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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	L2039-700120
	Application Number	
Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

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Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	L2039-700120
	Application Number	
Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS	

Customer Number	37462		
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Application Information:

Title of the Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS		
Attorney Docket Number	L2039-700120	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)	N/A		
Total Number of Drawing Sheets (if any)	25	**Suggested Figure for Publication (if any)**	4

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	Continuation of	12170939	2008-07-10	8289688	2012-10-16
Prior Application Status	Expired				Remove

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Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12170939	non provisional of	61041365	2008-04-01

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This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

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Application Number	Country i	Filing Date (YYYY-MM-DD)	Priority Claimed
			◯ Yes ◯ No

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☐ Authorization to Permit Access to the Instant Application by the Participating Offices

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In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

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Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

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○ Assignee	○ Legal Representative under 35 U.S.C. 117
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Assignee is an Organization check here. ☐

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Signature	/Matthew H. Grady/			Date (YYYY-MM-DD)	2012-10-15
First Name	Matthew	Last Name	Grady	Registration Number	52957

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

RELATED APPLICATIONS

This application is a continuation of and claims priority under 35 U.S.C. § 120 to U.S. Application Serial No. 12/170,939, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS," filed July 10, 2008, which application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application No. 61/041,365 filed April 1, 2008, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS," which are incorporated herein by reference in its entirety.

BACKGROUND

Field of Invention

The present invention relates generally to portable computers and, more particularly, to a portable computer that is configurable into different functional and positional modes.

Discussion of Related Art

Portable computers, such as laptop computers or notebook computers, have become increasingly popular and ubiquitous in the home and workplace. Conventional portable computers most commonly have a "clam-shell" configuration, with a base including the keyboard, various ports, connectors and/or inputs (e.g., for power and connecting peripheral devices), and the majority of the electrical components (e.g., the central processing unit and memory), and a display component pivotably coupled to the base by a hinge. The display component is movable about the hinge between a closed position, with the display screen positioned adjacent the keyboard, and an open position, with the display screen inclined at a desired viewing angle.

Some portable computers are able to accept user inputs via a touch screen in addition to via conventional tools, such as a keyboard or mouse. The use of a touch screen to input data is sometimes referred to as operating in "tablet mode" because the computer is being used in a manner similar to a tablet of paper. U.S. Patent No. 6,771,494 discloses a hybrid tablet-type portable computer that is capable of operating either as a normal laptop computer

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receiving user input via a keyboard ("laptop mode"), or as a tablet computer receiving user input via a touch screen. The '494 patent further discloses that the display component of the computer is attached to the base of the computer by hinges that allow the display to be tilted relative to the base (for laptop mode), and to be rotated and folded against the base to configure the computer into tablet mode.

Another variation of a portable computer with a moveable display is disclosed in U.S. Patent No. 6,266,236. The '236 patent discloses a computer including a base, a display member and an arm assembly coupling the display member to the base. According to the '236 patent, the arm assembly allows pivotable movement of the display member between a plurality of positions, including a notebook mode configuration, a tablet mode configuration, a presentation mode configuration, and a closed mode.

SUMMARY OF INVENTION

Aspects and embodiments of the present invention are directed to a portable computer that is configurable between a laptop mode (in which the portable computer has a conventional laptop appearance) and an easel mode in which the base of the computer and its display component stand upright forming an inverted "V," as discussed further below. The display component is pivotably coupled to the base of the portable computer by a hinge that allows the display component to be rotated or tilted about a longitudinal axis running along an interface between the base and the display component. Unlike the computers discussed in U.S. Patent No. 6,266,236 and U.S. Patent No. 6,771,494 above, the portable computer according to embodiments of the invention does not require an arm assembly, nor multiple, different hinge assemblies to be configured into the different modes. Furthermore, the portable computer according to embodiments of the invention is capable of different display modes and different functionality in the different configurations, as discussed below.

Further aspects and embodiments are directed to a portable computer having an embedded scroll wheel that can be configured to allow a user to control various features and functionality of the portable computer. For example, as discussed further below the scroll wheel can be used to navigate among information displayed on the portable computer's

display and/or to alter operating modes of the portable computer, and/or to control features such as volume, display brightness, etc.

According to one embodiment, a portable computer is configurable between various modes, including a closed mode, a laptop mode, an easel mode, a flat mode and a frame mode. The portable computer may comprise a display component including a display screen, a base, and a hinge assembly at least partially housed within the base and configured to pivotably couple the display component to the base. The display component may be rotatable about a longitudinal axis running along an interface between the display component and the base. In the closed mode, the display screen may be disposed substantially against the base, and rotating the display component about the longitudinal axis up to approximately 180 degrees from the closed mode may configure the portable computer into the laptop mode. Rotating the display component about the longitudinal axis beyond approximately 180 degrees axis from the closed mode may configure the portable computer into the easel mode.

In one example of the portable computer, the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode. In another example, the portable computer comprises a display orientation module that displays content on the display screen in one of a plurality of orientations relative to the longitudinal axis. The orientation of the displayed content may be dependent on the current display mode of the portable computer, or may be configurable responsive to a user input. The portable computer may further comprise a mode sensor which detects a current display mode of the portable computer, and the display orientation module may display content on the display screen in an orientation dependent on the current display mode detected by the mode sensor. Depending on the hinge assembly used, the longitudinal axis may comprises multiple parallel axes, and the hinge assembly may be configured to permit rotation of the display component about any of the multiple parallel axes to configure the portable computer between the plurality of display modes.

Another embodiment is directed to a portable computer comprising a base, a display component rotatably coupled to the base, and means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode.

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In another embodiment of a portable computer configurable between multiple modes including a laptop mode and an easel mode, the portable computer comprises a display component, a base, and a hinge assembly configured to rotatably couple the display component to the base. The hinge assembly may be configured to permit rotation of the display component about a single axis to configure the portable computer between the laptop mode and the easel mode. In one example, the single axis is a longitudinal axis running along an interface between the display component and the base. The portable computer may further comprise a scroll wheel disposed at least partially about the longitudinal axis. In one example, the display component comprises a display screen, and the scroll wheel is configured to permit a user to manipulate content displayed on the display screen.

Another embodiment is directed to a method of automatically orienting content displayed on a portable computer. The method comprises rotating a display component of the portable computer about a longitudinal axis running along an interface between the display component and a base of the portable computer, detecting a degree of rotation of the display component relative to the base, providing a signal representative of the degree of rotation of the display component, and automatically configuring an orientation, relative to the longitudinal axis, of the content displayed on the portable computer responsive to the signal.

According to another embodiment, a portable computer comprises a base unit, a display unit including a display screen configured to display content, an orientation sensor which detects an orientation of the display unit relative to the base unit, and a display orientation module which orients the content displayed on the display screen responsive to the orientation detected by the orientation sensor.

Another embodiment of a portable computer comprises a base, a display component rotatably coupled to the base such that the display component and the base are rotatable with respect to one another about a longitudinal axis running along an interface between the display component and the base, the display component including a display screen, and a scroll wheel disposed at least partially within the base and rotatable about the longitudinal axis, the scroll wheel configured to permit a user to control at least one of operating parameters of the portable computer and content displayed on the display screen. In one example, the scroll wheel is configured to permit the user to adjust a volume of sound

produced by the portable computer. In another example, the screen is configured to display at least one of a plurality of modes of content, and the scroll wheel is configured to permit the user to select a mode of content for display by the portable computer. The portable computer may further comprise one or more navigation buttons that may be used in conjunction with the scroll wheel to control aspects of the portable computer and displayed content.

According to another embodiment, a portable computer is configurable between a plurality of display modes including a laptop mode and an easel mode, the portable computer comprising a base, a display component rotatably coupled to the base and including a screen which displays content, and a scroll wheel accessible in each of the plurality of display modes and configured to permit a user to manipulate at least one of operating parameters of the portable computer and the content displayed on the screen. In one example, the scroll wheel is disposed at leas partially about an axis of rotation of the display component relative to the base.

In another embodiment, a portable computer comprises a base, a display component including a screen configured to display content, a hinge assembly configured to rotatably couple the display component to the base and to permit rotation of the display component about a longitudinal axis running along an interface between the display component and the base, and a scroll wheel disposed at least partially about the longitudinal axis.

Still other aspects, embodiments, and advantages of these exemplary aspects and embodiments, are discussed in detail below. Moreover, it is to be understood that both the foregoing information and the following detailed description are merely illustrative examples of various aspects and embodiments, and are intended to provide an overview or framework for understanding the nature and character of the claimed aspects and embodiments. Any embodiment disclosed herein may be combined with any other embodiment in any manner consistent with the objects, aims, and needs disclosed herein, and references to “an embodiment,” “some embodiments,” “an alternate embodiment,” “various embodiments,” “one embodiment” or the like are not necessarily mutually exclusive and are intended to indicate that a particular feature, structure, or characteristic described in connection with the embodiment may be included in at least one embodiment. The appearances of such terms herein are not necessarily all referring to the same embodiment. The accompanying drawings

are included to provide illustration and a further understanding of the various aspects and embodiments, and are incorporated in and constitute a part of this specification. The drawings, together with the remainder of the specification, serve to explain principles and operations of the described and claimed aspects and embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

Various aspects of at least one embodiment are discussed below with reference to the accompanying figures, which are not intended to be drawn to scale. Where technical features in the figures, detailed description or any claim are followed by references signs, the reference signs have been included for the sole purpose of increasing the intelligibility of the figures, detailed description, and claims. Accordingly, neither the reference signs nor their absence are intended to have any limiting effect on the scope of any claim elements. In the figures, each identical or nearly identical component that is illustrated in various figures is represented by a like numeral. For purposes of clarity, not every component may be labeled in every figure. The figures are provided for the purposes of illustration and explanation and are not intended as a definition of the limits of the invention. In the figures:

FIG. 1 is an illustration of one example of a portable computer, according to aspects of the invention, in a "laptop" configuration;

FIG. 2 is a view of the portable computer of FIG. 1 in the closed position;

FIG. 3 is a plan view of the exterior of the bottom of the portable computer of FIG. 1;

FIG. 4 is a perspective view of the portable computer of FIG. 1 in the easel mode;

FIG. 5 is a side view of the portable computer of FIG. 4, illustrating the adjustable angle of the easel mode;

FIGS. 6A-C are diagrams illustrating different positions of the portable computer of FIG. 4 in easel mode;

FIG. 7A is an illustration of a portion of the portable computer of FIG. 1 in the laptop mode, illustrating a hinge assembly according to aspects of the invention;

FIG. 7B is an in illustration of a portion of the portable computer of FIG. 1 in the easel mode, illustrating the hinge assembly according to aspects of the invention;

FIG. 8 is a diagram of one example of the hinge assembly of FIGS. 7A and 7B;

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FIG. 9 is a cross-sectional diagram of a portion of the hinge assembly of FIG. 8, taken along line 9-9 in FIG. 8;

FIG. 10 is an exploded view of the hinge assembly of FIG. 8;

FIG. 11 is a block diagram of one example of a portable computer user interface architecture, according to aspects of the invention;

FIG. 12 is a screen shot illustrating one example of a graphical user interface, according to aspects of the invention;

FIG. 13 is a screen shot illustrating another example of a graphical user interface according to aspects of the invention;

FIG. 14 is an illustration of a user adjusting the scroll wheel on a portable computer in the easel mode, according to aspects of the invention;

FIG. 15 is an illustration of a user pressing the scroll wheel on a portable computer, according to aspects of the invention;

FIG. 16 is an illustration of a user pressing a navigation button on the portable computer, according to aspects of the invention;

FIG. 17 is an illustration of an example of the portable computer in the laptop mode, according to aspects of the invention;

FIG. 18 is a view of a portion of the portable computer illustrating a wireless signal indicator feature, according to aspects of the invention;

FIG. 19 is a view of a portion of the portable computer in the closed position, according to aspects of the invention;

FIG. 20 is a plan view of one example of a power adaptor, according to aspects of the invention;

FIG. 21 is a side view of the power adaptor of FIG. 20;

FIG. 22A is another side view of the power adaptor of FIG. 20, illustrating the power cord would around a cord spool, according to aspects of the invention;

FIG. 22B is a plan view of the power adaptor of FIG. 22A

FIG. 23 is an illustration of the portable computer coupled to a docking station, according to aspects of the invention;

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FIG. 24 is an illustration of the portable computer showing one example of a docking connector, according to aspects of the invention;

FIG. 24 is an illustration of a hinge assembly coupled to a computer frame, according to aspects of the invention;

FIG. 26 is an illustration of the portable computer configured into a "frame" mode, according to aspects of the invention; and

FIG. 27 is an illustration of the portable computer configured into a "flat" mode, according to aspects of the invention.

DETAILED DESCRIPTION

Aspects and embodiments are directed to a portable computer that is configurable between different operating modes, including a laptop mode (in which the portable computer has a conventional laptop appearance), a flat mode, a frame mode, and an easel mode in which the base of the computer and its display component stand vertically forming an inverted "V," as discussed further below. The portable computer is capable of different display formats and functionality in the different modes, and includes a graphical user interface that may work seamlessly with the computer hardware to provide a unified, comfortable, holistic user experience. In particular, the portable computer may provide access to a wide array of functions, both those traditionally provided by computing devices and those traditionally provided by other passive information devices. For example, the hardware and software, including the graphical user interface, of the portable computer may be focused toward providing access to entertainment media, such as audio and video (e.g., playing music, streaming video, viewing photographs, etc.), email, and internet, while also providing state-of-the-art computer processing capability.

It is to be appreciated that embodiments of the methods and apparatuses discussed herein are not limited in application to the details of construction and the arrangement of components set forth in the following description or illustrated in the accompanying drawings. The methods and apparatuses are capable of implementation in other embodiments and of being practiced or of being carried out in various ways. Examples of specific implementations are provided herein for illustrative purposes only and are not intended to be

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limiting. In particular, acts, elements and features discussed in connection with any one or more embodiments are not intended to be excluded from a similar role in any other embodiments. Also, the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. Any references to embodiments or elements or acts of the systems and methods herein referred to in the singular may also embrace embodiments including a plurality of these elements, and any references in plural to any embodiment or element or act herein may also embrace embodiments including only a single element. References in the singular or plural form are not intended to limit the presently disclosed systems or methods, their components, acts, or elements. The use herein of "including," "comprising," "having," "containing," "involving," and variations thereof is meant to encompass the items listed thereafter and equivalents thereof as well as additional items. References to "or" may be construed as inclusive so that any terms described using "or" may indicate any of a single, more than one, and all of the described terms.

Referring to FIG. 1, there is illustrated one example of a portable computer according to aspects of the invention. In FIG. 1, the portable computer 100 is illustrated in the "laptop" mode, with the display component 102 inclined at a viewing angle from the base 104. The display component 102 is pivotably coupled to the base 104 by a hinge assembly (not shown) that allows the display component to be rotated with respect to the base. The hinge assembly may include a single or multiple hinges, which may be any of a variety of hinge types, including, but not limited, to single-axis hinges, multiple-axis hinges, geared hinges, etc. In one example, the hinge assembly allows the display component 102 to be rotated (or tilted) about a longitudinal axis 101 running along an interface between the display component and the base 104, as illustrated in FIG. 1 and discussed further below. The base 104 includes a keyboard 106 and internal electronic components (not shown), such as a central processing unit, memory, and other components necessary to operate the portable computer, as known to those skilled in the art. In some embodiments, the base 104 may also include a touch pad 108 or trackball (not shown) for receiving user commands, as known to those skilled in the art.

Still referring to FIG. 1, the display component 102 includes a display screen 110, and may also include a camera 112, microphone 114, and infrared receiver 116, as discussed further below. It is to be appreciated that the locations of the camera 112, microphone 114

and infrared receiver 114 are not limited to the example illustrated in FIG. 1, and may be placed in other locations on the display component 102 and/or base 104, as would be recognized by those skilled in the art. The display component 102 may also include cushions 118 that provide soft contact points between the base 104 and the display component 102 when the portable computer is closed. In one example, the cushions 118 are made of rubber. However, it is to be appreciated that the invention is not so limited, and the cushions 118 may comprise materials other than rubber, including, for example, a polymer, felt, or other suitable materials as would be recognized by those skilled in the art.

Referring to FIG. 2, there is illustrated a side view of the portable computer 100 of FIG. 1 in the closed configuration. As is the case for conventional clam-shell type portable computers, when the portable computer 100 is closed, the display screen is disposed "face down" against the keyboard of the base 104. In the illustrated embodiment, the base 104 includes a rounded portion 120 that houses the hinge (not shown) that pivotably couples the display component 102 to the base, as discussed further below. It is to be appreciated that the rounded portion 120 is not limited to having a round shape, but may instead have another shape, which may be dependent on the type of hinge used. In one embodiment, a power button 122, configured to turn the portable computer ON and OFF, may also be provided on the rounded portion 120, as illustrated in FIG. 2. However, it is to be appreciated that the invention is not so limited, and the power button 122 may be located elsewhere on the base 104. In one example, the power button 122 may be slightly recessed relative to the surface of the base 104, so as decrease the potential for the power button to be accidentally pressed.

An exterior view of the bottom of the base 104 (the underside of the portable computer 100) is illustrated in FIG. 3. As can be seen in FIG. 3, in one embodiment, the base 104 includes a plurality of feet 124. In one example, the feet 124 are made of rubber; however, it is to be appreciated that the invention is not so limited and the feet may be made of another material, such as, for example, a polymer or felt. A ventilation slit 126 may be provided near an interface between the base 104 and the display component 102, as illustrated, or elsewhere as may be desired, to allow heat to dissipate from the internal electronic components in the base. The base 104 may also include one or more speakers 128. In one example, the base 104 includes two stereo speakers 128, positioned at either side of the base, as illustrated in

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FIG. 3; however, it is to be appreciated that the portable computer 100 may comprise more or fewer speakers which may be placed at any location on the base 104. A scroll wheel 132 may be provided to allow a user to control certain functionality of the portable computer 100, such as navigating web pages, controlling speaker volume, selecting programs, etc., as discussed further below.

According to one embodiment, the base 104 may comprise a cushioning strip 130 disposed along an edge of the base 104 opposite to the interface between the display component 102 and the base, as illustrated in FIG. 3. The cushioning strip 130, which may comprise rubber, a polymer, or another suitable material, may serve as a "foot" when the portable computer is configured into the easel mode, as discussed further below. In one embodiment, the display component 102 may be provided with a similar cushioning strip that may serve as a second supporting foot when the portable computer is configured into the easel mode.

Referring to FIG. 4, there is illustrated an example of the portable computer 100 configured into the easel mode. To convert the portable computer 100 from the laptop mode (or closed position) into the easel mode, the display component 102 may be folded away from the base 104, in the same direction as to open the computer (i.e., to configure the computer from the closed position into the laptop mode) such that the base 104 and the display component 102 form an inverted "V" shape with the bottom of the base and the back of the display component face another, as illustrated in FIG. 4. In the easel mode, the display screen 110 is visible and accessible on one side of the portable computer 100 and the keyboard 106 (not shown in FIG. 4) is visible and accessible on the other side.

As illustrated in FIG. 4, in one embodiment, the portable computer may comprise integrated hardware volume controls, including a volume control button 204 and a mute button 206. In one example, the volume control button 204 may be a rocker switch that allows a user to easily increase or decrease the volume of audio played through the speakers 128. When the user presses the volume control button 204, a volume indicator may temporarily appear on the display screen 110, to provide a visual indication of the amount by which the volume is being increased or decreased. Similarly, pressing the mute button 206 may cause a visual indication that the volume is muted to appear on the display screen 110.

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According to one embodiment, when the portable computer 100 is configured into the easel mode, the visual display on the display screen 110 is automatically rotated 180 degrees such that the information appears "right-way-up," even through the display screen is upside-down compared to when the portable computer is in the laptop mode. Thus, a user may simply "flip" the portable computer 100 into the easel mode and immediately be able to comfortably view information on the display screen 110, without having to access display screen controls to adjust the orientation of the visual display. In one embodiment, the portable computer 100 includes an orientation (or mode) sensor that is configured to detect whether the portable computer is in the laptop mode or the easel mode, and to adjust the display accordingly. The orientation sensor may be incorporated into the base component 104, for example, underneath the keyboard 106, or into the display component. In one example, locating the orientation sensor in the display component 102, rather than the base 104, may provide more robust detection and therefore, may be presently preferred in some embodiments. The orientation sensor may be used to determine a precise relative orientation of the base component 104 with respect to the display component 102, or vice versa, for example, to determine whether the device is in the laptop mode, easel mode, or some point in between the two modes. In one example, the orientation sensor includes an accelerometer whose output is fed to the computer operating system (or to dedicated logic circuitry) which then triggers a display inversion as appropriate.

Accelerometers have been used in portable devices such as cellular phones, media players or computers, as sudden motion sensors, or "drop detectors," to protect against hard drive crashes in the event that the device is dropped. By contrast, however, the accelerometer in the portable computer according to an embodiment of the invention is not used to detect motion of the overall computer, but rather to detect a configuration of the portable computer 100 (e.g., laptop mode or easel mode), particularly, to detect an orientation of the display component 102 relative to the base component 104. In one example, information from the accelerometer is provided to a display controller in the portable computer and used to switch the display between portrait or landscape mode, as is done in some conventional devices.

Referring to FIG. 5, when the portable computer 100 is in the easel mode, the base 104 is disposed at an angle 134 to the display component 102. This angle 134 is adjustable, for

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example, to allow a comfortable viewing angle to the display screen 110 to be maintained for different positions of a user 136 and of the portable computer 100, as illustrated in FIGS. 6A, 6B and 6C. For example, when the user 136 is further from the portable computer, the angle 134a (FIG. 6A) may be made smaller than the angle 134b when the user is closer to the portable computer (FIG. 6B). As discussed above, in one example, the orientation sensor (not shown) may be used to detect, either approximately or precisely, the angle 134 and to provide the information to the computer operating system.

According to one embodiment, the display component 102 is pivotably coupled to the base 104 by a hinge that allows the display component to be moved relative to the base so as to allow the portable computer 100 to be configured into the closed position, the laptop mode or the easel mode. As discussed above, in conventional "clamshell" type portable computers, the hinges that couple the display component to the base generally do not permit more than about 180 degrees of rotation of the display component. Thus, these conventional portable computers can be in a closed position or open, laptop configuration, but cannot be configured into an easel mode because the conventional hinges do not permit sufficient movement of the display component. Similarly, the tablet-type portable computers discussed above have displays that can be opened, rotated and folded such that they lie flat against the keyboard on the base, but cannot be configured into an easel mode. Although, as discussed above, U.S. Patent No. 6,266,236 discloses a computer that is configurable into a presentation mode, this requires a complex arm assembly. By contrast, the portable computer according to embodiments of the present invention may be configured into the easel mode by simply continuing to tilt or rotate the display component past the "laptop positions" until a desired easel angle 134 is reached.

Referring to FIGS. 7A and 7B, there is illustrated a portion of the portable computer 100 illustrating a hinge assembly 138 that allows the portable computer to be configured into either the laptop mode (FIG. 7A) or the easel mode (FIG. 7B), according to aspects of the invention. According to one embodiment, the hinge assembly 138 accommodates 0-320 degrees of rotation, allowing a minimum angle 134 (see FIG. 5) of 40 degrees. However, it is to be appreciated that the hinge assembly 138 may allow greater or fewer degrees of rotation, provided only that sufficient rotation is allowed so as to configure the portable computer 100

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into either the laptop mode or the easel mode. As discussed above, in one embodiment the portable computer 100 includes an orientation sensor (not shown) that is configured to detect a relative orientation of the display component 102 and the base component 104. In one example, the orientation sensor may be an accelerometer incorporated into the base component 104, as discussed above. Alternatively, the orientation sensor may be incorporated into the hinge assembly 138 and may be used to detect movement of the hinge assembly, and to translate that movement into an information about the relative orientation of the display component 102 and the base component 104 (for example, a size of the angle 134). It is also to be appreciated that the orientation sensor may include electronic or mechanical components, or a combination thereof. For example, the hinge assembly may be provide with detents that provide an indication of the mode of the portable computer.

As discussed above, and also illustrated in FIGS. 7A and 7B, the portable computer may also comprise a scroll wheel 132 that allows a user to adjust, control and/or select various aspects of the portable computer (e.g., wireless capability or speaker volume) or items displayed on the display screen 110. A housing 160 may contain or support various mechanical and/or electronic components (not shown) that are coupled to the scroll wheel 132 and are configured to convert physical movement of the scroll wheel into electrical signals. These electrical signals may be provided to the central processing unit of the portable computer 100 which processes the electrical signals so as to translate movement of the scroll wheel into control of a selected feature, for example, adjusting the volume of the speaker(s) or selecting a particular item displayed on the display screen, as discussed further below.

One embodiment of the hinge assembly 138 is illustrated in FIG. 8. The hinge assembly includes a bracket 140 rotatably coupled to a housing 142. The housing 142 may include a first flange 144 that may be fastened to an internal frame in the base 104, as illustrated in FIG. 7A. The first flange 144 may include holes 146 to allow the first flange to be fastened to the base 104 using fasteners, such as, for example, screws, rivets or bolts. The bracket 140 may include a second flange 148 that may be similarly coupled to the display component 102 using fasteners 150. In one embodiment, the display screen 110 (see FIG. 1) may be an LCD screen. As known to those skilled in the art, an LCD screen generally comprises a frame and plastic housing. In one example, the second flange 148 may be

fastened to either or both of the display screen frame and the screen's plastic housing. Referring to FIG. 25, there is illustrated an example of two hinge assemblies 138 coupled to the display frame 208 of the display component, and to the base frame 210 of the base component 104. According to one embodiment, the bracket 140 and/or housing 142 may be formed of cast zinc. However, it is to be appreciated that other materials, including other metals, may be used, and the bracket 140 and/or housing 142 may be formed using a procedure other than casting, such as, for example, machining or molding.

Referring again to FIG. 8, in one embodiment, the hinge assembly 138 may also incorporate an area 152 for locating the power button (FIG. 2, 122) or a navigation control button (FIG. 4, 166), as discussed further below.

Referring to FIG. 9, there is illustrated a cross-sectional view of a portion of the hinge assembly 138 taken along line A-A in FIG. 8. As shown in FIG. 9, in one embodiment the hinge assembly 138 comprises a shaft 154 located within the hinge housing 142. The shaft 154 may be held in position within the hinge housing 142, and rotatably coupled to the housing, by torsion elements, such as springs 156. In one example, the springs 156 may be formed by stamping; however, it is to be appreciated that other methods of manufacture may be used. In one example, the hinge assembly may accommodate about 320 degrees of rotation, as discussed above, and may provide about 6.5 in-lbs in symmetric torque.

FIG. 10 is an exploded view of the hinge assembly of FIGS. 8 and 9. As shown in FIG. 10, the shaft 154 is coupled to a member 158. This member 158 may be integral with or coupled to the bracket 140 which is, in turn, fastened to the display component, as discussed above. Thus, the shaft 154 and springs 156 provide a rotatable coupling between the fixed elements of the hinge assembly, namely, the hinge housing 142 and bracket 140 which are fastened to the base 104 and display component 102 of the portable computer. In this manner, the hinge assembly allows the display component 102 to be moved relative to the base 104, thereby allowing the portable computer to be easily and quickly configured into any of the closed position, laptop mode or easel mode. For example, simply rotating or tilting the display component about the longitudinal axis 101 (see FIG. 1) up to approximately 180 degrees from the closed mode configures the portable computer into the laptop mode, and

rotating the display component about the longitudinal axis 101 beyond approximately 180 degrees axis from the closed mode configures the portable computer into the easel mode.

According to one embodiment, the portable computer may include integrated "navigation" hardware that allows a user to easily and comfortable control various features and functions of the portable computer, and to manipulate content displayed on the portable computer. For example, as discussed above, the portable computer 100 may comprise a scroll wheel 132 that allows a user to control, adjust and/or select various functionality of the portable computer. According to another embodiment, the scroll wheel 132 may be used to provide "hardware navigation" through information, such as menus, icons, etc., displayed on the display screen 110, as discussed further below with reference to FIG. 17. A common display configuration used in conventional computers is a "desktop" view in which multiple icons representing links to various programs or applications are displayed over a background image. Navigation is conventionally performed using a mouse, touch pad or trackball, as known to those skilled in the art. In one embodiment, the portable computer 100 may display information on the display screen 110 in the conventional desktop configuration, and navigation may be performed using either conventional tools, such as a touchpad 108, trackball (not shown) or peripheral, for example, a mouse, that is connected to the portable computer 100 via a port 164, or the scroll wheel 132, or a combination thereof. According to another embodiment, the portable computer 100 includes a streamlined graphical user interface that supports "map" navigation. The map user interface provides a clear overview of the entire computing environment and searching capability within the environment that may be accessed using the scroll wheel 132 and, optionally, one or navigation buttons 166, 168 that may be provided on the base 104 of the portable computer 100 (button 166) and/or in the keyboard 106 (button 168), illustrated in FIG. 17. In one embodiment, the map mode of navigation is a hierarchical mode that reduces the number of items to select amongst at any stage of navigation, thereby facilitating user access with the scroll wheel 132 and, optionally, the navigation button(s) 166, 168. Of course, it is to be appreciated that the map user interface may also be navigated using conventional tools, such as a trackball, touchpad, mouse or arrow keys.

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Referring to FIG. 11, there is illustrated a block diagram of one example of an architecture of the portable computer including a map user interface. The user interface "home" screen 170 that displays a plurality of modes of content 172. In the illustrated example, the home screen 170 contains five modes of content 172; however, it is to be appreciated that the home screen may include more or fewer than five modes of content and that the modes of content may differ from the examples discussed below. According to one example, the modes of content 172 accessible via the home screen 170 may include "media" 172a, "connect" 172b, "web" 172c, "applications" 172d, and "channels" 172e. Using the map user interface, information, programs, features and applications may be grouped into the various modes of content 172. By selecting any mode of content 172, for example, by using the scroll wheel 132 and/or navigation buttons 166, 168, as discussed further below, the user may access the content organized within that mode. For example, the media mode 172a may provide access to a medial player to play, view, search and organize media such as music, video, photos, etc. The connect mode 172b may provide access to features such as, for example, email, voice-over-IP, instant messaging, etc., and the web mode 172c may provide access to internet browsing and searching. The application mode 172d may provide access to, for example, computer applications or programs, such as word processor, spreadsheet, calculator, etc. In one example, these applications or programs may be provided as web-based services rather than programs or applications residing on the portable computer 100. The channels mode 172e may provide access to different functionality of the portable computer, with the different functions or features defined as different channels. For example, a channel may include an alarm clock channel in which the portable computer is configured to display a clock and can be programmed to activate an alarm, e.g., a sound, piece of music, etc., at a predetermined time. Another example of a channel may include a "photo frame" channel in which the portable computer may be configured to display a pre-selected image or set of images, etc. Another example of a channel is a "television" channel, in which the portable computer is configured to stream Internet television. In one example, a user may configure particular Internet television channels (e.g., a news channel, a movie channel, a home and garden channel, etc.) into sub-channels within the channels mode of content 172(e).

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Some or all of the modes of content 172 may access, retrieve and/or store information on the Internet 174.

According to one embodiment, the different modes of content 172 may be displayed as a series of bars across the display screen 110, as illustrated in FIG. 12. The following discussion of various features, including hardware navigation through the map user interface may refer primarily to the display configuration illustrated in FIG. 12. However, it is to be appreciated that the invention is not so limited, and the modes of content may be displayed in other configurations, including, for example, a "desktop" and icon configuration, a "dashboard" type display, as illustrated in FIG. 13, or another configuration, as would be recognized by those skilled in the art. Similarly, navigation is discussed below primarily with reference to the scroll wheel 132 and navigation buttons 166, 168; however, it is to be appreciation that navigation may also be accomplished using any of the conventional tools discussed above or known to those skilled in the art.

As discussed above, according to one embodiment, the scroll wheel 132 and, optionally, the navigation buttons 166, 168 may be used to navigate the user interface. Referring again to FIG. 12, scrolling the scroll wheel may sequentially highlight different ones of the modes of content 172. In one example, the highlighting may be achieved by changing the color of the selected mode, and/or by providing a visual indicator, such as a colored bar 176. A highlighted mode 172 may be selected by pressing the scroll wheel, thereby bringing up a new "page" or screen on the user interface corresponding to the selected mode. Once within a selected mode of content 172, the scroll wheel may similarly be used to select particular functions, features or applications within that mode. In one embodiment, the default action for the scroll wheel 132 may vary depending on whether the portable computer 100 is in the laptop mode or the easel mode. For example, in easel mode, the default action for the scroll wheel may be channel selection within the channels mode 172(e).

As discussed above, in one embodiment volume control for the speakers 128 may be provided by the volume control button 204 and mute button 206. Alternatively, according to another embodiment, volume control may be provided using the scroll wheel 132. Thus, as a user scrolls the scroll wheel 132, as illustrated in FIG. 14 by arrow 161, a volume indicator may appear on the display screen 110. In one example, the volume indicator may comprise a

transparent, or partially transparent, box 162 containing volume level indicators that may appear directly below the scroll wheel 132 on the display screen 110. In this example, as the user scrolls the scroll wheel 132, different volume levels in the volume box 162 may be successively highlighted, to indicate to the user that the volume is increasing or decreasing.

In one embodiment, the scroll wheel 132 may be depressible as well as scrollable. Thus, pressing the scroll wheel 132, as illustrated in FIG. 15, may allow further control, such as, for example, selecting a channel onto which the user has scrolled, or "play" and "pause" of audio or video being played through the portable computer 100.

As discussed above, according to one embodiment, one or more navigation buttons may be used in conjunction with the scroll wheel. In particular, in one embodiment, the navigation button(s) may be used to change the action of the scroll wheel. As discussed above, in one example, the default action of the scroll wheel is volume control. This action may be changed by pressing the navigation button 166, as illustrated in FIG. 16, for example, from volume control to menu navigation in the user interface, and vice versa. According to one embodiment, the effect of pressing the navigation button 166 may vary depending on active the mode of content of the portable computer 100. For example, if a user is in the media mode using a photo viewing application, pressing the navigation button 166 may change the action of the scroll wheel 132 from mode navigation to slideshow controls for the photos. When the navigation button 166 is pressed, an control indicator box (similar to the volume indicator box 162 discussed above with reference to FIG. 14) may appear containing different actions for the photo slideshow, such as "play," "next," "back," "skip," "full screen view," etc., and scrolling the scroll wheel 132 may allow a user to select one of these actions. Pressing the navigation button 166 again may return the scroll wheel action to menu navigation, to allow the user to, for example, move to a different feature or application within the active mode, or to select a different mode.

As can be seen in FIG. 16, the navigation button 166 may be easily accessed when the portable computer 100 is in the easel mode, providing a convenient navigation tool for this configuration. A similar navigation button 168 may be provided on the keyboard 106, as illustrated in FIG. 17. In one example, the functionality of the two navigation buttons 166, 168 may be the same, with the different locations providing easy, comfortable access in the

different configuration modes (i.e., laptop or easel) of the portable computer 100. Thus, a user may use either navigation button 166 or navigation button 168, depending on personal preference. In another example, the two navigation buttons may have different functionality. For example, the navigation button 166 may be used to alter the action of the scroll wheel 132, as discussed above, while the navigation button 168 is used to navigate "up" or "down" a level within the map user interface. For example, pressing the navigation button 168 while within a given mode of content may allow the user to "back up" to the home screen; or pressing the navigation button 168 while within a selected channel (in the channel mode of the content 172e) may allow the user to "back-up" to the channel mode main page.

It is to be appreciated that numerous variations on the functionality of the navigation buttons 166, 168 is possible, as would be recognized by those skilled in the art, and the above examples are given for illustration only and are not intended to be limiting. In addition, any functions described with reference to one navigation button (166 or 168) may be instead (or additionally) implemented with the other navigation button. In one example, the function of the navigation buttons 166, 168 may vary depending on whether the portable computer 100 is configured into the laptop mode or the easel mode. For example, only the navigation button 166 may be active in the easel mode, and only the navigation button 168 may be active in the laptop mode. Alternatively, both navigation buttons 166, 168 may be usable in either the laptop mode or the easel mode, but their functionality may vary. For example, when the portable computer 100 is in the easel mode, the default action for the navigation button 166 may be channel selection whereas the default action for the navigation button 168 is to access the "home" screen. Furthermore, the portable computer 100 is not limited to the use of two navigation buttons and may instead comprise only a single navigation button or more than two navigation buttons, any of which may be disposed in the locations described above (e.g., on the rounded portion 120 of the base 104 or on the keyboard 106), or in other locations on the portable computer.

As discussed above, according to one embodiment, the function or display content and/or display orientation of the portable computer may vary when the portable computer is configured from the laptop mode into the easel mode, or vice versa. For example, as discussed above, when the portable computer 100 is configured into the easel mode, the visual

display on the display screen 110 is automatically rotated 180 degrees such that the information appears "right-way-up," even through the display screen is upside-down compared to when the portable computer is in the laptop mode. In another example, for at least some activities within at least some modes of content (e.g., viewing a photograph or video), when the portable computer 100 is configured into the easel mode, the display may automatically adjust to "full screen view" (i.e., the displayed image or video is displayed on the full screen size, rather than in a window) to allow for comfortable viewing.

In addition, as discussed above, the ability to configure the portable computer 100 into either the laptop mode or the easel mode provides enhanced functionality. For example, when the portable computer 100 is not being actively used, the user may configure the portable computer into the easel mode, and program the portable computer to act as a digital photo frame, displaying one or more photos of the user's choice. In the easel mode, the portable computer 100 may occupy a smaller footprint on a surface than in the laptop or closed modes because the base 104 and display component 102 are upright, as illustrated in FIGS. 4 and 5. In addition, because the portable computer can act as a passive information and/or entertainment device, such as a photo frame or clock, as discussed above, the portable computer may provide a useful function even when not being actively used by the user, and may do so (in the easel mode) without taking up much surface area.

According to another embodiment, the portable computer 100 may further comprise a wireless signal indicator 178, as illustrated in FIG. 18. The wireless signal indicator 178 may indicate the availability and/or strength of a wireless signal to which the portable computer 100 is connected, or is attempting to connect to. In one example, the color of the wireless signal indicator 178 may provide information regarding the strength of a detected wireless signal. For example, green may indicate a "good" signal; yellow may indicate a "poor" or "low" signal; and red may indicate that there is no signal available. In one example, the wireless signal indicator 178 may be ON or active whenever the portable computer 100 is powered up. Alternatively, the wireless signal indicator 178 may be activated by a user action, for example, by pressing the navigation button 166 or another button or key provided on the portable computer 100, and may remain active for a predetermined time period (e.g., for 2 seconds, 10 seconds, one minute, etc.). As discussed above, the functionality of the

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navigation button 166 may vary depending on the configuration mode of the portable computer 100. In one example, when the portable computer 100 is in the closed position, but still powered up, the default action for the navigation button 166 may be to activate the wireless signal indicator 178.

According to one embodiment, the portable computer 100 may be provided with power cord and adapter to allow the portable computer to be plugged into a wall supply. Referring to FIG. 19, there is illustrated a view of a portion of the portable computer 100, showing a power jack 180 to which the power adaptor can be connected. As discussed above, the portable computer 100 may also include a port 164 to which peripheral devices, such as mouse, external keyboard, portable flash drive, memory stick, etc. may be connected. In one example, the port 164 is a USB port; however, it is to be appreciated that the port may accommodate protocols other than USB. In addition, although only one port 164 is illustrated in FIG 19, the portable computer 100 may comprise multiple ports that may accommodate multiple protocols. In one example, the portable computer 100 may also comprise a headphone jack 182. It is to be appreciated that the location of any or all of the power jack 180, port(s) 164, and headphone jack 182 are not limited to the example shown in FIG. 19, but may be anywhere convenient or desirable on the portable computer 100.

Referring to FIG. 20, there is illustrated a top down view one example of a power adaptor 184 that may be used with the portable computer 100 and connected via the power jack 180. As known to those skilled in the art, the power adaptor 184 comprises a transformer (not shown) that converts the wall power to a level acceptable for use by the portable computer 100. In one embodiment, the power adaptor 184 comprises a substantially round body 186 that houses the transformer and other necessary components. A connector 188 may allow the power adaptor 184 to be connected to a wall outlet or extension cord. In one example, the connector 188 may include foldable prongs 190 that can be folded against the connector 188 for storage, and folded out for connection, as illustrated in FIG. 21. A cord 192 may be slidably accommodated within the body 186, such that the cord may be stored within the body and flexibly extended (up to its maximum length) by a user.

According to one embodiment, the cord 192 may be wound around a cord spool 194 located within, or partially within, the body 186 of the power adaptor 184. As illustrated in

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FIG. 21, the cord spool 194 may be configured to slide out from the body 186 of the power adaptor 184, such that the cord 192 can be wound around the cord spool 194, as illustrated in FIGS. 22A and 22B.

According to another embodiment, the portable computer 100 may be configured to connect to a docking station 196, as illustrated in FIG. 23. In one embodiment, a connector 198 on the docking station 196 may be configured to slidably connect to connectors 200 on the portable computer 100, as illustrated in FIG. 23. In one example, the connectors 200 may include power and audio connectors, such that the portable computer 100 may receive power from the docking station and receive and/or provide audio signals from/to the docking station, respectively. For example, the docking station may be coupled to external speakers, and the portable computer may provide audio signals to the docking station to be played through the external speakers. In another example, the docking station 196 may also be coupled to an audio device (not shown), such as an MP3 player, which may provide audio signals and data to the portable computer 100, for example, to update an audio library on the portable computer. It is to be appreciated that many other variations of communication between the portable computer 100 and devices coupled to the docking station 196 are possible, as would be recognized by those skilled in the art, and such variations are intended to be within the scope of this disclosure. Furthermore, numerous variations on the connector(s) 198, 200 that couple the docking station 196 to the portable computer 100 are also possible, as would be recognized by those skilled in the art. For example, the portable computer 100 may include a multi-pin connector 202 located on the base 104, as illustrated in FIG. 24. Such and other variations are intended to be within the scope of this disclosure and the above-mentioned examples are provided for illustration only and are not intended to be limiting.

In addition, it is to be appreciated that although the above discussion refers primarily to the portable computer 100 being in either the laptop mode or easel mode, other modes or configurations are also possible. For example, as discussed above, because the portable computer 100 can be configured from the closed position, through the laptop mode into the easel mode by rotating the display component 102, a number of configurations are possible in between "true" laptop mode and "true" easel mode. In another example, the portable computer 100 may be configured into a "frame" mode, as illustrated in FIG. 26, in which the

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portable computer is placed on a surface 212 with the keyboard 106 "face down" on the surface 212 and the display 110 facing upward. In the frame mode, the display component 102 may be at a similar orientation, and angle 134, with respect to the base component 104 as in the easel mode. However, rather than the base component 104 and display component 102 being oriented vertically with respect to the surface 212, as in the easel mode (in which the portable computer forms an inverted "V" as discussed above), in the frame mode, the base component 104 may lie flat on the surface 212, as shown in FIG. 26. In one example, software and/or hardware protection may be provided for the keyboard to prevent keys from being pressed (or to prevent the portable computer from responding to pressed keys) when the portable computer is in the frame mode.

Similarly, referring to FIG. 27, there is illustrated another configuration of the portable computer 100, referring to as the "flat" mode. In the flat mode, the display component 102 may be rotated (or opened) to approximately 180 degrees with respect to the base component 104, such that the base component and display component lay flat on a surface, with the keyboard 106 and display screen 110 exposed, as shown in FIG. 27. Unlike the easel and frame modes, in which the keyboard may be concealed and not easily accessible, in the flat mode, the keyboard is accessible and usable. In addition, as discussed above, the visual display on the display screen 110 may be automatically rotated to accommodate comfortable viewing of information by persons located in different positions relative to the base component 104 or display component 102. The visual display on the display screen 110 may also be manually adjusted by a user using, for example, the keyboard 106, touch pad 108 or mouse (not shown), scroll wheel 132 or navigation buttons (not shown). For example, if a user (located at position A) wishes to display information for a person located opposite the user (at position B), the visual display may be rotated (automatically or manually)180 degrees such that the information appears "right-way-up," to the person at location B, even through the display screen 110 is upside-down for that person. Similarly, in another example, the visual display may be rotated (automatically or manually) 90 degrees such that the information appears "right-way-up," for a person at location C. In one example, a user can "toggle" the visual display among various orientations. For example, a user at location A may have the visual display facing themselves while using the keyboard 106 or other controls to

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change or access information on the display, then toggle the display orientation 180 or 90 degrees to display the information for persons at locations B or C.

In summary, various aspects and embodiments provide a portable computer that is configurable between different operating modes, including a laptop mode and an easel mode, and that is capable of different display formats and functionality in the different modes. The ability to view and operate the portable computer in the different laptop and easel modes, and to incorporate features and functions such as an alarm clock, digital photograph frame, voice-over-IP, etc, may provide enhanced flexibility and usefulness. In addition, the portable computer may include a graphical user interface that may work seamlessly with the computer hardware to provide an enjoyable, holistic user experience.

Having thus described several aspects of at least one embodiment, it is to be appreciated various alterations, modifications, and improvements will readily occur to those skilled in the art. For example functionality or features that have been described herein in connection with hardware may instead be implemented in software, or vice versa. For example, the wireless signal indicator discussed above may instead (or in addition) be provided as a software application. Such alterations, modifications, and improvements are intended to be part of this disclosure and are intended to be within the scope of the invention. Accordingly, the foregoing description and drawings are by way of example only.

What is claimed is:

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CLAIMS

1. A portable computer configurable between a plurality of display modes including at least a laptop mode and an easel mode, the portable computer comprising:

a display component;

a base;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator; and

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 180 degrees from the closed mode transitions the portable computer for viewing in the easel mode having a content display orientation 180 degrees from a content display orientation of the laptop mode, and wherein during operation in the easel mode the display component is positioned toward the operator with the keyboard directed away from the operator.

2. The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which detects a current display mode of the portable computer; and

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wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. The portable computer of claim 1, wherein the interface is constructed and arranged to permit rotation of the base and the display component with respect to each other at the interface.

6. The portable computer of claim 1, wherein the interface defines a single longitudinal axis.

7. The portable computer of claim 6, wherein the interface consists of a single longitudinal axis.

8. The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the easel mode.

10. The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and easel modes, and wherein the

integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. The portable computer of claim 1, wherein the plurality of modes includes a frame mode in which the display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface.

13. A portable computer configurable between a plurality of display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an interface connecting the display component and the base, defining a single longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other only about the single longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the single longitudinal axis configures the portable computer into an operating display mode, wherein in the operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the operating display mode.

14. The portable computer of claim 13, wherein the operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration .

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15. The portable computer of claim 14, wherein the interface comprises means for rotating the display component relative to the base.

16. The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a first position where the base and display component are disposed against each other and a second position where at least a portion of the base and at least a portion of the display component are in the inverted v configuration.

17. A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base, and a interface connecting the display component and the base defining a single longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the single longitudinal axis to configure the portable computer in one of the plurality of display modes, wherein the single longitudinal axis is configured to run along the connection between the display component and the base of the portable computer; and

positioning at least a portion of the portable computer in an inverted v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base on an opposite side of the display component to support the portable computer in the inverted v configuration.

18. The method of claim 17, wherein the base includes a keyboard, an the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard faces away from the user of the portable computer.

19. The method of claim 17, further comprising an act of automatically rotating a display orientation of the display component by 180 degrees responsive to a transition between two of the plurality of display modes.

5

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ABSTRACT

A portable computer that is configurable between a plurality of display modes including a laptop mode (in which the portable computer has a conventional laptop appearance) and an easel mode in which the base of the computer and its display component stand vertically forming an inverted "V." The portable computer includes a hinge assembly that couples the display component to the base of the computer, and allows the display component to be rotated about an axis along an interface between the display component and the base to configure the portable computer between a closed position, the laptop mode and the easel mode. The portable computer further comprises a scroll wheel and optional navigation buttons that permit a user to control or manipulate various aspects of operation of the portable computer (such as volume or display brightness) and/or content displayed the computer.

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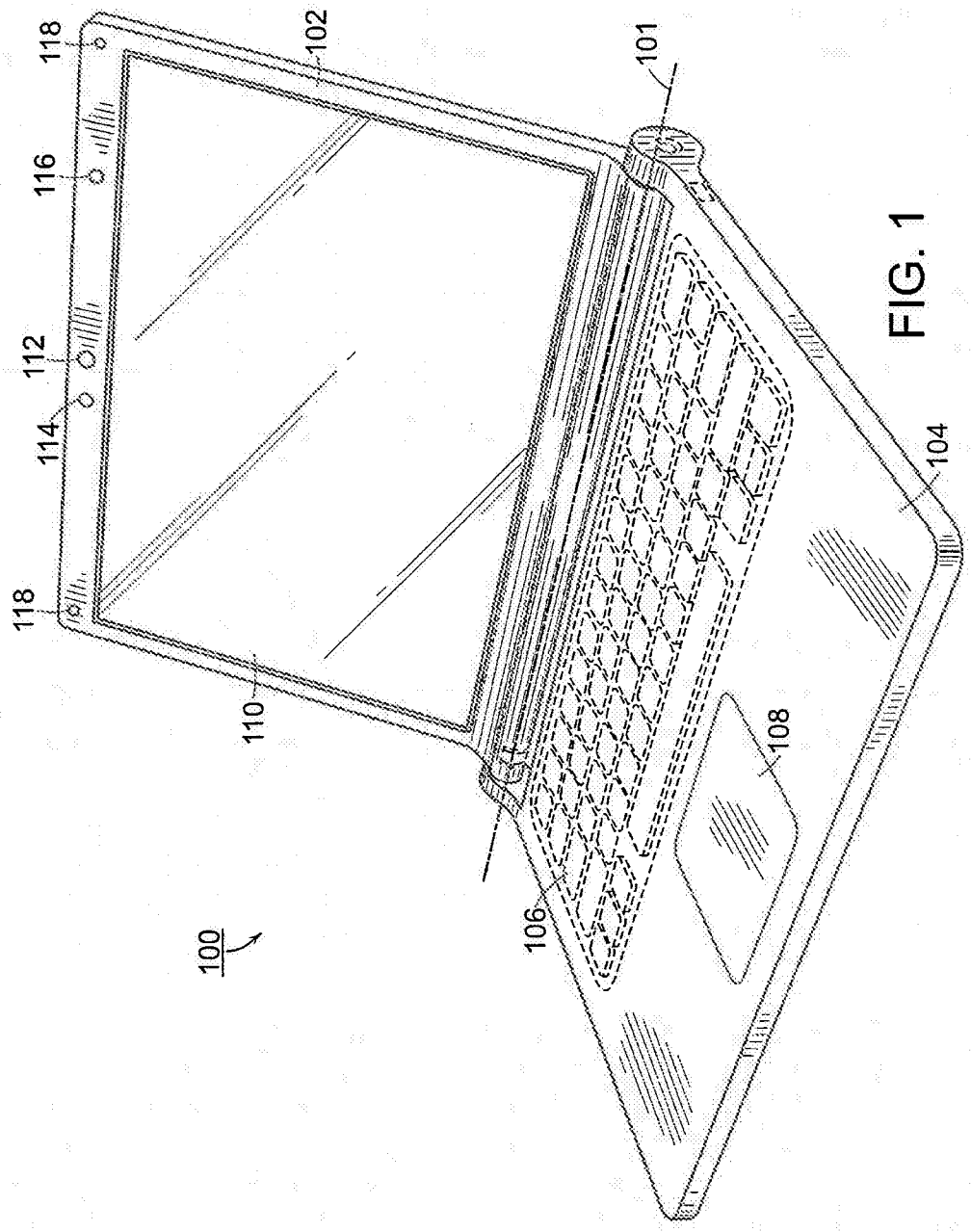


FIG. 1

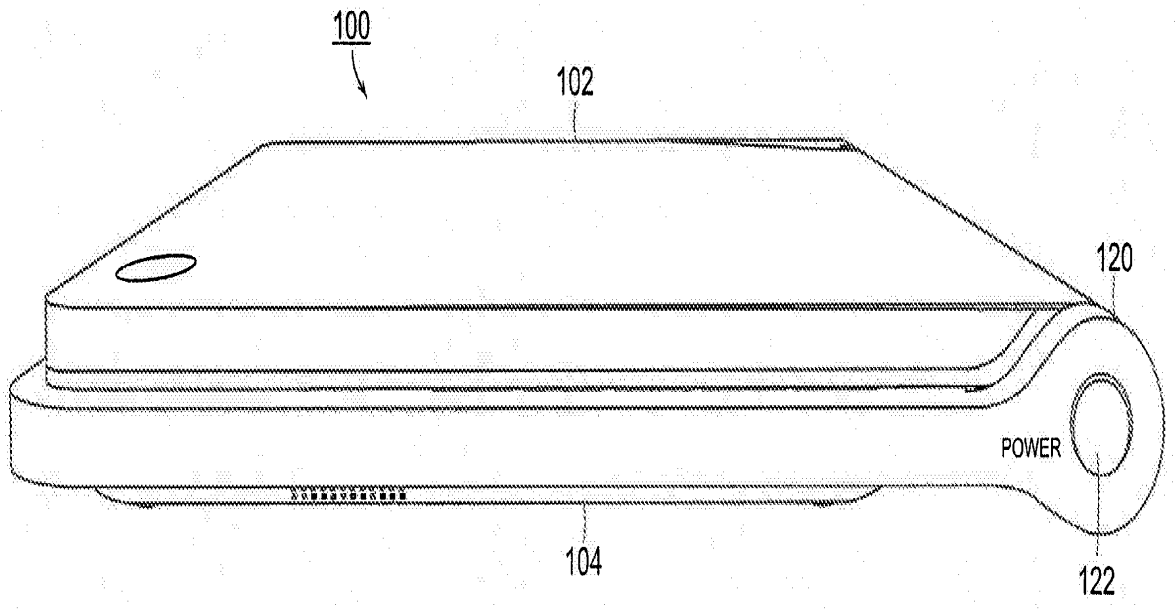


FIG. 2

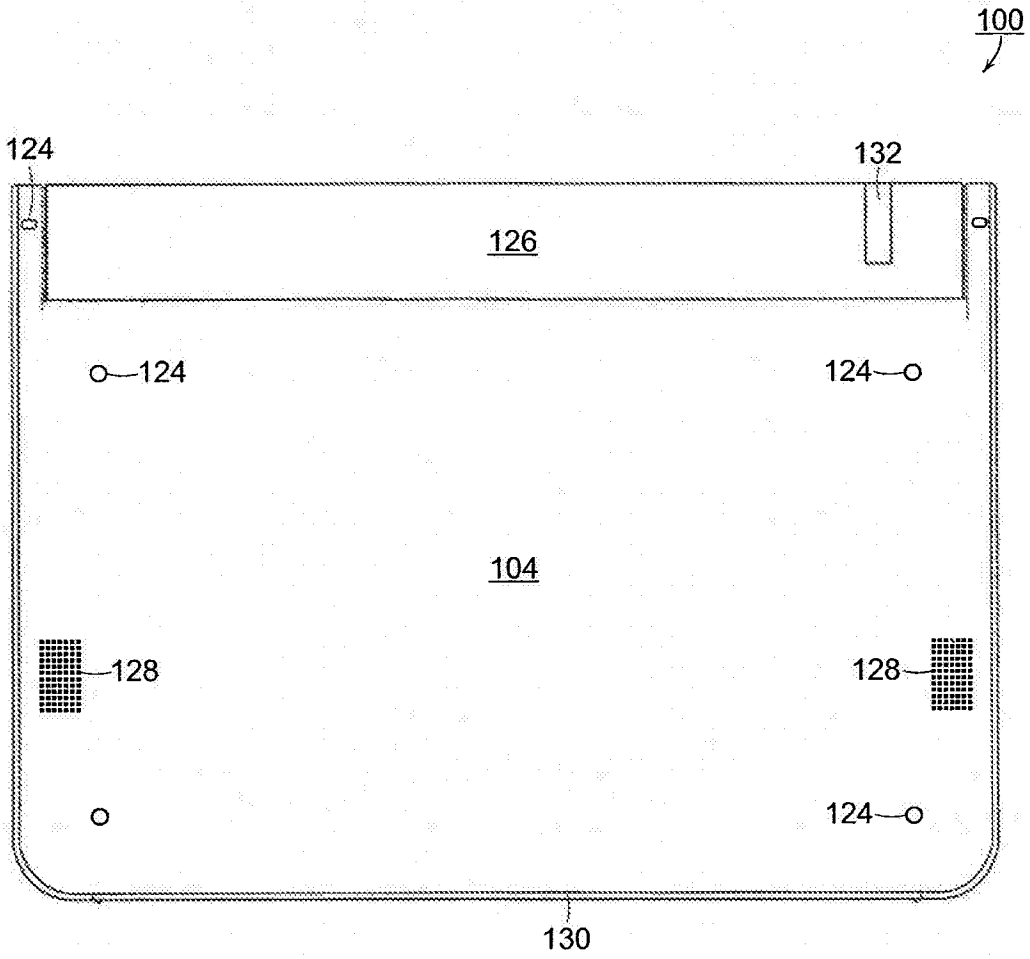


FIG. 3

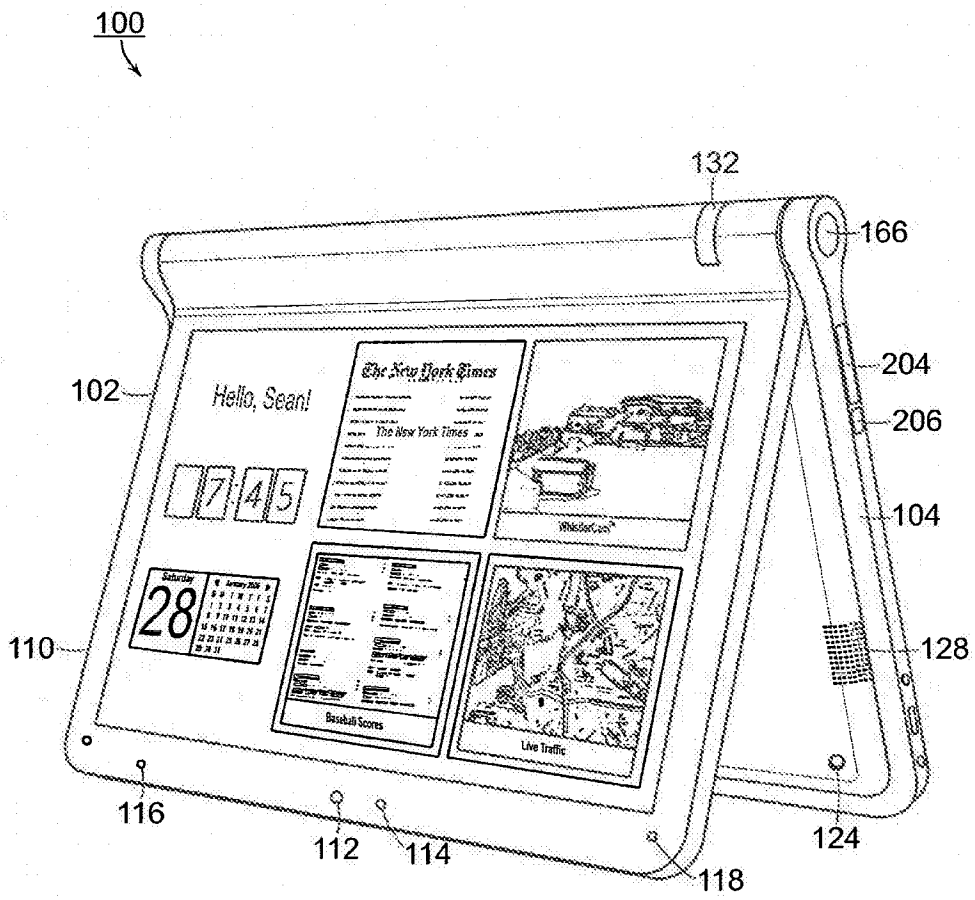

100
132
166
102
Hello, Sean!
204
206
104
110
128
Baseball Scores
Live Traffic
116
112
114
118
124

FIG. 4

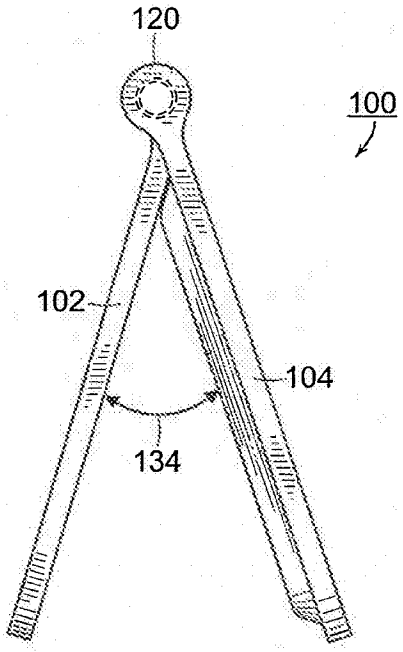


FIG. 5

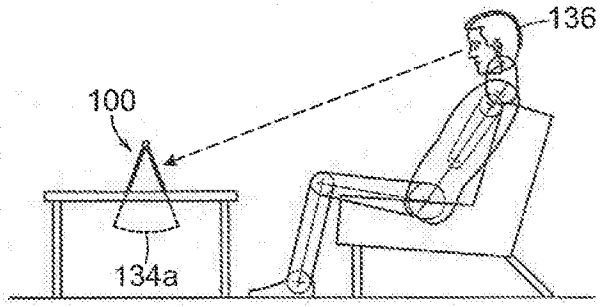


FIG. 6A

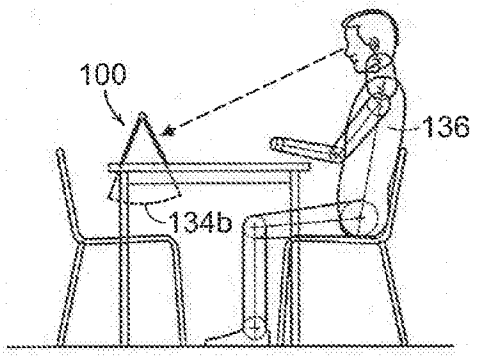


FIG. 6B

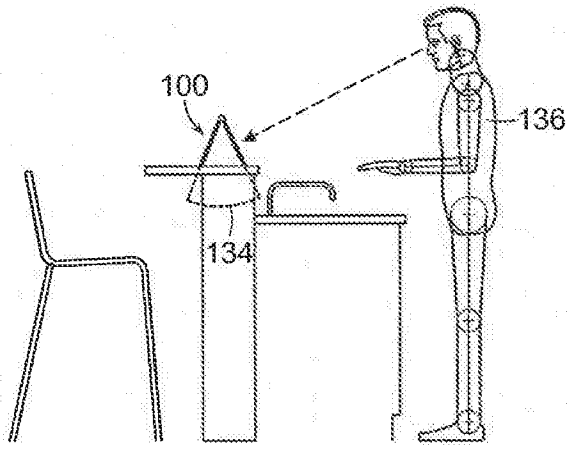


FIG. 6C

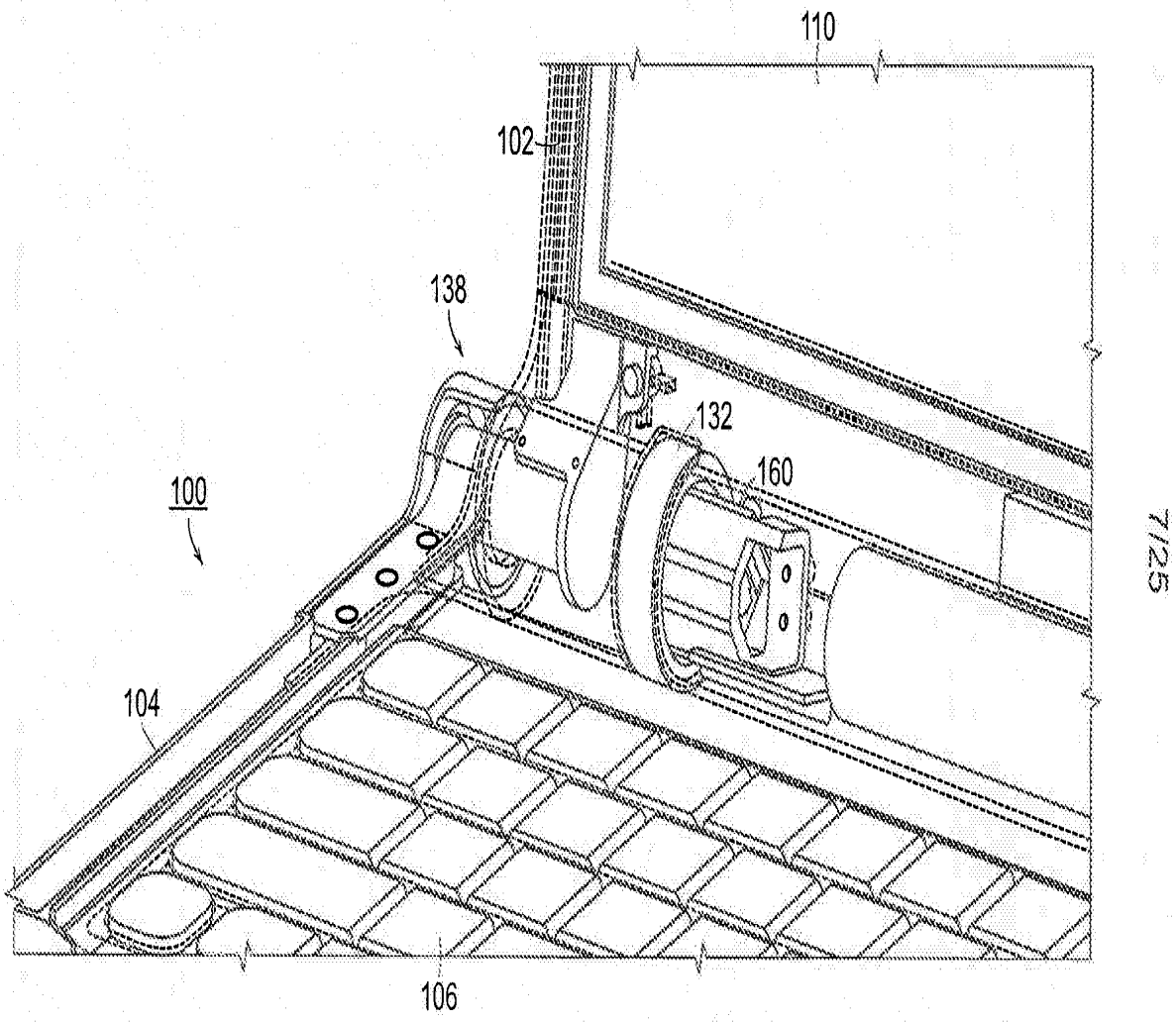


FIG. 7A

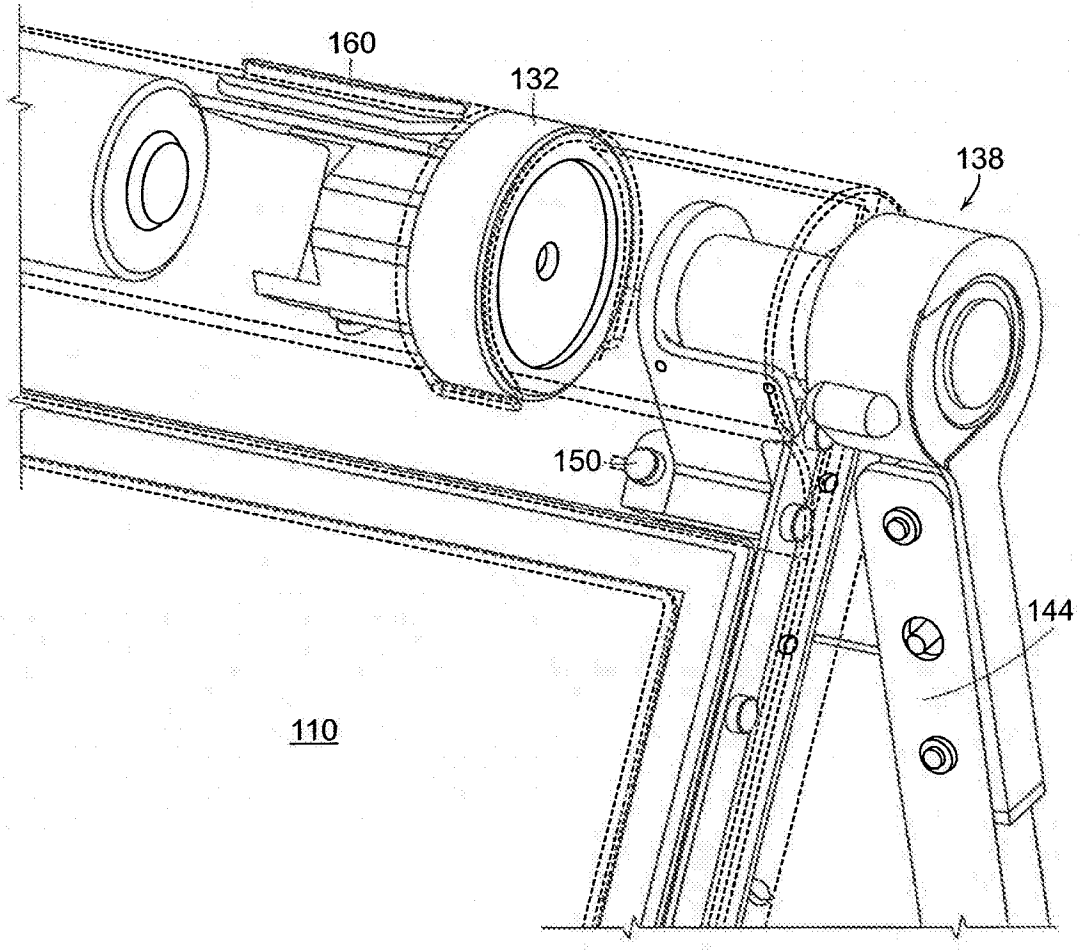


FIG. 7B

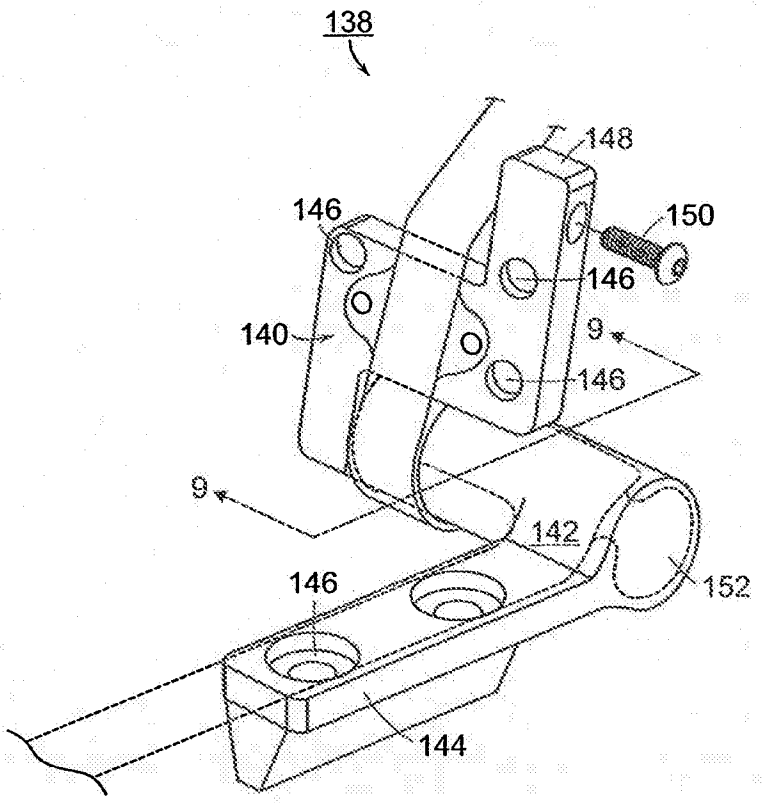


FIG. 8

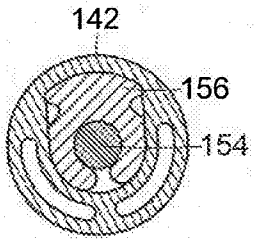


FIG. 9

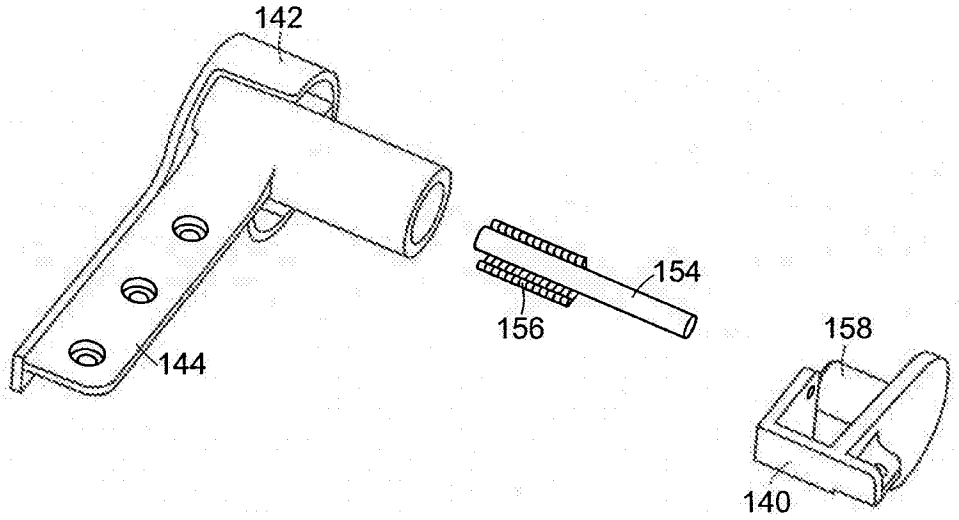


FIG. 10

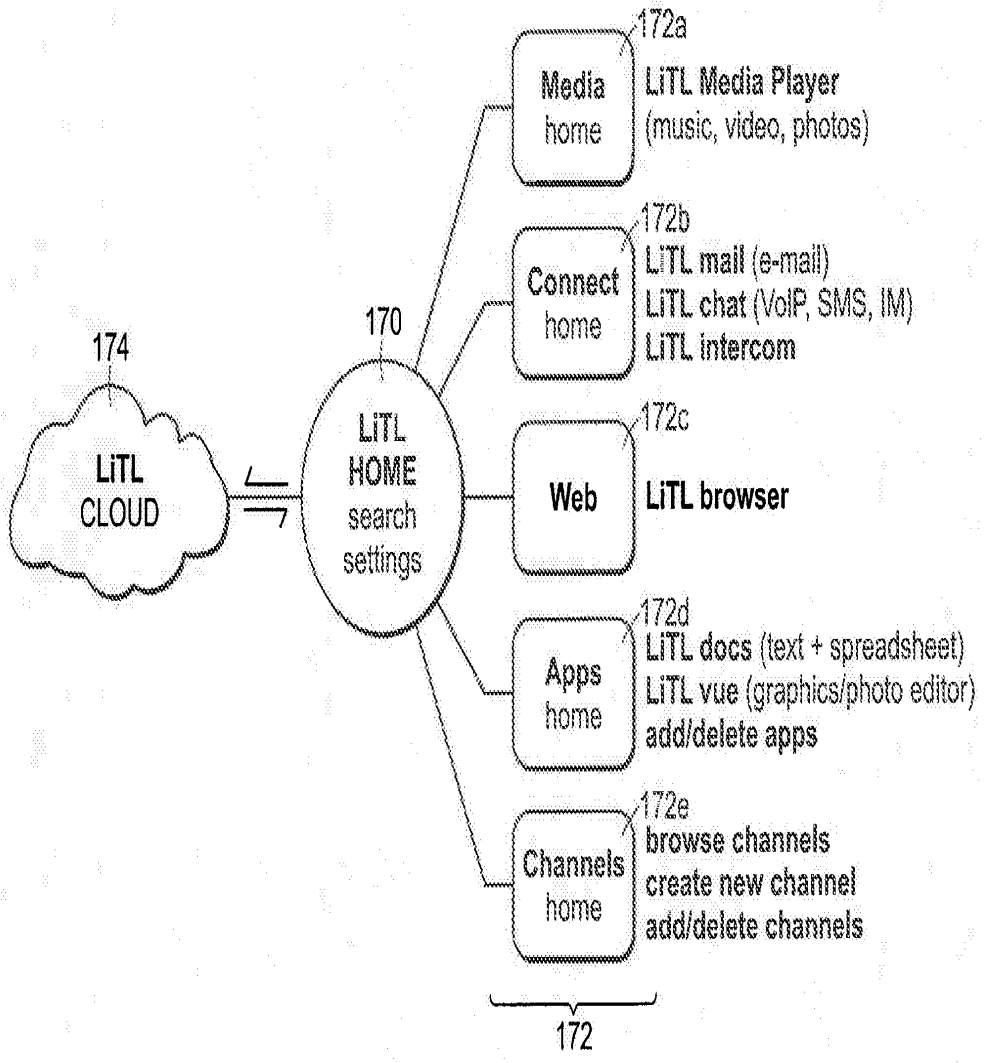

172a
Media
home
LiTL Media Player
(music, video, photos)
172b
Connect
home
LiTL mail (e-mail)
LiTL chat (VoIP, SMS, IM)
LiTL intercom
174
170
LiTL
CLOUD
LiTL
HOME
search
settings
172c
Web
LiTL browser
172d
Apps
home
LiTL docs (text + spreadsheet)
LiTL vue (graphics/photo editor)
add/delete apps
172e
Channels
home
browse channels
create new channel
add/delete channels
172

FIG. 11

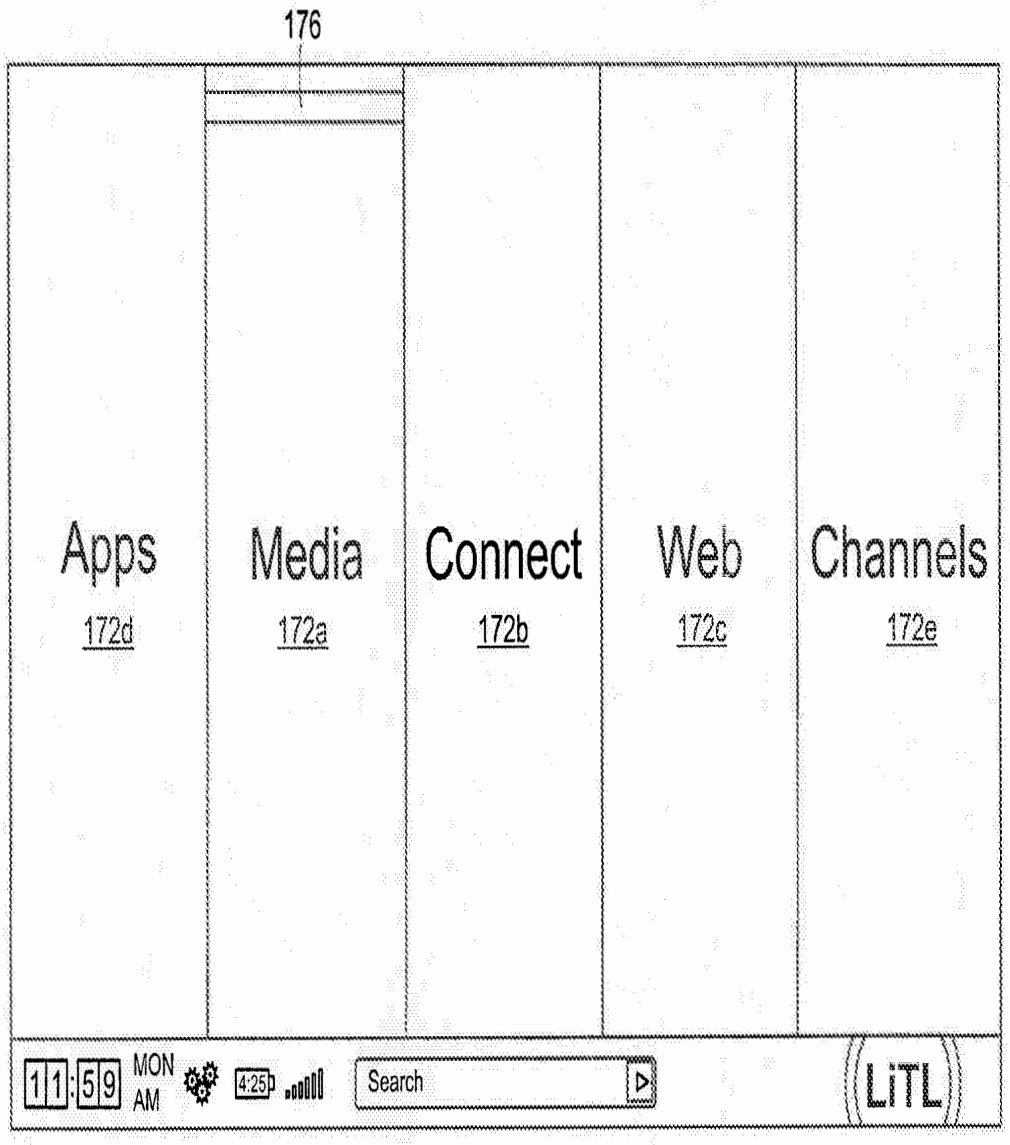

176
110
Apps
172d
Media
172a
Connect
172b
Web
172c
Channels
172e
11:59 MON AM
4:25
Search
LiTL

FIG. 12


110
Hello, Sean!
7:45 AM
The New York Times
The New York Times
WhistlerCam™
Saturday
28
January 2006
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
Baseball Scores
Live Traffic

FIG. 13

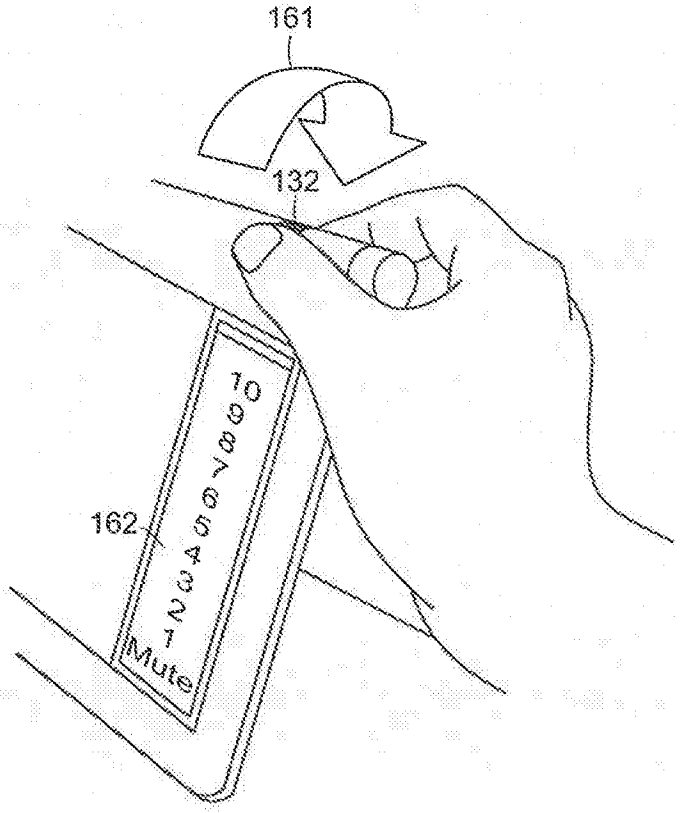


FIG. 14

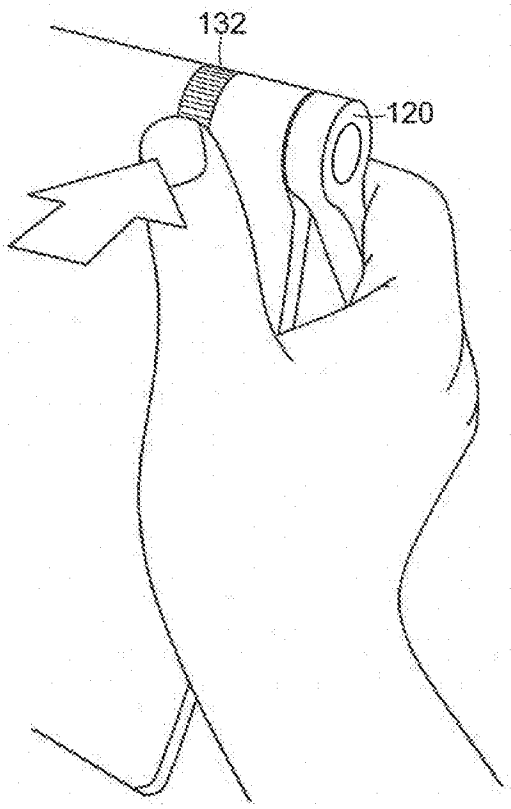


FIG. 15

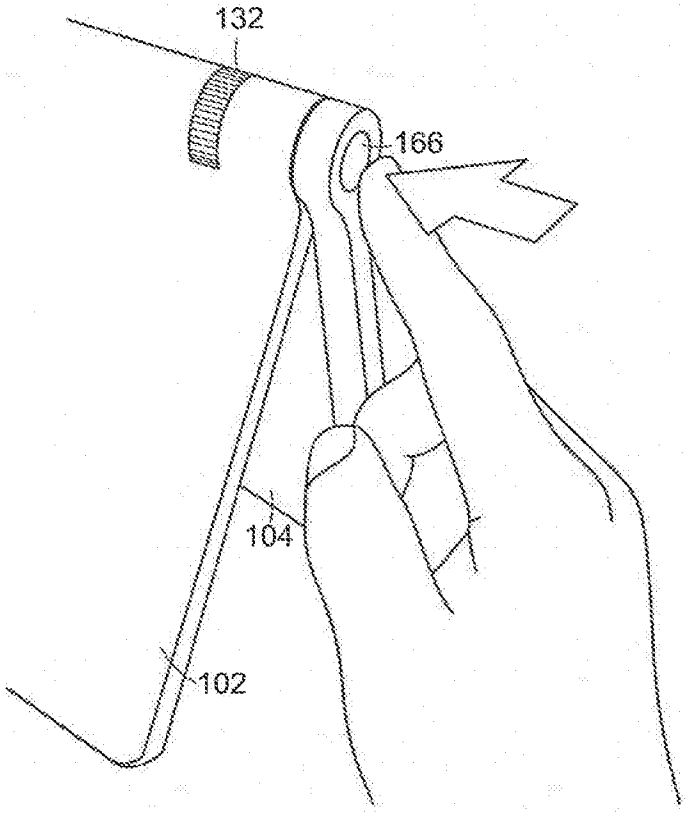


FIG. 16

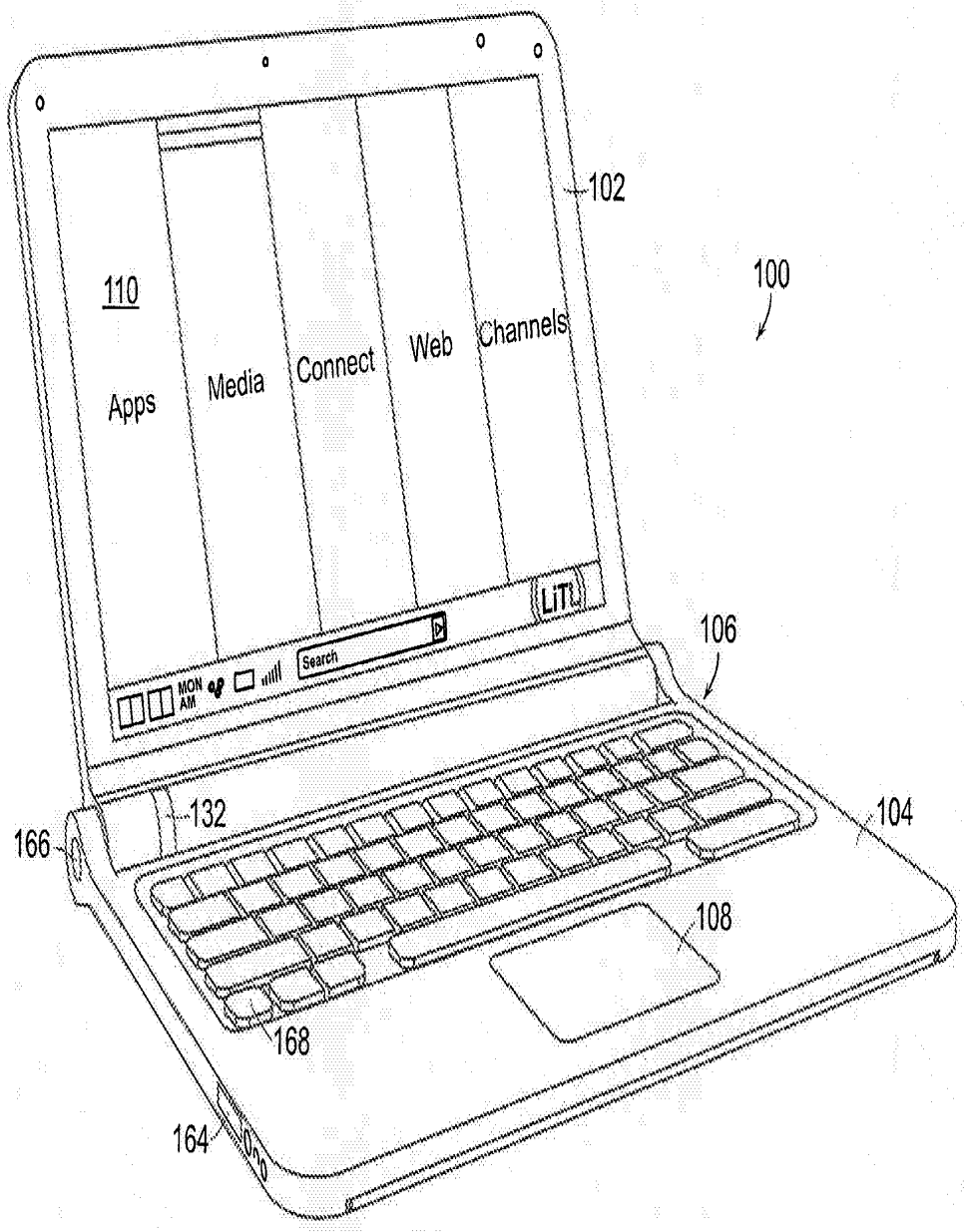

110
Apps
Media
Connect
Web
Channels
102
100
106
104
132
166
108
168
164
Search

FIG. 17

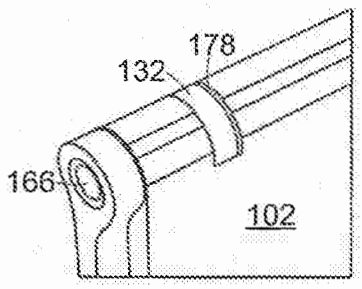


FIG. 18

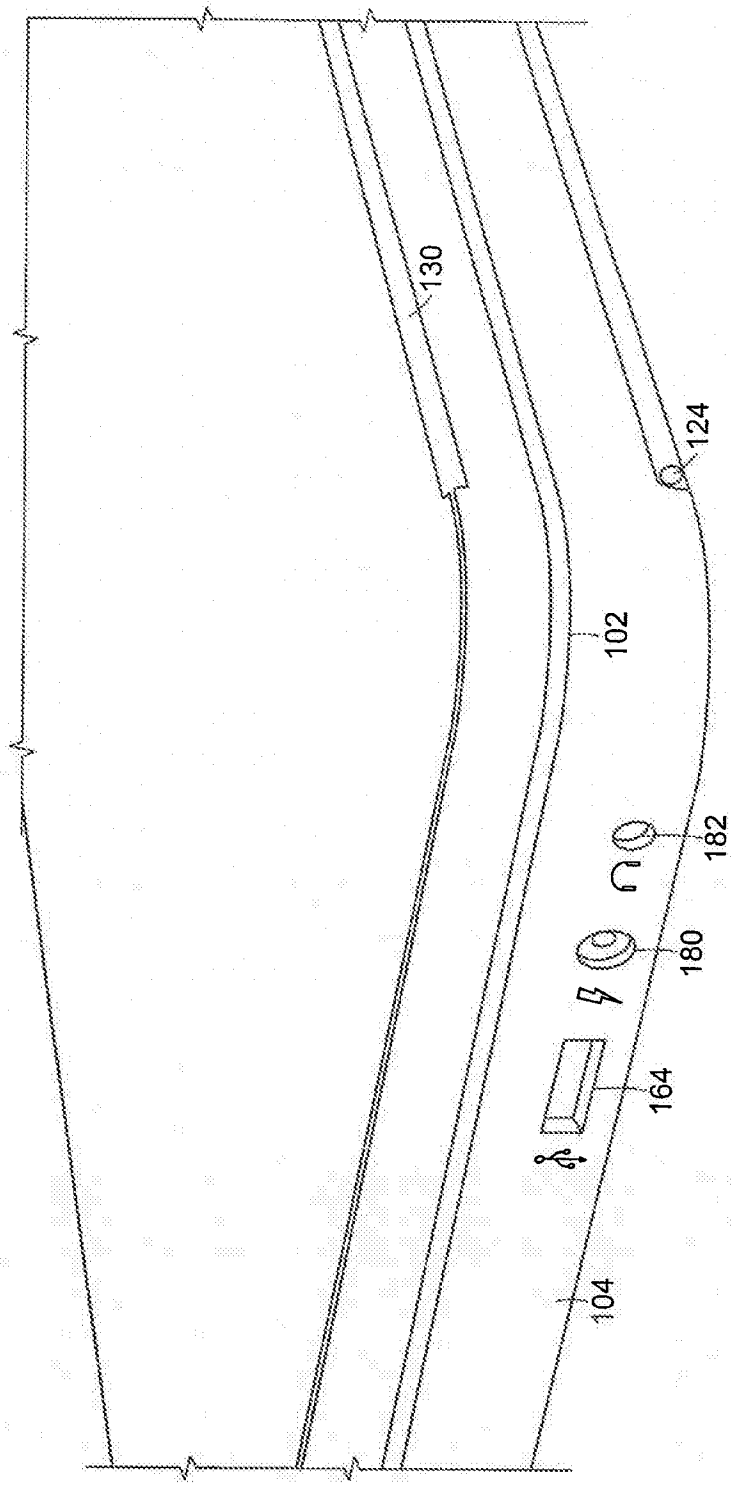


FIG. 19

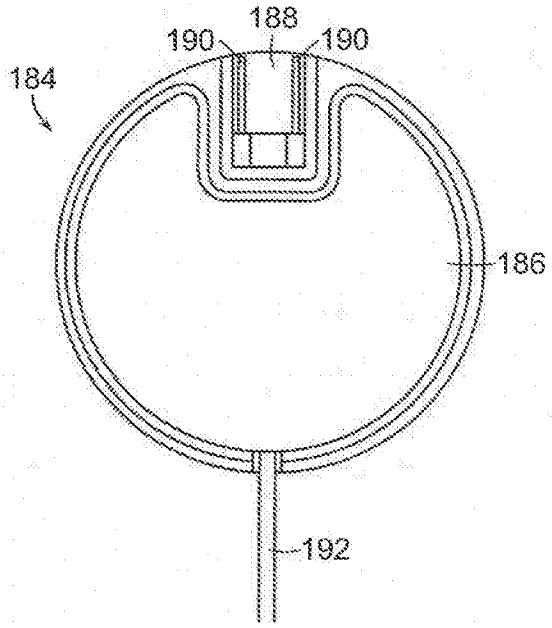


FIG. 20

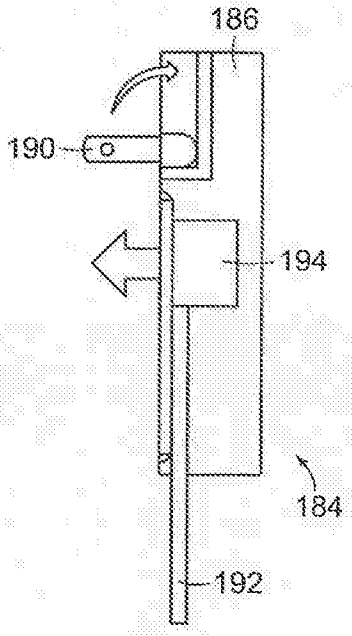


FIG. 21

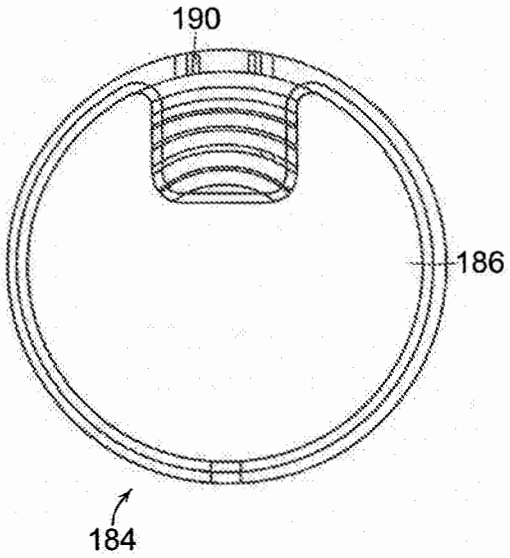


FIG. 22A

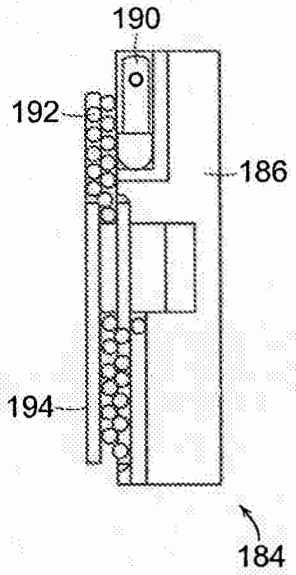


FIG. 22B

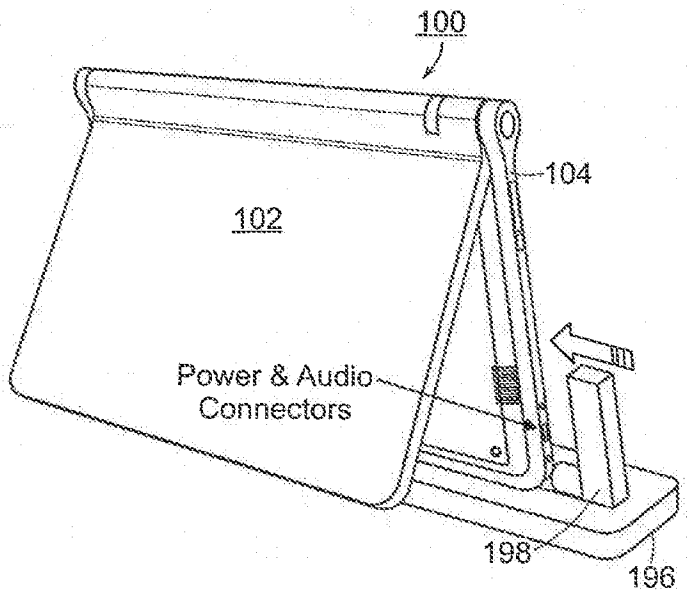


FIG. 23

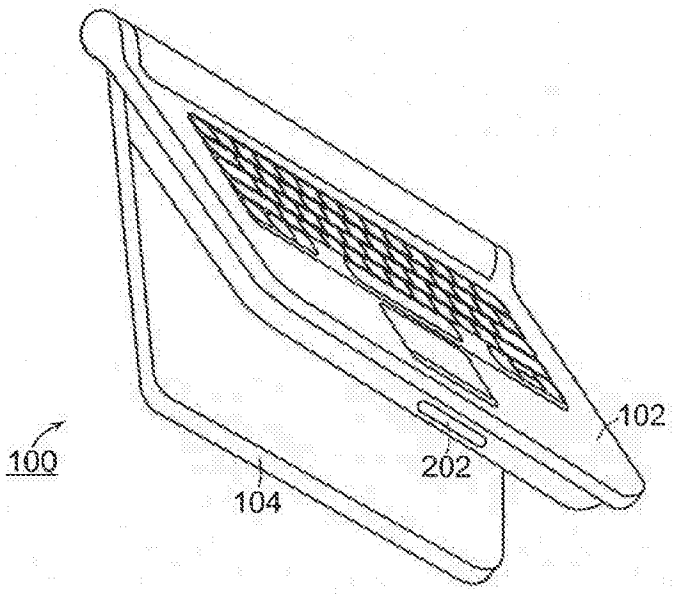


FIG. 24

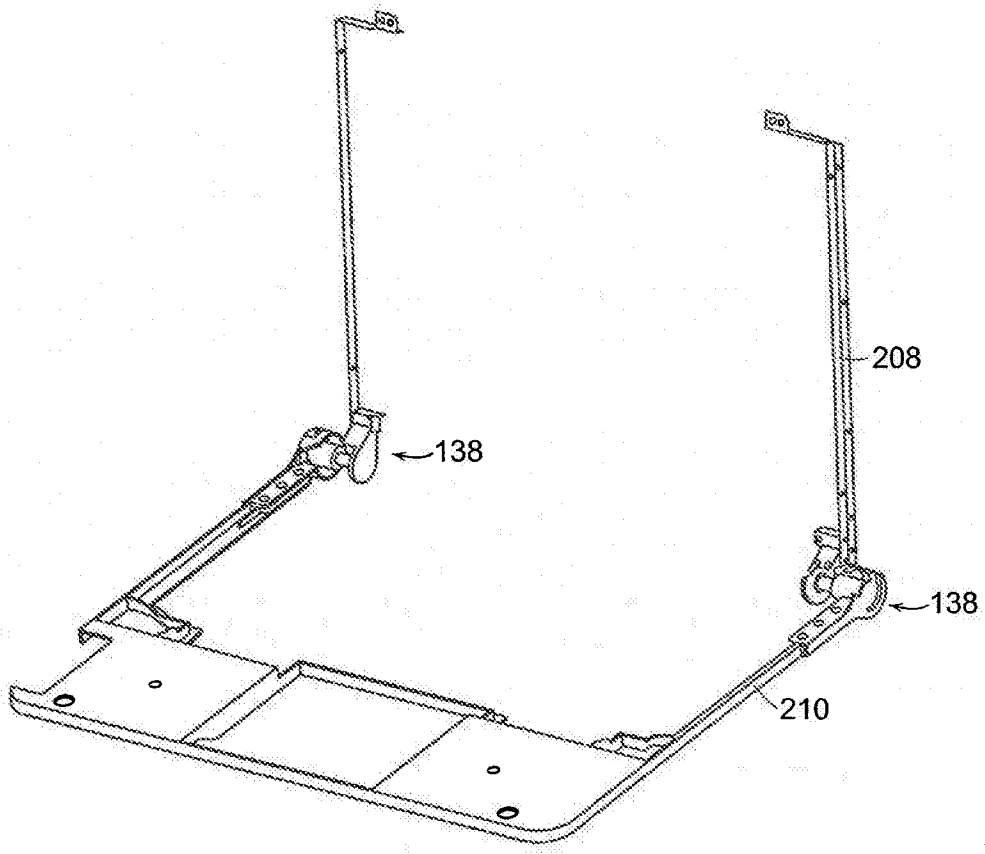


FIG. 25

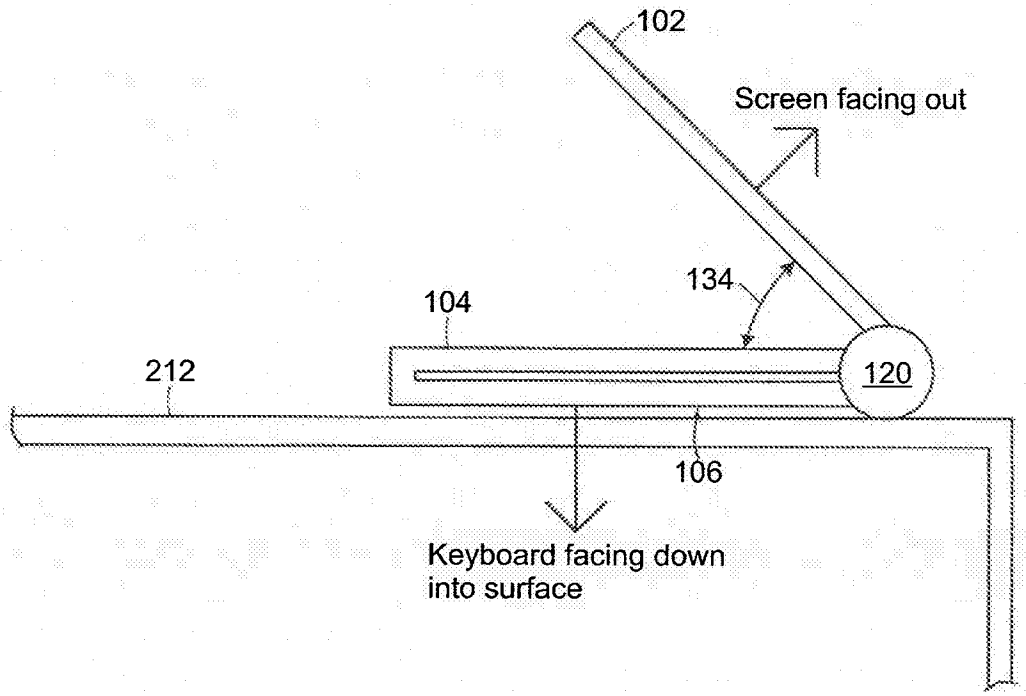

102
Screen facing out
134
104
212
120
106
Keyboard facing down
into surface

FIG. 26

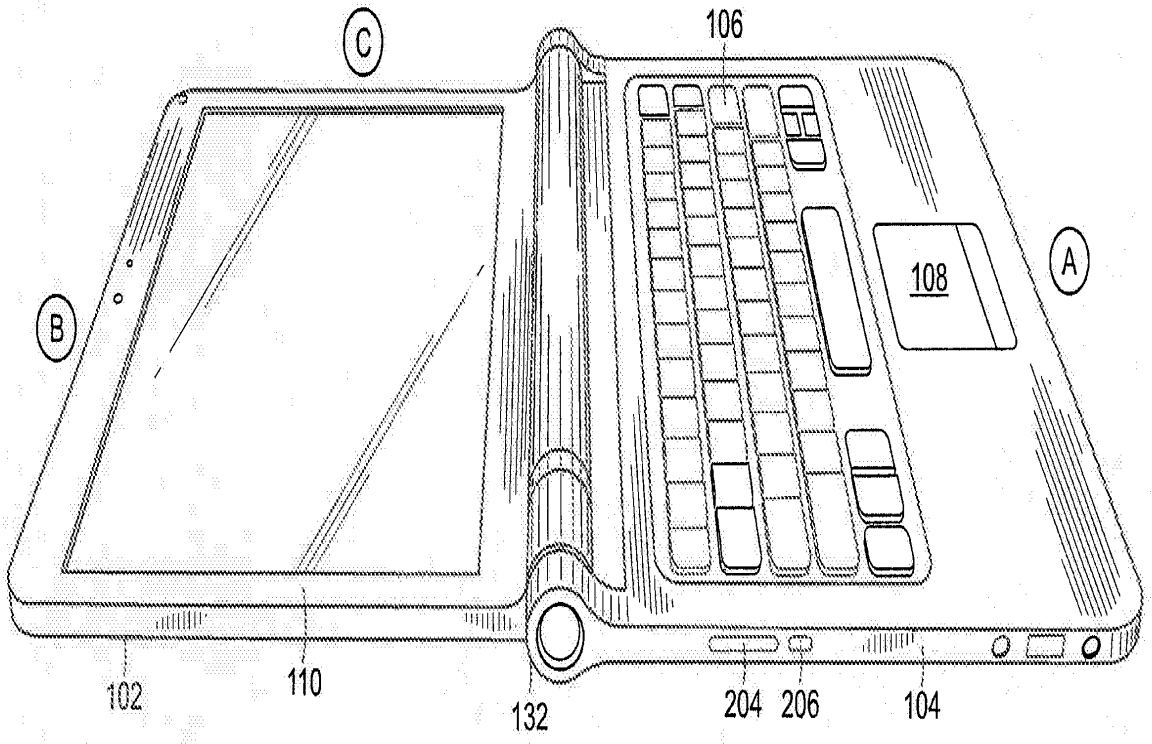


FIG. 27

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Matthew H. Grady
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	390	390
Utility Search Fee	1111	1	620	620
Utility Examination Fee	1311	1	250	250
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1260**

Electronic Acknowledgement Receipt

EFS ID:	13983032
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	15-OCT-2012
Filing Date:	
Time Stamp:	13:45:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1260
RAM confirmation Number	11870
Deposit Account	502762
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	L2039-700120_-_Application_Data_Sheet_Fillable_PDF_1.pdf	1882164 4734ac88369c9576bff4c724fb2290cd3c6954a2	no	7
Warnings:					
Information:					
2		L2039-700120_-_L2039-700120-Spec-Claims-Ab_2.pdf	91781 15e8bdff3ebb8fe6e2d1c668c61053aea3943752	yes	31

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	25
Claims	26	30
Abstract	31	31

Warnings:					
Information:					
3	Drawings-only black and white line drawings	L2039-700120_-_L2039-700120-Drawings_3.pdf	2033445 e8a956a05aba0d8ea0778f65d7f99fca3fd2137b	no	25
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	33233 0720c39ee325035b8b3c513b9ba9f2136dc87d2a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4040623		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/651,636

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	390
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	620
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	250
TOTAL CLAIMS (37 CFR 1.16(i))	19 minus 20 =	*			OR	x 62 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 250 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1260

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/651,636	10/15/2012	Yves Behar	L2039-700120

CONFIRMATION NO. 6472

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

FORMALITIES LETTER

OC000000057415826

Date Mailed: 11/07/2012

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings must be reasonably free from erasures and must be free from alterations, overwriting, interlineations, folds, and copy marks. See Figure(s) 16,23.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A surcharge (for late submission of the basic filing fee, search fee, examination fee or inventor's oath or declaration) as set forth in 37 CFR 1.16(f) of $ **130** for a non-small entity, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is $ **130** for a non-small entity
- $ **130** Surcharge.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  All

Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/fhadera/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/651,636	10/15/2012	2115	1260	L2039-700120	19	3

CONFIRMATION NO. 6472

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

FILING RECEIPT

OC000000057415825

Date Mailed: 11/07/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Applicant(s)

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Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

If Required, Foreign Filing License Granted: 11/02/2012
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/651,636**
Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

Title

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

Preliminary Class

713

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage, facilitate, and accelerate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

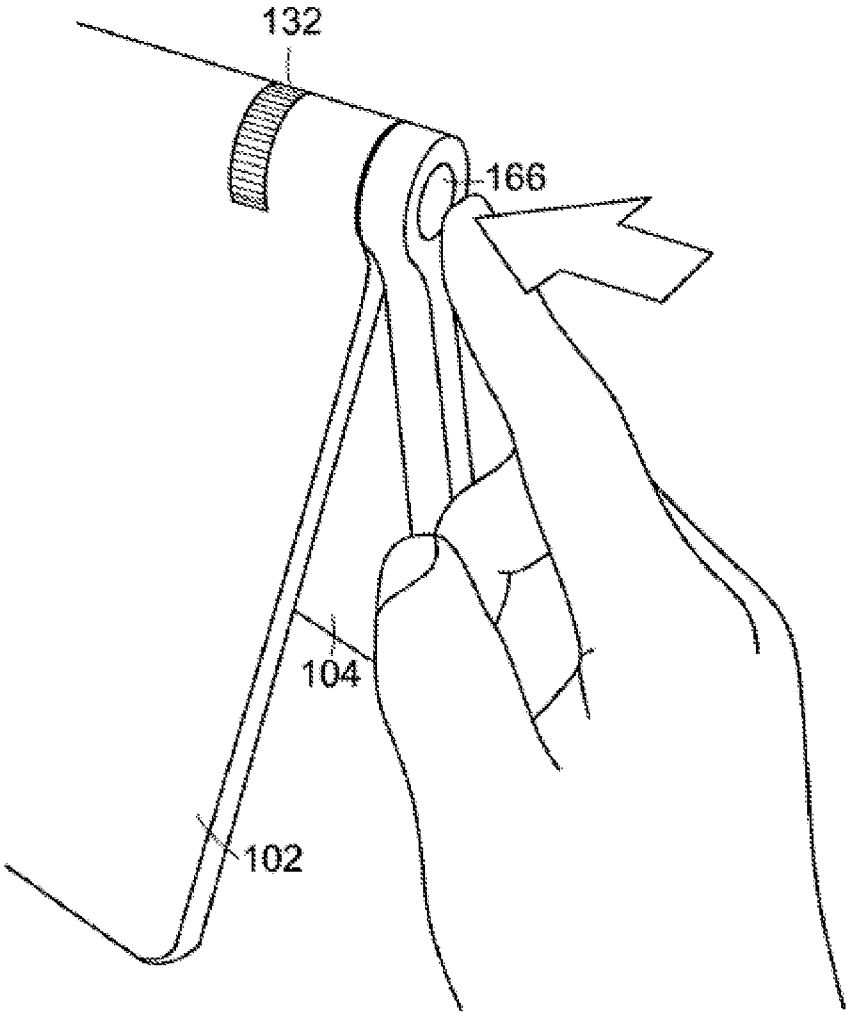


FIG. 16

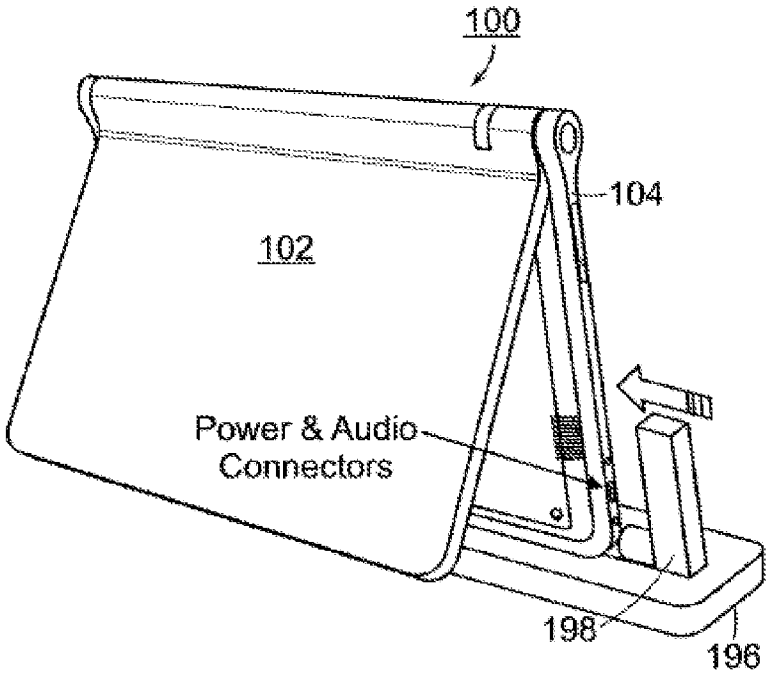


FIG. 23

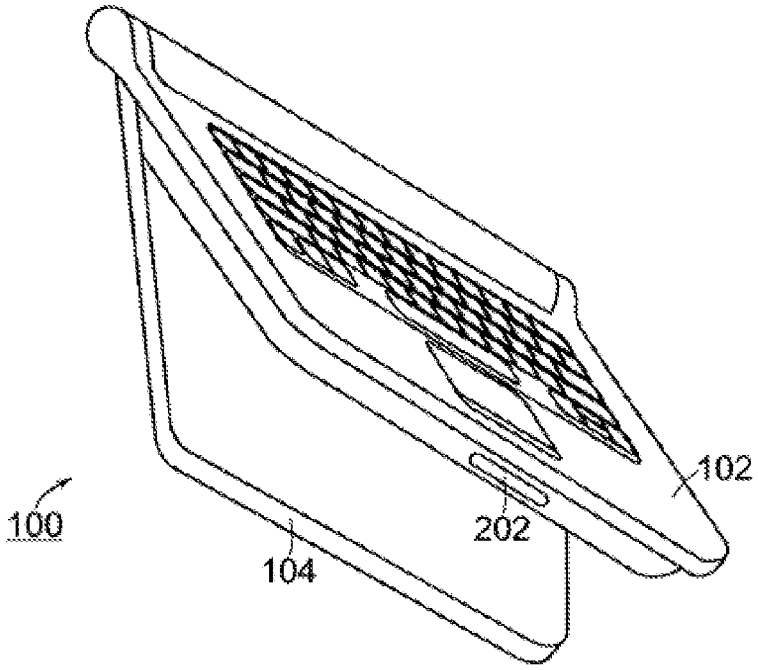


FIG. 24

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Matthew H. Grady/Matthew Grady
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	1051	1	130	130
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	150	150
Miscellaneous:				
			Total in USD ($)	**280**

Electronic Acknowledgement Receipt

EFS ID:	14904199
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady/Matthew Grady
Filer Authorized By:	Matthew H. Grady
Attorney Docket Number:	L2039-700120
Receipt Date:	07-FEB-2013
Filing Date:	15-OCT-2012
Time Stamp:	15:39:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$280
RAM confirmation Number	2442
Deposit Account	502762
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Drawings-only black and white line drawings	L2039-700120_-_700120_Replacement_1.pdf	112383 f7a062db4100a8d96b778c7a3f3a0197533e9bdd	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32367 19e7414f4c8691448f046d9c410c6b5ee50f4942	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	144750		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: February 15, 2013
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2115

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: Not Yet Assigned

FIRST PRELIMINARY AMENDMENT UNDER 37 C.F.R. 1.115

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

INTRODUCTORY COMMENTS

Prior to examination on the merits, please amend the above-identified U.S. patent application as follows:

Amendments to the Specification begin on page 2 of this paper.

Remarks/Arguments begin on page 3 of this paper.

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning on page 1 line 3 as follows:

RELATED APPLICATIONS

This application is a continuation of and claims priority under 35 U.S.C. § 120 to U.S. Application Serial No. 12/170,939, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS," filed July 10, 2008, which application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application No. 61/041,365 filed April 1, 2008, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS," which are incorporated herein by reference in its entirety. This application is also a continuation of and claims priority under 35 U.S.C. § 120 to U.S. Application Serial No. 12/170,951, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS," filed July 10, 2008, which application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Patent Application No. 61/041,365 filed April 1, 2008, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS."

REMARKS

Prior to examination on the merits, Applicant respectfully requests entry of the present Amendment.

Dated: February 15, 2013

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
Matthew H. Grady
Registration No.: 52,957
Edward J. Russavage
Registration No.: 43,069
LANDO & ANASTASI LLP
Riverfront Office Park
One Main Street
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(617) 395-7000
Attorneys for Applicant

Supplemental Application Data Sheet

Inventor Information

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State or Province of mailing address::	CA
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State or Province of mailing address::	CA
Postal or Zip Code of mailing address::	94117

Inventor Number:: 3

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Family Name::	Hibmacronan
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State or Province of mailing address::	CA
Postal or Zip Code of mailing address::	94602

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Country of Residence::	US
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City of mailing address::	San Francisco
State or Province of mailing address::	CA
Postal or Zip Code of mailing address::	94110

Inventor Number::	5
Given Name::	Matthew
Middle Name::	David
Family Name::	Day

City of Residence::	San Francisco
State or Province of Residence::	CA
Country of Residence::	US
Street of mailing address::	425 2nd Street #301
City of mailing address::	San Francisco
State or Province of mailing address::	CA
Postal or Zip Code of mailing address::	94107

Correspondence Information

Correspondence Customer Number::	37462
E-Mail address::	MGrady@LALaw.com

Application Information

Application Number::	13/651,636
Filing Date::	10/15/12
Application Type::	Regular
Subject Matter::	Utility
CD-ROM or CD-R?::	None
Sequence submission?::	None
Computer Readable Form (CRF)?::	No
Title::	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Attorney Docket Number::	L2039-700120
Request for Early Publication?::	No
Request for Non-Publication?::	No

Total Drawing Sheets::	25
Small Entity?::	No
Petition included?::	No
Secrecy Order in Parent Appl.?::	No
Authorization to Permit Access::	No

Representative Information

Representative Customer Number::	37462

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	Continuation of	12/170939	07/10/08
12/170939	An application claiming the benefit under 35 USC 119(e)	61/041365	04/01/08
This Application	Continuation of	12/170951	07/10/08
12/170951	An application claiming the benefit under 35 USC 119(e)	61/041365	04/01/08

Foreign Priority Information

Applicant Information

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.			
Signature	/Matthew H. Grady/	Date	February 15, 2013
Name (Print/Type)	Matthew H. Grady	Registration No. (Attorney/Agent)	52,957

Electronic Acknowledgement Receipt

EFS ID:	14970433
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady/Matthew Grady
Filer Authorized By:	Matthew H. Grady
Attorney Docket Number:	L2039-700120
Receipt Date:	15-FEB-2013
Filing Date:	15-OCT-2012
Time Stamp:	13:25:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	L2039-700120_-_Amendment_1.PDF	27856 3545b69c5b7db62f8666edc7e940e5416b47ba13	no	3

Warnings:	
Information:	

2	Application Data Sheet	SuppADS.pdf	20163 4685eb59fa5211e62bef932eea182c453738c17f	no	5

Warnings:	
Information:	
This is not an USPTO supplied ADS fillable form	
Total Files Size (in bytes):	48019

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/651,636	10/15/2012	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	02/15/2013									
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	X $ =		OR	X $62=	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $250=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**0**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/PAUL I. NEAL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/651,636	10/15/2012	Yves Behar	L2039-700120

CONFIRMATION NO. 6472

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

NOTICE

OC000000059450324

Date Mailed: 02/28/2013

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  All
  Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/651,636	10/15/2012	2115	1390	L2039-700120	19	3

CONFIRMATION NO. 6472

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

UPDATED FILING RECEIPT

OC000000059450323

Date Mailed: 02/28/2013

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Applicant(s)

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 11/02/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/651,636**

Projected Publication Date: 06/06/2013

Non-Publication Request: No

Early Publication Request: No

Title

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

Preliminary Class

713

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Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/651,636

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	390
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	620
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	250
TOTAL CLAIMS (37 CFR 1.16(i))	19 minus 20 =	*			OR	x 62 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 250 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1260

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2115
Examiner Name	Not Yet Assigned
Attorney Docket Number	L2039-700120

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7467356		2008-12-16	Gettman et al.	
	2	5926364		1999-07-20	Karidis	
	3	6144358		2000-11-07	Narayanaswamy et al.	
	4	6341061		2002-01-22	Eisbach et al.	
	5	6437974		2002-08-20	Liu	
	6	6492974		2002-12-10	Nobuchi et al.	
	7	6882335		2005-04-19	Saarinen	
	8	6295038		2001-09-25	Rebeske	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	9	7698407		2010-04-13	Mattox, Jr. et al.	
	10	5436954		1995-07-25	Nishiyama et al.	
	11	7035665		2006-04-25	Kido et al.	
	12	7869834		2011-01-11	Seol et al.	
	13	6693652		2004-02-17	Barrus et al.	
	14	7756928		2010-07-13	Meenan et al.	
	15	7061472		2006-06-13	Schweizer et al.	
	16	6972752		2005-12-06	Nako et al.	
	17	5796575		1998-08-18	Podwalny et al.	
	18	6661426		2003-12-09	Jetha et al.	
	19	D593085		2009-05-26	Behar et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	20	D593091		2009-05-26	Behar et al.	
	21	D593086		2009-05-26	Behar et al.	
	22	D605635		2009-12-08	Edahiro et al.	
	23	D333636		1993-03-02	Issa	
	24	5515345		1996-05-07	Barreira et al.	
	25	D392944		1998-03-31	Issa	
	26	D462069		2002-08-27	Gatto	
	27	D479708		2003-09-16	Hwang et al.	
	28	D495674		2004-09-07	Yoo et al.	
	29	D528993		2006-09-26	Wilson	
	30	D544846		2007-06-19	Kindle et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	31	D581371		2008-11-25	Richmond	
	32	7522946		2009-04-21	Im	
	33	D391927		1998-03-10	Faranda et al.	
	34	D491177		2004-06-08	Andre et al.	
	35	D491936		2004-06-22	Jao	
	36	D504128		2005-04-19	Maskatia	
	37	D512997		2005-12-20	Lee et al.	
	38	D517541		2006-03-21	Maskatia	
	39	D518042		2006-03-28	Kanayama	
	40	D534531		2007-01-02	Ogasawara	
	41	5793355		1998-08-11	Youens	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	42	D399526		1998-10-13	Brady	
	43	D495694		2004-09-07	Chase et al.	
	44	D528541		2006-09-19	Maskatia	
	45	5712760		1998-01-27	Coulon et al.	
	46	5847698		1998-12-08	Reavey et al.	
	47	6464195		2002-10-15	Hildebrandt	
	48	6642909		2003-11-04	Oliva	
	49	6665175		2003-12-16	deBoer et al.	
	50	D535292		2007-01-16	Shi et al.	
	51	D395868		1998-07-07	Iino	
	52	D452238		2001-12-18	Sugano et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	53	D463797		2002-10-01	Andre et al.	
	54	D476326		2003-06-24	Tanimura	
	55	D494162		2004-08-10	Kondo	
	56	D513509		2006-01-10	Kawa	
	57	D516552		2006-03-07	Iseki	
	58	D523429		2006-06-20	Lin	
	59	6067224		2000-05-23	Nobuchi	
	60	5790371		1998-08-04	Latocha et al.	
	61	5900848		1999-05-04	Haneda et al.	
	62	5987704		1999-11-23	Tang	
	63	6005767		1999-12-21	Ku et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	64	6222507		2001-04-24	Gouko	
	65	6266236		2001-07-24	Ku et al.	
	66	6275376		2001-08-14	Moon	
	67	6302612		2001-10-16	Fowler et al.	
	68	6327482		2001-12-04	Miyashita	
	69	6628267		2003-09-30	Karidis et al.	
	70	6659516		2003-12-09	Wang et al.	
	71	6771494		2004-08-03	Shimano	
	72	6819304		2004-11-16	Branson	
	73	6829140		2004-12-07	Shimano et al.	
	74	6859219		2005-02-22	Sall	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	75	7138962		2006-11-21	Koenig	
	76	7428142		2008-09-23	Ligtenberg et al.	
	77	6343006		2002-01-29	Moscovitch et al.	
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	Attorney Docket Number	L2039-700120

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	1	Office Action L2039-700111 dated April 4, 2011, Serial No. 12/170,951	☐
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	7	Search Report from corresponding International Application PCT/US2009/038599 dated March 6, 2009	☐

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew H. Grady/	Date (YYYY-MM-DD)	2013-04-08
Name/Print	Matthew H. Grady	Registration Number	52957

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特開平6－242853

(43)公開日　平成６年(1994)９月２日

(51)Int.Cl.[5]	識別記号	庁内整理番号	ＦＩ		技術表示箇所
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審査請求　未請求　請求項の数12　ＯＬ　（全　５　頁）

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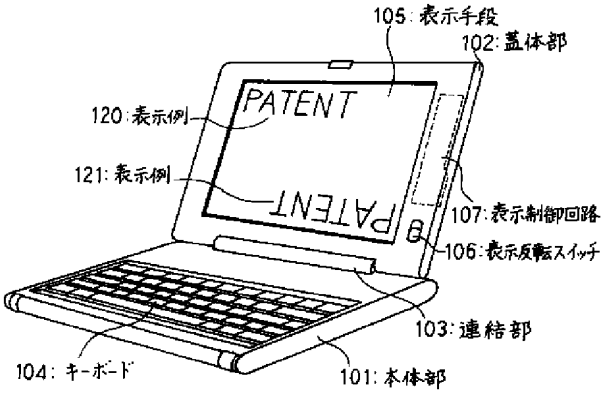
(74)代理人　弁理士　薄田　利幸

最終頁に続く

(54)【発明の名称】　電子機器装置及びパーソナルコンピュータ

(57)【要約】
【目的】キーボードを使用できる形態を保持しながら、ペン入力操作やマウス操作主体の利用環境に適した形態を採ることのできるパーソナルコンピュータを提供すること。
【構成】前面にキーボード１０４を有する本体部１０１と、前面に表示手段１０５を有する蓋体部１０２と、両者の前面を向かい合わせる状態で、本体部の一端と蓋体部の一端とを連結し、かつ両者を開閉可能とする連結機構１０３とからなり、この連結機構１０３は、本体部１０１に対して蓋体部１０２を１８０度を越えた角度に開き得る構造であるパーソナルコンピュータ。表示手段１０５の表示を天地逆にするための表示反転スイッチ１０６があることが好ましい。

図１



【特許請求の範囲】
【請求項１】前面にキーボードを有する本体部と、前面に表示手段を有する蓋体部と、該本体部の前面と該蓋体部の前面とを向かい合わせる状態で、本体部の一端と蓋体部の一端とを連結し、かつ両者を開閉可能とする連結機構とからなる電子機器装置において、上記連結機構は、上記本体部に対して上記蓋体部を１８０度を越えた角度に開き得る構造であることを特徴とする電子機器装置。
【請求項２】請求項１記載の電子機器装置において、上記表示手段は、表示される記号が天地逆に表示されるための切替手段を備えたことを特徴とする電子機器装置。
【請求項３】請求項１記載の電子機器装置において、上記連結機構は、上記本体部に対して上記蓋体部を実質的に０度から３６０度の範囲の任意の角度にし得る構造であることを特徴とする電子機器装置。
【請求項４】請求項３記載の電子機器装置において、上記表示手段は、表示される記号が天地逆に表示されるための切替手段を備えたことを特徴とする電子機器装置。
【請求項５】請求項１から４のいずれか一に記載の電子機器装置において、上記キーボードは、キーボードからの入力を無効とするための第２の切替手段を備えたことを特徴とする電子機器装置。
【請求項６】請求項１から４のいずれか一に記載の電子機器装置において、上記本体部は、本体部が鉛直線に対して所定の範囲の角度にあることを検出する検出手段を有し、上記キーボードは、該検出手段の検出した値に基づいて、キーボードからの入力を無効とするための第３の切替手段を備えたことを特徴とする電子機器装置。
【請求項７】前面にキーボードを有し、電子回路を格納する本体部と、前面に表示手段を有する蓋体部と、該本体部の前面と該蓋体部の前面とを向かい合わせる状態で、本体部の一端と蓋体部の一端とを連結し、かつ両者を開閉可能とする連結機構とからなるパーソナルコンピュータにおいて、上記連結機構は、上記本体部に対して上記蓋体部を１８０度を越えた角度に開き得る構造であることを特徴とするパーソナルコンピュータ。
【請求項８】請求項７記載のパーソナルコンピュータにおいて、上記表示手段は、表示される記号が天地逆に表示されるための切替手段を備えたことを特徴とするパーソナルコンピュータ。
【請求項９】請求項７記載のパーソナルコンピュータにおいて、上記連結機構は、上記本体部に対して上記蓋体部を実質的に０度から３６０度の範囲の任意の角度にし得る構造であることを特徴とするパーソナルコンピュータ。
【請求項１０】請求項９記載のパーソナルコンピュータにおいて、上記表示手段は、表示される記号が天地逆に表示されるための切替手段を備えたことを特徴とするパーソナルコンピュータ。
【請求項１１】請求項７から１０のいずれか一に記載のパーソナルコンピュータにおいて、上記キーボードは、キーボードからの入力を無効とするための第２の切替手段を備えたことを特徴とするパーソナルコンピュータ。
【請求項１２】請求項７から１０のいずれか一に記載のパーソナルコンピュータにおいて、上記本体部は、本体部が鉛直線に対して所定の範囲の角度にあることを検出する検出手段を有し、上記キーボードは、該検出手段の検出した値に基づいて、キーボードからの入力を無効とするための第３の切替手段を備えたことを特徴とするパーソナルコンピュータ。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、小型化により可搬性を高めた電子機器装置及びパーソナルコンピュータに関する。
【０００２】
【従来の技術】近年、情報処理装置等の電子機器装置の小型化の進展は著しく、とりわけ、パーソナルコンピュータは、その大きさ、重量の点で、携帯可能なまでに小型化されてきた。
【０００３】この様な従来の携帯型パーソナルコンピュータの一般的な形態は、（１）操作部を有する本体部と、（２）表示部を有する蓋体部と、（３）上記本体部と蓋体部とを連結すると共に、連結部を軸として蓋体を回動させて開閉可能にする構構とで構成される匡体構造を持つ。通常、携帯時等の未使用時には本体部と蓋体部とは向かい合わさる形で閉じられている。使用時にはこの蓋体部を１２０度程度に開けて操作するようになっている。この様な携帯型パーソナルコンピュータは、俗にラップトップ型コンピュータとも呼ばれ、近年省スペースの卓上型コンピュータとして数多く商品化され、利用されている。なお、この種の電子機器装置に関連するものには、例えば、特開平３－１０９６２２、特開平３－２９２５２０等がある。
【０００４】
【発明が解決しようとする課題】上記従来技術は、ペン入力操作やマウス操作主体のユーザーインターフェースを有する利用形態には適した形態でないという問題があった。近年、パーソナルコンピュータの利用環境が変わりつつあり、そのひとつは、マウス操作を主体とする操作環境の提供であり、さらには、ペン入力による操作環境の提供である。上記従来技術は、あくまでもキーボード入力による操作環境に適したものであった。なお、このような問題は、携帯型ワードプロセッサ等のパーソナルコンピュータ以外の電子機器装置においても同様である。
【０００５】本発明の目的は、キーボードを使用できる形態を保持しながら、ペン入力操作やマウス操作主体の利用環境に適した形態を採ることのできる電子機器装置

及びパーソナルコンピュータを提供することにある。
【０００６】
【課題を解決するための手段】上記目的を達成するために、本発明の電子機器装置は、前面にキーボードを有する本体部と、前面に表示手段を有する蓋体部と、この本体部の前面とこの蓋体部の前面とを向かい合わせる状態で、本体部の一端と蓋体部の一端とを連結し、かつ両者を開閉可能とする連結機構とからなり、本体部に対して蓋体部が１８０度を越えた角度に開き得るように、連結機構の構造を構成したものである。
【０００７】また、本発明のパーソナルコンピュータは、前面にキーボードを有し、電子回路を格納する本体部と、前面に表示手段を有する蓋体部と、この本体部の前面とこの蓋体部の前面とを向かい合わせる状態で、本体部の一端と蓋体部の一端とを連結し、かつ両者を開閉可能とする連結機構とからなり、本体部に対して蓋体部が１８０度を越えた角度に開き得るように、連結機構の構造を構成したものである。
【０００８】いずれの装置においても、上記連結機構は、本体部に対して蓋体部を実質的に０度から３６０度の範囲の任意の角度にし得る構造であることが好ましい。また、上記表示手段は、表示される記号が天地逆に表示されるための切替手段を備えることが好ましい。さらに、本体部に対して蓋体部を３６０度開き、蓋体部を表側にして用いる等のとき、蓋体部になんらかの力が加わると、裏側になっている本体部のキーボードから意図しないデータが誤って入力される場合があり得る。それを防止するためキーボードからの入力を無効とするための第２の切替手段を備えることが好ましい。また、この切替手段は、本体部の鉛直線に対してなす角度から自動的に切り替わるようにしてもよい。
【０００９】
【作用】上記のように構成することでキーボードを有する本体部と表示手段を有する蓋体部とをほぼ３６０度開き、キーボードと表示手段とが背中合わせとなるようにすることが出来る。そのような、ほぼ３６０度開いた状態では、キーボードも表示手段も機器の表面に露出する形となるので、表示手段を利用者に対面するように手で持てば、ペン入力環境にまさに好適な形態となる。しかも、必要とあれば、機器を裏返すことにより、利用者は、キーボードを操作することもできる。
【００１０】あるいはまた、本体部と蓋体部とを約３４０度に開くことが出来る。この状態だと、連結部分を上に、本体部の一端と蓋体部の一端とを下にした形で、机上に立てることが出きる。このとき、表示手段に表示される文字・図形等は、上下及び左右が逆となるため、利用者が表示内容を即座に読みとることは難しい。そこで、表示を天地逆にする。このようにして机上に立てて用いればマウス操作に好適な形態となる。
【００１１】
【実施例】本発明の一実施例を図面を用いて説明する。図１は、本発明を適用した携帯用パーソナルコンピュータの斜視図である。本体部１０１は、コンピュータ本体の電子回路を格納している。蓋体部１０２は、コンピュータの表示手段１０５をその全面に備え、使用時には、引き起こして表示手段が利用する人に対面するようになっている。表示手段１０５は、本コンピュータの表示部であり、ペン入力環境時には、入力手段ともなる。キーボード１０４は、コンピュータの入力部で、従来の使用においては中心となる入力部である。
【００１２】連結部１０３は、本体部１０１の一端とヒンジで繋がれている。また一方で、連結部１０３は、蓋体部１０２の一端ともヒンジで繋がれている。表示反転スイッチ１０６は、利用者によって操作されるスイッチで、ノーマル状態とリバース状態の２状態をとることが出来る。その状態は、表示制御回路１０７に入力されている。表示制御回路１０７は、本体部１０１に格納されているコンピュータ本体回路の制御により、表示手段１０５への出力を制御する電子回路である。表示制御回路１０７は、表示反転スイッチ１０６の状態により、表示手段への表示を天地逆にできる。つまり、表示反転スイッチ１０６がノーマル状態にあるときは、その表示は表示例１２０の如くに行われる。一方、表示反転スイッチ１０６がリバース状態にあるときは、その表示は表示例１２１の如く天地逆に、すなわち、表示面中心の鉛直線を中心として１８０度回転して行われる。
【００１３】次に、本発明で重要な役割を果たす連結機構の詳細を図２を用いて説明する。連結機構は、連結部１０３、本体支持軸１１０及び蓋体支持軸１１１を有する。本体支持軸１１０は、本体部１０１に設けられた本体支持部１１２と連結される。本体部１０１は、軸１５０を中心に自由に回転することが出来る。蓋体支持軸１１１は、蓋体部１０２に設けられた蓋体支持部１１３と連結される。蓋体部１０２は、軸１５１を中心に自由に回転することが出来る。
【００１４】次に、図２で説明した連結機構の働きにより、本体部１０１及び蓋体部１０２がどの様に回転するかを図３を用いて説明する。通常、携帯時等の未使用時には、本体部１０１と蓋体部１０２は図２を用いて説明した連結機構の働きによりキーボード１０４と表示手段１０５が向かい合うようにして閉じることが出来る。一方、使用時には蓋体部１０２は軸１５１を中心に回転させることにより、本体部１０１より起きあがらせて開けることが出来る。適当な角度、例えば回転１５２により蓋体部１０２を約１２０度開けるならば、蓋体部１０２は蓋体部位置１５５に位置する。これは、図１に示した形態であり、利用者はキーボード１０４と表示手段１０５とに自然な形で対面しながら本コンピュータを操作できる。
【００１５】いま、蓋体部１０２を回転１５３により１

８０度開けるならば、蓋体部１０２は蓋体部位置１５６に位置する。さらにそこで、連結部１０３を軸１５０を中心とする回転１５４により１８０度回転させ、軸１５１を軸位置１５７に移動させると、蓋体部１０２は、蓋体部位置１５８に位置する。このようにして、蓋体部１０２は図２を用いて説明した連結機構の働きによりほぼ３６０度回転させることが出来る。この状態では、表示手段１０５は表示手段位置１５９に位置する。すなわち、キーボード１０４も表示手段１０５も、コンピュータの表面に出ているので、必要とあれば利用者はキーボード１０４を操作することもできるし、表示手段１０５を使用することもできる。

【００１６】図３を用いて説明したように、本発明のパーソナルコンピュータは、本体部１０１と蓋体部１０２とをほぼ３６０度開けた状態にすることが出来る。図４は、このときの状態を示した斜視図であり、ペン入力によるコンピュータ利用に適した形態になっている。本図では、利用者に対して連結部１０３が手前側になっている。この時は表示手段１０５の表示向きは表示例１２０の如くで問題ない。しかしながら、利用者によっては、利用者に対して連結部１０３が向こう側になっていたほうが好まれる場合もある。その場合、表示反転スイッチ１０６をリバース状態にすることにより、表示手段１０５の表示向きを表示例１２１の如くにすれば良い。

【００１７】すでに説明してきたように、本発明によれば、本体部１０１と蓋体部１０２とをほぼ０度から３６０度の範囲で任意の角度に開けることが出来る。図５は、本体部１０１と蓋体部１０２とをおよそ３４０度開けた状態の利用形態を示すものである。この場合、表示反転スイッチ１０６をリバース状態に設定することにより表示手段１０５の表示向きを表示例１２１の如くにする。そして、連結部１０３を上方向にして机上に設置する。この時、キーボード１０４は利用者からみて完全に裏側になってしまうので、利用者は簡単にキーボード１０４を操作することは出来ないが、マウス１３０を接続して、マウス主体操作環境ならば大きな問題ではない。この様にして机上に設置した場合、コンピュータの占める机上面積は、図１に示した設置方法と比べて大幅に少なくすることが出来る。

【００１８】なお、図４に示した状態でパーソナルコンピュータを用い、表の表示手段１０５に多少強い力が加えられたときなど、裏側になっているキーボードから意図しないデータが誤って入力される場合があり得る。それを防止するためキーボードからの入力を無効とするための切替手段（図示せず）を設けておくことが好ましい。

【００１９】また、この切替手段は自動的に作動するようにしてもよい。例えば、本体部が鉛直線に対して所定の範囲の角度にあることを検出する検出手段を本体部に設け、この検出手段の検出した値に基づいて、キーボードからの入力を無効とするような構成としてもよい。

【００２０】

【発明の効果】本発明は、以上述べたように構成されているので次のような効果がある。

（１）従来通りのキーボード主体の利用形態と、ペン入力主体、マウス操作主体の利用形態に適した形態とのすべてを実現することができた。

（２）マウス操作主体で利用する場合、より少ない机上占有面積で済むようにできた。

（３）外部表示手段を利用する場合、利用者の正面に外部表示手段を無理なく設置できた。

【図面の簡単な説明】

【図１】本発明の一実施例のパーソナルコンピュータの斜視図である。

【図２】本発明の一実施例のパーソナルコンピュータの連結機構の構成図である。

【図３】図３に示した連結機構の動作説明図である。

【図４】本発明の一実施例のパーソナルコンピュータの一利用形態を説明する斜視図である。

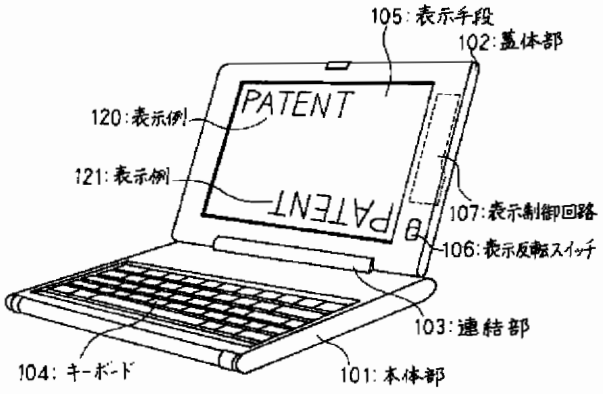
【図５】本発明の一実施例のパーソナルコンピュータの他の利用形態を説明する斜視図である。

【符号の説明】

１０１…本体部
１０２…蓋体部
１０３…連結部
１０４…キーボード
１０５…表示手段
１０６…表示反転スイッチ
１０７…表示制御回路
１１０…本体支持軸
１１１…蓋体支持軸
１１２…本体支持部
１１３…蓋体支持部
１２０、１２１…表示例
１３０…マウス
１５０、１５１…軸
１５２、１５３、１５４…回転
１５５、１５６、１５８…蓋体部位置
１５７…軸位置
１５９…表示手段位置

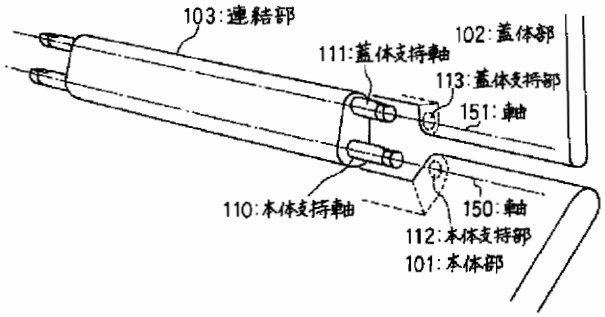
【図１】

図１



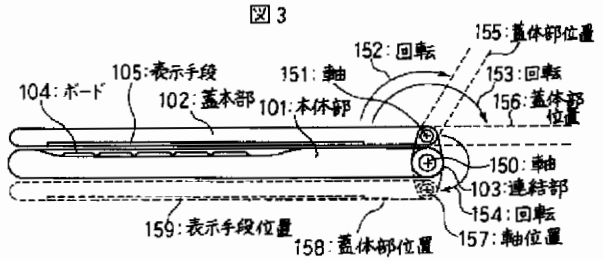
【図２】

図２



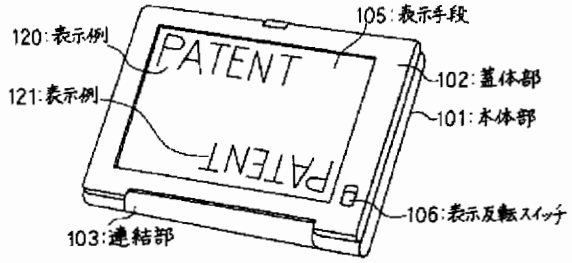
【図３】

図３



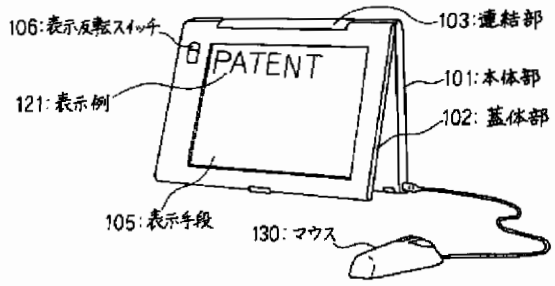
【図４】

図４



【図５】

図５



フロントページの続き

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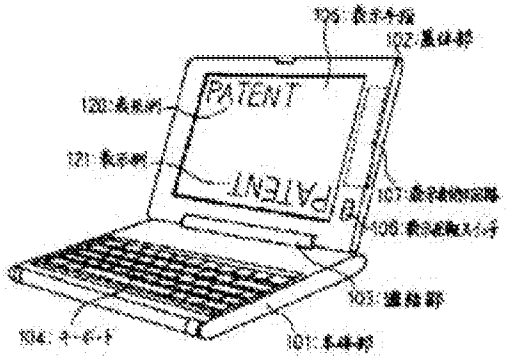
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(54) **ELECTRONIC APPARATUS DEVICE AND PERSONAL COMPUTER**

(57)Abstract:
PURPOSE: To provide the personal computer which can take a form being suitable for the use environment of mainly using a pen input operation and a mouse operation, while holding a form which can use a keyboard.
CONSTITUTION: The personal computer consists of a main body part 101 having a keyboard 104 in front, a cover body part 102 having a display means 105 in front, and a connecting mechanism 103 for connecting one end of the main body part to one end of the cover body part, in a state that the fronts of both of them are opposed to each other, and also, making both of them openable and closeable, and this connecting mechanism 103 has a structure which can open the cover body part 102 at an angle exceeding 180 degrees against the main body part 101. It is desirable that a display inversion switch 106 for reversing the top and the bottom of a display of the display means 105 is provided.



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CLAIMS

[Claim(s)]
[Claim 1]A body part which has a keyboard in a front face.
A lid part which has a displaying means in a front face.
A connecting mechanism whose opening and closing of both connect an end of a body part, and an end of a lid part, and are enabled in the state of opposing a front face of this body part, and a front face of this lid part.
In an electronic equipment device provided with the above,
An electronic equipment device, wherein the above-mentioned connecting mechanism is the structure which can open the above-mentioned lid part to an angle exceeding 180 degree to the above-mentioned body part.

[Claim 2]An electronic equipment device, wherein the above-mentioned displaying means is provided with a switching means for a sign displayed to be displayed on top-and-bottom reverse in the electronic equipment device according to claim 1.
[Claim 3]An electronic equipment device characterized by the above-mentioned connecting mechanism being the structure which can make the above-mentioned lid part substantially any angle of the range of 0 to 360 degree to the above-mentioned body part in the electronic equipment device according to claim 1.
[Claim 4]An electronic equipment device, wherein the above-mentioned displaying means is provided with a switching means for a sign displayed to be displayed on top-and-bottom reverse in the electronic equipment device according to claim 3.
[Claim 5]An electronic equipment device, wherein the above-mentioned keyboard is provided with a second switching means for repealing an input from a keyboard in the electronic equipment device according to any one of claims 1 to 4.
[Claim 6]An electronic equipment device comprising:
A detection means to detect that the above-mentioned body part has a body part in an angle of a predetermined range to a vertical line in the electronic equipment device according to any one of claims 1 to 4.
The 3rd switching means for the above-mentioned keyboard to repeal an input from a keyboard based on a value which this detection means detected.

[Claim 7]A body part which has a keyboard in a front face and stores an electronic circuit.
A lid part which has a displaying means in a front face.
A connecting mechanism whose opening and closing of both connect an end of a body part, and an end of a lid part, and are enabled in the state of opposing a front face of this body part, and a front face of this lid part.
In a personal computer provided with the above,
A personal computer, wherein the above-mentioned connecting mechanism is the structure which can open the above-mentioned lid part to an angle exceeding 180 degree to the above-mentioned body part.

[Claim 8]A personal computer, wherein the above-mentioned displaying means is provided with a switching means for a sign displayed to be displayed on top-and-bottom reverse in the personal

computer according to claim 7.
[Claim 9]A personal computer characterized by the above-mentioned connecting mechanism being the structure which can make the above-mentioned lid part substantially any angle of the range of 0 to 360 degree to the above-mentioned body part in the personal computer according to claim 7.
[Claim 10]A personal computer, wherein the above-mentioned displaying means is provided with a switching means for a sign displayed to be displayed on top-and-bottom reverse in the personal computer according to claim 9.
[Claim 11]A personal computer, wherein the above-mentioned keyboard is provided with a second switching means for repealing an input from a keyboard in the personal computer according to any one of claims 7 to 10.
[Claim 12]A personal computer comprising:
A detection means to detect that the above-mentioned body part has a body part in an angle of a predetermined range to a vertical line in the personal computer according to any one of claims 7 to 10.
The 3rd switching means for the above-mentioned keyboard to repeal an input from a keyboard based on a value which this detection means detected.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]The present invention relates to the electronic equipment device and personal computer which improved portability by miniaturization.
[0002]
[Description of the Prior Art]Progress of a miniaturization of electronic equipment devices, such as information processing equipment, is remarkable, and it divides in recent years, and in respect of the size and weight, the personal computer will have been miniaturized, by the time it is portable.
[0003]The general form of such a conventional portable personal computer connects the body part which has (1) operating part, the lid part which has (2) display parts, and the (3) above-

mentioned body part and a lid part, and it has the box structure which comprises **** which make rotate a lid centering on a connecting part, and whose opening and closing are enabled. Usually, at the times of intact at the time of carrying, etc., the body part and the lid part are closed in the form which goes and is put together. At the time of use, this lid part is opened in about 120 degree, and is operated. Such a portable personal computer is also commonly called a laptop computer, are commercialized as a desktop computer space-saving in recent years, and are used. [many] JP,3-109622,A, JP,3-292520,A, etc. are one of the things relevant to this kind of electronic equipment device, for example.
[0004]
[Problem to be solved by the invention]The above-mentioned prior art had the problem that it was not the form for which it was suitable in the usage pattern which has a user interface of the Penn alter operation or a mouse operation subject. In recent years, the utilizing environment of a personal computer is changing, the one is offer of the operating environment which makes mouse operation a subject, and it is offer of the operating environment by a pen input further. The above-mentioned prior art was suitable for the operating environment by a keyboard input to the last. Such a problem is the same also in electronic equipment devices other than personal computers, such as a portable word processor.
[0005]There is the object of this invention in providing the electronic equipment device and personal computer which can take a form suitable for the utilizing environment of the Penn alter operation or a mouse operation subject, holding the form which can use a keyboard.
[0006]
[Means for solving problem]To achieve the above objects, the electronic equipment device of the present invention, In the state of opposing the body part which has a keyboard in a front face, the lid part which has a displaying means in a front face, and the front face of this body part and the front face of this lid part, The end of a body part and the end of a lid part are connected, and it consists of a connecting mechanism whose opening and closing of both are enabled, and the structure of a connecting mechanism is constituted so that a lid part can open to the angle exceeding 180 degree to a body part.
[0007]The personal computer of the present invention in the state of opposing the body part which has a keyboard in a front face and stores an electronic circuit, the lid part which has a displaying means in a front face, and the front face of this body part and the front face of this lid part, The end of a body part and the end of a lid part are connected, and it consists of a connecting mechanism whose opening and closing of both are enabled, and the structure of a connecting mechanism is constituted so that a lid part can open to the angle exceeding 180 degree to a body part.
[0008]As for the above-mentioned connecting mechanism, also in which equipment, it is preferable that it is the structure which can make a lid part substantially any angle of the range of 0 to 360 degree to a body part. As for the above-mentioned displaying means, it is preferable to have a switching means for the sign displayed to be displayed on top-and-bottom reverse. A lid part is opened 360 degree to a body part, and if a certain power is added to a lid part at the times, such as making a lid part into a side front and using it, the data which is not meant from the keyboard of the body part which is the back side may be input accidentally. In order to prevent it, it is preferable to have a second switching means for repealing the input from a keyboard. It may be made for this switching means to change from the angle made to the vertical line of a body part automatically.
[0009]

[Function]The body part which has a keyboard with constituting as mentioned above, and the lid part which has a displaying means are opened about 360 degree, and a keyboard and a displaying means can be faced. In such a state where it opened about 360 degree, since a keyboard and a displaying means serve as a form exposed on the surface of apparatus, if it has a displaying means by hand so that a user may be met, it will become a form just preferable for pen input environment. And if it is with necessity, the user can also operate a keyboard by turning apparatus over.
[0010]Or a body part and a lid part can be opened to about 340 degree again. If it is in this state, standing on a desk will have come out in the form which turned the joining segment up and turned the end of a body part, and the end of the lid part down. Since the upper and lower sides and right and left become reverse, it is difficult for the character, figure, etc. which are displayed on a displaying means at this time for a user to read display information immediately. Then, an indication is given top-and-bottom reverse. Thus, if it stands and uses on a desk, it will become a form preferable for mouse operation.
[0011]
[Working example]One working example of the present invention is described using Drawings. Fig.1 is a perspective view of the portable personal computer to which the present invention is applied. The body part 101 stores the electronic circuit of a computer body. The lid part 102 is provided with the displaying means 105 of a computer all over the, and meets those whom are caused and a displaying means uses at the time of use. The displaying means 105 is a display part of this computer.
At the time of pen input environment, it also becomes an input means.
The keyboard 104 is an input part of a computer and is a main input part in the conventional use.
[0012]The connecting part 103 is tied by the ends and hinges of the body part 101. By one side, the connecting part 103 is tied also with the end of the lid part 102 by hinges. The display reversing switch 106 is a switch operated by the user, and can take 2 of a normal state and a reverse state states. The state is input into the display control circuit 107. The display control circuit 107 is an electronic circuit which controls the output to the displaying means 105 by control of the computer body circuit stored in the body part 101. The display to a displaying means is made as for the display control circuit 107 to top-and-bottom reverse according to the state of the display reversing switch 106. That is, when the display reversing switch 106 is in a normal state, the display is performed like the display example 120. On the other hand, when the display reversing switch 106 is in a reverse state, the display is performed like the display example 121 by rotating 180 degree around the center of the vertical line of top-and-bottom reverse, i.e., a display surface center.
[0013]Next, the details of the connecting mechanism which performs an important role are described using Fig.2 by the present invention. A connecting mechanism has the connecting part 103, the body support shaft 110, and the lid supporting spindle 111. The body support shaft 110 is connected with the body supporting part 112 provided by the body part 101. It can be freely rotated by the body part 101 focusing on the axis 150. The lid supporting spindle 111 is connected with the lid supporting part 113 provided by the lid part 102. It can be freely rotated by the lid part 102 focusing on the axis 151.
[0014]Next, it is described using Fig.3 how the body part 101 and the lid part 102 rotate by work of the connecting mechanism described by Fig.2.Usually, at the times of intact at the time of carrying, etc., the body part 101 and the lid part 102 can be closed, as the keyboard 104 and the displaying means 105 face each other by work of the connecting mechanism described using

Fig.2. On the other hand, at the time of use, by making it rotate focusing on the axis 151, it can be made to be able to get up and go up from the body part 101, and the lid part 102 can be opened. If the lid part 102 is opened about 120 degree with the suitable angle 152, for example, rotation, the lid part 102 will be placed at the lid part position 155. This is the form shown in Fig.1.
The user can operate this computer, meeting the keyboard 104 and the displaying means 105 in a natural form.

[0015]If the lid part 102 is opened 180 degree by the rotation 153 now, the lid part 102 will be placed at the lid part position 156. If it is made to rotate 180 degree by the rotation 154 of the connecting part 103 centering on the axis 150 and the axis 151 is furthermore moved to the shaft position 157 there, the lid part 102 will be placed at the lid part position 158. Thus, the lid part 102 can make it rotate about 360 degree by work of the connecting mechanism described using Fig.2. In this state, the displaying means 105 is placed at the displaying means position 159. That is, since they have come out on the surface of the computer, there are the keyboard 104 and the displaying means 105 with necessity, and the user can also operate the keyboard 104 and they can also use the displaying means 105.
[0016]As described using Fig.3, the personal computer of the present invention can change the body part 101 and the lid part 102 into the state where it opened about 360 degree. Fig.4 is a perspective view showing a state at this time.
It is a form suitable for computer applications by a pen input.
In this figure, the connecting part 103 is a near side to the user. At this time, for [the displaying means 105] displays comes out like the display example 120, and is satisfactory. However, the way where the connecting part 103 had become the other side to the user for some users may be liked. In that case, what is necessary is just to carry out for [the displaying means 105] displays like the display example 121 by changing the display reversing switch 106 into a reverse state.
[0017]As already described, according to the present invention, the body part 101 and the lid part 102 can be opened in any angle in about 0 to 360 degree. Fig.5 shows the usage pattern in the state where the body part 101 and the lid part 102 were opened about 340 degree. In this case, for [the displaying means 105] displays is carried out like the display example 121 by setting the display reversing switch 106 as a reverse state. And the connecting part 103 is made above and it installs on a desk. Since the keyboard 104 becomes the back side completely from the viewpoint of a user at this time, the user cannot operate the keyboard 104 easily, but the mouse 130 is connected, and it is not a big problem if it is a mouse subject operating environment. Thus, when it installs on a desk, the desk surface product which a computer occupies can be substantially lessened compared with the installation method shown in Fig.1.
[0018]When strong power is somewhat applied to the displaying means 105 of a table using a personal computer in the state which showed in Fig.4, the data which is not meant from the keyboard which is the back side may be input accidentally. In order to prevent it, it is preferable to provide the switching means (not shown) for repealing the input from a keyboard.
[0019]It may be made for this switching means to operate automatically. For example, it is good also as composition which repeals the input from a keyboard based on the value which provided a detection means to detect that a body part is in the angle of the predetermined range to a vertical line, to the body part, and this detection means detected.
[0020]
[Effect of the Invention]Since the present invention is constituted as stated above, there are the

following effects.
(1) All of the usage patterns of a keyboard subject as usual and forms suitable for the usage pattern of a pen input subject and a mouse operation subject were able to be realized.
(2) When using with a mouse operation subject, it could end with fewer desk occupation areas.
(3) When an external display means was used, the external display means has been installed in a user's transverse plane reasonable.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application]The present invention relates to the electronic equipment device and personal computer which improved portability by miniaturization.

[Translation done.]

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PRIOR ART

[Description of the Prior Art]Progress of a miniaturization of electronic equipment devices, such as information processing equipment, is remarkable, and it divides in recent years, and in respect of the size and weight, the personal computer will have been miniaturized, by the time it is portable.

[0003]The general form of such a conventional portable personal computer connects the body part which has (1) operating part, the lid part which has (2) display parts, and the (3) above-mentioned body part and a lid part, and it has the box structure which comprises **** which make rotate a lid centering on a connecting part, and whose opening and closing are enabled. Usually, at the times of intact at the time of carrying, etc., the body part and the lid part are closed in the form which goes and is put together. At the time of use, this lid part is opened in about 120 degree, and is operated. Such a portable personal computer is also commonly called a laptop computer, are commercialized as a desktop computer space-saving in recent years, and are used. [many] JP,3-109622,A, JP,3-292520,A, etc. are one of the things relevant to this kind of electronic equipment device, for example.

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EFFECT OF THE INVENTION

[Effect of the Invention]Since the present invention is constituted as stated above, there are the following effects.
(1) All of the usage patterns of a keyboard subject as usual and forms suitable for the usage pattern of a pen input subject and a mouse operation subject were able to be realized.
(2) When using with a mouse operation subject, it could end with fewer desk occupation areas.
(3) When an external display means was used, the external display means has been installed in a user's transverse plane reasonable.

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TECHNICAL PROBLEM

[Problem to be solved by the invention]The above-mentioned prior art had the problem that it was not the form for which it was suitable in the usage pattern which has a user interface of pen input operation or a mouse operation subject. In recent years, the utilizing environment of a personal computer is changing, the one is offer of the operating environment which makes mouse operation a subject, and it is offer of the operating environment by a pen input further. The above-mentioned prior art was suitable for the operating environment by a keyboard input to the last. Such a problem is the same also in electronic equipment devices other than personal computers, such as a portable word processor.
[0005]There is the object of this invention in providing the electronic equipment device and personal computer which can take a form suitable for the utilizing environment of pen input operation or a mouse operation subject, holding the form which can use a keyboard.

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MEANS

[Means for solving problem]To achieve the above objects, the electronic equipment device of the present invention, In the state of opposing the body part which has a keyboard in a front face, the lid part which has a displaying means in a front face, and the front face of this body part and the front face of this lid part, The end of a body part and the end of a lid part are connected, and it consists of a connecting mechanism whose opening and closing of both are enabled, and the structure of a connecting mechanism is constituted so that a lid part can open to the angle exceeding 180 degree to a body part.
[0007]The personal computer of the present invention in the state of opposing the body part which has a keyboard in a front face and stores an electronic circuit, the lid part which has a displaying means in a front face, and the front face of this body part and the front face of this lid

part, The end of a body part and the end of a lid part are connected, and it consists of a connecting mechanism whose opening and closing of both are enabled, and the structure of a connecting mechanism is constituted so that a lid part can open to the angle exceeding 180 degree to a body part.
[0008]As for the above-mentioned connecting mechanism, also in which equipment, it is preferable that it is the structure which can make a lid part substantially any angle of the range of 0 to 360 degree to a body part. As for the above-mentioned displaying means, it is preferable to have a switching means for the sign displayed to be displayed on top-and-bottom reverse. A lid part is opened 360 degree to a body part, and if a certain power is added to a lid part at the times, such as making a lid part into a side front and using it, the data which is not meant from the keyboard of the body part which is the back side may be input accidentally. In order to prevent it, it is preferable to have a second switching means for repealing the input from a keyboard. It may be made for this switching means to change from the angle made to the vertical line of a body part automatically.

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OPERATION

[Function]The body part which has a keyboard with constituting as mentioned above, and the lid part which has a displaying means are opened about 360 degree, and a keyboard and a displaying means can be faced. In such a state where it opened about 360 degree, since a keyboard and a displaying means serve as a form exposed on the surface of apparatus, if it has a displaying means by hand so that a user may be met, it will become a form just preferable for pen input environment. And if it is with necessity, the user can also operate a keyboard by turning apparatus over.
[0010]Or a body part and a lid part can be opened to about 340 degree again. If it is in this state, standing on a desk will have come out in the form which turned the joining segment up and turned the end of a body part, and the end of the lid part down. Since the upper and lower sides and right and left become reverse, it is difficult for the character, figure, etc. which are displayed on a displaying means at this time for a user to read display information immediately. Then, an indication is given top-and-bottom reverse. Thus, if it stands and uses on a desk, it will become a form preferable for mouse operation.
[0011]

[Translation done.]

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EXAMPLE

[Working example]One working example of the present invention is described using Drawings. Fig.1 is a perspective view of the portable personal computer to which the present invention is applied. The body part 101 stores the electronic circuit of a computer body. The lid part 102 is provided with the displaying means 105 of a computer all over the, and meets those whom are caused and a displaying means uses at the time of use. The displaying means 105 is a display part of this computer.
At the time of pen input environment, it also becomes an input means.
The keyboard 104 is an input part of a computer and is a main input part in the conventional use.
[0012]The connecting part 103 is tied by the ends and hinges of the body part 101. By one side, the connecting part 103 is tied also with the end of the lid part 102 by hinges. The display reversing switch 106 is a switch operated by the user, and can take 2 of a normal state and a reverse state states. The state is input into the display control circuit 107. The display control circuit 107 is an electronic circuit which controls the output to the displaying means 105 by control of the computer body circuit stored in the body part 101. The display to a displaying means is made as for the display control circuit 107 to top-and-bottom reverse according to the state of the display reversing switch 106. That is, when the display reversing switch 106 is in a normal state, the display is performed like the display example 120. On the other hand, when the display reversing switch 106 is in a reverse state, the display is performed like the display example 121 by rotating 180 degree around the center of the vertical line of top-and-bottom reverse, i.e., a display surface center.
[0013]Next, the details of the connecting mechanism which performs an important role are described using Fig.2 by the present invention. A connecting mechanism has the connecting part 103, the body support shaft 110, and the lid supporting spindle 111. The body support shaft 110 is connected with the body supporting part 112 provided by the body part 101. It can be freely rotated by the body part 101 focusing on the axis 150. The lid supporting spindle 111 is connected with the lid supporting part 113 provided by the lid part 102. It can be freely rotated by the lid part 102 focusing on the axis 151.
[0014]Next, it is described using Fig.3 how the body part 101 and the lid part 102 rotate by work of the connecting mechanism described by Fig.2.Usually, at the times of intact at the time of

carrying, etc., the body part 101 and the lid part 102 can be closed, as the keyboard 104 and the displaying means 105 face each other by work of the connecting mechanism described using Fig.2. On the other hand, at the time of use, by making it rotate focusing on the axis 151, it can be made to be able to get up and go up from the body part 101, and the lid part 102 can be opened. If the lid part 102 is opened about 120 degree with the suitable angle 152, for example, rotation, the lid part 102 will be placed at the lid part position 155. This is the form shown in Fig.1.
The user can operate this computer, meeting the keyboard 104 and the displaying means 105 in a natural form.

[0015]If the lid part 102 is opened 180 degree by the rotation 153 now, the lid part 102 will be placed at the lid part position 156. If it is made to rotate 180 degree by the rotation 154 of the connecting part 103 centering on the axis 150 and the axis 151 is furthermore moved to the shaft position 157 there, the lid part 102 will be placed at the lid part position 158. Thus, the lid part 102 can make it rotate about 360 degree by work of the connecting mechanism described using Fig.2. In this state, the displaying means 105 is placed at the displaying means position 159. That is, since they have come out on the surface of the computer, there are the keyboard 104 and the displaying means 105 with necessity, and the user can also operate the keyboard 104 and they can also use the displaying means 105.
[0016]As described using Fig.3, the personal computer of the present invention can change the body part 101 and the lid part 102 into the state where it opened about 360 degree. Fig.4 is a perspective view showing a state at this time.
It is a form suitable for computer applications by a pen input.
In this figure, the connecting part 103 is a near side to the user. At this time, for [the displaying means 105] displays comes out like the display example 120, and is satisfactory. However, the way where the connecting part 103 had become the other side to the user for some users may be liked. In that case, what is necessary is just to carry out for [the displaying means 105] displays like the display example 121 by changing the display reversing switch 106 into a reverse state.
[0017]As already described, according to the present invention, the body part 101 and the lid part 102 can be opened in any angle in about 0 to 360 degree. Fig.5 shows the usage pattern in the state where the body part 101 and the lid part 102 were opened about 340 degree. In this case, for [the displaying means 105] displays is carried out like the display example 121 by setting the display reversing switch 106 as a reverse state. And the connecting part 103 is made above and it installs on a desk. Since the keyboard 104 becomes the back side completely from the viewpoint of a user at this time, the user cannot operate the keyboard 104 easily, but the mouse 130 is connected, and it is not a big problem if it is a mouse subject operating environment. Thus, when it installs on a desk, the desk surface product which a computer occupies can be substantially lessened compared with the installation method shown in Fig.1.
[0018]When strong power is somewhat applied to the displaying means 105 of a table using a personal computer in the state which showed in Fig.4, the data which is not meant from the keyboard which is the back side may be input accidentally. In order to prevent it, it is preferable to provide the switching means (not shown) for repealing the input from a keyboard.
[0019]It may be made for this switching means to operate automatically. For example, it is good also as composition which repeals the input from a keyboard based on the value which provided a detection means to detect that a body part is in the angle of the predetermined range to a vertical line, to the body part, and this detection means detected.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a perspective view of the personal computer of one working example of the present invention.
[Drawing 2]It is a configuration diagram of the connecting mechanism of the personal computer of one working example of the present invention.
[Drawing 3]It is an explanatory view of the connecting mechanism shown in Fig.3 of operation.
[Drawing 4]It is a perspective view which describes one usage pattern of the personal computer of one working example of the present invention.
[Drawing 5]It is a perspective view which describes other usage patterns of the personal computer of one working example of the present invention.
[Explanations of letters or numerals]
101 -- Body part
102 -- Lid part
103 -- Connecting part
104 -- Keyboard
105 -- Displaying means
106 -- Display reversing switch
107 -- Display control circuit
110 -- Body support shaft
111 -- Lid supporting spindle
112 -- Body supporting part
113 -- Lid supporting part
120, 121 -- Display example
130 -- Mouse
150, 151 -- Axis
152, 153, 154 -- Rotation
155, 156, 158 -- Lid part position
157 -- Shaft position
159 -- Displaying means position

[Translation done.]

* NOTICES *

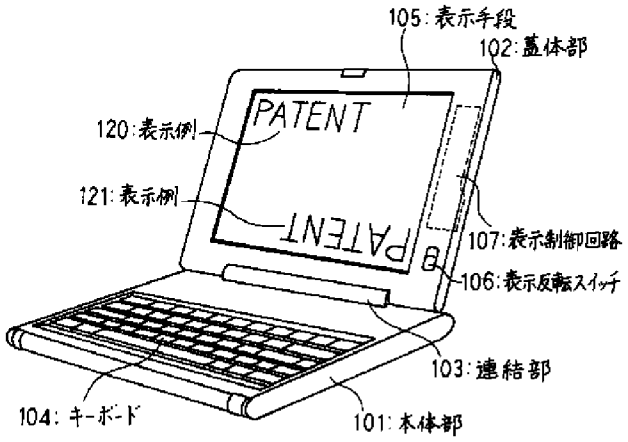
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DRAWINGS

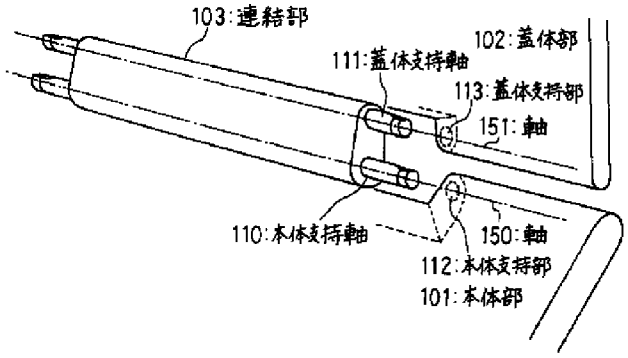
[Drawing 1]

図1



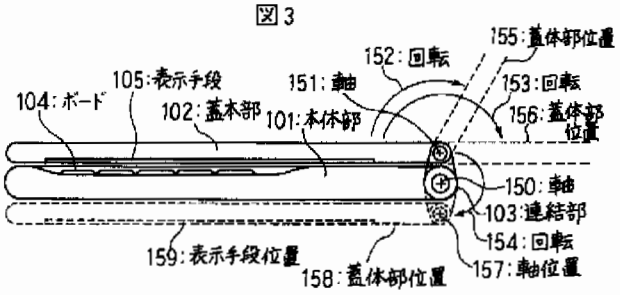
[Drawing 2]

図2



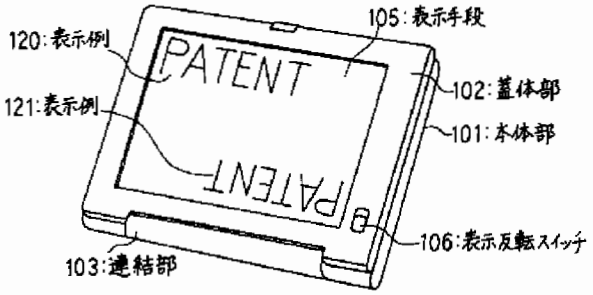
[Drawing 3]

図3



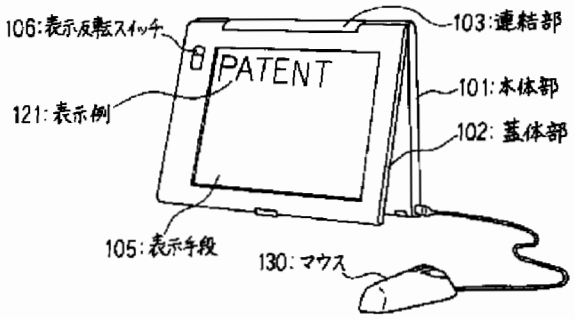
[Drawing 4]

図4



[Drawing 5]

図5



[Translation done.]

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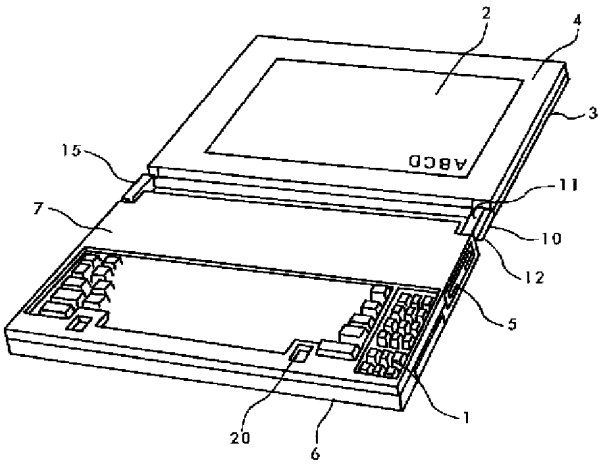
(74)代理人　弁理士　小川　勝男

最終頁に続く

(54)【発明の名称】　情報処理装置

(57)【要約】
【目的】本発明の目的は、液晶表示装置の表示面を１８０度以上回転できる構造とすると共に液晶表示装置の文字あるいはイメージ等の画面表示を点対称位置に変更して表示できるようにし、多用途向けに使用可能とするものである。
【構成】本体ケースに１８０度以上回転可能な支持機構によって液晶表示装置を取付け、液晶表示画面に文字あるいはイメージ等の画面表示を点対称位置に変更して表示可能に構成したもの。

図　7



【特許請求の範囲】
【請求項１】制御基板を収納保持する本体ケースと、この本体ケースに設けられ、文字データあるいは記号データ等を入力する文字キーを有するキーボードと、この本体ケースに収納した記憶装置と、本体ケースの後方に回転自在に取付けられた平面的な表示画面とを有する情報処理装置において、
前記表示装置を本体ケースに対して少なくとも１８０度以上回転可能に支持する支持機構と、前記文字キーによって入力された文字を倒立文字パターンに変更する手段と、前記文字キーによって入力された文字位置を点対称位置に変更する文字位置変更手段と、前記キーボードに設けられた表示状態変更キーと、表示状態変更キーの入力信号により、前記で変更された倒立文字パターンを文字位置変更手段によって変更された新たな表示位置に表示する表示制御装置を具備している情報処理装置。
【請求項２】制御基板を収納保持する本体ケースと、この本体ケースに設けられ、文字データあるいは記号データ等を入力する文字キーを有するキーボードと、この本体ケースに収納した記憶装置と、本体ケースの後方に回転自在に取付けられた平面的な表示画面とを有する情報処理装置において、
前記表示装置を本体ケースに対して少なくとも１８０度以上回転可能に支持する支持機構と、前記文字キーによって入力された文字等のドットの総てを点対称位置に変更するドット位置変更手段と、前記キーボードに設けられた表示状態変更キーと、表示状態変更キーの入力信号により、前記ドット位置変更手段で変更された総てのドットを変更された新たな表示位置に表示する表示制御装置を具備している情報処理装置。
【請求項３】請求項１あるいは請求項２のいずれかにおいて、
前記支持機構は、本体ケースと表示装置の表示器ケースとを回転可能に連結するアームと、このアームと本体ケースとを所定の摩擦力で回転可能に連結する表示器側ロックヒンジと、同じくこのアームと表示器ケースとを所定の摩擦力で回転可能に連結する本体側ロックヒンジとから構成すると共に、この本体側ロックヒンジの摩擦トルクを表示器側ロックヒンジより大きく設定した情報処理装置。
【請求項４】請求項１あるいは請求項２のいずれかにおいて、
前記支持機構は前記表示装置を本体ケースに対して２７０度以上回転可能に支持するものであると共に、キーボードの周縁高さをキー押下時のキートップよりも高く形成した情報処理装置。
【請求項５】請求項１あるいは請求項２のいずれかにおいて、
前記支持機構は前記表示装置を本体ケースに対して３６０度回転可能に支持するものであると共に、表示装置の表示器ケースと本体ケースの裏面を相互密着状態に保持可能に構成した情報処理装置。
【請求項６】請求項５において、
本体上ケースの手前に係止部を形成した情報処理装置。
【請求項７】請求項５において、
表示器ケースと本体ケースの裏面を相互密着状態に組合せ保持した状態において、
表示器ケースと本体ケースの後端部を底面として立脚させるように構成した情報処理装置。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明はノート形の日本語ワードプロセッサやパーソナルコンピュータのような情報処理装置に関し、特に平面的な液晶表示装置を備えた情報処理装置に関するものである。
【０００２】
【従来の技術】パーソナルユースとして近年急速に普及しつつある日本語ワードプロセッサやパーソナルコンピュータなどは、可搬性からその表示装置として薄形軽量な液晶表示装置が用いられるようになってきた。この情報処理装置は、実開昭61－160526号公報に示されている如く、本体ケース内部にキーボードをはじめとして、制御基板，磁気ディスク駆動装置等の外部記憶装置（以下外部記憶装置と称する），電源等を配置し、本体ケース後方に液晶表示装置を開閉可能なＬＣＤケースに液晶表示装置を収納して構成するのが一般的である。
【０００３】
【発明が解決しようとする課題】上記従来の情報処理装置は、一人の使用者のために使用し易い構成になっている。表示画面も一人の使用者が見易いように１３５度程度まで開くことが可能となっているが、これ以上は開くことができないように構成されている。従って、相手と机を挟んで対座した場合、相手は表示画面をみることができない状態になる。そのため、使用者の傍に相手にも座ってもらい、一つの表示画面を二人で見なければならないことが余儀なく生じるものであり、面倒であり窮屈でもある。又、通常の使用時以外の保管あるいは収納時には、情報処理装置が本来有している機能を充分に機能させることが困難であった。即ち、液晶表示装置を開けてタイマー機能に基づく時計等を表示しておいても、本体部が机上で邪魔になり、このような使用には不向きであった。
【０００４】本発明の主たる目的は、対面した相手とも表示画面を互いに見ながら話をすることができるようにし、この種情報処理装置を利用して会議を進めることを可能にすることを主たる目的とし、更に、他の目的は、通常使用時以外の非使用時の保管時において時計表示等の機能を活かせるようにすることにある。
【０００５】
【課題を解決するための手段】前記主たる目的は、制御

基板を収納保持する本体ケースと、この本体ケースに設けられ、文字データあるいは記号データ等を入力する文字キーを有するキーボードと、この本体ケースに収納した記憶装置と、本体ケースの後方に回転自在に取付けられた平面的な表示画面とを有する情報処理装置において、前記表示装置を本体ケースに対して少なくとも１８０度以上回転可能に支持する支持機構と、前記文字キーによって入力された文字を倒立文字パターンに変更する手段と、前記文字キーによって入力された文字位置を点対称位置に変更する文字位置変更手段と、前記キーボードに設けられた表示状態変更キーと、表示状態変更キーの入力信号により、前記で変更された倒立文字パターンを文字位置変更手段によって変更された新たな表示位置に表示する表示制御装置を具備させることにより達成される。又、文字データをドットリフレッシュ方式で記憶している場合は、前記文字キーによって入力された文字等のドットの総てを点対称位置に変更するドット位置変更手段と、前記キーボードに設けられた表示状態変更キーと、表示状態変更キーの入力信号により、前記ドット位置変更手段で変更された総てのドットを変更された新たな表示位置に表示する表示制御装置を具備させることによって達成される。

【０００６】更に又、他の目的は、前記支持機構は前記表示装置を本体ケースに対して270度以上回転可能に支持するものであると共に、キーボードの周縁高さをキー押下時のキートップよりも高く形成するか、あるいは前記支持機構は前記表示装置を本体ケースに対して３６０度回転可能に支持するものであると共に、表示装置の表示器ケースと本体ケースの裏面を相互密着状態に保持可能に構成するか、あるいは表示器ケースと本体ケースの裏面を相互密着状態に組合せ保持した状態において、表示器ケースと本体ケースの後端部を底面として立脚させるように構成することによって達成される。

【０００７】

【作用】本発明は、表示器を本体ケースに対して１８０度回転でき、更に文字を倒立パターンとし文字位置を点対称位置に変更するように構成するか、あるいは入力された総てのドットを点対称位置に変更するようにしたので、対面した相手に見易く、又理解し易い状態に表示され、この種情報処理装置を利用しての会議に便ならしめるように作用する。又、本体ケースに対して３６０度まで回転可能とし、任意の角度、例えば２７０度，３６０度の角度で仮固定可能としているので、この情報処理装置を時計等の表示装置として利用可能になるように作用する。

【０００８】

【実施例】以下、本発明の構成の一実施例を図面に基づき説明する。

【０００９】図１，図２は本発明の一実施例であるノート形の日本語ワードプロセッサの使用状態図を示す斜面図および側面図である。

【００１０】１は主として文字や記号等を入力する文字キー１０１、主として数字を入力するテンキー１０２，カーソルキー１０３、あるいは機能キー１０４等を有するキーボードである。このキーボード１から入力された入力データを表示するＬＣＤ液晶表示器２が開閉可能な表示器ケース３に組込まれ、この表示器ケースの前面を液晶パネル４で覆う構造となっている。５は入力編集した情報を記憶しておくための磁気ディスク駆動装置からなる外部記憶装置であり、本体下ケース６と本体上ケース７の間に介在されている。６７はこれら本体下ケース６および本体上ケース７の組合せによって成された本体ケースである。前記磁気ディスク駆動装置はハードディスクあるいはフロッピーディスク駆動装置いずれも適用される。キーボード１に設ける各種キーはいずれも本体上ケース７から突出しないような構造としてキートップを下にして本体ケース６７を倒置して机上に設置しても、不用意にキーが作用しないようにし、あるいは、キーボード１のストロークを大きくしてキートップ等の操作感触を改良するために本体上ケース７から突出する場合は、キートップ面を下面にして机上に設置した時、キートップが本体自重により沈み込むようにキートップ操作力を配慮しているものである。尚、このとき、前述のように不用意にキー入力されないようにする必要がある。即ち、キートップと本体上ケースとの関係は、本体上ケースの表面（周縁）高さをキー押し下げによる入力発生時のキートップよりも高く形成していることが絶対的条件である。

【００１１】文字や数字等を入力するキーボード１の下部には図３に示す如く装置全体を制御するための制御基板８が配置されている。

【００１２】一方、本体下ケース６後部の片側には液晶表示器２と制御基板８を接続するためのＬＣＤケーブル９がアーム１０，アーム１１の組立品により中空状に形成される支持機構１２内に挿入配置され、液晶表示装置の回転に対応できるようにしている。本体下ケース６後部の他の一方には本体側ロックヒンジ１３を設けると共に、表示器ケース３の下部にはＬＣＤ側ロックヒンジ１４を設け、その各々をアルミダイキャスト品等により製作されたヒンジ側アーム１５により結合される構成となっている。なお、本体側ロックヒンジ１３及びＬＣＤ側ロックヒンジ１４はシャフト１６とコイルばね１７の締代を利用したばねクラッチ方式を応用した例を示したものである。この他ウェーブスプリングを圧接する摩擦板方式も有り、この方式ではウェーブスプリングの締め代を調整することによって摩擦トルクの調整ができる。このようにしてロックヒンジの構成は装置によって最適なものを選択して使用することができる。ロックヒンジのトルクについて説明すると、通常使用時は図２に示す如く、液晶表示装置を開閉する操作頻度が多いことからＬ

ＣＤ側ロックヒンジ１４に対して本体側ロックヒンジ１３の回転トルクを大きく設定している。即ち、通常の液晶表示装置４の開閉時には本体側ロックヒンジ１３及びヒンジ側アーム１５は動作しないよう構成されている。

【００１３】また、キーボード１上の特定キーを操作することによって液晶表示装置２に表示された文字あるいはイメージ等の画面表示を１８０°回転した状態(倒立状態)に表示できるように構成されている。

【００１４】これを図５に示す回路ブロック図により説明する。通常の入力装置であるキーボード１からの入力は、キーボードコントローラ２１，ＣＰＵ２２，文字パターンおよび文字位置変更手段（プログラムメモリ）２３を介してキャラクタジェネレータ２４により表示内容が、例えば「Ａ」のように構成される。このデータ「Ａ」を表示用メモリ２５に転送し、液晶コントローラ２６を介して液晶表示装置２の画面上に「Ａ」と表示されるものである。これらは通常の液晶表示装置２の画面表示であるが、画面表示を１８０°回転した状態（倒立状態）で表示するため、キーボード１の機能キー１０４の表示状態変更キー１０４Ａを操作することによりＣＰＵ２２を介して文字パターンおよび文字位置変更手段（プログラムメモリ）２３によりキャラクタジェネレータ２４から文字やイメージ等のデータを図７あるいは図５のように倒立して表示用メモリ２５に転送するようプログラム構成されている。又、この文字パターンおよび文字位置変更手段２３は倒立文字作成と同時に前記キーボードによって通常に入力された文字の位置の点対称位置を計算して新たな文字位置とする機能を有している。この文字パターンおよび文字位置変更手段２３は文字パターン変更手段と文字位置変更手段を個別に分割して備えてもいい。

【００１５】この文字位置変更手法は文字データをキャラクタジェネレータ２４から読みだす方式のものについてのものであるが、文字データの総てをドットリフレッシュ方式で表示するものにあっては、入力された文字等のドットデータの総てのドットを点対称位置に変更することによって全画面の倒立表示状態を得ることができる。即ち、キャラクタジェネレータを使用し一字毎に倒立文字パターンを作成する手間を省力することができる。

【００１６】尚、図５において、２７はワークメモリ、２８は印刷バッファメモリ、３１はインターフェース回路、３２は印刷スイッチ、３３は電源ＬＥＤ、３４は印刷ＬＥＤ、３５はプリンタコントローラ、３６は印刷ユニット、３７は送紙ユニット、３８はフロッピーディスクコントローラである。

【００１７】以上のように構成された装置の操作方法について次に説明する。

【００１８】図１，図２はノート型の日本語ワードプロセッサやパーソナルコンピュータのような情報処理装置の通常の使用状態を示すものであり、通常は前述の如くLCD側ロックヒンジ１４のみが回転動作するものである。図６は会議の席上あるいは机上で第３者にオペレータが情報処理装置の操作方法，機能等を説明するため液晶表示装置４を１８０°回転して、机上に水平になるようにヒンジ側アーム１５を介して本体側ロックヒンジ１３を動作させたものである。図７は更にこの状態において、キーボード１の表示状態変更キー１０４Ａを操作することにより、上述で説明したごとく液晶表示装置２の文字あるいはイメージ等の表示内容を対面する第３者から見易くするため倒立状態に表示可能としたものである。更に、ＬＣＤ側ロックヒンジ１４，ヒンジ側アーム１５，本体側ロックヒンジ１３の連動により本体側装置に対して３６０°回転可能な構造であるため、第３者に対する説明時、図８のように略２２０°前後まで回転することにより画面表示を一段と見易くすることも可能となる。通常、液晶表示装置２の表示画面は指向性があるためオペレータと同方向からは非常に見にくい面があるが、上述の操作形態にすることにより非常に見やすくすることができるものである。

【００１９】以上は通常の使用状態について述べたものであるが、非使用時の設置例について述べる。図９は液晶表示装置２を約３００°程度回転することによりカレンダー，時計，スケジュールを表示させて机上に設置した（これを仮にステーショナリー機能と称す）ものである。これにより、非使用時の収納，保管等の問題も改善され、しかも、机上で各種スケジュール等の確認を始めとして有効利用できるものである。また、非使用時更に設置面積を小さくするために、および机上設置が問題な場合には壁掛けとしても使用できるようにしたものである。

【００２０】即ち、本発明の一実施例構成によれば、液晶表示装置の表示器ケースの裏面と本体ケースの裏面との密着組合せ状態として、図１０のように机上に立脚させることができ、これを希望しないときは図１１に示す如く３６０°回転させ、図１２に示すように、壁１８に取り付けたフック１９に本体上ケース７のキーボード１手前に設けた係合部（凹部）２０を係合することにより、ステーショナリー機能を維持しながら表示保管することが可能となるものである。

【００２１】

【発明の効果】本発明によれば、制御基板を収納保持する本体ケースと、この本体ケースに設けられ、文字データあるいは記号データ等を入力する文字キーを有するキーボードと、この本体ケースに収納した記憶装置と、本体ケースの後方に回転自在に取付けられた平面的な表示画面とを有する情報処理装置において、前記表示装置を本体ケースに対して少なくとも１８０度以上回転可能に支持する支持機構と、前記文字キーによって入力された文字を倒立文字パターンに変更する手段と、前記文字キ

ーによって入力された文字位置を点対称位置に変更する文字位置変更手段と、前記キーボードに設けられた表示状態変更キーと、表示状態変更キーの入力信号により、前記で変更された倒立文字パターンを文字位置変更手段によって変更された新たな表示位置に表示する表示制御装置を具備させるか、あるいは、前記表示装置を本体ケースに対して少なくとも１８０度以上回転可能に支持する支持機構と、前記文字キーによって入力された文字等のドットの総てを点対称位置に変更するドット位置変更手段と、前記キーボードに設けられた表示状態変更キーと、表示状態変更キーの入力信号により、前記ドット位置変更手段で変更された総てのドットを変更された新たな表示位置に表示するように構成したので、対面した相手とも表示画面を互いに見ながら話をすることができるようになり、この種情報処理装置を利用して会議を進めることが可能に成る。又、通常使用時以外の非使用時の保管時において時計表示等の機能を活かすことが可能になる。

【図面の簡単な説明】

【図１】本発明の一実施例であるラップトップ形の日本語ワードプロセッサあるいはパーソナルコンピュータのような可搬形の情報処理装置の使用状態斜面図。

【図２】同じく通常使用状態の側面図。

【図３】液晶表示装置を閉じたときの断面図。

【図４】本体とＬＣＤケースの結合断面図。

【図５】回路ブロック図。

【図６】第３者への説明状態図。

【図７】第３者への説明状態図。

【図８】第３者への説明状態図。

【図９】非使用時における机上への設置例を示す図。

【図１０】非使用時における壁掛け状態図。

【図１１】液晶表示装置を３６０°回転した場合の断面図。

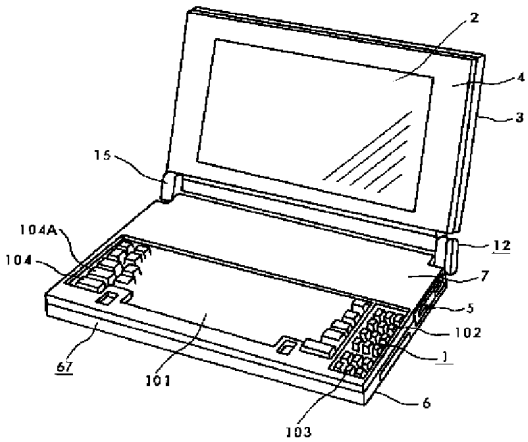
【図１２】使用時における壁掛け状態の断面図。

【符号の説明】

１…キーボード、２…液晶表示画面、３…表示器ケース、５…外部記憶装置、６…本体下ケース、７…本体上ケース、８…制御基板、１２…支持機構、１３本体側ロックヒンジ、１４…ＬＣＤ側ロックヒンジ、１５…ヒンジ側アーム、１８…壁、１９…フック、２０…凹部、２３…文字位置変更手段、６７…本体ケース、１０４Ａ…表示状態変更キー。

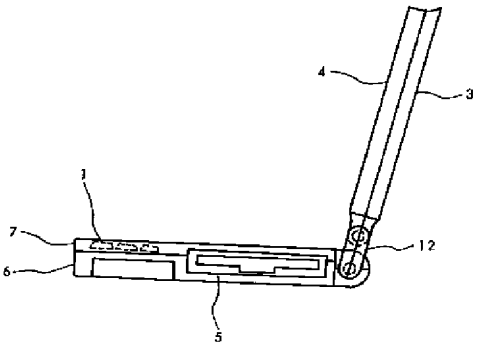
【図１】

図 1

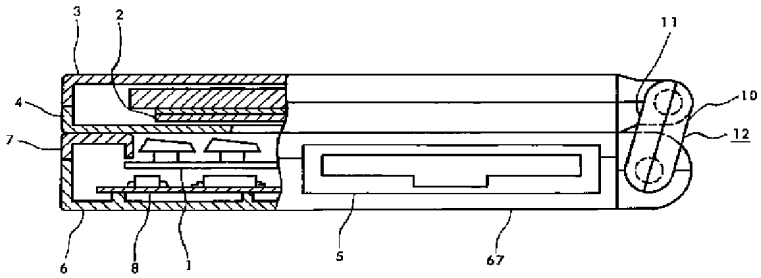


【図２】

図 2

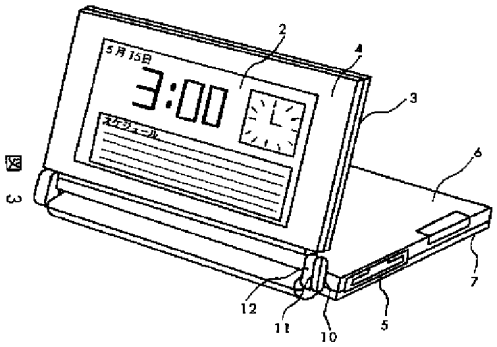


【図３】



【図９】

図 9



【図４】

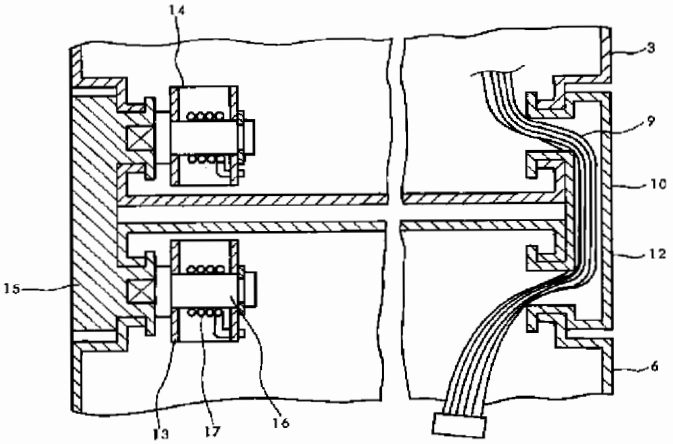
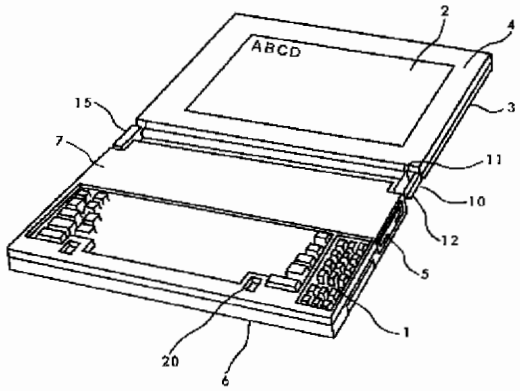


図４

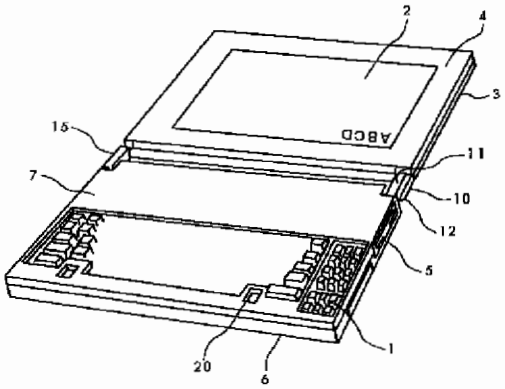
【図６】

図 6



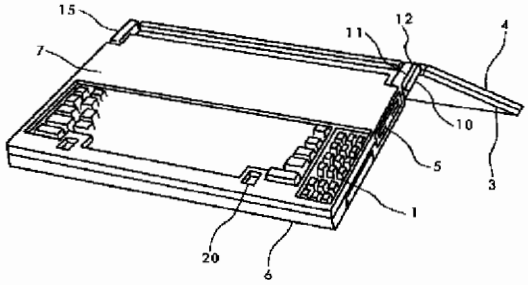
【図７】

図 7



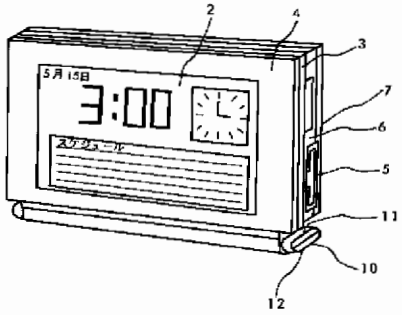
【図８】

図 8



【図１０】

図 10



【図１１】

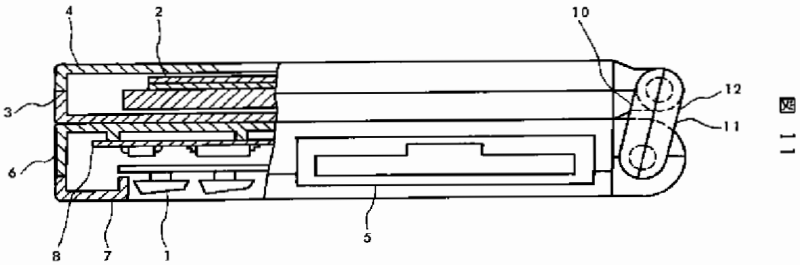
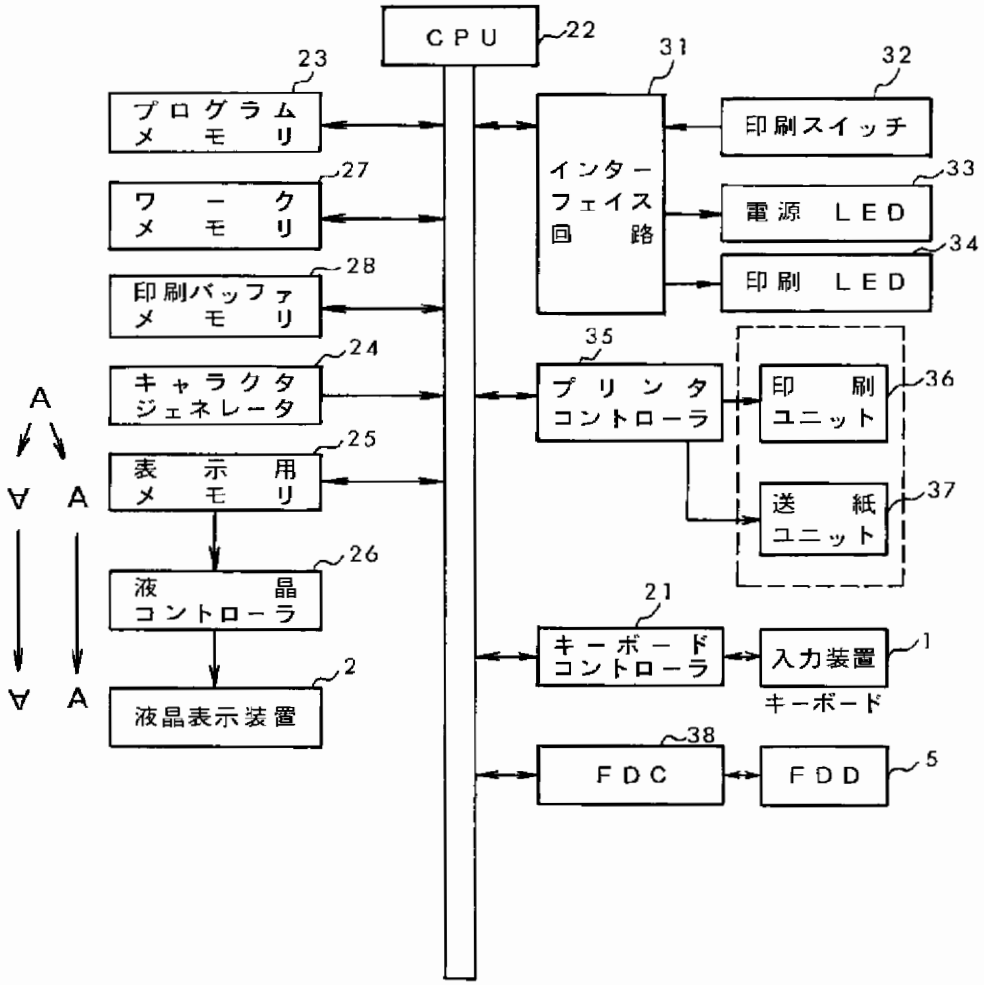


図１１

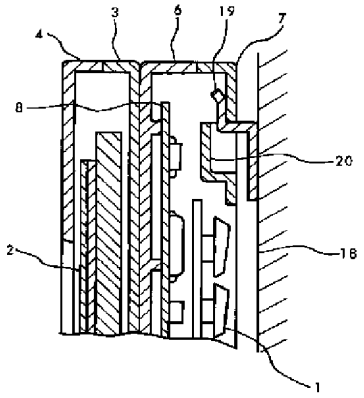
【図５】

図　５


CPU
22
23
プログラムメモリ
27
ワークメモリ
28
印刷バッファメモリ
24
キャラクタジェネレータ
25
表示用メモリ
26
液晶コントローラ
2
液晶表示装置
A
A
A
A
31
インターフェイス回路
32
印刷スイッチ
33
電源 LED
34
印刷 LED
35
プリンタコントローラ
36
印刷ユニット
37
送紙ユニット
21
キーボードコントローラ
1
入力装置
キーボード
38
FDC
FDD
5

【図１２】

図 12



フロントページの続き

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PATENT ABSTRACTS OF JAPAN

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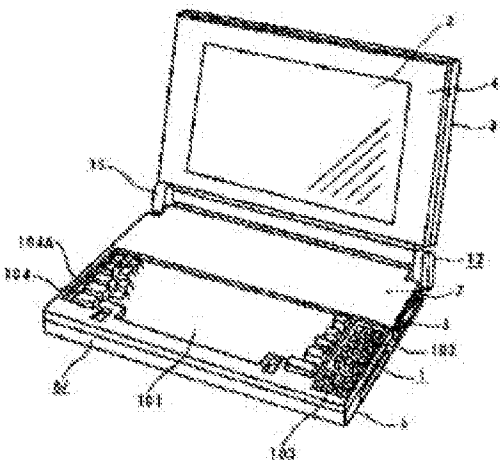
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(54) **INFORMATION PROCESSOR**

(57)Abstract:
PURPOSE: To have a conversation even with the confronted opposite party side while looking at a display screen by displaying an inverted character pattern on a rotary display device at a position symmetrical to an input position in terms of a point by the input signal of a display state change key.
CONSTITUTION: The lock hinges provided at the rear part of a main body lower case 6 and at the lower part of a display case 3 respectively are connected together by a hinge side arm 15. Then a liquid crystal display device 2 is supported rotatable at 180° or more to a main body case 6, and a screen is turned by 180° for display. Thus the character patterns are displayed via a CPU with operation of a display state change key 104A. Then the data on the characters, images, etc., are inverted and sent to a display memory by a character position changing means. At the same time, the position symmetrical to the position of a character supplied normally through a keyboard 1 in terms of a point is defined as a new character position. Thus it is possible to have a conversation even with the confronted opposite party side while looking at a display screen. Then an information processor of such a constitution can be applied to a conference.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]The present invention relates to the information processing equipment especially provided with the superficial liquid crystal display about information processing equipment like the Japanese word processor of a note form, or a personal computer.
[0002]
[Description of the Prior Art]while spreading through urgency as a personal youth in recent years -- one day -- this word word processor, a personal computer, etc. -- as the display device from portability -- a thin type -- a lightweight liquid crystal display has come to be used. This information processing equipment makes a keyboard the inside of body casing with the start as shown in JP,S61-160526,U, It is common to arrange external storages (an external storage is called below), such as a control board and a magnetic disk driving device, a power supply, etc., and to store and constitute a liquid crystal display in the LCD case which can open and close a liquid crystal display to body casing back.
[0003]
[Problem to be solved by the invention]The above-mentioned conventional information processing equipment has composition which is easy to use it for a one user. Although a display screen can also be opened by the one user to about 135 degree legible, it is constituted more so that it cannot open. Therefore, when it sits opposite with a partner on both sides of a desk, a partner will be in the state where a display screen cannot be seen. Therefore, I also get a partner to sit on a user side, that one display screen must be seen by two persons arises unavoidably, and it is troublesome, and also narrow. At the time of the storage of those other than the time of anticipated use, or storage, it was difficult to operate sufficiently the function which information processing equipment originally has. That is, even if the liquid crystal display was opened and it displayed the clock based on a timer function, etc., the body part became obstructive on the desk and was unsuitable for such use.
[0004]It enables it to talk while the main purpose of the present invention looks at a display screen mutually also with the partner who met, Setting it as the main purpose to make it possible to be able to proceed a meeting using this species information processing unit, the purpose of further others is to enable it to utilize functions, such as a clock display, at the time of the storage at the time of disuse other than the time of normal use.
[0005]
[Means for solving problem]The keyboard which has a letter key which the above-mentioned main purpose is provided by the body casing which carries out storing and holding of the control

board, and this body casing, and inputs alphabetic data or sign data, In the information processing equipment which has the memory storage stored to this body casing, and the superficial display screen rotatably attached behind body casing, The used machine style which supports the aforementioned display device pivotable at least 180 degree or more to body casing, A means to change into a handstand character pattern the character input by the aforementioned letter key, The character position input by the aforementioned letter key with the input signal of the character position alteration means changed into a point symmetry position, the displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, It is attained by making the display control which displays the handstand character pattern changed above on the new display position changed by the character position alteration means provide. When alphabetic data is memorized with the dot refreshing system, All the dots, such as a character input by the aforementioned letter key, with the input signal of the dot position alteration means changed into a point symmetry position, the displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, It is attained by making the display control displayed on the new display position which had all the dots changed by the aforementioned dot position alteration means changed provide.
[0006]The aforementioned used machine style supports the aforementioned display device pivotable 270 degree or more to body casing, and other purposes again. Form the periphery height of a keyboard more highly than the keytop at the time of key press Shimo, or the aforementioned used machine style supports the aforementioned display device pivotable 360 degree to body casing, and. In the state where constituted the back surface of the indicator case of a display device, and body casing in the mutual adhesion condition so that holding was possible, or combined the back surface of an indicator case and body casing with the mutual adhesion condition, and it was held, It is attained by constituting so that the rear end part of an indicator case and body casing may be made based as a bottom surface.
[0007]
[Function]All the dots which consisted of the present invention so that an indicator could be rotated 180 degree to body casing, and also a character might be used as a handstand pattern and a character position might be changed into a point symmetry position, or were input were changed into a point symmetry position.
Therefore, it is legible as a partner who met, and is displayed on the state of being easy to understand, and it acts so that it may close, if it is [a meeting using this species information processing unit] facilities.
Since it supposes that it is pivotable to 360 degree to body casing and temporary fastening is made possible at an angle of any angle, for example, 270 degree, and 360 degree, it acts so that it may become available considering this information processing equipment as display devices, such as a clock.
[0008]
[Working example]Hereafter, one working example of the composition of the present invention is described based on Drawings.
[0009]Fig.1 and Fig.2 are the slope figures and side views showing the busy condition figure of the Japanese word processor of a note form which is one working example of the present invention.
[0010]1 is a keyboard which has the letter key 101 which mainly inputs a character, a sign, etc., the ten key 102 which mainly inputs a number, the cursor key 103, or the function key 104. It is included in the indicator case 3 which can open and close the LCD liquid crystal indicator 2

which displays the input data input from this keyboard 1, and has wrap structure with the liquid crystal panel 4 in the front face of this indicator case. 5 is an external storage consisting of the magnetic disk driving device for memorizing the information which carried out the input editing, and interposes between the main part lower case 6 and the main part upper case 7. 67 is the body casing accomplished with the combination of these main part lower case 6 and the main part upper case 7. The aforementioned magnetic disk driving device is applied either a hard disk or floppy disk driving. Even if each various key provided on the keyboard 1 turns a keytop down as a structure which is not projected from the main part upper case 7, inverts the body casing 67 and installs it on a desk, A key is kept from acting carelessly, Or when projecting from the main part upper case 7 in order to carry out the stroke of the keyboard 1 largely and to improve operation touch, such as a keytop, and a keytop surface is used as a lower surface and it installs on a desk, the keytop operating physical force is considered so that a keytop may sink with main part weight. It is necessary to make it not carelessly inputted as mentioned above at this time. That is, it is absolute conditions for the relation between a keytop and a main part upper case to carry out the key press of the surface (periphery) height of a main part upper case, and to form more highly than the keytop at the time of input generating by lowering.

[0011]The control board 8 for controlling the whole equipment in the lower part of the keyboard 1 which inputs a character, a number, etc. to be shown in Fig.3 is arranged.

[0012]Insertion arrangement of the LCD cable 9 for connecting the control board 8 with the liquid crystal display 2 at rear one side is carried out into the main part lower case 6 used machine style 12 formed in hollow shape of the assembly of the arm 10 and the arm 11, and it enables it to correspond to rotation of a liquid crystal display on the other hand. To other one side of main part lower case 6 rear part, the main part side lock hinge 13 is provided, and the LCD side lock hinge 14 is provided in the lower part of the indicator case 3, and it has composition combined by the hinge side arm 15 manufactured with the aluminum dies casting article etc. in each of it. The main part side lock hinge 13 and the LCD side lock hinge 14 show the example adapting the wrapped-spring-clutch system using the interference of the shaft 16 and the coil spring 17. In addition, there is also a friction plate system which welds a wave spring by pressure, and adjustment of friction torque can be performed by adjusting the interference of a wave spring by this system. Thus, the composition of a lock hinge can choose and use the optimal thing with equipment. If it describes about the torque of a lock hinge, since there is much operation frequency which opens and closes a liquid crystal display as shown in Fig.2, the rotational torque of the main part side lock hinge 13 will have been largely set up to the LCD side lock hinge 14 at the time of normal use. That is, at the time of opening and closing of the usual liquid crystal display 4, the main part side lock hinge 13 and the hinge side arm 15 are constituted so that it may not operate.

[0013]By operating the specific key on the keyboard 1, it is constituted so that screen display displayed on the liquid crystal display 2, such as a character or an image, can be displayed on the state (handstand state) where 180 degrees rotated.

[0014]This is described with the circuit block figure shown in Fig.5. Via the keyboard controller 21, CPU22, a character pattern, and the character position alteration means (program memory) 23, in display information, the input from the keyboard 1 which is the usual input device is constituted by the character generator 24, for example as shown in "A." This data "A" is transmitted to the memory 25 for a display, and it is displayed as "A" on the screen of the liquid crystal display 2 via the liquid crystal controller 26. Although these are the screen display of the usual liquid crystal display 2, After 180 degrees has rotated a screen display (handstand state), in

order to display, By operating the displaying condition change key 104A of the function key 104 of the keyboard 1. The program configuration is carried out so that a handstand may be done like Fig.7 or Fig.5 in the data of a character, an image, etc. from the character generator 24 via CPU22 by the character pattern and the character position alteration means (program memory) 23 and it may transmit to the memory 25 for a display.This character pattern and the character position alteration means 23 have a function which calculates the point symmetry position of the position of the character input into usual, and is made into a new character position with the aforementioned keyboard simultaneously with handstand character creation. A character-pattern alteration means and a character position alteration means may be divided individually, and this character pattern and the character position alteration means 23 may be provided with them.
[0015]Although this character position change technique is a thing about the thing of the system which reads alphabetic data from the character generator 24, If it is in some which display all the alphabetic data with a dot refreshing system, the handstand displaying condition of the full screen can be acquired by changing all the dots of dot data, such as an input character, into a point symmetry position. That is, a labor can be reduced in the time and effort which creates a handstand character pattern for every character using a character generator.
[0016]In Fig.5, a work memory and 28 27 A printing buffer memory, 31 -- an interface circuit and 32 -- as for a printer controller and 36, power supply LED and 34 are [a paper feed unit and 38] floppy disk controllers a printing unit and 37 printing LED and 35 a printing switch and 33.
[0017]It describes next about the operating instructions of the equipment constituted as mentioned above.
[0018]Fig.1 and Fig.2 show the anticipated-use state of information processing equipment like the Japanese word processor of a notebook type, or a personal computer, and only the LCD side lock hinge 14 usually carries out rotating operation like the above-mentioned.Fig.6 rotates 180 degrees of liquid crystal displays 4, in order that an operator may describe the operating instructions of information processing equipment, a function, etc. to the 3rd person on the session of a meeting, or a desk, and it operates the main part side lock hinge 13 via the hinge side arm 15 so that it may become level on a desk. Further, in this state, by operating the displaying condition change key 104A of the keyboard 1, since Fig.7 makes legible display information, such as a character of the liquid crystal display 2, or an image, from the 3rd person who meets as described by ****, it enables a display in the handstand state. Since it is a structure pivotable 360 degrees to a body side device by linkage of the LCD side lock hinge 14, the hinge side arm 15, and the main part side lock hinge 13, It also becomes possible at the time of the description to the 3rd person to make a screen display legible much more by rotating to abbreviated 220 degree order like Fig.8. Usually, since the display screen of the liquid crystal display 2 has directivity, there is a surface very hard to see an operator and from said, but it can be made very legible by using an above-mentioned operation form.
[0019]Although the above describes an anticipated-use state, the example of installation at the time of disuse is described. Fig.9 is a calendar, a clock, and the thing (this is temporarily called a stationery function) that was made to display a schedule and was installed on the desk by rotating about 300 degrees of liquid crystal displays 2. Thereby, problems, such as storage at the time of disuse and storage, are also solved, and, moreover, various schedules etc. can be used effectively including a check on a desk. When desk installation is problematic, it enables it to use it also as a wall tapestry, in order to make an installation area small further at the time of disuse.
[0020]Namely, according to one working-example composition of the present invention, as an adhesion combination state of the back surface of the indicator case of a liquid crystal display,

and the back surface of body casing, As you can make it based on a desk like Fig.10, 360 degrees is rotated as shown in Fig.11 when you do not wish this, and shown in Fig.12.By engaging the engagement part (concave part) 20 provided before [keyboard 1] the main part upper case 7 with the hook 19 attached to the wall 18, it becomes possible to carry out display storage, maintaining a stationery function.
[0021]
[Effect of the Invention]The body casing which carries out storing and holding of the control board in the present invention, and the keyboard which has a letter key which is provided by this body casing and inputs alphabetic data or sign data, In information processing equipment which has memory storage stored to this body casing, and the superficial display screen rotatably attached behind body casing, A used machine style which supports the aforementioned display device pivotable at least 180 degree or more to body casing, A means to change into a handstand character pattern a character input by the aforementioned letter key, A character position input by the aforementioned letter key with an input signal of a character position alteration means changed into a point symmetry position, a displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, . [whether a display control which displays a handstand character pattern changed above on the new display position changed by a character position alteration means is made to provide, and] Or a used machine style which supports the aforementioned display device pivotable at least 180 degree or more to body casing, All the dots, such as a character input by the aforementioned letter key, with an input signal of a dot position alteration means changed into a point symmetry position, a displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, It constituted so that it might display on the new display position which had all the dots changed by the aforementioned dot position alteration means changed.
Therefore, it can talk looking at a display screen mutually also with a partner who met, and it changes that he can proceed a meeting using this species information processing unit possible.
It becomes possible to utilize functions, such as a clock display, at the time of the storage at the time of disuse other than the time of normal use.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application]The present invention relates to the information processing equipment especially provided with the superficial liquid crystal display about information processing equipment like the Japanese word processor of a note form, or a personal computer.

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PRIOR ART

[Description of the Prior Art]while spreading through urgency as a personal youth in recent years -- one day -- this word word processor, a personal computer, etc. -- as the display device from portability -- a thin type -- a lightweight liquid crystal display has come to be used. This information processing equipment makes a keyboard the inside of body casing with the start as shown in JP,S61-160526,U, It is common to arrange external storages (an external storage is called below), such as a control board and a magnetic disk driving device, a power supply, etc., and to store and constitute a liquid crystal display in the LCD case which can open and close a liquid crystal display to body casing back.

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EFFECT OF THE INVENTION

[Effect of the Invention]The body casing which carries out storing and holding of the control board in the present invention, and the keyboard which has a letter key which is provided by this body casing and inputs alphabetic data or sign data, In information processing equipment which has memory storage stored to this body casing, and the superficial display screen rotatably attached behind body casing, A used machine style which supports the aforementioned display device pivotable at least 180 degree or more to body casing, A means to change into a handstand character pattern a character input by the aforementioned letter key, A character position input by the aforementioned letter key with an input signal of a character position alteration means changed into a point symmetry position, a displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, . [whether a display control which displays a handstand character pattern changed above on the new display position changed by a character position alteration means is made to provide, and] Or a used machine style which supports the aforementioned display device pivotable at least 180 degree or more to body casing, All the dots, such as a character input by the aforementioned letter key, with an input signal of a dot position alteration means changed into a point symmetry position, a displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, It constituted so that it might display on the new display position which had all the dots changed by the aforementioned dot position alteration means changed.
Therefore, it can talk looking at a display screen mutually also with a partner who met, and it changes that he can proceed a meeting using this species information processing unit possible.
It becomes possible to utilize functions, such as a clock display, at the time of the storage at the time of disuse other than the time of normal use.

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TECHNICAL PROBLEM

[Problem to be solved by the invention]The above-mentioned conventional information processing equipment has composition which is easy to use it for a one user. Although a display screen can also be opened by the one user to about 135 degree legible, it is constituted more so that it cannot open. Therefore, when it sits opposite with a partner on both sides of a desk, a partner will be in the state where a display screen cannot be seen. Therefore, I also get a partner to sit on a user side, that one display screen must be seen by two persons arises unavoidably, and it is troublesome, and also narrow. At the time of the storage of those other than the time of

anticipated use, or storage, it was difficult to operate sufficiently the function which information processing equipment originally has. That is, even if the liquid crystal display was opened and it displayed the clock based on a timer function, etc., the body part became obstructive on the desk and was unsuitable for such use.
[0004]It enables it to talk while the main purpose of the present invention looks at a display screen mutually also with the partner who met, Setting it as the main purpose to make it possible to be able to proceed a meeting using this species information processing unit, the purpose of further others is to enable it to utilize functions, such as a clock display, at the time of the storage at the time of disuse other than the time of normal use.

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MEANS

[Means for solving problem]The keyboard which has a letter key which the above-mentioned main purpose is provided by the body casing which carries out storing and holding of the control board, and this body casing, and inputs alphabetic data or sign data, In the information processing equipment which has the memory storage stored to this body casing, and the superficial display screen rotatably attached behind body casing, The used machine style which supports the aforementioned display device pivotable at least 180 degree or more to body casing, A means to change into a handstand character pattern the character input by the aforementioned letter key, The character position input by the aforementioned letter key with the input signal of a Monju repositioning means to change into a point symmetry position, the displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, It is attained by making the display control which displays the handstand character pattern changed above on the new display position changed by the character position alteration means provide. When alphabetic data is memorized with the dot refreshing system, All the dots, such as a character input by the aforementioned letter key, with the input signal of the dot position alteration means changed into a point symmetry position, the displaying condition change key provided by the aforementioned keyboard, and a displaying condition change key, It is attained by making the display control displayed on the new display position which had all the dots changed by the aforementioned dot position alteration means changed provide.
[0006]The aforementioned used machine style supports the aforementioned display device pivotable 270 degree or more to body casing, and other purposes again. Form the periphery

height of a keyboard more highly than the keytop at the time under a key press, or the aforementioned used machine style supports the aforementioned display device pivotable 360 degree to body casing, and. In the state where constituted the back surface of the indicator case of a display device, and body casing in the mutual adhesion condition so that holding was possible, or combined the back surface of an indicator case and body casing with the mutual adhesion condition, and it was held, It is attained by constituting so that the rear end part of an indicator case and body casing may be made based as a bottom surface.

[Translation done.]

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OPERATION

[Function]All the dots which consisted of the present invention so that an indicator could be rotated 180 degree to body casing, and also a character might be used as a handstand pattern and a character position might be changed into a point symmetry position, or were input were changed into a point symmetry position.
Therefore, it is legible as a partner who met, and is displayed on the state of being easy to understand, and it acts so that it may close, if it is [a meeting using this species information processing unit] facilities.
Since it supposes that it is pivotable to 360 degree to body casing and temporary fastening is made possible at an angle of any angle, for example, 270 degree, and 360 degree, it acts so that it may become available considering this information processing equipment as display devices, such as a clock.

[Translation done.]

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EXAMPLE

[Working example]Hereafter, one working example of the composition of the present invention is described based on Drawings.
[0009]Fig.1 and Fig.2 are the slope figures and side views showing the busy condition figure of the Japanese word processor of a note form which is one working example of the present invention.
[0010]1 is a keyboard which has the letter key 101 which mainly inputs a character, a sign, etc., the ten key 102 which mainly inputs a number, the cursor key 103, or the function key 104. It is included in the indicator case 3 which can open and close the LCD liquid crystal indicator 2 which displays the input data input from this keyboard 1, and has wrap structure with the liquid crystal panel 4 in the front face of this indicator case. 5 is an external storage consisting of the magnetic disk driving device for memorizing the information which carried out the input editing, and interposes between the main part lower case 6 and the main part upper case 7. 67 is the body casing accomplished with the combination of these main part lower case 6 and the main part upper case 7. The aforementioned magnetic disk driving device is applied either a hard disk or floppy disk driving. Even if each various key provided on the keyboard 1 turns a keytop down as a structure which is not projected from the main part upper case 7, inverts the body casing 67 and installs it on a desk, A key is kept from acting carelessly, Or when projecting from the main part upper case 7 in order to carry out the stroke of the keyboard 1 largely and to improve operation touch, such as a keytop, and a keytop surface is used as a lower surface and it installs on a desk, the keytop operating physical force is considered so that a keytop may sink with main part weight. It is necessary to make it not carelessly inputted as mentioned above at this time. That is, it is absolute conditions for the relation between a keytop and a main part upper case to carry out the key press of the surface (periphery) height of a main part upper case, and to form more highly than the keytop at the time of input generating by lowering.
[0011]The control board 8 for controlling the whole equipment in the lower part of the keyboard 1 which inputs a character, a number, etc. to be shown in Fig.3 is arranged.
[0012]Insertion arrangement of the LCD cable 9 for connecting the control board 8 with the liquid crystal display 2 at rear one side is carried out into the main part lower case 6 used machine style 12 formed in hollow shape of the assembly of the arm 10 and the arm 11, and it enables it to correspond to rotation of a liquid crystal display on the other hand. To other one side of main part lower case 6 rear part, the main part side lock hinge 13 is provided, and the LCD side lock hinge 14 is provided in the lower part of the indicator case 3, and it has composition combined by the hinge side arm 15 manufactured with the aluminum dies casting article etc. in each of it. The main part side lock hinge 13 and the LCD side lock hinge 14 show the example adapting the wrapped-spring-clutch system using the interference of the shaft 16 and the coil spring 17. In addition, there is also a friction plate system which welds a wave spring by pressure, and adjustment of friction torque can be performed by adjusting the interference of a wave spring by this system. Thus, the composition of a lock hinge can choose and use the optimal thing with equipment. If it describes about the torque of a lock hinge, since there is much operation frequency which opens and closes a liquid crystal display as shown in Fig.2, the rotational torque of the main part side lock hinge 13 will have been largely set up to the LCD

side lock hinge 14 at the time of normal use. That is, at the time of opening and closing of the usual liquid crystal display 4, the main part side lock hinge 13 and the hinge side arm 15 are constituted so that it may not operate.
[0013]By operating the specific key on the keyboard 1, it is constituted so that screen display displayed on the liquid crystal display 2, such as a character or an image, can be displayed on the state (handstand state) where 180 degrees rotated.
[0014]This is described with the circuit block figure shown in Fig.5. Via the keyboard controller 21, CPU22, a character pattern, and the character position alteration means (program memory) 23, in display information, the input from the keyboard 1 which is the usual input device is constituted by the character generator 24, for example as shown in "A." This data "A" is transmitted to the memory 25 for a display, and it is displayed as "A" on the screen of the liquid crystal display 2 via the liquid crystal controller 26. Although these are the screen display of the usual liquid crystal display 2, After 180 degrees has rotated a screen display (handstand state), in order to display, By operating the displaying condition change key 104A of the function key 104 of the keyboard 1. The program configuration is carried out so that a handstand may be done like Fig.7 or Fig.5 in the data of a character, an image, etc. from the character generator 24 via CPU22 by the character pattern and the character position alteration means (program memory) 23 and it may transmit to the memory 25 for a display.This character pattern and the character position alteration means 23 have a function which calculates the point symmetry position of the position of the character input into usual, and is made into a new character position with the aforementioned keyboard simultaneously with handstand character creation. A character-pattern alteration means and a character position alteration means may be divided individually, and this character pattern and the character position alteration means 23 may be provided with them.
[0015]Although this character position change technique is a thing about the thing of the system which reads alphabetic data from the character generator 24, If it is in some which display all the alphabetic data with a dot refreshing system, the handstand displaying condition of the full screen can be acquired by changing all the dots of dot data, such as an input character, into a point symmetry position. That is, a labor can be reduced in the time and effort which creates a handstand character pattern for every character using a character generator.
[0016]In Fig.5, a work memory and 28 27 A printing buffer memory, 31 -- an interface circuit and 32 -- as for a printer controller and 36, power supply LED and 34 are [a paper feed unit and 38] floppy disk controllers a printing unit and 37 printing LED and 35 a printing switch and 33.
[0017]It describes next about the operating instructions of the equipment constituted as mentioned above.
[0018]Fig.1 and Fig.2 show the anticipated-use state of information processing equipment like the Japanese word processor of a notebook type, or a personal computer, and only the LCD side lock hinge 14 usually carries out rotating operation like the above-mentioned.Fig.6 rotates 180 degrees of liquid crystal displays 4, in order that an operator may describe the operating instructions of information processing equipment, a function, etc. to the 3rd person on the session of a meeting, or a desk, and it operates the main part side lock hinge 13 via the hinge side arm 15 so that it may become level on a desk. Further, in this state, by operating the displaying condition change key 104A of the keyboard 1, since Fig.7 makes legible display information, such as a character of the liquid crystal display 2, or an image, from the 3rd person who meets as described by ****, it enables a display in the handstand state. Since it is a structure pivotable 360 degrees to a body side device by linkage of the LCD side lock hinge 14, the hinge side arm 15, and the main part side lock hinge 13, It also becomes possible at the time of the description to the

3rd person to make a screen display legible much more by rotating to abbreviated 220 degree order like Fig.8. Usually, since the display screen of the liquid crystal display 2 has directivity, there is a surface very hard to see an operator and from said, but it can be made very legible by using an above-mentioned operation form.
[0019]Although the above describes an anticipated-use state, the example of installation at the time of disuse is described. Fig.9 is a calendar, a clock, and the thing (this is temporarily called a stationery function) that was made to display a schedule and was installed on the desk by rotating about 300 degrees of liquid crystal displays 2. Thereby, problems, such as storage at the time of disuse and storage, are also solved, and, moreover, various schedules etc. can be used effectively including a check on a desk. When desk installation is problematic, it enables it to use it also as a wall tapestry, in order to make an installation area small further at the time of disuse.
[0020]Namely, according to one working-example composition of the present invention, as an adhesion combination state of the back surface of the indicator case of a liquid crystal display, and the back surface of body casing, As you can make it based on a desk like Fig.10, 360 degrees is rotated as shown in Fig.11 when you do not wish this, and shown in Fig.12.By engaging the engagement part (concave part) 20 provided before [keyboard 1] the main part upper case 7 with the hook 19 attached to the wall 18, it becomes possible to carry out display storage, maintaining a stationery function.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]The busy condition slope figure of the Japanese word processor of a laptop form, or information processing equipment of a portable form like a personal computer which is one working example of the present invention.
[Drawing 2]Similarly it is a side view of a normal use state.
[Drawing 3]A cross sectional view when a liquid crystal display is closed.
[Drawing 4]The joint cross sectional view of a main part and an LCD case.
[Drawing 5]Circuit block figure.
[Drawing 6]The description constitutional diagram to the 3rd person.
[Drawing 7]The description constitutional diagram to the 3rd person.
[Drawing 8]The description constitutional diagram to the 3rd person.

[Drawing 9]The figure showing the example of installation to the desk top at the time of disuse.
[Drawing 10]The wall tapestry constitutional diagram at the time of disuse.
[Drawing 11]The cross sectional view at the time of rotating 360 degrees of liquid crystal displays.
[Drawing 12]The cross sectional view of a wall tapestry state at the time of use.
[Explanations of letters or numerals]
1 -- keyboard, 2 -- liquid crystal display screen, 3 -- indicator case, 5 -- external storage, 6 -- main part lower case, 7 -- main part upper case, 8 -- control board, 12 -- a used machine style and the 13 main-part side lock hinge, 14 -- the LCD side lock hinge, 15 -- the hinge side arm, 18 -- wall, 19 -- hook, 20 -- concave part, 23 -- character position alteration means, 67 -- body casing, 104 A -- displaying condition change key.

[Translation done.]

* NOTICES *

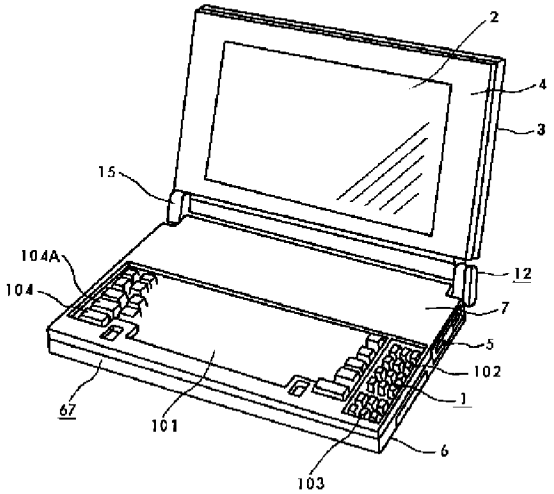
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DRAWINGS

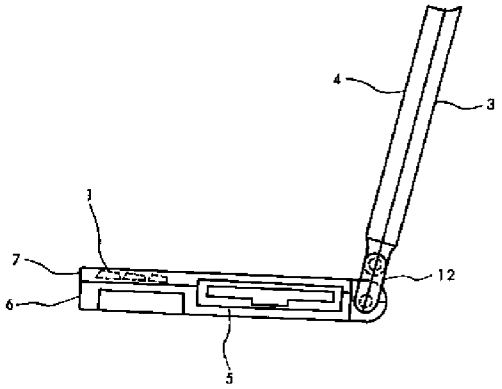
[Drawing 1]

図 1



[Drawing 2]

図 2



[Drawing 3]

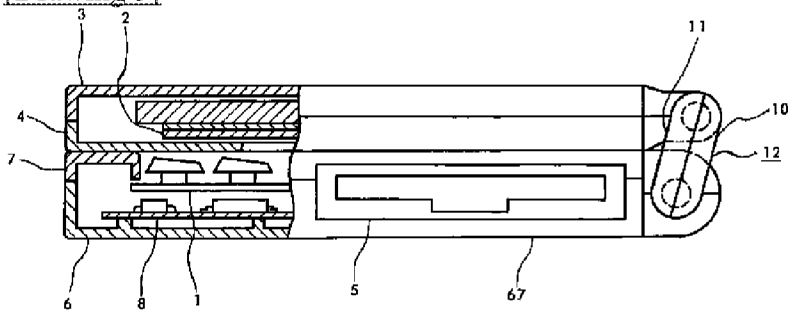
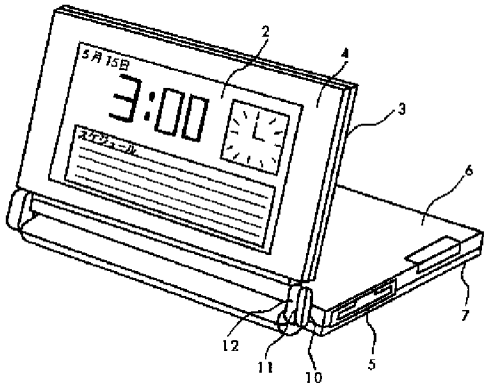


図 3

[Drawing 9]

図 9



[Drawing 4]

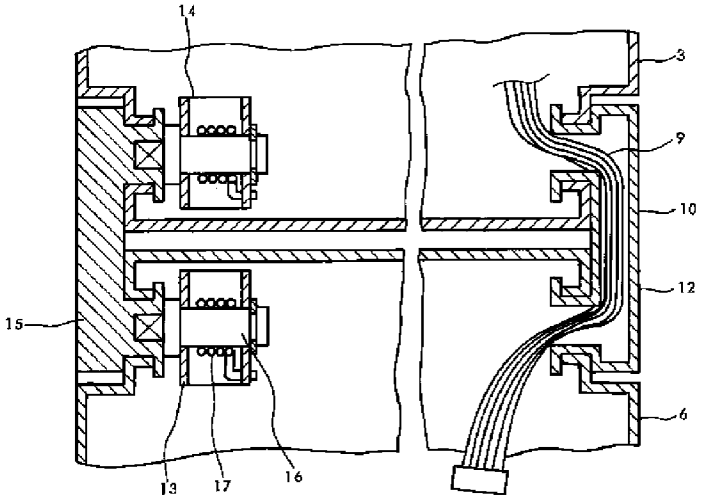
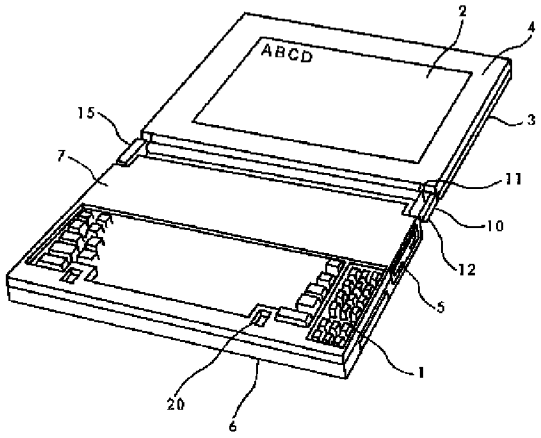


図 4

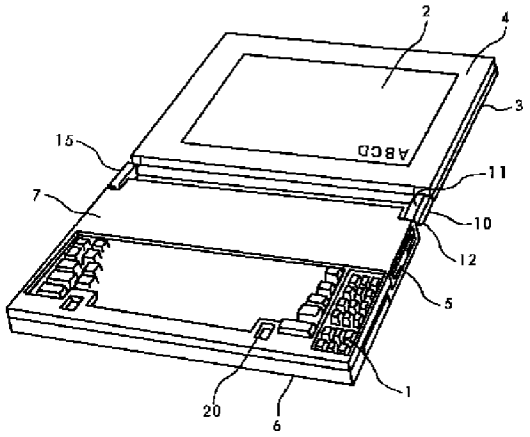
[Drawing 6]

図 6



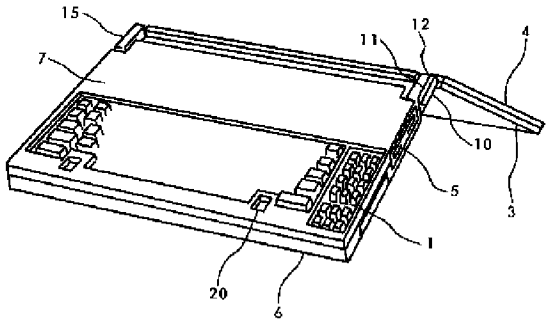
[Drawing 7]

図 7



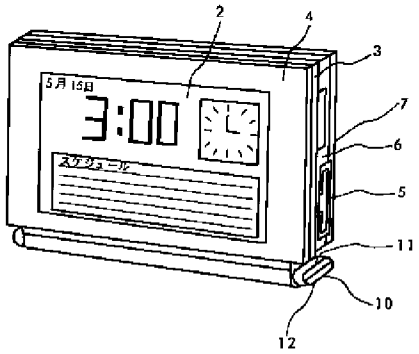
[Drawing 8]

図 8



[Drawing 10]

図 10



[Drawing 11]

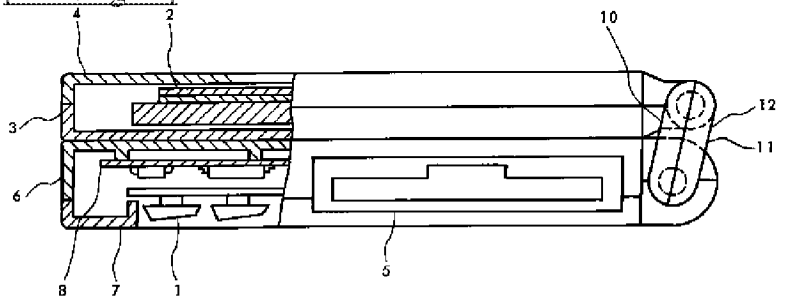
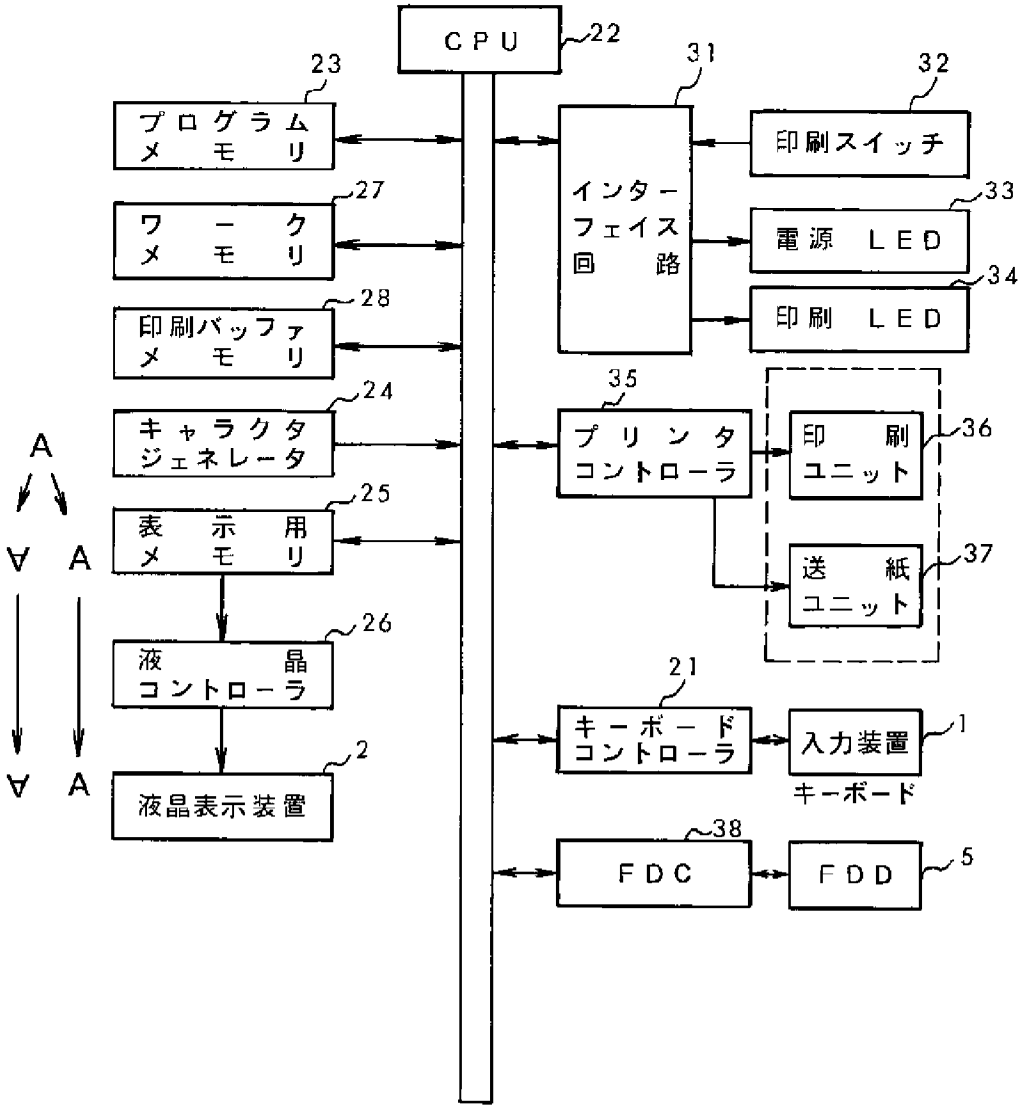


図 11

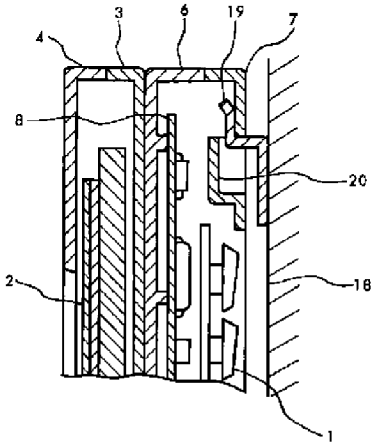
[Drawing 5]

図　5



[Drawing 12]

図 12



[Translation done.]

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審査請求　未請求　請求項の数１　ＯＬ　（全　４　頁）

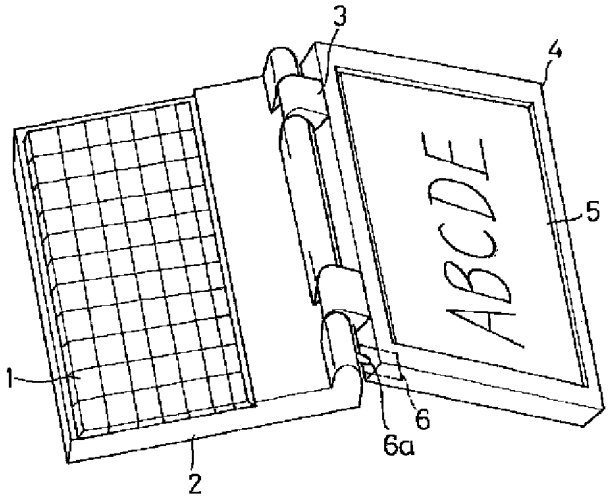
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(54)【発明の名称】　携帯型コンピュータ

(57)【要約】
【目的】　ディスプレイを大きく開くとその表示内容が１８０°回転して表示され、対面の相手側から正常な立像として見えるようにし、プレゼンテーションをしやすくした携帯型コンピュータを実現する。
【構成】　ディスプレイが蓋側に取り付けられ、キーボードが本体側に取り付けられ、開閉自在となった携帯型コンピュータであって、ディスプレイの開き角度が所定値以上になったことを検出する開き角度センサと、開き角度センサがディスプレイの開き角度が所定値以上となったのを検出したときに、ディスプレイの表示を１８０°回転させる表示処理部とを備えている。



【特許請求の範囲】
【請求項１】　ディスプレイが蓋側に取り付けられ、キーボードが本体側に取り付けられ、開閉自在となった携帯型コンピュータにおいて、
前記ディスプレイの開き角度が所定値以上になったことを検出する開き角度センサと、
前記開き角度センサがディスプレイの開き角度が所定値以上となったのを検出したときに、前記ディスプレイの表示を１８０°回転させる表示処理部とを備えて成る携帯型コンピュータ。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】この発明はラップトップコンピュータ、ノートブック型コンピュータ、サブノート型コンピュータなどの携帯型コンピュータに関する。
【０００２】
【従来の技術】従来から、ラップトップコンピュータ、ノートブック型コンピュータ、サブノート型コンピュータなどの携帯型コンピュータが広く普及しており、客先に商談に行くときに携帯して行き、商談相手に携帯型コンピュータのディスプレイでプレゼンテーションを行ない、商談を進める形態で利用される機会も多い。
【０００３】
【発明が解決しようとする課題】ところが、従来の携帯型コンピュータでは、応接室などで対面して商談するような場合、対面の席に座っている相手にディスプレイの表示を見てもらうためにはコンピュータ本体を相手側に向くように回転させたり、相手に使用者側に来てもらっていっしょに見たりする必要があり、コンピュータを回転させて相手に見てもらっている場合には使用者がキーボードを操作してディスプレイの表示を変化させる必要があればもう一度コンピュータを使用者側に向け直す手間が掛かり、またいっしょに同じ向きに座り直してもらうのも客人相手では面倒であり、対面しながら円滑に商談を進める点で不自由があった。
【０００４】この発明はこのような従来の問題点に鑑みてなされたもので、ディスプレイを大きく開いて対面している相手に見えるようにすれば、ディスプレイの表示内容が自動的に１８０°回転して相手から見て正常な立像で見えるようにできる携帯型コンピュータを提供することを目的とする。
【０００５】
【課題を解決するための手段】この発明は、ディスプレイが蓋側に取り付けられ、キーボードが本体側に取り付けられ、開閉自在となった携帯型コンピュータにおいて、ディスプレイの開き角度が所定値以上になったことを検出する開き角度センサと、開き角度センサがディスプレイの開き角度が所定値以上となったのを検出したときに、ディスプレイの表示を１８０°回転させる表示処理部とを備えたものである。
【０００６】
【作用】この発明の携帯型コンピュータでは、対面に座わって話しているときに相手方にディスプレイの表示を見せる必要が生じたような場合、ディスプレイの取り付けられた蓋側を大きく開いて相手に見せるようにすれば、開き角度センサがそれを検出し、これによって表示処理部がそれまでのディスプレイの表示を１８０°回転させて表示するようになる。
【０００７】したがって、対面の相手にディスプレイを大きく開いて正常な表示を見せながら、使用者は反対側から本体のキーボードを通常の姿勢で操作するという使い方が可能となる。
【０００８】
【実施例】以下、この発明の実施例を図に基づいて詳説する。図１及び図２はこの発明の一実施例の携帯型コンピュータの外観を示しており、キーボード１の備えられた本体２と、この本体２に対してヒンジ３によって開閉自在に連結された蓋体４と、蓋体４に取り付けられたディスプレ５から構成されている。そして蓋体４のヒンジ側端面には蓋体４を１８０°以上に大きく開いたときにその突起部６ａが本体２の背面に当接してスイッチ動作する開き角度センサ６が設けられている。
【０００９】図３はこの実施例の携帯型コンピュータの回路構成を示しており、通常のコンピュータの構成と同じように中央演算処理装置（ＣＰＵ）７と、主メモリ８と、キーボード１からの入力操作信号をＣＰＵに対して入力処理する入力処理部９と、ＣＰＵ７からの表示データをディスプレイ５に表示させる制御を行なう表示処理部１０と、ハードディスク、フロッピーディスクなどの外部記憶装置１１を備えている。
【００１０】入力処理部９に対しては、キーボード１を接続すると共に、開き角度センサ６のセンシング信号も入力するようになっている。この開き角度センサ６は蓋体４を１８０°以上に大きく開いたときに突起部６ａが没入してスイッチ６ｂを閉じ、これによって開き角度センシング信号を入力処理部９に与える構成である。
【００１１】なお、開き角度センサ６はこの構成のものに限定されず、広く開き角度を検出する機械的手段や電気的手段を利用することができる。
【００１２】ＣＰＵ７は開き角度センサ６から開き角度センシング信号が入力されると、表示データを表示処理部１０に出力している場合に、表示データと共に１８０°回転表示指令信号も出力し、これを受けて表示処理部１０はディスプレイ５の表示をそれまでの表示状態から１８０°回転させた状態、つまり天地を逆転させた表示状態に変化させるようになっている。
【００１３】次に、上記構成の携帯型コンピュータの動作について説明する。通常の使用状態は図１に示すように蓋体４を９０°～１２０°程度に開き、ディスプレイ５の表示を見ながら、同じ向きで本体２上のキーボード

１を操作する。

【００１４】しかしながら、客先に持ち込んでプレゼンテーションを行なうような場合には、通常、図４（ａ）に示すように使用者Ａと相手Ｂとは対面座して商談を進めるので、使用者Ａは図１に示す状態、つまりコンピュータＣの蓋体４をその中のディスプレイ５が自分の方から見える角度に開いた状態で操作し、所望の内容が表示できれば図４（ｂ）に示すように蓋体４を１８０°以上に大きく開いて相手Ｂにディスプレイの表示を見せるようにする。

【００１５】この状態では、図２に示すように、開き角度センサ６が所定角度以上に大きく開いたことを示すセンシング信号を入力処理部９に入力し、入力処理部９はＣＰＵ７にその信号を与える。

【００１６】そこで、ＣＰＵ７はそれまでの表示状態から１８０°回転させて表示させる指令を表示データと共に表示処理部１０に出力し、表示処理部１０はディスプレイ５に表示データを１８０°回転させた状態で表示させる。したがって、対面に座っている相手Ｂはディスプレイ５の表示を通常の立像となった状態で見ることができるようになる。しかもこの場合、使用者Ａはそれまでと同じ向きに座ったまま、キーボード１を操作して入力を行ない、ディスプレイ５の表示内容を変化させることができることになる。

【００１７】

【発明の効果】以上のようにこの発明によれば、通常、対面して相手方と商談を行なうが、その対面座のままコンピュータのディスプレイを相手に見える角度まで大きく開くだけで相手に正常な立像状態で表示内容を見せることができ、コンピュータを客先に持ち込み、対面に座りながら話し合い、その後、コンピュータを開いてプレゼンテーションを始めるような場合、従来のように相手に席を変わってもらったり、使用者が相手と同じ向きの席に変わったりして同じ向きからディスプレイを見、あるいはコンピュータ自体を相手側に回転させてディスプレイを見てもらうような面倒な作業をする必要がなくなり、しかも相手にディスプレイの表示を見せながら対面座からキーボードを通常と同じ姿勢で操作して表示内容を変化させることもでき、使い勝手が大幅に向上する。

【図面の簡単な説明】

【図１】この発明の一実施例の通常の使用状態の斜視図。

【図２】上記実施例のディスプレイを大きく開いた状態での表示状態を示す斜視図。

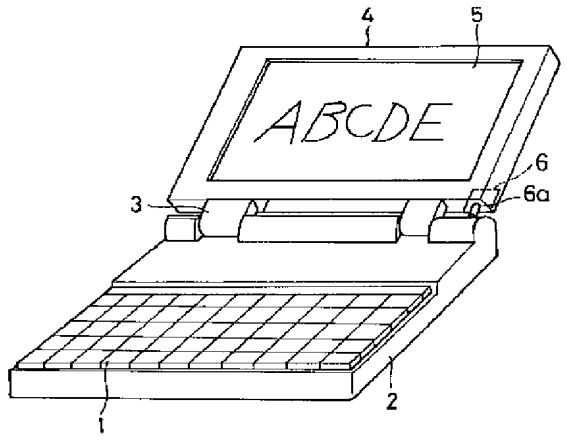
【図３】上記実施例の回路ブロック図。

【図４】上記実施例の使用説明図。

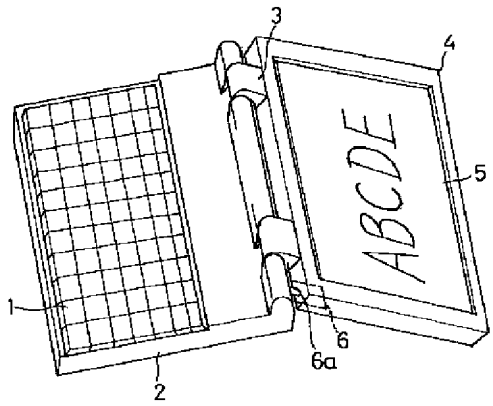
【符号の説明】

１　キーボード
２　本体
３　ヒンジ
４　蓋体
５　ディスプレイ
６　開き角度センサ
６ａ　突起部
６ｂ　スイッチ
７　ＣＰＵ
８　主メモリ
９　入力処理部
１０　表示処理部
１１　外部記憶装置
Ａ　使用者
Ｂ　相手
Ｃ　コンピュータ

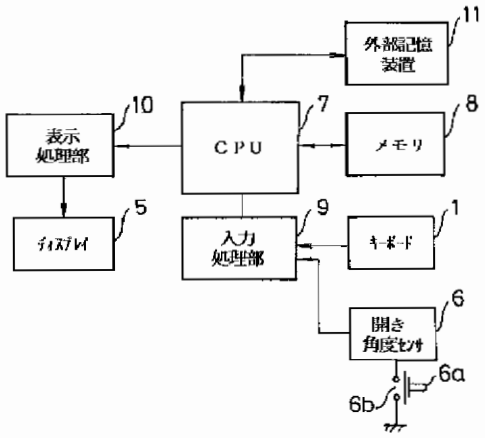
【図１】



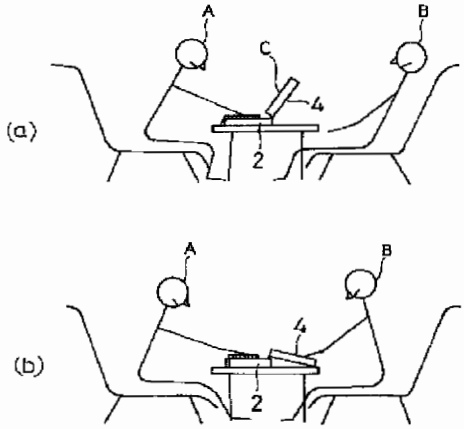
【図２】



【図３】


外部記憶装置
11
表示処理部
10
CPU
7
メモリ
8
ディスプレイ
5
入力処理部
9
キーボード
1
開き角度センサ
6
6a
6b

【図４】


(a)
A
B
C
4
2
(b)
A
B
4
2

PATENT ABSTRACTS OF JAPAN

(11)Publication number : **08-179851**
(43)Date of publication of application : **12.07.1996**

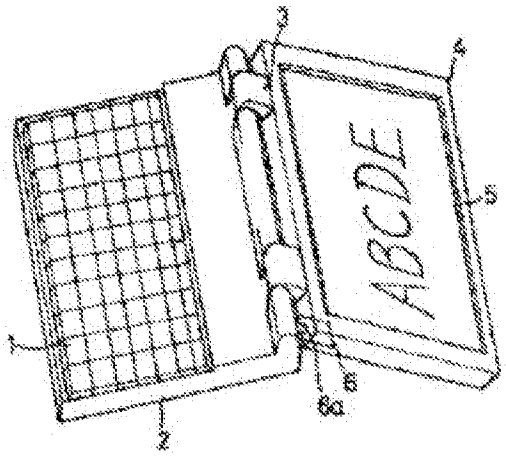
(51)Int.Cl. G06F 1/16

(21)Application number : **06-322621**
(22)Date of filing : **26.12.1994**

(71)Applicant : **TOSHIBA CORP**
(72)Inventor : **TAKAGI SHIGEO**

(54) **PORTABLE COMPUTER**

(57)Abstract:
PURPOSE: To observe displayed contents on a display as a normal erected image for a facing party by rotating the display on the display just at a specified angle when the opening angle of the display gets larger than a prescribed value.
CONSTITUTION: When a user and the party have a business talk while facing each other, the computer is operated in the state of opening a lid body 4 at a certain angle so that a display 5 in it can be observed from the user side and when desired contents are displayed, the lid body 4 is widely opened more than 180° so that the party can observe the display on the display. In such a state, an opening angle sensor 6 inputs a sensing signal showing that the cover is widely opened more than the prescribed angle to an input processing part, and this input processing part applies that signal to the CPU. Then, the CPU outputs a command for displaying data while rotating the cover at 180° from the display state up to the moment to a display processing part together with display data, and the display processing part displays the display data on the display 5 in the state of rotating it at 180°.



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CLAIMS

[Claim(s)]
[Claim 1]In a portable computer whose opening and closing a display was attached to the lid side, a keyboard was attached to the main part side, and were attained,
A portable computer comprising:
A difference angle sensor which detects that a difference angle of the aforementioned display became beyond a specified value.
A display processing part which rotates 180 degrees of displays of the aforementioned display when the aforementioned difference angle sensor detects that a difference angle of a display became beyond a specified value.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to portable computers, such as a laptop computer, a notebook type computer, and a subnote type computer.
[0002]

[Description of the Prior Art]The laptop computer from the former, a notebook type computer, There are also many opportunities used with the form which carries and goes when portable computers, such as a subnote type computer, have spread widely and go to a customer to have a business talk, gives a business talk partner a presentation on the display of a portable computer, and can proceed a business talk.
[0003]
[Problem to be solved by the invention]In however, the case so that it may meet and have a business talk in the conventional portable computer at a reception room etc. In order to get a partner sitting on the seat of a confrontation to look at the display of a display, rotate a computer body so that the other party may be turned to, or, It takes the time and effort which will turn a computer to the user side once again if a user needs to operate a keyboard and needs to change the display of a display when I get a partner to come to the user side, it is necessary to see together, a computer is rotated and I get the partner seeing, While it is troublesome that I also have you sit up straight in the same direction together and it met in the visitor partner, there was inconvenience at the point which can proceed a business talk smoothly.
[0004]If it is made visible [this invention] to the partner who was made in view of such a conventional problem, opened the display largely, and has met, It aims at providing the portable computer where 180 degrees of display information of a display rotate automatically, sees from a partner, and can be in sight with a normal statue.
[0005]
[Means for solving problem]A display is attached to the lid side, a keyboard is attached to the main part side, and the present invention is characterized by that a portable computer whose opening and closing were attained comprises the following.
A difference angle sensor which detects that a difference angle of a display became beyond a specified value.
A display processing part which rotates 180 degrees of displays of a display when a difference angle sensor detects that a difference angle of a display became beyond a specified value.

[0006]
[Function]If the lid side with which the display was attached is opened largely and it is made to show it as a partner when the display of a display needs to be shown to the other party, while telling [the portable computer of this invention] **** to the confrontation, A difference angle sensor detects it, and by this, a display processing part rotates 180 degrees and comes to display the display of the display till then.
[0007]Therefore, a user becomes possible [the usage of operating the keyboard of a main part with the usual attitude] from an opposite side, opening a display as the partner of a confrontation largely and showing him a normal display.
[0008]
[Working example]Hereafter, the working example of this invention is explained in full detail based on a figure. Fig.1 and Fig.2 show the appearance of the portable computer of one working example of this invention, and comprise the display 5 attached to the main part 2 equipped with the keyboard 1, the lid 4 connected by the hinges 3 to this main part 2 enabling free opening and closing, and the lid 4.And when the lid 4 is largely opened to not less than 180 degrees at the hinge side edge of the lid 4, the difference angle sensor 6 in which the protruding part 6a abuts and carries out switching to the back face of the main part 2 is provided.
[0009]Fig.3 shows the circuit configuration of the portable computer of this working example,

and like the composition of the usual computer The central processing unit (CPU) 7, It has the external storages 11, such as the main memory 8, the input processing part 9 which carries out the input process of the alter operation signal from the keyboard 1 to CPU, the display processing part 10 which performs control for which the displayed data from CPU7 are displayed on the display 5, a hard disk, a floppy disk.
[0010]The keyboard 1 is connected to the input processing part 9, and the sensing signal of the difference angle sensor 6 is also input. This difference angle sensor 6 is the composition of the protruding part 6a being absorbed and closing the switch 6b when the lid 4 is largely opened to not less than 180 degrees, and this opening, and giving an angle sensing signal to the input processing part 9.
[0011]The difference angle sensor 6 is not limited to the thing of this composition, but can use the mechanical means and electric means which detect a difference angle widely.
[0012]If CPU7 is opened from the difference angle sensor 6 and an angle sensing signal is input, When displayed data are being outputted to the display processing part 10, a 180-degree rotational display command signal is also outputted with displayed data, In response, the display processing part 10 is changed to the state, i.e., the displaying condition which reversed top and bottom, where 180 degrees of displays of the display 5 were rotated from the displaying condition till then.
[0013]Next, it describes about operation of the portable computer of the above-mentioned composition. An anticipated-use state opens the lid 4 to 90 degrees - about 120 degrees, as shown in Fig.1, and it operates the keyboard 1 on the main part 2 by the same direction, looking at the display of the display 5.
[0014]However, in carrying into a customer and performing a presentation. Usually, since the user A and the partner B do a confrontation seat and can proceed a business talk as shown in Fig.4 (a), The user A operates it in the state shown in Fig.1, i.e., the state where the lid 4 of the computer C was opened to the angle at which the display 5 in it appears from its direction, If the desired contents can be displayed, as shown in Fig.4 (b), the lid 4 will be largely opened to not less than 180 degrees, and the display of a display will be shown to the partner B.
[0015]In this state, as shown in Fig.2, the sensing signal which shows that the difference angle sensor 6 opened largely more than the predetermined angle is input into the input processing part 9, and the input processing part 9 gives that signal to CPU7.
[0016]Then, CPU7 outputs the instructions which rotate 180 degrees and are displayed from the displaying condition till then to the display processing part 10 with displayed data, and the display processing part 10 is displayed in the state where the display 5 was made to rotate 180 degrees of displayed data. Therefore, the partner B sitting on the confrontation can see the display of the display 5 now in the state where it became the usual statue. And while the user A has sat on the same direction even with it in this case, it can input by the ability to operate the keyboard 1, and the display information of the display 5 can be made to change.
[0017]
[Effect of the Invention]As mentioned above, according to this invention, meet, and usually perform a business talk with the other party, but. Display information can be shown to a partner in the state of a normal statue only by opening largely to the angle which is visible against the display of a computer with the confrontation seat, Carry a computer into a customer, discuss, sitting on a confrontation, and After that, When opening a computer and beginning a presentation, get a seat to change to a partner like before, or. A user changes to the seat of a partner and the same direction, and looks at a display from the same direction, It becomes

unnecessary or to do troublesome work which makes the other party rotate the computer itself and has a display seen. And a keyboard can be operated with the same attitude as usual from a confrontation seat, display information can also be changed, showing a partner the display of a display, and usability improves substantially.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application]This invention relates to portable computers, such as a laptop computer, a notebook type computer, and a subnote type computer.

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PRIOR ART

[Description of the Prior Art]The laptop computer from the former, a notebook type computer, There are also many opportunities used with the form which carries and goes when portable computers, such as a subnote type computer, have spread widely and go to a customer to have a business talk, gives a business talk partner a presentation on the display of a portable computer,

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EFFECT OF THE INVENTION

[Effect of the Invention]As mentioned above, according to this invention, meet, and usually perform a business talk with the other party, but. Display information can be shown to a partner in the state of a normal statue only by opening largely to the angle which is visible against the display of a computer with the confrontation seat, Carry a computer into a customer, discuss, sitting on a confrontation, and After that, When opening a computer and beginning a presentation, get a seat to change to a partner like before, or. A user changes to the seat of a partner and the same direction, and looks at a display from the same direction, It becomes unnecessary or to do troublesome work which makes the other party rotate the computer itself and has a display seen. And a keyboard can be operated with the same attitude as usual from a confrontation seat, display information can also be changed, showing a partner the display of a display, and usability improves substantially.

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TECHNICAL PROBLEM

[Problem to be solved by the invention]In however, the case so that it may meet and have a business talk in the conventional portable computer at a reception room etc. In order to get a partner sitting on the seat of a confrontation to look at the display of a display, rotate a computer body so that the other party may be turned to, or, It takes the time and effort which will turn a computer to the user side once again if a user needs to operate a keyboard and needs to change the display of a display when I get a partner to come to the user side, it is necessary to see together, a computer is rotated and I get the partner seeing, While it is troublesome that I also have you sit up straight in the same direction together and it met in the visitor partner, there was inconvenience at the point which can proceed a business talk smoothly.
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MEANS

[Means for solving problem]A display is attached to the lid side, a keyboard is attached to the main part side, and the present invention is characterized by that a portable computer whose opening and closing were attained comprises the following.
A difference angle sensor which detects that a difference angle of a display became beyond a specified value.
A display processing part which rotates 180 degrees of displays of a display when a difference angle sensor detects that a difference angle of a display became beyond a specified value.

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OPERATION

[Function]If the lid side with which the display was attached is opened largely and it is made to show it as a partner when the display of a display needs to be shown to the other party, while telling [the portable computer of this invention] **** to the confrontation, A difference angle sensor detects it, and by this, a display processing part rotates 180 degrees and comes to display the display of the display till then.
[0007]Therefore, a user becomes possible [the usage of operating the keyboard of a main part with the usual attitude] from an opposite side, opening a display as the partner of a confrontation largely and showing him a normal display.

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EXAMPLE

[Working example]Hereafter, the working example of this invention is explained in full detail based on a figure. Fig.1 and Fig.2 show the appearance of the portable computer of one working example of this invention, and comprise the display 5 attached to the main part 2 equipped with the keyboard 1, the lid 4 connected by the hinges 3 to this main part 2 enabling free opening and closing, and the lid 4.And when the lid 4 is largely opened to not less than 180 degrees at the hinge side edge of the lid 4, the difference angle sensor 6 in which the protruding part 6a abuts and carries out switching to the back face of the main part 2 is provided.
[0009]Fig.3 shows the circuit configuration of the portable computer of this working example, and like the composition of the usual computer The central processing unit (CPU) 7, It has the external storages 11, such as the main memory 8, the input processing part 9 which carries out the input process of the alter operation signal from the keyboard 1 to CPU, the display processing part 10 which performs control for which the displayed data from CPU7 are displayed

on the display 5, a hard disk, a floppy disk.
[0010]The keyboard 1 is connected to the input processing part 9, and the sensing signal of the difference angle sensor 6 is also input. This difference angle sensor 6 is the composition of the protruding part 6a being absorbed and closing the switch 6b when the lid 4 is largely opened to not less than 180 degrees, and this opening, and giving an angle sensing signal to the input processing part 9.
[0011]The difference angle sensor 6 is not limited to the thing of this composition, but can use the mechanical means and electric means which detect a difference angle widely.
[0012]If CPU7 is opened from the difference angle sensor 6 and an angle sensing signal is input, When displayed data are being outputted to the display processing part 10, a 180-degree rotational display command signal is also outputted with displayed data, In response, the display processing part 10 is changed to the state, i.e., the displaying condition which reversed top and bottom, where 180 degrees of displays of the display 5 were rotated from the displaying condition till then.
[0013]Next, it describes about operation of the portable computer of the above-mentioned composition. An anticipated-use state opens the lid 4 to 90 degrees - about 120 degrees, as shown in Fig.1, and it operates the keyboard 1 on the main part 2 by the same direction, looking at the display of the display 5.
[0014]However, in carrying into a customer and performing a presentation. Usually, since the user A and the partner B do a confrontation seat and can proceed a business talk as shown in Fig.4 (a), The user A operates it in the state shown in Fig.1, i.e., the state where the lid 4 of the computer C was opened to the angle at which the display 5 in it appears from its direction, If the desired contents can be displayed, as shown in Fig.4 (b), the lid 4 will be largely opened to not less than 180 degrees, and the display of a display will be shown to the partner B.
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]The perspective view of an anticipated-use state of one working example of this invention.
[Drawing 2]The perspective view showing the displaying condition in the state where the display of the above-mentioned working example was opened largely.
[Drawing 3]The circuit block figure of the above-mentioned working example.
[Drawing 4]The use explanatory view of the above-mentioned working example.
[Explanations of letters or numerals]
1 Keyboard
2 Main part
3 Hinge
4 Lid
5 Display
6 Difference angle sensor
6a Protruding part
6b Switch
7 CPU
8 Main memory
9 Input processing part
10 Display processing part
11 External storage
A User
B Partner
C Computer

[Translation done.]

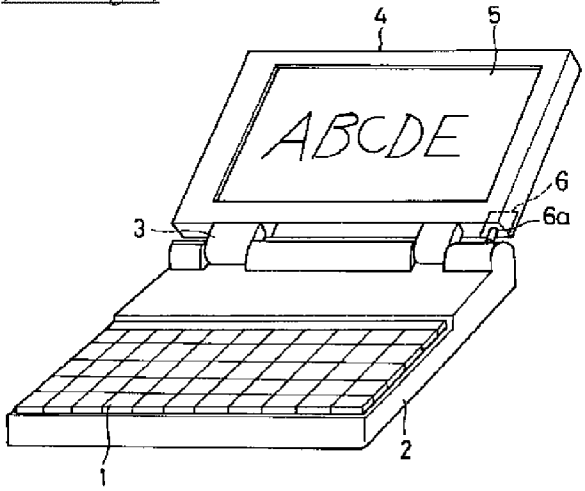
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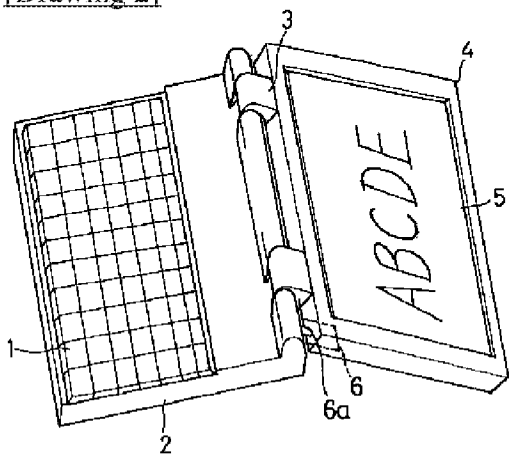
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

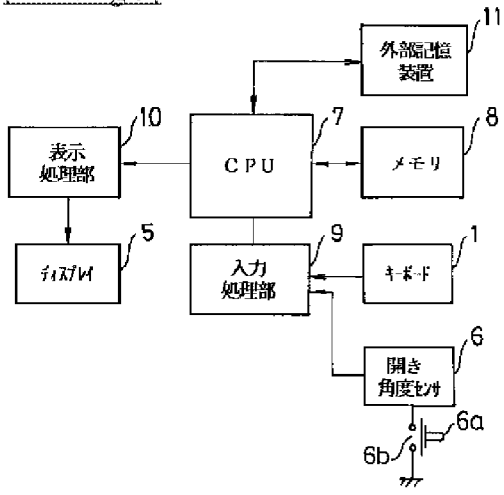
[Drawing 1]



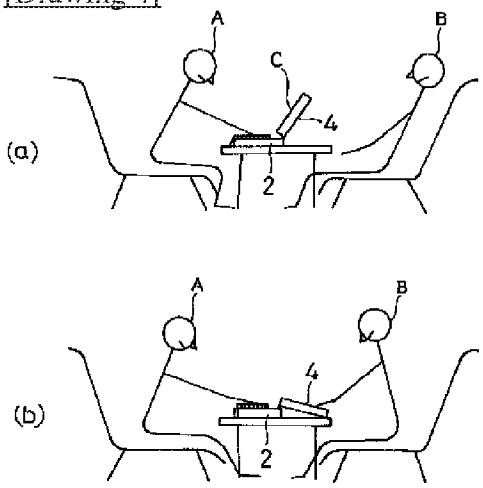
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

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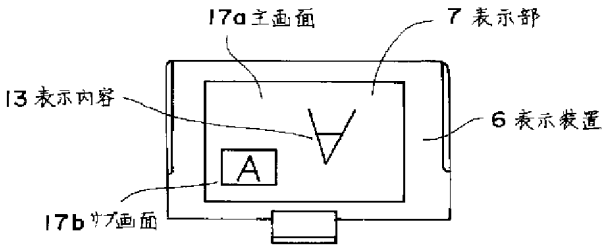
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(54)【発明の名称】　ポータブルコンピュータ

(57)【要約】
【目的】ポータブルコンピュータにおいて、単一の表示装置を用いて、コンピュータの操作者、および操作者と対面して位置する人物が、表示部に表示された表示内容を対面する２方向から同時に読み取ることができるようにする。
【構成】ポータブルコンピュータの単一の表示部に２個の画面を設け、各々の画面に表示された文字、グラフ、図形等の表示内容を、互いに１８０°反転した方向に表示させる。２画面のうちの一方の画面はポータブルコンピュータのキーボードの操作者が、他の一方の画面は操作者と対面して位置する人物が、表示内容を目視できるようにする。

［図　１］



Petitioners - Exhibit 1002, page 179

【特許請求の範囲】
【請求項１】１つの表示部を第１の画面と第２の画面に分割し、さらに上記第２の画面の表示方向を第１の画面の表示方向に対して反転させる手段を備えていることを特徴とするポータブルコンピュータ。
【請求項２】上記第１の画面の表示内容の表示方向と第２の画面の表示内容の表示方向とを入換る手段を備えていることを特徴とする請求項１記載のポータブルコンピュータ。
【請求項３】上記第２の画面を表示する表示部上の位置を、任意の位置に移動させる手段を備えていることを特徴とする請求項１記載のポータブルコンピュータ。
【請求項４】上記第２の画面の大きさを可変する手段を備えていることを特徴とする請求項１記載のポータブルコンピュータ。
【請求項５】上記第２の画面に上記第１の画面の表示内容全体を縮少して表示する手段を備えていることを特徴とする請求項１記載のポータブルコンピュータ。
【請求項６】上記第２の画面に上記第１の画面の表示内容の一部を第１の画面と同一の大きさで表示する手段を備えていることを特徴とする請求項１記載のポータブルコンピュータ。
【請求項７】上記第２の画面を表示するか否かを選択する手段を備えていることを特徴とする請求項１記載のポータブルコンピュータ。
【請求項８】ディスプレイカバーとボトムケースを揺動可能に接続するヒンジ機構を備え、上記ヒンジ機構は、キーボード等の操作パネルを覆う第１の位置と、操作者が表示部を目視しながら、キーボードを操作する第２の位置と、操作者およびその操作者と対面して位置する人物が、同時に表示部を目視する第３の位置と、前記操作者と対面して位置する人物が表示部を目視する第４の位置とに、ディスプレイカバーを回転し、その位置を保持することを特徴とする請求項１記載のポータブルコンピュータ。
【請求項９】第２の画面を目視する人物が操作可能なサブキーボードを備えたことを特徴とする請求項１記載のポータブルコンピュータ。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明はポータブルなパーソナルコンピュータ（ポータブルコンピュータ）に関するもので、特に、表示装置に表示される文字、グラフ、図形等の表示内容を、対面する２方向から同時に読み取ることを可能とし、複数者の情報の交換を可能としたポータブルコンピュータに関する。
【０００２】
【従来の技術】いわゆるラップトップ型やノートブック型のパーソナルコンピュータにおいては、キーボードを操作する人物が表示装置に表示された文字、グラフ、図形等の表示内容を読み取り易いように、表示装置をキーボードの上部に固定している。この場合、キーボードを操作する位置から表示部に表示された表示内容を読み取ることは容易であるが、キーボードの操作位置以外の位置や方向から表示装置に表示された表示内容を読み取ることは難しい。
【０００３】この点に関して、表示装置を移動する技術が提案されている。例えば、特開昭６３－１５５３１３号公報に開示されているように、ラップトップ型ワープロ、ラップトップ型パソコン、ノートブック型パソコンにおいて、表示装置をコンピュータ本体から取りはずして、接続ケーブルを介して使用することで、表示装置を見やすい任意の位置に置くことを可能とするものである。
【０００４】
【発明が解決しようとする課題】上記従来技術は、ラップトップ型ワープロ、ラップトップ型パソコン、ノートブック型パソコン等において、表示装置を上記各種ポータブルコンピュータの操作者から見て、任意の見易い位置に置くことはできるものの、同一の表示内容を、例えば対面する２方向から同時に読み取るという点に関しては配慮がなされていない。したがって、ポータブルコンピュータを用いて、データの表示、見積りの提示等の情報の交換を行う場合、操作者と該操作者に対面して位置する人物が、対面する２方向から、表示内容を同時に読み取るには不適当であるという問題点があった。
【０００５】本発明の目的は、ポータブルコンピュータを用いて、データの表示・見積りの提示等の情報交換を行う際に、複数の人物がポータブルコンピュータの表示内容を確認する必要があり、このような場合、対面する２方向から単一の表示部を目視することで、対面して位置する複数者が同一の表示内容を同時に読み取ることが可能なポータブルコンピュータを提供することにある。
【０００６】本発明の他の目的は、単一の表示部に表示された表示内容を対面して位置する複数者が同時に読み取ることができる上記ポータブルコンピュータにおいて、表示部の見易さを向上し、表示内容を読み取り易くすることにある。
【０００７】本発明の他の目的は、単一の表示部に表示された表示内容を対面して位置する複数者が同時に読み取ることができる上記ポータブルコンピュータにおいて、操作性を向上することにある。
【０００８】
【課題を解決するための手段】上記目的を達成するために表示部に主画面の他にサブ画面を設け、サブ画面に表示される文字、グラフ、図形等の表示内容を、主画面に表示された表示内容と１８０°反転して表示したものである。さらに表示内容を読み取り易くするために、主画面とサブ画面の表示方向の入れ換え、サブ画面の位置・大きさの変更、サブ画面の表示内容の拡大、縮少を可能

としたものである。
【０００９】また、上記目的を達成するために表示部を２画面に分割し、各々の画面に表示された文字、グラフ、図形等の表示内容を、互いに１８０°反転して表示したものである。さらに、表示内容を読み取り易くするために、２画面の大きさを可変とし、２画面を上下方向あるいは左右方向に並べたものである。
【００１０】また、操作性を向上するために、上記の画面切換操作は、キーボードの操作、切換スイッチ、あるいは表示装置とボトムケースの角度の変化によって行うとしたものである。
【００１１】また、操作性を向上するために、主となる操作者と対面して位置する人物の方向からポータブルコンピュータを操作することができるように、主となるキーボードの他に、主となる操作者と対面して位置する人物の方向から操作することが可能なサブキーボードを設けたものである。
【００１２】また、操作性を向上するために、主となるキーボードあるいはサブキーボードと、制御装置により、複数の画面に表示された文字、グラフ、図形等の表示内容を、同時に制御することを可能にしたものである。
【００１３】また、表示部に表示された表示内容を対面する２方向から読み取り易くするために、表示部を操作パネルに対して、多段階に回転、固定することができるヒンジ機構を用いたものである。
【００１４】
【作用】表示部に主画面の他にサブ画面を設け、サブ画面に表示される文字、グラフ、図形等の表示内容を、主画面に表示される表示内容と１８０°反転して表示させる。それによって、表示内容は対面する２方向から同時に読み取ることが可能になるので、ポータブルコンピュータの操作者およびその操作者と対面して位置する人物が、単一の表示部を目視することにより、同一の表示内容を同時に読み取ることができる。
【００１５】さらに、主画面とサブ画面の表示方向の入れ換え、サブ画面を表示する位置の変更、サブ画面の大きさの変更、サブ画面の表示内容の拡大、縮少を行う。それによって、主画面及びサブ画面の表示方法を任意に変更することが可能になるので、表示内容を容易に読み取ることができる。
【００１６】また、表示部を２画面に分割し、各々の画面に表示された文字、グラフ、図形等の表示内容を、互いに１８０°反転して表示させる。それによって、表示内容は対面する２方向から同時に読み取ることができる様になるので、ポータブルコンピュータの操作者およびその操作者と対面して位置する人物が、単一の表示部を目視することにより、同一の表示内容を同時に読み取ることができる。さらに、２画面の大きさを変更し、２画面を上下方向あるいは左右方向に並べる。それによって、表示部に表示される表示内容の大きさ及び位置を変更することができるので、表示内容を容易に読み取ることができる。
【００１７】また、サブ画面の表示、画面の分割をキーボードの操作、切り換えスイッチ、あるいは表示装置の角度の変化によって行う。それによって、表示部に表示された表示内容の変更を簡便かつ瞬時に行うことができるので、操作性が増す。
【００１８】また、ポータブルコンピュータの主となるキーボードの他に、主となるキーボードの操作者と対面して位置する人物が操作可能なサブキーを備える。それによって、主となる操作者と対面して位置する人物もポータブルコンピュータへの入力が容易に行えるので、ポータブルコンピュータの操作性が増す。
【００１９】また、ポータブルコンピュータの主となるキーボード、あるいはサブキーボードと、制御装置によって、複数の画面の表示内容を同時に制御する。それによって、主となる操作者およびその操作者と対面して位置する人物が、容易に複数の画面の表示内容を制御し、かつ制御された表示内容は複数の画面に同時に表示されるので、ポータブルコンピュータの操作性を向上することができる。
【００２０】また、表示部を操作パネルに対して、多段階に回転、固定することができるヒンジを用いる。それによって、ポータブルコンピュータを持ち運ぶときには表示部で操作パネルを覆い、ポータブルコンピュータの操作者がキーボードを操作する時には、その操作者が目視し易い角度に表示部を回転し、前記操作者およびその操作者と対面して位置する人物が、同時に表示内容を目視する場合には、表示部は操作パネルとほぼ同一平面をなすように開き、操作者と対面して位置する人物が主として表示内容を目視する場合には、表示部と操作パネルのなす角を上記よりも更に大きくすることができるので、表示部に表示された文字、グラフ、図形等の表示内容を、対面する２方向から目視することを容易にする。
【００２１】
【実施例】以下添付の図面に示す実施例により、さらに詳細に本発明について説明する。図３と図４は、本発明が適用されるポータブルコンピュータの外観の一例を示す斜視図である。図３はポータブルコンピュータの持ち運び時の外観を示し、図４は操作時の外観を示している。図示するように、ポータブルコンピュータは、ボトムケース１、リアカバー２、ディスプレイカバー３から成っている。ラッチ９を解除してディスプレイカバー３を開くことにより、キーボード４の操作、表示部７の目視ができる様になる。ポータブルコンピュータの機能を果たすための回路基板は、操作パネル５の下部に収められている。また、ボトムケース１の側面にフロッピーデッキ８ａ、カードスロット８ｂが設けられている。ポータブルコンピュータは電源スイッチ１１を入れることに

より作動し、キーボード４に入力することで各種情報を処理し、表示部７に処理した情報の内容を表示する。なお、図３と図４において、１０はディスプレイカバー３を開くためのヒンジ、１２は後述する主画面とサブ画面の表示切替えを行う切換スイッチを示している。

【００２２】本実施例では、表示装置６としてはアクティブマトリックス方式のカラーＬＣＤ（液晶ディスプレイ）を用いている。しかし、他にもプラズマディスプレイ、ＥＬ（エレクトロルミネセンス）等、ラップトップ型のポータブルコンピュータに使用可能な、いわゆるフラットパネルディスプレイであれば何でも用いることが可能である。また、本実施例に用いた表示装置６は、対角方向の大きさ１０．４インチ、１６色表示のＴＦＴ（薄膜トランジスタ）－ＬＣＤである。画素数は６４０（Ｈ）×４８０（Ｖ）ドット、カラーフィルターの配置はＲ、Ｇ、Ｂ縦ストライプ、６４０×３ピクセル、ピクセル・ピッチは０．１１（Ｈ）、０．３３（Ｖ）で、冷陰極蛍光管によるバックライト方式である。

【００２３】図１と図２は、表示部７上に主画面１７ａとサブ画面１７ｂを設けて表示した状態を示す説明図である。図１は主画面１７ａの一部にサブ画面１７ｂを設け、主画面１７ａにはキーボードの操作者と対面して位置している人物（図示せず）から読み取ることができる方向に表示内容１３を表示し、サブ画面１７ｂにはキーボードの操作者１４ａが読み取ることができる方向に表示内容１３を表示した状態を示す。図２は図１の主画面１７ａとサブ画面１７ｂの表示方向を入れ換えた状態を示す。本実施例において、上記のサブ画面１７ｂの表示と主画面１７ａとサブ画面１７ｂの表示方向の入換えは、ポータブルコンピュータの操作を行うキーとは別に設けられた切換スイッチ１２（図４参照）によって行われる。

【００２４】図５と図６は、主画面１７ａ内のサブ画面１７ｂの表示位置を示す説明図である。図５に示す例では、サブ画面１７ｂを主画面１７ａの４ヶ所に移動できるように構成した。これにより、主画面１７ａに表示される表示内容１３のうち、サブ画面１７ｂの表示によって隠される部分を変更することができる。

【００２５】図６はサブ画面１７ｂの大きさを変更できるようにした例を示す。本実施例では、サブ画面１７ｂの大きさは、縦横共に長さが主画面１７ａの１／４となるようにし、更にサブ画面１７ｂの大きさを縦横の長さが主画面１７ａの１／５から１／２まで変更できる様にした。サブ画面１７ｂの大きさとしては、主画面１７ａの１／５より小さいと画面が小さく表示内容１３が読み取りにくくなり、１／２より大きいと主画面１７ａに表示されている表示内容１３が隠れる部分が多過ぎる。このことにより、サブ画面１７ｂの表示内容１３の大きさを、主画面１７ａの表示内容１３との関係を考えながら変更することができ、表示内容１３を読み取り易くすることができる。また、サブ画面１７ｂの表示は、主画面１７ａの表示全体を縮少して表示させること、および主画面１７ａの表示内容１３の一部を主画面１７ａと同一の大きさ、あるいは拡大して表示させることができるようにする。このことにより、サブ画面１７ｂを目視する側の人物が、容易に表示内容全体を読み取ること、および表示内容１３の一部を詳細に確認することが可能になる。

【００２６】図７は、本実施例のポータブルコンピュータを使用している状態を示す側面図である。ポータブルコンピュータの表示部７は操作パネル５と約１８０°の角度をなすように開らかれ、操作パネル５と表示部７とコンピュータを設置した机面１５とを平行にする。これにより、表示部７の主画面１７ａに表示された表示内容１３の表示方向はポータブルコンピュータの操作者と対面して位置する人物１４ｂに向き、表示部７のサブ画面１７ｂに表示された表示内容１３の表示方向はポータブルコンピュータのキーボードの操作者１４ａに向く。主画面１７ａの表示内容１３の表示方向と、サブ画面１７ｂの表示内容１３の表示方向は、必要に応じて逆にしても良い。図７に示す様に、キーボードの操作者１４ａと、その操作者と対面して位置する人物１４ｂとが、単一の表示部７の主画面１７ａとサブ画面１７ｂを目視することで、同一の表示内容１３を同時に読み取ることが可能になる。

【００２７】図８は表示装置６の拡大説明図である。本実施例に用いた表示装置６は、前記したＴＦＴ－ＬＣＤであり、画素１６は長方形の形状に、横にｍ個、縦にｎ個並んでいる。画素１６の液晶層１６ｄは画素電極１６ａに印加する画像信号によって制御する。表示装置６に表示された表示内容１３を１８０°反転して表示するためには、表示装置６の左上端部に位置する画素１６から数えて、横ａ番目、縦ｂ番目に存在する画素電極１６ａに印加する画像信号を、横（ｍ－ａ＋１）番目、縦（ｎ－ｂ＋１）番目に存在する画素電極１６ａに印加する画像信号と入れ替える操作を行うことで達成される。なお、図中、１６ｂはドレインバス、１６ｃはゲートバスを示している。

【００２８】図９は上記した主画面１７ａとサブ画面１７ｂを表示可能なポータブルコンピュータの一例を示すブロック図である。図示するように、ポータブルコンピュータは、表示装置６とドレイン・ドライバー２７ａとゲート・ドライバー２７ｂとインターフェイスコントローラ２８と主画面フレームバッファメモリ２９ａとサブ画面フレームバッファメモリ２９ｂと座標変換回路３０と表示処理装置３１とマイクロプロセッサ３２とＲＯＭ３３とＲＡＭ３４とから構成されている。

【００２９】図９において、マイクロプロセッサ３２は、ＲＯＭ３３に記憶されているプログラムをＲＡＭ３４をワークエリアとして動作させる。すなわち、マイク

ロプロセッサ３２が表示命令を発行すると、表示処理装置３１は該表示命令に対応する画像信号を発生して出力する。例えば、文字を表示する場合には、ＲＯＭ３３に記憶されている文字パターンを読み出し、それを画像信号として主画面フレームバッファメモリ２９ａとサブ画面フレームバッファメモリ２９ｂの、表示命令によって定められたアドレスに書き込む。このとき、例えば主画面の表示内容を上下反転表示する場合、座標変換回路３０の働きにより、上記文字パターンは、反転文字パターンに座標変換され、これが画像信号として主画面フレームバッファメモリ２９ａに格納される。また、サブ画面フレームバッファメモリ２９ｂには座標変換されない画像信号が格納される。インターフェイスコントローラ２８は、主画面フレームバッファメモリ２９ａとサブ画面フレームバッファメモリ２９ｂに格納された画像信号を順次読み取り、ドレイン・ドライバー２７ａとゲート・ドライバー２７ｂを駆動して、表示装置６に表示内容１３として表示する。

【００３０】図１０は表示装置６に表示内容１３を表示する場合における画像信号の表示部上のｘ，ｙ座標を示し、図１１は主画面フレームバッファメモリ２９ａのｘ，ｙ座標（各座標はアドレスを意味する）を示し、図１２はサブ画面フレームバッファメモリ２９ｂのｘ，ｙ座標（各座標はアドレスを意味する）を示す。図１０、１１、１２において、Ａ，Ｂは主画面フレームバッファメモリ２９ａのそれぞれｘ座標とｙ座標を示し、ａ，ｂは主画面１７ａのそれぞれｘ座標とｙ座標を示し、Ｐ，Ｑはサブ画面フレームバッファメモリ２９ｂのそれぞれｘ座標とｙ座標を示し、ｐ，ｑはサブ画面１７ｂのそれぞれｘ座標、ｙ座標を示す。

【００３１】図示するように、主画面１７ａのｘ座標、ｙ座標の最大値はそれぞれｍ、ｎであり、サブ画面１７ｂのｘ座標、ｙ座標の最大値はそれぞれｕ、ｖである。主画面１７ａを正規の方向に表示し、サブ画面１７ｂを反転して表示する場合には、（数１）および（数２）に示す座標変換を行う。また、サブ画面１７ｂを正規の方向に表示し、主画面１７ａを反転して表示する場合には、（数３）および（数４）に示す座標変換を行う。

【００３２】

【数１】

$$[\text{数}1] \qquad (A,\ B) = (a,\ b)$$

【００３３】

【数２】

$$[\text{数}2] \qquad (P,\ Q) = (m-a+1,\ n-b+1)$$

【００３４】

【数３】

$$[\text{数}3] \qquad (A,\ B) = (m-a+1,\ n-b+1)$$

【００３５】

【数４】

$$[\text{数}4] \qquad (P,\ Q) = (a,\ b)$$

【００３６】上式の座標変換は、座標変換回路３０によって行われる。座標変換回路３０は、通常の加算機と補数器から構成される。上式で使用するｍ、ｎ、ａ、ｂはあらかじめＲＯＭ３３に記憶されており、サブ画面１７ｂを設定して反転して表示するための入力信号が、マイクロプロセッサ３２に入力されると、マイクロプロセッサ３２はＲＯＭ３３から必要な定数値をよみだし、表示処理装置３１および座標変換回路３０に送る。さらに、マイクロプロセッサ３２は座標変換の指令を送り、座標変換回路３０において上記必要な座標変換を行い、またはスルーで主画面フレームバッファメモリ２９ａとサブ画面フレームバッファメモリ２９ｂとに座標変換回路３０の出力結果を書き込む。インターフェイスコントローラ２８は、主画面フレームバッファメモリ２９ａ、およびサブ画面フレームバッファメモリ２９ｂの情報を順次読み取り、ドレイン・ドライバー２７ａ、ゲート・ドライバー２７ｂを駆動して、表示装置６に主画面１７ａおよびサブ画面１７ｂを設定し、互いに反転した方向に表示内容１３を表示する。

【００３７】サブ画面１７ｂは主画面１７ａよりも表示面積が小さいため、通常は主画面１７ａに表示された表示内容１３のすべてを反転して表示することはできず、一部分を表示する。主画面１７ａのどの部分を表示するかは、ポータブルコンピュータ、ワードプロセッサ等で通常行われているような、画面１７のスクロールを行うことで設定・変更することができる。また、サブ画面１７ｂに主画面１７ａの画面１７全体を、通常行われているようなレイアウト表示を用いて表示することも可能である。

【００３８】図１３と図１４は、表示部７の画面を２分割して表示した状態の一例を示す説明図である。図１３は画面を縦方向に２分割し、一方の画面１７ｃにキーボードの操作者１４ａから見て読み取れる方向に表示内容１３を表示し、他方の画面１７ｄにキーボードの操作者と対面して位置する人物１４ｂから見て読み取れる方向に表示内容１３を表示したところを示す。２分割された画面１７ｃ，１７ｄの各々は、同一の表示内容１３を表示するが、表示方向は反転させる。図１４は、画面を横方向に２分割し（表示部７の上下方向に画面分割）した例を示している。縦方向に分割するか、または横方向に分割するかは、選択可能に形成し、また画面の大きさも可変可能に形成する。例えば、表示部全体の１／３を一

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方の画面１７ｃ、残りの２／３を他方の画面１７ｄとする切り換えを可能にすること等が考えられる。以上により、表示部７に表示された表示内容１３を対面する２方向から読み取る場合、読み取り易いように表示部７の画面１７の構成を変更することが可能になる。

【００３９】ここで、２分割画面において、互いに反転した方向に表示内容１３を表示する方法は、前記した主画面とサブ画面における表示方法に準ずる。この例においては、２分割画面の表示はキーボード４の操作によって行った。すなわち、キーボード上のコントロールキーと文字キーの一種を同時に押すことにより、２分割画面を表示する。

【００４０】図１５は上記実施例にかかるポータブルコンピュータの側面説明図である。本実施例に用いるヒンジ１０は、ポータブルコンピュータの表示部７が操作パネル５となす角を任意に変更できるようにする。ポータブルコンピュータを持ち運ぶ場合には、表示部７は操作パネル５を被う。ポータブルコンピュータの操作者１４ａが単独でキーボード４を操作する場合には、表示部７はＡの位置に固定し、キーボード４を操作しながら表示内容１３を読み取る。ポータブルコンピュータの主たる操作者１４ａと、その操作者１４ａと対面して位置する人物１４ｂの両者が表示部７を目視する場合には、表示部７はＢの位置に固定し、複数者が対面して表示内容１３を読み取ることができるようにする。更に、キーボードの操作者１４ａと対面して位置する人物１４ｂが主として表示部７を目視する場合には、表示部７はｃの位置に固定し、通常とは反対方向からの目視を容易にする。

【００４１】図１６は本実施例によるヒンジ１０の一例を示す斜視図である。ヒンジ１０は、その取り付け金具１８ａ，１８ｂのねじ穴１９ａ，１９ｂを介して、ボトムケース１とディスプレイカバー３にねじによって固定される。ここで、取り付け金具１８ａはボトムケース１への取り付け金具であり、取り付け金具１８ｂはディスプレイカバー３への取り付け金具である。表示部７は、上記取り付け金具１８ａに固定されている樹脂製のシャフト２０と、ディスプレイカバー３への取り付け金具１８ｂに固定されている樹脂製のブッシュ２１との間の摩擦力により、表示部７と操作パネル５とのなす角度が任意となる位置で停止可能に構成されている。この他に、３段階以上のラッチ構造を設けて、表示部７が操作パネル５となす角度を変更できるように構成しても良い。

【００４２】図１７は、上記実施例にかかるポータブルコンピュータの他の例を示す側面説明図である。図１７に示すポータブルコンピュータにおいては、接触型スイッチ２２のオン・オフにより、表示部７に表示した文字、グラフ、図形等の表示内容１３を互いに１８０°反転した方向に表示する２画面表示に切り換えが行われる。図示するように、接触型スイッチ２２はディスプレイカバー３とリアカバー２とに設けられ、表示部７が操作パネル５と例えば１８０°の角度をなし、ディスプレイカバー３とリアカバー２が接触して停止した場合にオンとなる。その結果、マイクロプロイセッサ３２（図９参照）に対して信号が送られ、マイクロプロセッサ３２は表示部７に表示された表示内容１３を互いに１８０°反転し、２画面表示を行う旨の命令を出力する。表示部７と操作パネル５とのなす角度が、例えば１８０°より小さくなった場合には、接触型スイッチ２２がオフとなり、２画面表示は解除される。

【００４３】図１８と図１９は、ボトムケース１とディスプレイカバー３とを接続するヒンジ部の構成を示す説明図であり、接触型スイッチ２２をヒンジ部に設けたものである。図示するように、ヒンジ１０の取り付け金具１８ａ，１８ｂとシャフト２０の一部に接触型スイッチ２２が設けられている。図１８に示すように、表示部７と操作パネル５のなす角度が小さい場合には、接触型スイッチ２２はオンしない。図１９に示すように、表示部７と操作パネル５のなす角度を大きくした場合、例えば１８０°より大きくした場合には、接触型スイッチ２２がオンし、マイクロプロセッサ３２によって２画面表示が行われる。再度、上記角度を小さくもどすと、接触型スイッチ２２はオフし、表示部７の表示は通常にもどる。このように、表示部７と操作パネル５のなす角度を変更することにより、他の操作を行うことなく自動的に、表示内容１３を互いに１８０°反転した方向に表示する２画面表示を行うことが可能になる。

【００４４】図２０～図２２は、ポータブルコンピュータの他の例を示す外観図である。図２０～図２２に示すポータブルコンピュータは、主となるキーボード４の他に、操作者１４ａと対面して位置する人物１４ｂが操作することのできるサブキーボード２３を備えている。図２０に示す例は、サブキーボード２３をポータブルコンピュータ本体とは別に用意し、接続ケーブル２４を介して使用する例を示している。また、図２１は、表示部７の周辺にサブキーボード２３を設置して操作する例を示している。また、図２２は、表示部７の下側にサブキーボード２３を収納しておき、使用時に引き出して使用する例を示している。図２２において、サブキーボード２３は通常サブキーボードカバー２６に収納されており、使用時に操作者と対面して位置する人物１４ｂの側に引き出し、スタンド２５によって支えて使用する。サブキーボード２３の設置により、ポータブルコンピュータの主となる操作者と対面して位置する人物１４ｂも、主となる操作者１４ａと同様にサブキーボード２３に設けられているサブキー２３ａを介してコンピュータに入力することが可能となり、ポータブルコンピュータの操作性が向上する。

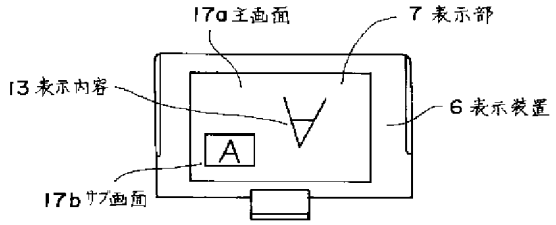
【００４５】なお、上記の実施例においては、表示部に主画面とサブ画面を設けたり、表示部を２つの画面に分割したが、本発明はこれに限定されるものではなく、表

示部に３つ以上の画面を設けるようにしてもよい。
【００４６】上記実施例のポータブルコンピュータによれば、キーボードの操作者と該操作者と対面している人物等の複数の人物が、単一の表示部７を目視することで、同一の表示内容を読み取ることができる。
【００４７】さらに、上記実施例のポータブルコンピュータによれば、会社等で業務を進行する際に、複数の人物間でデータの表示、見積りの提示等の情報交換を行うことが容易である。また、学校、塾等で、教育者と被教育者が対面して学習を行う場合にも有効となる。
【００４８】また、上記実施例において、ポータブルコンピュータの表示装置６だけを銀行のカウンター等に設置し、銀行員と顧客がやり取りをするのに利用することもできる。
【００４９】
【発明の効果】本発明によれば、ラップトップ型あるいはノートブック型のポータブルコンピュータにおいて、表示部に表示された文字、グラフ、図形等の表示内容を、ポータブルコンピュータの操作者が読み取る方向、およびその操作者と対面して位置するの人物が読み取る方向の、対面する２方向に表示することが可能になる。したがって、対面して位置する複数の人物が、単一の表示部を目視することで、同一の表示内容を同時かつ容易に読み取ることができる効果がある。
【００５０】また、ポータブルコンピュータの表示部に表示された文字、グラフ、図形等の表示内容を、対面する２方向から同時に読み取ることができるように表示変更する場合、さらに表示部の画面の構成を種々変更することができるので、表示内容を対面する２方向から容易に読み取ることができる効果がある。
【００５１】また、ポータブルコンピュータの表示部に表示された文字、グラフ、図形等の表示内容を、対面する２方向から読み取ることができるように表示切換する場合、キーボード操作等により容易に行うことができる効果がある。
【００５２】また、表示部と操作パネルのなす角度を変更することができるので、表示部に表示された文字、グラフ、図形等の表示内容を、対面する２方向から容易に読み取ることができる効果がある。
【００５３】また、ポータブルコンピュータの主たる操作者と対面して位置する人物が、必要に応じてサブキーボードを介してポータブルコンピュータに入力することができるので、操作性を向上させる効果がある。
【００５４】また、表示内容を互いに１８０°反転して表示した２画面を、同時に制御することができるので、操作性を向上させる効果がある。
【図面の簡単な説明】
【図１】表示部上に主画面とサブ画面を設けて表示した状態を示す説明図。
【図２】表示部上に主画面とサブ画面を設けて表示した状態を示す説明図。
【図３】本発明が適用されるポータブルコンピュータの外観の一例を示す斜視図。
【図４】本発明が適用されるポータブルコンピュータの外観の一例を示す斜視図。
【図５】主画面内のサブ画面の表示位置を示す説明図。
【図６】主画面内のサブ画面の表示位置を示す説明図。
【図７】ポータブルコンピュータを使用している状態の一例を示す側面図。
【図８】表示装置の拡大説明図。
【図９】主画面とサブ画面を表示可能なポータブルコンピュータの一例を示すブロック図。
【図１０】画像信号の表示部上のｘ，ｙ座標を示す説明図。
【図１１】主画面フレームバッファメモリのｘ，ｙ座標（各座標はアドレスを意味する）を示す説明図。
【図１２】サブ画面フレームバッファメモリのｘ，ｙ座標（各座標はアドレスを意味する）を示す説明図。
【図１３】表示部の画面を２分割表示した状態の一例を示す説明図。
【図１４】表示部の画面を２分割表示した状態の一例を示す説明図。
【図１５】ポータブルコンピュータの側面説明図。
【図１６】ヒンジの一例を示す斜視図。
【図１７】ポータブルコンピュータの他の例を示す側面説明図。
【図１８】ボトムケースとディスプレイカバーとを接続するヒンジ部の構成を示す説明図。
【図１９】ボトムケースとディスプレイカバーとを接続するヒンジ部の構成を示す説明図。
【図２０】ポータブルコンピュータの他の例を示す外観図。
【図２１】ポータブルコンピュータの他の例を示す外観図。
【図２２】ポータブルコンピュータの他の例を示す外観図。
【符号の説明】
１…ボトムケース、２…リアカバー、３…ディスプレイカバー、４…キーボード、５…操作パネル、６…表示装置、７…表示部、８ａ…フロッピーデッキ、８ｂ…カードスロット、９…ラッチ、１０…ヒンジ、１１…電源スイッチ、１２…表示反転スイッチ、１３…表示内容、１４ａ…操作者、１４ｂ…操作者と対面して位置する人物、１５…机面、１６…画素、１６ａ…画素電極、１６ｂ…ドレイン・バス、１６ｃ…ゲート・バス、１６ｄ…液晶層、１７…画面、１７ａ…主画面、１７ｂ…サブ画面、１７ｃ…２分割画面の一方の画面、１７ｄ…２分割画面の他方の画面、１８ａ、１８ｂ…取り付け金具、１９ａ、１９ｂ…ねじ穴、２０…シャフト、２１…ブッシュ、２２…接触型スイッチ、２３…サブキーボード、２

３ａ…サブキー、２４…接続ケーブル、２５…スタンド、２６…サブキーボードカバー、２７ａ…ドレインドライバー、２７ｂ…ゲートドライバー、２８…インターフェイスコントローラ、２９ａ…主画面フレームバッファメモリ、２９ｂ…サブ画面フレームバッファメモリ、３０…座標変換回路、３１…表示処理装置、３２…マイクロプロセッサ、３３…ＲＯＭ、３４…ＲＡＭ。

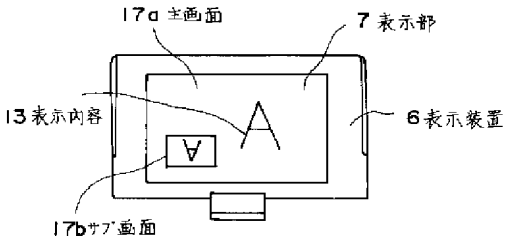
【図１】

［図　１］



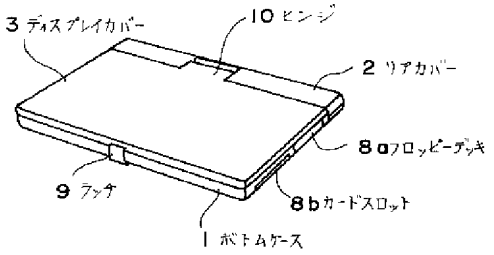
【図２】

［図　２］



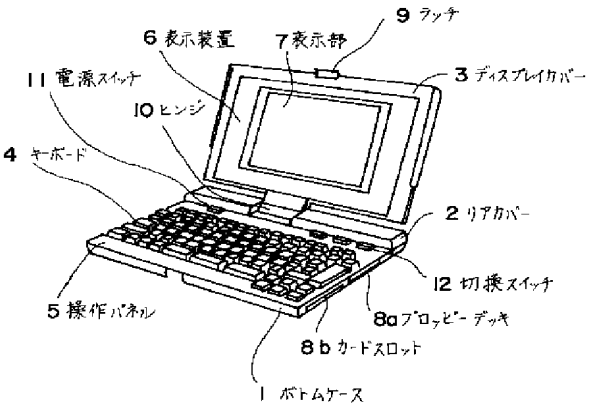
【図３】

［図　３］



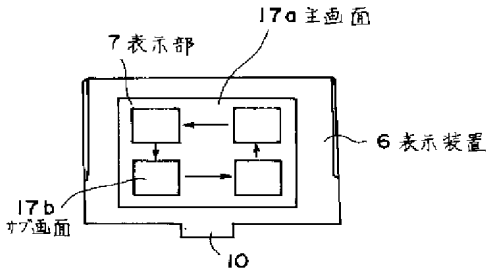
【図４】

［図　４］



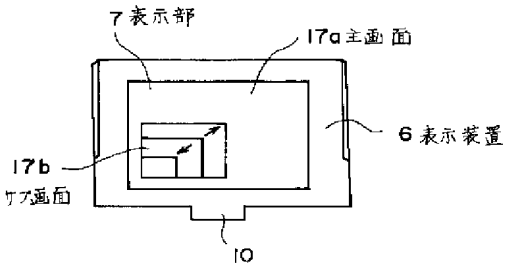
【図５】

［図　５］



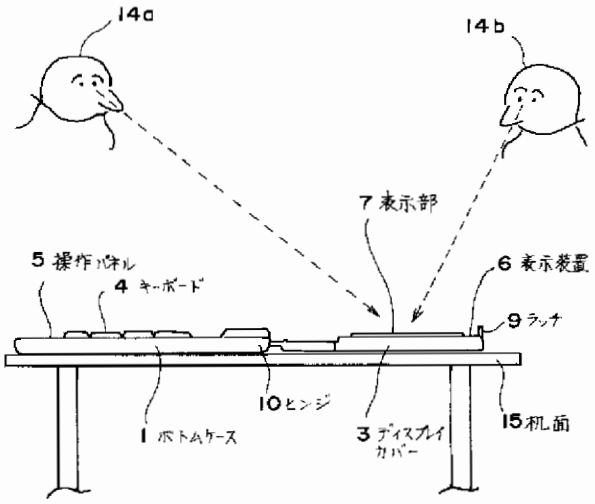
【図６】

［図　６］



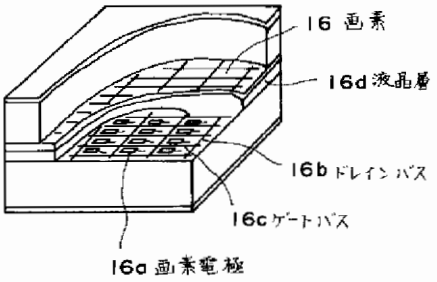
【図7】

[図 7]



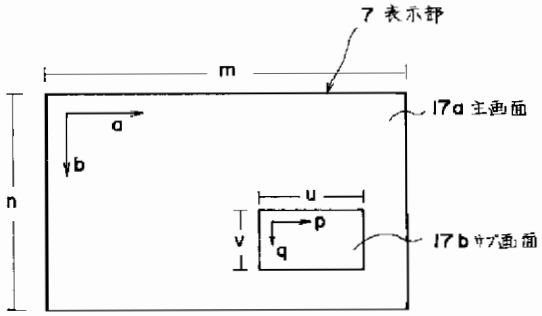
【図8】

[図 8]



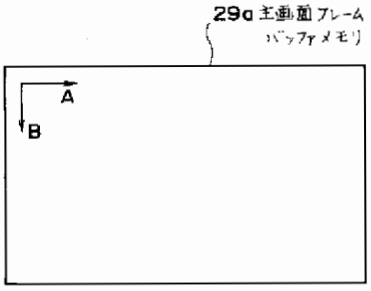
【図10】

[図 10]



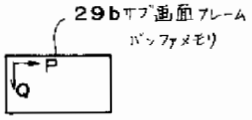
【図11】

[図 11]



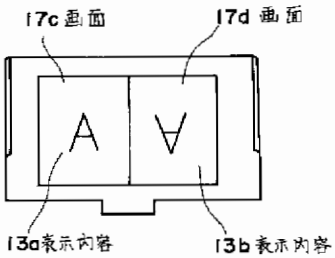
【図12】

[図 12]



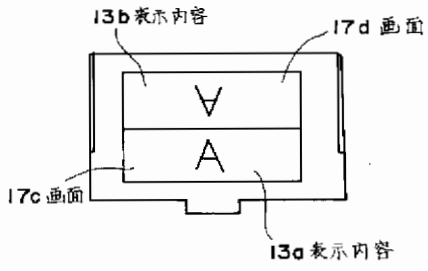
【図13】

[図 13]



【図14】

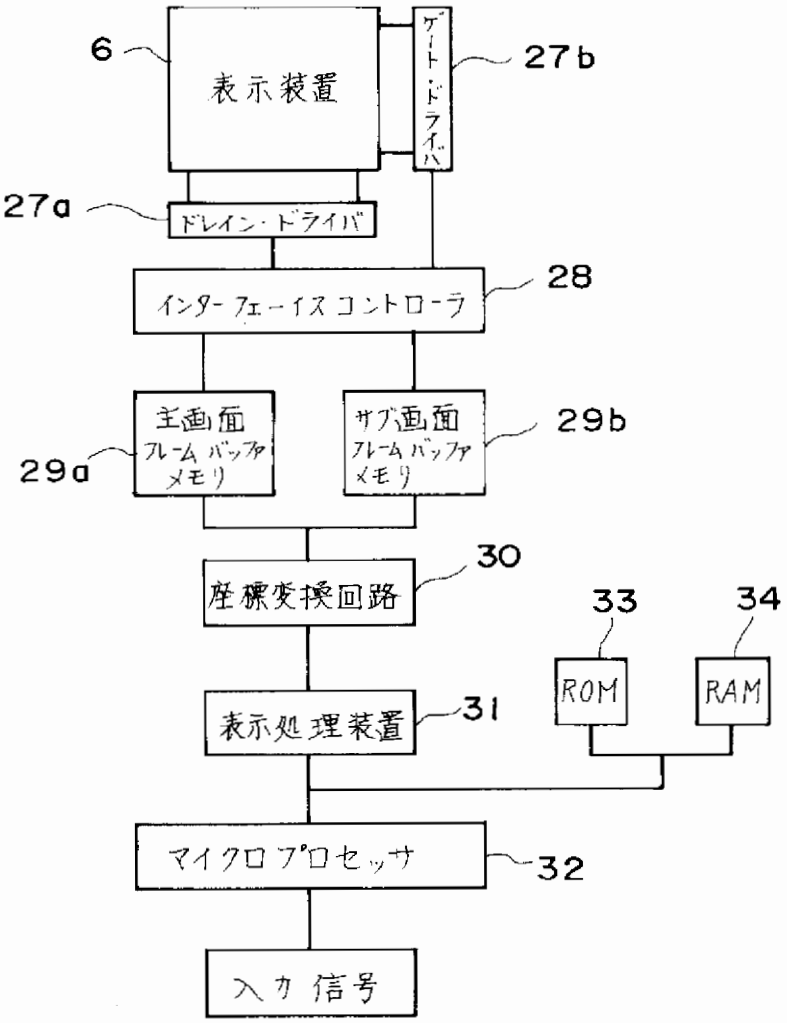
[図 14]



Petitioners - Exhibit 1002, page 187

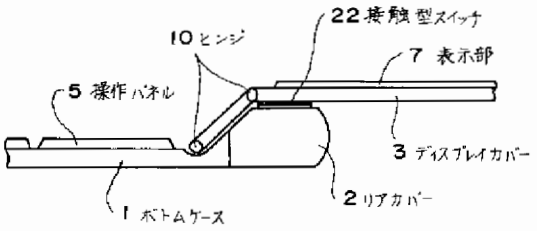
【図9】

［図 9］



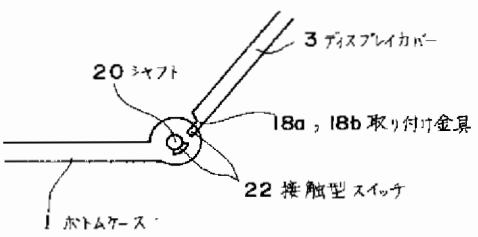
【図17】

［図 17］



【図18】

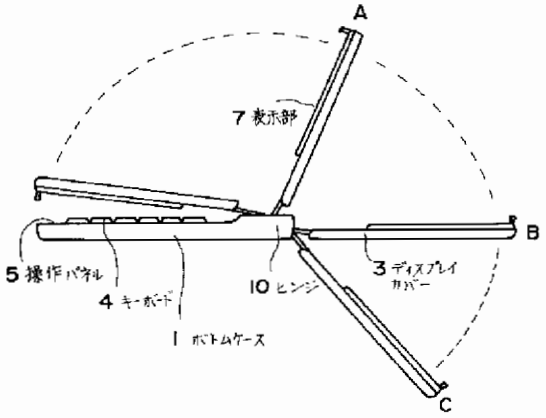
［図 18］



Petitioners - Exhibit 1002, page 188

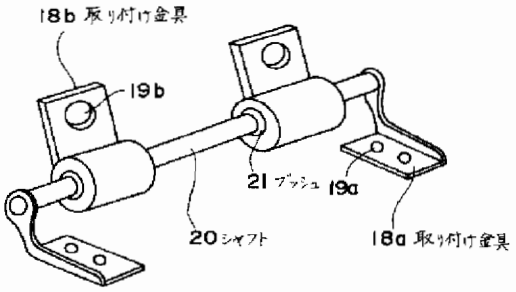
【図15】

[図 15]



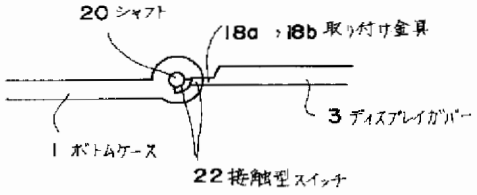
【図16】

[図 16]



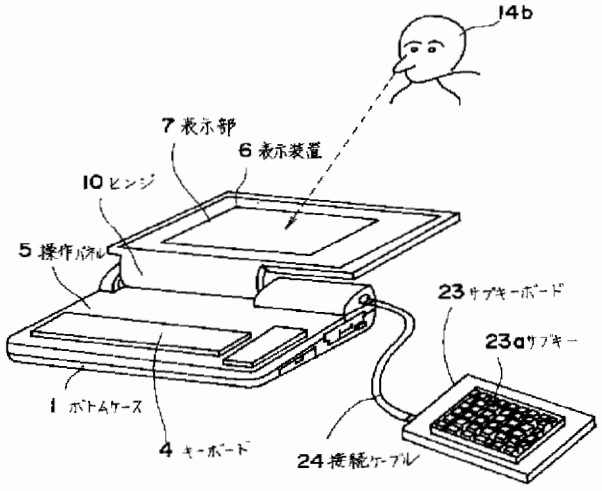
【図19】

[図 19]



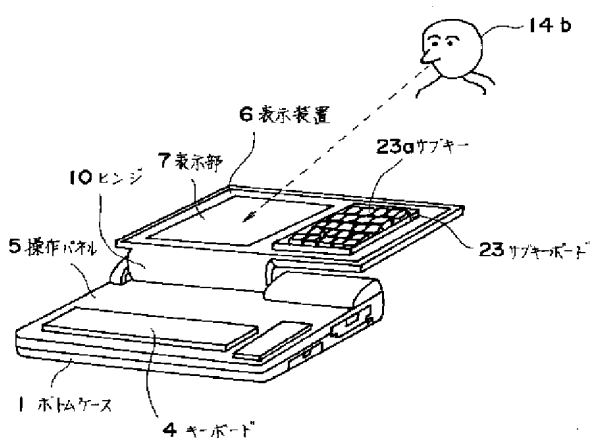
【図20】

[図 20]



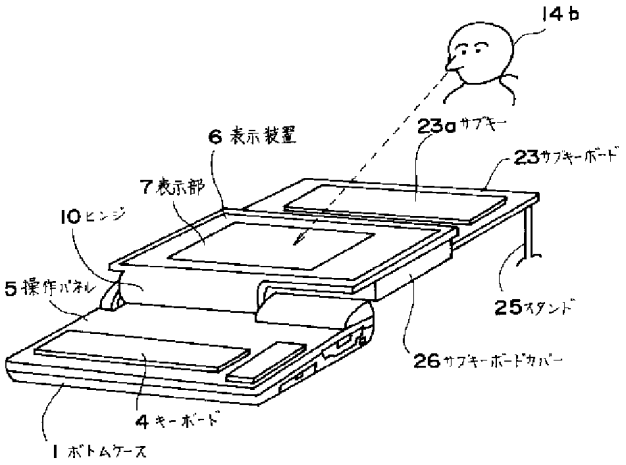
【図２１】

［図２１］



【図２２】

［図２２］



フロントページの続き

(51)Int.Cl.[5]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｇ０９Ｇ　5/14		8121－5Ｇ		

PATENT ABSTRACTS OF JAPAN

(11)Publication number : **05-197507**
(43)Date of publication of application : **06.08.1993**

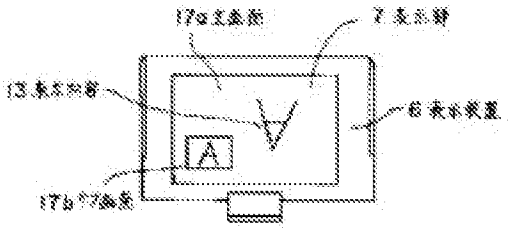
(51)Int.Cl. G06F 3/14
G06F 1/16
G09F 9/00
G09G 3/20
G09G 5/14

(21)Application number : **04-006643**
(22)Date of filing : **17.01.1992**

(71)Applicant : **HITACHI LTD**
(72)Inventor : **YAMAUCHI TOSHIYASU**

(54) **PORTABLE COMPUTER**

(57)Abstract:
PURPOSE: To enable plural persons who face each other to easily read the same display contents at the same time by providing a means which inverts the display direction of the 2nd screen of a display part about the display direction of the 1st screen.
CONSTITUTION: A subordinate screen 17b is provided at part of the main screen 17a of the display part 7, and the display contents are displayed on the main screen 17a in a readable direction for the person who faces the operator of a keyboard and on the subordinate screen 17b in a readable direction for the keyboard operator. The display of the subordinate screen 17b and the display directions of the main screen 17a and subordinate screen 17b are switched with a changeover switch provided separately from keys for the operation of the portable computer. In this case, the display contents of characters, a graph, a figure, etc., displayed on the subordinate screen 17b are displayed while 180° turned over to the display contents of the main screen 17a.



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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]A portable computer provided with a means to divide one display part into a first screen and a second screen, and to reverse a display direction of the 2nd screen of the above to a display direction of a first screen further.
[Claim 2]The portable computer according to claim 1 provided with a means as for which ON replaces a display direction of display information of the 1st screen of the above, and a display direction of display information of a second screen.
[Claim 3]The portable computer according to claim 1 provided with a means to move a position on a display part which displays the 2nd screen of the above to any position.
[Claim 4]The portable computer according to claim 1 provided with a means to change a size of the 2nd screen of the above.
[Claim 5]The portable computer according to claim 1 provided with a means to reduce and display the whole display information of the 1st screen of the above on the 2nd screen of the above.
[Claim 6]The portable computer according to claim 1 provided with a means to display a part of display information of the 1st screen of the above on the 2nd screen of the above in the same size as a first screen.
[Claim 7]The portable computer according to claim 1 provided with a means to choose whether the 2nd screen of the above is displayed.
[Claim 8]Have a hinge mechanism which connects a bottom case with a display cover rockable, and the above-mentioned hinge mechanism, While the 1st is wrap located in navigational panels, such as a keyboard, and an operator views a display part, A second position which operates a keyboard, and the 3rd position in which a person who meets an operator and its operator and is placed views a display part simultaneously, The portable computer according to claim 1 rotating a display cover in the 4th position in which a person who meets the aforementioned operator and is placed views a display part, and holding the position in it.
[Claim 9]The portable computer according to claim 1, wherein a person who views a second screen has an operational sub key board.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]The present invention is a thing about a portable personal computer (portable computer), It makes it possible to read simultaneously the display information of a character, a graph, a figure, etc. which are especially displayed on a display device in the 2-way which meets, and is related with the portable computer which enabled exchange of two or more persons' information.
[0002]
[Description of the Prior Art]In what is called a personal computer of a laptop type or a notebook type, the display device is fixed to the upper part of a keyboard so that the person who operates a keyboard may tend to read the display information of a character, a graph, a figure, etc. which were displayed on the display device. In this case, although it is easy to read the display information displayed on the display part in the position which operates a keyboard, it is difficult to read in the position and direction of [other than the actuated valve position of a keyboard] the display information displayed on the display device.
[0003]The technology which moves a display device is proposed about this point. For example, as it discloses in JP,S63-155313,A. In a laptop type word processor, a laptop PC, and a book type personal computer, it makes it possible to put a display device on any legible position by removing a display device from a computer body and using it via a connecting cable.
[0004]
[Problem to be solved by the invention]In a laptop type word processor, a laptop PC, a book type personal computer, etc. the above-mentioned prior art, A display device is seen from the operator of the various above-mentioned portable computers, and consideration is not made about the point of reading simultaneously the same display information of what can be put on any legible position in the 2-way which meets, for example. Therefore, when information, including the display of data, estimated presentation, etc., was exchanged using a portable computer, there was a problem that the person who meets and is placed at an operator and this operator was unsuitable for reading display information in the 2-way which meets simultaneously.
[0005]When exchanging the information about presentation of a display and estimate of data, etc. using a portable computer, the object of this invention, Two or more persons need to check the display information of a portable computer, and it is in providing a portable computer with two or more persons able to read the same display information in the 2-way which meets simultaneously in such a case who meet and are placed by viewing a single display part.
[0006]In the above-mentioned portable computer with which two or more persons who meet and

are placed can read simultaneously the display information displayed on the single display part, other purposes of the present invention improve the conspicuousness of a display part, and are in making display information easy to read.
[0007]In the above-mentioned portable computer with which two or more persons who meet and are placed can read simultaneously the display information displayed on the single display part, other purposes of the present invention are to improve operativity.
[0008]
[Means for solving problem]To achieve the above objects, a sub screen other than a main screen is provided to a display part, 180 degrees is reversed with the display information displayed on the main screen, and the display information of a character, a graph, a figure, etc. which are displayed on a sub screen is displayed. In order to make display information furthermore easy to read, exchange of the display direction of a main screen and a sub screen, change of the position and size of a sub screen, expansion of the display information of a sub screen, and reduction are enabled.
[0009]A display part is divided into two screens to achieve the above objects, mutually, 180 degrees is reversed and the display information of a character, a graph, a figure, etc. which were displayed on each screen is displayed. In order to make display information easy to read, the size of two screens is made variable and two screens are arranged in a vertical direction or right and left directions.
[0010]In order to improve operativity, the above-mentioned screen switching operation presupposes that change of the angle of operation of a keyboard, a change-over switch or a display device, and a bottom case performs.
[0011]So that a portable computer can be operated from the direction of the person who meets the operator who becomes main and is placed, in order to improve operativity. The sub key board which can be operated from the direction of the person who meets the operator who becomes main and is placed besides the keyboard which becomes main is provided.
[0012]In order to improve operativity, it makes it possible the keyboard or sub key board which becomes main, and to control simultaneously the display information of a character, a graph, a figure, etc. which were displayed on two or more screens by a control device.
[0013]In order to make easy to read in the 2-way which meets display information displayed on the display part, the hinge mechanism which can rotate and fix a display part to a multistage story to a navigational panel is used.
[0014]
[Function]A sub screen other than a main screen is provided to a display part, 180 degrees is reversed with the display information displayed on a main screen, and the display information of a character, a graph, a figure, etc. which are displayed on a sub screen is displayed. Since it becomes possible to read display information in the 2-way which meets simultaneously by it, when the person who meets the operator of a portable computer and its operator, and is placed views a single display part, the same display information can be read simultaneously.
[0015]Exchange of the display direction of a main screen and a sub screen, change of the position which displays a sub screen, change of the size of a sub screen, expansion of the display information of a sub screen, and reduction are performed. Since it enables it to change arbitrarily the method of presentation of a main screen and a sub screen, display information can be read easily.
[0016]A display part is divided into two screens, mutually, 180 degrees is reversed and the display information of a character, a graph, a figure, etc. which were displayed on each screen is

displayed. Since display information can be simultaneously read now in the 2-way which meets by it, when the person who meets the operator of a portable computer and its operator, and is placed views a single display part, the same display information can be read simultaneously. The size of two screens is changed and two screens are arranged in a vertical direction or right and left directions. Since the size and position of display information which are displayed on a display part can be changed by it, display information can be read easily.
[0017]Change of the angle of operation of a keyboard, a change over switch, or a display device performs display of a sub screen, and division of a screen. Since the display information displayed on the display part can be changed into simple and an instant by it, operativity increases.
[0018]The person who meets the operator of the keyboard which becomes main and is placed has an operational sub key besides the keyboard which becomes main [a portable computer]. Since the person who meets the operator who becomes main and is placed by it can also perform the input to a portable computer easily, the operativity of a portable computer increases.
[0019]The display information of two or more screens is simultaneously controlled by the keyboard which becomes main or sub key board of a portable computer, and a control device. The person who meets the operator who becomes main, and its operator, and is placed by it controls the display information of two or more screens easily, and since the controlled display information is simultaneously displayed on two or more screens, it can improve the operativity of a portable computer.
[0020]The hinge which can rotate and fix a display part to a multistage story to a navigational panel is used. When carrying a portable computer, and a navigational panel is covered by a display part and the operator of a portable computer operates a keyboard by it, When the person who rotates a display part at the angle which the operator tends to view, meets the aforementioned operator and its operator, and is placed views display information simultaneously, When the person who opens a display part so that the same plane may be substantially made with a navigational panel, meets an operator, and is placed mainly views display information, Since the angle which a navigational panel makes can be made a display part further more largely than the above, it makes it easy to view the display information of a character, a graph, a figure, etc. which were displayed on the display part from the 2-way which meets.
[0021]
[Working example]According to the working example shown in attached Drawings below, it describes about the present invention still in detail. Fig.3 and Fig.4 are the perspective views showing an example of the appearance of the portable computer with which the present invention is applied.Fig.3 shows the appearance at the time of carrying of a portable computer, and Fig.4 shows the appearance at the time of operation.The portable computer comprises the bottom case 1, the rear cover 2, and the display cover 3 so that it may illustrate. It comes to be able to perform operation of the keyboard 4 and viewing of the display part 7 by releasing the latch 9 and opening the display cover 3. The circuit board for performing the function of a portable computer is stored in the lower part of the navigational panel 5. The floppy disk deck 8a and the card slot 8b are provided by the side surface of the bottom case 1. The contents of the information which the portable computer operated by turning on the electric power switch 11, processed the variety of information in inputting into the keyboard 4, and was processed to the display part 7 are displayed. In Fig.3 and Fig.4, a hinge for 10 to open the display cover 3 and 12 show the change-over switch which performs the display change of a main screen and a sub screen mentioned

later.
[0022]In this example, color LCD (liquid crystal display) of the active matrix system is used as the display device 6. However, otherwise, the thing usable to the portable computer of a laptop type for which anything is used with what is called a flat-panel display is possible for a plasma display, EL (electroluminescence), etc. The display device 6 used for this example is TFT-(thin film transistor) LCD of the size of 10.4 inches of a diagonal direction, and 16 color specification. As for arrangement of a 640(H) x480(V) dot and a light filter, pixel numbers are 0.11 (H) and 0.33(V), and R, G, B length stripe, 640x3 pixels, and their pixel pitch are the backlight systems by a cold cathode fluorescent tube.
[0023]Fig.1 and Fig.2 are the explanatory views showing the state where the main screen 17a and the sub screen 17b were provided and displayed on the display part 7.Fig.1 provides the sub screen 17b to some main screens 17a, and the display information 13 is displayed in the direction which can be read in the person (not shown) who meets the operator of a keyboard and is placed at the main screen 17a, The state where the display information 13 was displayed in the direction which the operator 14a of a keyboard can read is shown in the sub screen 17b. Fig.2 shows the state where the display direction of the main screen 17a and the sub screen 17b of Fig.1 was replaced.In this example, exchange of the display direction of a display and the main screen 17a of the above-mentioned sub screen 17b, and the sub screen 17b is performed by the change-over switch 12 (refer to Fig.4) provided separately from the key which operates a portable computer.
[0024]Fig.5 and Fig.6 are the explanatory views showing the display position of the sub screen 17b in the main screen 17a.It constituted from an example shown in Fig.5 so that the sub screen 17b could be moved to four places of the main screen 17a. The portion hidden by the display of the sub screen 17b by this among the display information 13 displayed on the main screen 17a can be changed.
[0025]Fig.6 shows the example which enabled it to change the size of the sub screen 17b. It is made for length to become one fourth of the main screens 17a in every direction, and also length in every direction enabled it, as for the size of the sub screen 17b, to change the size of the sub screen 17b in this example from 1/5 to 1/2 of the main screen 17a. When larger [if smaller than one fifth of the main screens 17a, a screen will be small and it will become difficult to read the display information 13 as a size of the sub screen 17b, and] than one half, there are too many portions in which the display information 13 currently displayed on the main screen 17a hides. Display information 13 can be made easy to be able to change the size of the display information 13 of the sub screen 17b by this, considering a relation with the display information 13 of the main screen 17a, and to read. a part of the display of the sub screen 17b reducing the whole display of the main screen 17a, and making it display, and display information 13 of the main screen 17a -- the same size as the main screen 17a -- or it expands and enables it to make it display It becomes possible that the near person who views the sub screen 17b reads the whole display information easily by this, and to check a part of display information 13 in detail.
[0026]Fig.7 is a side view showing the state where the portable computer of this example is used. The display part 7 of a portable computer makes parallel him of open, the navigational panel 5, the display part 7, and the desktop 15 that installed the computer so that the navigational panel 5 and the angle of about 180 degrees may be made. This turns to the display direction of the display information 13 displayed on the main screen 17a of the display part 7 to the person 14b who meets the operator of a portable computer and is placed, It turns to the display direction of the display information 13 displayed on the sub screen 17b of the display part 7 to the operator 14a of the keyboard of a portable computer. The display direction of the display information 13

of the main screen 17a and the display direction of the display information 13 of the sub screen 17b may be made reverse if needed. As shown in Fig.7, it enables the person 14b who meets the operator 14a and operator of a keyboard and is placed to read the same display information 13 simultaneously by viewing the main screen 17a and the sub screen 17b of the single display part 7.

[0027]Fig.8 is an expansion explanatory view of the display device 6. The display device 6 used for this example is above-mentioned TFT-LCD.

The pixel 16 is located in a line with rectangular form at m width and n length.

16 d of liquid crystal layers of the pixel 16 are controlled by the picture signal applied to the picture element electrode 16a. In order 180 degrees is reversed and to display the display information 13 displayed on the display device 6, It is attained by counting from the pixel 16 which is placed at the upper left end of the display device 6, and performing operation replaced with the picture signal which applies the picture signal applied to the picture element electrode 16a which exists in the a-th width and the b-th length to the picture element electrode 16a which exists in eye horizontal (m-a+1) watch and eye vertical (n-b+1) watch. 16b shows a drain bus among a figure, and 16c shows the gate bus.

[0028]Fig.9 is a block diagram showing an example of the portable computer which can display the above-mentioned main screen 17a and the sub screen 17b. So that it may illustrate a portable computer, The display device 6. The drain driver 27a. It comprises the gate driver 27b, the interface controller 28, the main screen frame buffer memory 29a, the sub screen frame buffer memory 29b, the coordinate transformation circuit 30, the display processing device 31, the microprocessor 32, and ROM33 and RAM34.

[0029]In the program memorized by ROM33, in Fig.9, the microprocessor 32 operates RAM34 as a work area. That is, if the microprocessor 32 publishes a display command, the display processing device 31 will generate and output the picture signal corresponding to this display command. For example, in displaying a character, it writes in the address which made reading the character pattern memorized by ROM33 and was defined by making it into a picture signal by the display command of the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b. When indicating the display information of a main screen by flip vertical, for example at this time, coordinate conversion of the above-mentioned character pattern is carried out to a character inversion pattern by work of the coordinate transformation circuit 30, and this is stored in the main screen frame buffer memory 29a as a picture signal. The picture signal by which coordinate conversion is not carried out is stored in the sub screen frame buffer memory 29b. The interface controller 28 reads sequentially the picture signal stored in the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b, drives the drain driver 27a and the gate driver 27b, and displays them on the display device 6 as the display information 13.

[0030]Fig.10 shows x on the display part of the picture signal in the case of displaying the display information 13, and a y-coordinate to the display device 6, Fig.11 shows x of the main screen frame buffer memory 29a, and a y-coordinate (each coordinates mean an address), and Fig.12 shows x of the sub screen frame buffer memory 29b, and a y-coordinate (each coordinates mean an address). in Fig.10, and 11 and 12 -- A and B -- each of the main screen frame buffer memory 29a -- an x-coordinate and a y-coordinate, [show and] a and b -- each of the main screen 17a -- an x-coordinate and a y-coordinate are shown -- P and Q -- each of the sub screen frame buffer memory 29b -- an x-coordinate and a y-coordinate are shown -- p and q -- each of the sub screen 17b -- an x-coordinate and a y-coordinate are shown.

[0031]The maximums of the x-coordinate of the main screen 17a and a y-coordinate are m and n, respectively, and the maximums of the x-coordinate of the sub screen 17b and a y-coordinate are u and v, respectively so that it may illustrate. In displaying the main screen 17a in the regular direction and reversing and displaying the sub screen 17b, it performs coordinate conversion shown in (several 1) and (several 2). In displaying the sub screen 17b in the regular direction and reversing and displaying the main screen 17a, it performs coordinate conversion shown in (several 3) and (several 4).

[0032]

[Mathematical formula 1]

[数1] $(A, B) = (a, b)$

[0033]

[Mathematical formula 2]

[数2] $(P, Q) = (m-a+1, n-b+1)$

[0034]

[Mathematical formula 3]

[数3] $(A, B) = (m-a+1, n-b+1)$

[0035]

[Mathematical formula 4]

[数4] $(P, Q) = (a, b)$

[0036]Coordinate conversion of an upper type is performed by the coordinate transformation circuit 30. The coordinate transformation circuit 30 comprises a usual adding machine and complementer. If m, n, a, and b which are used by an upper formula are beforehand memorized by ROM33 and the input signal for setting up the sub screen 17b, and it being reversed, and displaying is input into the microprocessor 32, The microprocessor 32 reads a required constant value from ROM33, and sends it to a broth, the display processing device 31, and the coordinate transformation circuit 30. furthermore -- the microprocessor 32 sending instructions of coordinate conversion and setting to the coordinate transformation circuit 30 -- the above -- required coordinate conversion is performed or the output of the coordinate transformation circuit 30 is through written in the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b. The interface controller 28 reads sequentially the information on the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b, and drives the drain driver 27a and the gate driver 27b, The main screen 17a and the sub screen 17b are set to the display device 6, and the display information 13 is displayed in the direction reversed mutually.

[0037]Rather than the main screen 17a, since the display surface product is small, the sub screen 17b cannot reverse and display all the display information 13 usually displayed on the main screen 17a, but displays a part. It can be set up and changed by scrolling Screen 17 which is usually performed with a portable computer, a word processor, etc. whether the portion of a main screen 17a throat is displayed. It is also possible to display the screen 17 whole of the main screen 17a on the sub screen 17b using a layout display which is usually performed.

[0038]Fig.13 and Fig.14 are the explanatory views showing an example in the state where it divided and displayed two about the screen of the display part 7.Fig.13 shows the place which

divided the screen into two in the longitudinal direction, displayed the display information 13 in the direction which can be seen and read in the operator 14a of a keyboard on one screen 17c, and displayed the display information 13 in the direction which is seen and can be read in the person 14b who meets the operator of a keyboard and is placed at Screen 17d of another side. A display direction is reversed although Screens [which were divided into two / 17c and 17d] each displays the same display information 13. Fig.14 shows the example which divided the screen into the transverse direction two and carried out it (it is a screen separation to the vertical direction of the display part 7). Whether it divides into a longitudinal direction or it divides into a transverse direction form selectable, and it also forms the size of a screen so that variable is possible. For example, it is possible to enable the change which uses one third of the whole display parts as one screen 17c, and uses the two thirds [remaining] as Screen 17d of another side etc. When reading the display information 13 displayed on the display part 7 in the 2-way which meets by the above, it becomes possible to change the composition of Screen 17 of the display part 7 so that it may be easy to read.

[0039]Here, in two split screens, the method of displaying the display information 13 in the direction reversed mutually applies to the method of presentation in the above-mentioned main screen and sub screen. In this example, operation of the keyboard 4 performed the display of two split screens. That is, two split screens are displayed by pushing simultaneously the Control key on a keyboard, and a kind of a letter key.

[0040]Fig.15 is a side surface explanatory view of the portable computer concerning the above-mentioned working example. The hinge 10 used for this example enables it to change arbitrarily the angle which the display part 7 of a portable computer makes with the navigational panel 5. In carrying a portable computer, the display part 7 covers the navigational panel 5. When the operator 14a of a portable computer operates the keyboard 4 independently, the display part 7 is fixed to the position of A, and it reads the display information 13, operating the keyboard 4. When the main operator 14a of a portable computer and both of the person 14b who meets the operator 14a and is placed view the display part 7, it fixes to the position of B, two or more persons meet, and the display part 7 enables it to read the display information 13. When the person 14b who meets the operator 14a of a keyboard and is placed mainly views the display part 7, the display part 7 is fixed to the position of c, and usual makes viewing from a counter direction easy.

[0041]Fig.16 is a perspective view showing an example of the hinge 10 by this example. The hinge 10 is fixed to the bottom case 1 and the display cover 3 with a screw via the screw holes 19a and 19b of the mounting hardware 18a and 18b. Here, the mounting hardware 18a is the mounting hardware to the bottom case 1, and the mounting hardware 18b is the mounting hardware to the display cover 3. The display part 7 according to the frictional force between the shaft 20 made of resin currently fixed to the above-mentioned mounting hardware 18a, and the bush 21 made of resin currently fixed to the mounting hardware 18b to the display cover 3, It comprises a position which becomes arbitrary [the angle of the display part 7 and the navigational panel 5 to make] so that a stop is possible. In addition, the latch structure more than a three-stage may be provided, and it may constitute so that the display part 7 can change the navigational panel 5 and the angle to make.

[0042]Fig.17 is a side surface explanatory view showing other examples of the portable computer concerning the above-mentioned working example. In the portable computer shown in Fig.17, a change is carried out to two screen display which displays the display information 13 of a character, a graph, a figure, etc. which were displayed on the display part 7 in the direction

reversed 180 degrees mutually by ON/OFF of the contact type switch 22. The display cover 3 and the rear cover 2 provide, the display part 7 makes the navigational panel 5 and the angle of 180 degrees, and when the display cover 3 and the rear cover 2 contacted and stop, the contact type switch 22 is set to ON so that it may illustrate. As a result, a signal is sent to micro ploy SESSA 32 (refer to Fig.9), and the microprocessor 32 reverses mutually 180 degrees of display information 13 displayed on the display part 7, and outputs the command of the purport that two screen display is performed. When the angle of the display part 7 and the navigational panel 5 to make becomes smaller than 180 degrees, for example, the contact type switch 22 serves as OFF, and two screen display is released.

[0043]Fig.18 and Fig.19 are the explanatory views showing composition of a hinge region which connects the bottom case 1 and the display cover 3.

The contact type switch 22 is provided to a hinge region.

The contact type switch 22 is provided by the mounting hardware 18a and 18b of the hinge 10, and a part of shaft 20 so that it may illustrate. As shown in Fig.18, when the angle which the display part 7 and the navigational panel 5 make is small, the contact type switch 22 is not turned on. As shown in Fig.19, when the angle which the navigational panel 5 makes is largely made the display part 7, for example it carries out more largely than 180 degrees, the contact type switch 22 turns on and two screen display is performed by the microprocessor 32. Again, if the above-mentioned angle is returned small, the contact type switch 22 will be turned off and the display of the display part 7 will return to normal. Thus, it becomes possible to perform two screen display which displays the display information 13 in the direction reversed 180 degrees mutually automatically by changing the angle which the display part 7 and the navigational panel 5 make, without performing other operations.

[0044]Fig.20 - Fig.22 are the outline views showing other examples of a portable computer.The portable computer shown in Fig.20 - Fig.22 is provided with the sub key board 23 which the person 14b who meets the operator 14a other than the keyboard 4 which becomes main, and is placed can operate.The example shown in Fig.20 prepares the sub key board 23 separately from the main part of a portable computer, and shows the example used via the connecting cable 24. Fig.21 shows the example which installs and operates the sub key board 23 around the display part 7. Fig.22 stores the sub key board 23 below the display part 7, and shows the example used pulling out at the time of use. In Fig.22, the sub key board 23 is usually stored by the sub key board cover 26, is pulled out to the person 14b side who meets an operator at the time of use and is placed, and is supported and used with the stand 25. The person 14b who meets the operator who becomes main [a portable computer] and is placed by installation of the sub key board 23, It becomes possible to input into a computer via the sub key 23a currently provided by the sub key board 23 like the operator 14a who becomes main, and the operativity of a portable computer improves.

[0045]Although the main screen and the sub screen were provided to the display part or the display part was divided into two screens, the present invention is not limited to this and it may be made to provide three or more screens to a display part in the above-mentioned working example.

[0046]According to the portable computer of the above-mentioned working example, the same display information can be read because two or more persons, such as a person who has met the operator of a keyboard and this operator, view the single display part 7.

[0047]According to the portable computer of the above-mentioned working example, when going on business in a company etc., it is easy to exchange the information about the display of

data and estimated presentation, etc. among two or more persons. It becomes effective also when learning by an educator and an educator meeting in a school, a cram school, etc.
[0048]In the above-mentioned working example, only the display device 6 of a portable computer can be installed in the counter of a bank, etc., and it can also use for a customer exchanging with a bank clerk.
[0049]
[Effect of the Invention]In [according to the present invention] a laptop type or notebook type portable computer, It becomes possible to display the display information of a character, a graph, a figure, etc. which were displayed on the display part on the 2-way which the direction which the operator of a portable computer reads, and the direction which a being [it / the operator is met and] person reads meet. Therefore, it is effective in the ability to read the same display information simultaneous and easily because two or more persons who meet and are placed view a single display part.
[0050]The character, graph which were displayed on the display part of the portable computer, Since various composition of the screen of a display part can be further changed when carrying out a display change so that the display information of a figure etc. can be simultaneously read in the 2-way which meets, it is effective in the ability to read display information in the 2-way which meets easily.
[0051]When carrying out a display change so that the display information of a character, a graph, a figure, etc. which were displayed on the display part of the portable computer can be read in the 2-way which meets, there is an effect which can be easily performed by keyboard grabbing etc.
[0052]Since the angle which a display part and a navigational panel make can be changed, it is effective in the ability to read easily the display information of a character, a graph, a figure, etc. which were displayed on the display part in the 2-way which meets.
[0053]Since the person who meets the main operator of a portable computer and is placed can input into a portable computer via a sub key board if needed, there is an effect which improves operativity.
[0054]Since two screens which were reversed 180 degrees and displayed display information mutually are simultaneously controllable, there is an effect which improves operativity.

[Translation done.]

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PRIOR ART

[Description of the Prior Art]In what is called a personal computer of a laptop type or a notebook type, the display device is fixed to the upper part of a keyboard so that the person who operates a keyboard may tend to read the display information of a character, a graph, a figure, etc. which were displayed on the display device. In this case, although it is easy to read the display information displayed on the display part in the position which operates a keyboard, it is difficult to read in the position and direction of [other than the actuated valve position of a keyboard] the display information displayed on the display device.
[0003]The technology which moves a display device is proposed about this point. For example, as it discloses in JP,S63-155313,A. In a laptop type word processor, a laptop PC, and a book type personal computer, it makes it possible to put a display device on any legible position by removing a display device from a computer body and using it via a connecting cable.

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EFFECT OF THE INVENTION

[Effect of the Invention]In [according to the present invention] a laptop type or notebook type portable computer, It becomes possible to display the display information of the character displayed on the display part, Graf, a figure, etc. on the 2-way which the direction which the operator of a portable computer reads, and the direction which a being [it / the operator is met and] person reads meet. Therefore, it is effective in the ability to read the same display information simultaneous and easily because two or more persons who meet and are placed view a single display part.
[0050]The character, Graf who were displayed on the display part of the portable computer, Since various composition of the screen of a display part can be further changed when carrying out a display change so that the display information of a figure etc. can be simultaneously read in the 2-way which meets, it is effective in the ability to read display information in the 2-way which meets easily.
[0051]When carrying out a display change so that the display information of a character, a graph, a figure, etc. which were displayed on the display part of the portable computer can be read in the 2-way which meets, there is an effect which can be easily performed by keyboard grabbing etc.
[0052]Since the angle which a display part and a navigational panel make can be changed, it is

effective in the ability to read easily the display information of a character, a graph, a figure, etc. which were displayed on the display part in the 2-way which meets.
[0053]Since the person who meets the main operator of a portable computer and is placed can input into a portable computer via a sub key board if needed, there is an effect which improves operativity.
[0054]Since two screens which were reversed 180 degrees and displayed display information mutually are simultaneously controllable, there is an effect which improves operativity.

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TECHNICAL PROBLEM

[Problem to be solved by the invention]In a laptop type word processor, a laptop PC, a book type personal computer, etc. the above-mentioned prior art, A display device is seen from the operator of the various above-mentioned portable computers, and consideration is not made about the point of reading simultaneously the same display information of what can be put on any legible position in the 2-way which meets, for example. Therefore, when information, including the display of data, estimated presentation, etc., was exchanged using a portable computer, there was a problem that the person who meets and is placed at an operator and this operator was unsuitable for reading display information in the 2-way which meets simultaneously.
[0005]When exchanging the information about presentation of a display and estimate of data, etc. using a portable computer, the object of this invention, Two or more persons need to check the display information of a portable computer, and it is in providing a portable computer with two or more persons able to read the same display information in the 2-way which meets simultaneously in such a case who meet and are placed by viewing a single display part.
[0006]In the above-mentioned portable computer with which two or more persons who meet and are placed can read simultaneously the display information displayed on the single display part, other purposes of the present invention improve the conspicuousness of a display part, and are in making display information easy to read.
[0007]In the above-mentioned portable computer with which two or more persons who meet and are placed can read simultaneously the display information displayed on the single display part, other purposes of the present invention are to improve operativity.

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MEANS

[Means for solving problem]To achieve the above objects, a sub screen other than a main screen is provided to a display part, 180 degrees is reversed with the display information displayed on the main screen, and the display information of a character, a graph, a figure, etc. which are displayed on a sub screen is displayed. In order to make display information furthermore easy to read, exchange of the display direction of a main screen and a sub screen, change of the position and size of a sub screen, expansion of the display information of a sub screen, and reduction are enabled.
[0009]A display part is divided into two screens to achieve the above objects, mutually, 180 degrees is reversed and the display information of a character, a graph, a figure, etc. which were displayed on each screen is displayed. In order to make display information easy to read, the size of two screens is made variable and two screens are arranged in a vertical direction or right and left directions.
[0010]In order to improve operativity, the above-mentioned screen switching operation presupposes that change of the angle of operation of a keyboard, a change-over switch or a display device, and a bottom case performs.
[0011]So that a portable computer can be operated from the direction of the person who meets the operator who becomes main and is placed, in order to improve operativity. The sub key board which can be operated from the direction of the person who meets the operator who becomes main and is placed besides the keyboard which becomes main is provided.
[0012]In order to improve operativity, it makes it possible the keyboard or sub key board which becomes main, and to control simultaneously the display information of a character, a graph, a figure, etc. which were displayed on two or more screens by a control device.
[0013]In order to make easy to read in the 2-way which meets display information displayed on the display part, the hinge mechanism which can rotate and fix a display part to a multistage story to a navigational panel is used.

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OPERATION

[Function]A sub screen other than a main screen is provided to a display part, 180 degrees is reversed with the display information displayed on a main screen, and the display information of a character, a graph, a figure, etc. which are displayed on a sub screen is displayed. Since it becomes possible to read display information in the 2-way which meets simultaneously by it, when the person who meets the operator of a portable computer and its operator, and is placed views a single display part, the same display information can be read simultaneously.
[0015]Exchange of the display direction of a main screen and a sub screen, change of the position which displays a sub screen, change of the size of a sub screen, expansion of the display information of a sub screen, and reduction are performed. Since it enables it to change arbitrarily the method of presentation of a main screen and a sub screen, display information can be read easily.
[0016]A display part is divided into two screens, mutually, 180 degrees is reversed and the display information of a character, a graph, a figure, etc. which were displayed on each screen is displayed. Since display information can be simultaneously read now in the 2-way which meets by it, when the person who meets the operator of a portable computer and its operator, and is placed views a single display part, the same display information can be read simultaneously. The size of two screens is changed and two screens are arranged in a vertical direction or right and left directions. Since the size and position of display information which are displayed on a display part can be changed by it, display information can be read easily.
[0017]Change of the angle of operation of a keyboard, a change over switch, or a display device performs display of a sub screen, and division of a screen. Since the display information displayed on the display part can be changed into simple and an instant by it, operativity increases.
[0018]The person who meets the operator of the keyboard which becomes main and is placed has an operational sub key besides the keyboard which becomes main [a portable computer]. Since the person who meets the operator who becomes main and is placed by it can also perform the input to a portable computer easily, the operativity of a portable computer increases.
[0019]The display information of two or more screens is simultaneously controlled by the keyboard which becomes main or sub key board of a portable computer, and a control device. The person who meets the operator who becomes main, and its operator, and is placed by it controls the display information of two or more screens easily, and since the controlled display information is simultaneously displayed on two or more screens, it can improve the operativity of a portable computer.
[0020]The hinge which can rotate and fix a display part to a multistage story to a navigational

panel is used. When carrying a portable computer, and a navigational panel is covered by a display part and the operator of a portable computer operates a keyboard by it, When the person who rotates a display part at the angle which the operator tends to view, meets the aforementioned operator and its operator, and is placed views display information simultaneously, When the person who opens a display part so that the same plane may be substantially made with a navigational panel, meets an operator, and is placed mainly views display information, Since the angle which a navigational panel makes can be made a display part further more largely than the above, it makes it easy to view the display information of a character, a graph, a figure, etc. which were displayed on the display part from the 2-way which meets.

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EXAMPLE

[Working example]According to the working example shown in attached Drawings below, it describes about the present invention still in detail. Fig.3 and Fig.4 are the perspective views showing an example of the appearance of the portable computer with which the present invention is applied.Fig.3 shows the appearance at the time of carrying of a portable computer, and Fig.4 shows the appearance at the time of operation.The portable computer comprises the bottom case 1, the rear cover 2, and the display cover 3 so that it may illustrate. It comes to be able to perform operation of the keyboard 4 and viewing of the display part 7 by releasing the latch 9 and opening the display cover 3. The circuit board for performing the function of a portable computer is stored in the lower part of the navigational panel 5. The floppy disk deck 8a and the card slot 8b are provided by the side surface of the bottom case 1. The contents of the information which the portable computer operated by turning on the electric power switch 11, processed the variety of information in inputting into the keyboard 4, and was processed to the display part 7 are displayed. In Fig.3 and Fig.4, a hinge for 10 to open the display cover 3 and 12 show the change-over switch which performs the display change of a main screen and a sub screen mentioned later.
[0022]In this example, color LCD (liquid crystal display) of the active matrix system is used as the display device 6. However, otherwise, the thing usable to the portable computer of a laptop

type for which anything is used with what is called a flat-panel display is possible for a plasma display, EL (electroluminescence), etc. The display device 6 used for this example is TFT-(thin film transistor) LCD of the size of 10.4 inches of a diagonal direction, and 16 color specification. As for arrangement of a 640(H) x480(V) dot and a light filter, pixel numbers are 0.11 (H) and 0.33(V), and R, G, B length stripe, 640x3 pixels, and their pixel pitch are the backlight systems by a cold cathode fluorescent tube.

[0023]Fig.1 and Fig.2 are the explanatory views showing the state where the main screen 17a and the sub screen 17b were provided and displayed on the display part 7.Fig.1 provides the sub screen 17b to some main screens 17a, and the display information 13 is displayed in the direction which can be read in the person (not shown) who meets the operator of a keyboard and is placed at the main screen 17a, The state where the display information 13 was displayed in the direction which the operator 14a of a keyboard can read is shown in the sub screen 17b. Fig.2 shows the state where the display direction of the main screen 17a and the sub screen 17b of Fig.1 was replaced.In this example, exchange of the display direction of a display and the main screen 17a of the above-mentioned sub screen 17b, and the sub screen 17b is performed by the change-over switch 12 (refer to Fig.4) provided separately from the key which operates a portable computer.

[0024]Fig.5 and Fig.6 are the explanatory views showing the display position of the sub screen 17b in the main screen 17a.It constituted from an example shown in Fig.5 so that the sub screen 17b could be moved to four places of the main screen 17a. The portion hidden by the display of the sub screen 17b by this among the display information 13 displayed on the main screen 17a can be changed.

[0025]Fig.6 shows the example which enabled it to change the size of the sub screen 17b. It is made for length to become one fourth of the main screens 17a in every direction, and also length in every direction enabled it, as for the size of the sub screen 17b, to change the size of the sub screen 17b in this example from 1/5 to 1/2 of the main screen 17a. When larger [if smaller than one fifth of the main screens 17a, a screen will be small and it will become difficult to read the display information 13 as a size of the sub screen 17b, and] than one half, there are too many portions in which the display information 13 currently displayed on the main screen 17a hides. Display information 13 can be made easy to be able to change the size of the display information 13 of the sub screen 17b by this, considering a relation with the display information 13 of the main screen 17a, and to read. a part of the display of the sub screen 17b reducing the whole display of the main screen 17a, and making it display, and display information 13 of the main screen 17a -- the same size as the main screen 17a -- or it expands and enables it to make it display It becomes possible that the near person who views the sub screen 17b reads the whole display information easily by this, and to check a part of display information 13 in detail.

[0026]Fig.7 is a side view showing the state where the portable computer of this example is used. The display part 7 of a portable computer makes parallel him of open, the navigational panel 5, the display part 7, and the desktop 15 that installed the computer so that the navigational panel 5 and the angle of about 180 degrees may be made. This turns to the display direction of the display information 13 displayed on the main screen 17a of the display part 7 to the person 14b who meets the operator of a portable computer and is placed, It turns to the display direction of the display information 13 displayed on the sub screen 17b of the display part 7 to the operator 14a of the keyboard of a portable computer. The display direction of the display information 13 of the main screen 17a and the display direction of the display information 13 of the sub screen 17b may be made reverse if needed. As shown in Fig.7, it enables the person 14b who meets the operator 14a and operator of a keyboard and is placed to read the same display information 13

simultaneously by viewing the main screen 17a and the sub screen 17b of the single display part 7.
[0027]Fig.8 is an expansion explanatory view of the display device 6. The display device 6 used for this example is above-mentioned TFT-LCD.
The pixel 16 is located in a line with rectangular form at m width and n length.
16 d of liquid crystal layers of the pixel 16 are controlled by the picture signal applied to the picture element electrode 16a. In order 180 degrees is reversed and to display the display information 13 displayed on the display device 6, It is attained by counting from the pixel 16 which is placed at the upper left end of the display device 6, and performing operation replaced with the picture signal which applies the picture signal applied to the picture element electrode 16a which exists in the a-th width and the b-th length to the picture element electrode 16a which exists in eye horizontal (m-a+1) watch and eye vertical (n-b+1) watch. 16b shows a drain bus among a figure, and 16c shows the gate bus.
[0028]Fig.9 is a block diagram showing an example of the portable computer which can display the above-mentioned main screen 17a and the sub screen 17b. So that it may illustrate a portable computer, The display device 6. The drain driver 27a. It comprises the gate driver 27b, the interface controller 28, the main screen frame buffer memory 29a, the sub screen frame buffer memory 29b, the coordinate transformation circuit 30, the display processing device 31, the microprocessor 32, and ROM33 and RAM34.
[0029]In the program memorized by ROM33, in Fig.9, the microprocessor 32 operates RAM34 as a work area. That is, if the microprocessor 32 publishes a display command, the display processing device 31 will generate and output the picture signal corresponding to this display command. For example, in displaying a character, it writes in the address which made reading the character pattern memorized by ROM33 and was defined by making it into a picture signal by the display command of the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b. When indicating the display information of a main screen by flip vertical, for example at this time, coordinate conversion of the above-mentioned character pattern is carried out to a character inversion pattern by work of the coordinate transformation circuit 30, and this is stored in the main screen frame buffer memory 29a as a picture signal. The picture signal by which coordinate conversion is not carried out is stored in the sub screen frame buffer memory 29b. The interface controller 28 reads sequentially the picture signal stored in the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b, drives the drain driver 27a and the gate driver 27b, and displays them on the display device 6 as the display information 13.
[0030]Fig.10 shows x on the display part of the picture signal in the case of displaying the display information 13, and a y-coordinate to the display device 6, Fig.11 shows x of the main screen frame buffer memory 29a, and a y-coordinate (each coordinates mean an address), and Fig.12 shows x of the sub screen frame buffer memory 29b, and a y-coordinate (each coordinates mean an address). in Fig.10, and 11 and 12 -- A and B -- each of the main screen frame buffer memory 29a -- an x-coordinate and a y-coordinate, [show and] a and b -- each of the main screen 17a -- an x-coordinate and a y-coordinate are shown -- P and Q -- each of the sub screen frame buffer memory 29b -- an x-coordinate and a y-coordinate are shown -- p and q -- each of the sub screen 17b -- an x-coordinate and a y-coordinate are shown.
[0031]The maximums of the x-coordinate of the main screen 17a and a y-coordinate are m and n, respectively, and the maximums of the x-coordinate of the sub screen 17b and a y-coordinate are u and v, respectively so that it may illustrate. In displaying the main screen 17a in the regular

direction and reversing and displaying the sub screen 17b, it performs coordinate conversion shown in (several 1) and (several 2). In displaying the sub screen 17b in the regular direction and reversing and displaying the main screen 17a, it performs coordinate conversion shown in (several 3) and (several 4).

[0032]

[Mathematical formula 1]

[数1] $(A, B) = (a, b)$

[0033]

[Mathematical formula 2]

[数2] $(P, Q) = (m-a+1, n-b+1)$

[0034]

[Mathematical formula 3]

[数3] $(A, B) = (m-a+1, n-b+1)$

[0035]

[Mathematical formula 4]

[数4] $(P, Q) = (a, b)$

[0036]Coordinate conversion of an upper type is performed by the coordinate transformation circuit 30. The coordinate transformation circuit 30 comprises a usual adding machine and complementer. If m, n, a, and b which are used by an upper formula are beforehand memorized by ROM33 and the input signal for setting up the sub screen 17b, and it being reversed, and displaying is input into the microprocessor 32, The microprocessor 32 reads a required constant value from ROM33, and sends it to a broth, the display processing device 31, and the coordinate transformation circuit 30. furthermore -- the microprocessor 32 sending instructions of coordinate conversion and setting to the coordinate transformation circuit 30 -- the above -- required coordinate conversion is performed or the output of the coordinate transformation circuit 30 is through written in the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b. The interface controller 28 reads sequentially the information on the main screen frame buffer memory 29a and the sub screen frame buffer memory 29b, and drives the drain driver 27a and the gate driver 27b, The main screen 17a and the sub screen 17b are set to the display device 6, and the display information 13 is displayed in the direction reversed mutually.

[0037]Rather than the main screen 17a, since the display surface product is small, the sub screen 17b cannot reverse and display all the display information 13 usually displayed on the main screen 17a, but displays a part. It can be set up and changed by scrolling Screen 17 which is usually performed with a portable computer, a word processor, etc. whether the portion of a main screen 17a throat is displayed. It is also possible to display the screen 17 whole of the main screen 17a on the sub screen 17b using a layout display which is usually performed.

[0038]Fig.13 and Fig.14 are the explanatory views showing an example in the state where it divided and displayed two about the screen of the display part 7.Fig.13 shows the place which divided the screen into two in the longitudinal direction, displayed the display information 13 in the direction which can be seen and read in the operator 14a of a keyboard on one screen 17c, and displayed the display information 13 in the direction which is seen and can be read in the

person 14b who meets the operator of a keyboard and is placed at Screen 17d of another side. A display direction is reversed although Screens [which were divided into two / 17c and 17d] each displays the same display information 13. Fig.14 shows the example which divided the screen into the transverse direction two and carried out it (it is a screen separation to the vertical direction of the display part 7). Whether it divides into a longitudinal direction or it divides into a transverse direction form selectable, and it also forms the size of a screen so that variable is possible. For example, it is possible to enable the change which uses one third of the whole display parts as one screen 17c, and uses the two thirds [remaining] as Screen 17d of another side etc. When reading the display information 13 displayed on the display part 7 in the 2-way which meets by the above, it becomes possible to change the composition of Screen 17 of the display part 7 so that it may be easy to read.

[0039]Here, in two split screens, the method of displaying the display information 13 in the direction reversed mutually applies to the method of presentation in the above-mentioned main screen and sub screen. In this example, operation of the keyboard 4 performed the display of two split screens. That is, two split screens are displayed by pushing simultaneously the Control key on a keyboard, and a kind of a letter key.

[0040]Fig.15 is a side surface explanatory view of the portable computer concerning the above-mentioned working example. The hinge 10 used for this example enables it to change arbitrarily the angle which the display part 7 of a portable computer makes with the navigational panel 5. In carrying a portable computer, the display part 7 covers the navigational panel 5. When the operator 14a of a portable computer operates the keyboard 4 independently, the display part 7 is fixed to the position of A, and it reads the display information 13, operating the keyboard 4. When the main operator 14a of a portable computer and both of the person 14b who meets the operator 14a and is placed view the display part 7, it fixes to the position of B, two or more persons meet, and the display part 7 enables it to read the display information 13. When the person 14b who meets the operator 14a of a keyboard and is placed mainly views the display part 7, the display part 7 is fixed to the position of c, and usual makes viewing from a counter direction easy.

[0041]Fig.16 is a perspective view showing an example of the hinge 10 by this example. The hinge 10 is fixed to the bottom case 1 and the display cover 3 with a screw via the screw holes 19a and 19b of the mounting hardware 18a and 18b. Here, the mounting hardware 18a is the mounting hardware to the bottom case 1, and the mounting hardware 18b is the mounting hardware to the display cover 3. The display part 7 according to the frictional force between the shaft 20 made of resin currently fixed to the above-mentioned mounting hardware 18a, and the bush 21 made of resin currently fixed to the mounting hardware 18b to the display cover 3, It comprises a position which becomes arbitrary [the angle of the display part 7 and the navigational panel 5 to make] so that a stop is possible. In addition, the latch structure more than a three-stage may be provided, and it may constitute so that the display part 7 can change the navigational panel 5 and the angle to make.

[0042]Fig.17 is a side surface explanatory view showing other examples of the portable computer concerning the above-mentioned working example. In the portable computer shown in Fig.17, a change is carried out to two screen display which displays the display information 13 of the character displayed on the display part 7, Graf, a figure, etc. in the direction reversed 180 degrees mutually by ON/OFF of the contact type switch 22. The display cover 3 and the rear cover 2 provide, the display part 7 makes the navigational panel 5 and the angle of 180 degrees, and when the display cover 3 and the rear cover 2 contacted and stop, the contact type switch 22

is set to ON so that it may illustrate. As a result, a signal is sent to micro ploy SESSA 32 (refer to Fig.9), and the microprocessor 32 reverses mutually 180 degrees of display information 13 displayed on the display part 7, and outputs the command of the purport that two screen display is performed. When the angle of the display part 7 and the navigational panel 5 to make becomes smaller than 180 degrees, for example, the contact type switch 22 serves as OFF, and two screen display is released.

[0043]Fig.18 and Fig.19 are the explanatory views showing composition of a hinge region which connects the bottom case 1 and the display cover 3.

The contact type switch 22 is provided to a hinge region.

The contact type switch 22 is provided by the mounting hardware 18a and 18b of the hinge 10, and a part of shaft 20 so that it may illustrate. As shown in Fig.18, when the angle which the display part 7 and the navigational panel 5 make is small, the contact type switch 22 is not turned on. As shown in Fig.19, when the angle which the navigational panel 5 makes is largely made the display part 7, for example it carries out more largely than 180 degrees, the contact type switch 22 turns on and two screen display is performed by the microprocessor 32. Again, if the above-mentioned angle is returned small, the contact type switch 22 will be turned off and the display of the display part 7 will return to normal. Thus, it becomes possible to perform two screen display which displays the display information 13 in the direction reversed 180 degrees mutually automatically by changing the angle which the display part 7 and the navigational panel 5 make, without performing other operations.

[0044]Fig.20 - Fig.22 are the outline views showing other examples of a portable computer.The portable computer shown in Fig.20 - Fig.22 is provided with the sub key board 23 which the person 14b who meets the operator 14a other than the keyboard 4 which becomes main, and is placed can operate.The example shown in Fig.20 prepares the sub key board 23 separately from the main part of a portable computer, and shows the example used via the connecting cable 24. Fig.21 shows the example which installs and operates the sub key board 23 around the display part 7. Fig.22 stores the sub key board 23 below the display part 7, and shows the example used pulling out at the time of use. In Fig.22, the sub key board 23 is usually stored by the sub key board cover 26, is pulled out to the person 14b side who meets an operator at the time of use and is placed, and is supported and used with the stand 25. The person 14b who meets the operator who becomes main [a portable computer] and is placed by installation of the sub key board 23, It becomes possible to input into a computer via the sub key 23a currently provided by the sub key board 23 like the operator 14a who becomes main, and the operativity of a portable computer improves.

[0045]Although the main screen and the sub screen were provided to the display part or the display part was divided into two screens, the present invention is not limited to this and it may be made to provide three or more screens to a display part in the above-mentioned working example.

[0046]According to the portable computer of the above-mentioned working example, the same display information can be read because two or more persons, such as a person who has met the operator of a keyboard and this operator, view the single display part 7.

[0047]According to the portable computer of the above-mentioned working example, when going on business in a company etc., it is easy to exchange the information about the display of data and estimated presentation, etc. among two or more persons. It becomes effective also when learning by an educator and an educator meeting in a school, a cram school, etc.

[0048]In the above-mentioned working example, only the display device 6 of a portable

computer can be installed in the counter of a bank, etc., and it can also use for a customer exchanging with a bank clerk.

[Translation done.]

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]The explanatory view showing the state where the main screen and the sub screen were provided and displayed on the display part.
[Drawing 2]The explanatory view showing the state where the main screen and the sub screen were provided and displayed on the display part.
[Drawing 3]The perspective view showing an example of the appearance of the portable computer with which the present invention is applied.
[Drawing 4]The perspective view showing an example of the appearance of the portable computer with which the present invention is applied.
[Drawing 5]The explanatory view showing the display position of the sub screen in a main screen.
[Drawing 6]The explanatory view showing the display position of the sub screen in a main screen.
[Drawing 7]The side view showing an example in the state where the portable computer is used.
[Drawing 8]The expansion explanatory view of a display device.
[Drawing 9]The block diagram showing an example of the portable computer which can display a main screen and a sub screen.
[Drawing 10]The explanatory view showing x on the display part of a picture signal, and a y-coordinate.
[Drawing 11]The explanatory view showing x of main screen frame buffer memory, and a y-coordinate (each coordinates mean an address).
[Drawing 12]The explanatory view showing x of sub screen frame buffer memory, and a y-coordinate (each coordinates mean an address).
[Drawing 13]The explanatory view showing an example in the state where 2 split displays of the screen of a display part were carried out.
[Drawing 14]The explanatory view showing an example in the state where 2 split displays of the screen of a display part were carried out.

[Drawing 15]The side surface explanatory view of a portable computer.
[Drawing 16]The perspective view showing an example of a hinge.
[Drawing 17]The side surface explanatory view showing other examples of a portable computer.
[Drawing 18]The explanatory view showing the composition of the hinge region which connects a bottom case and a display cover.
[Drawing 19]The explanatory view showing the composition of the hinge region which connects a bottom case and a display cover.
[Drawing 20]The outline view showing other examples of a portable computer.
[Drawing 21]The outline view showing other examples of a portable computer.
[Drawing 22]The outline view showing other examples of a portable computer.
[Explanations of letters or numerals]
1 -- bottom case, 2 -- rear cover, 3 -- display cover, 4 -- keyboard, 5 -- navigational panel, 6 -- display device, 7 -- display part, 8 a -- floppy disk deck, 8 b -- card slot, 9 -- latch, 10 -- hinge, 11 -- electric power switch, 12 -- display reversing switch, 13 -- display information, 14 a -- operator, 14 b -- person who meets an operator and is placed, 15 -- desktop, 16 -- pixel, 16 a -- picture element electrode, 16 b -- Dorain Buss, 16 c -- gate bus, 16 d -- liquid crystal layer, 17 -- screen, 17 a -- main screen, 17 b -- one screen of a sub screen and c--172 split screen, 17 d -- screen of another side of two split screens, 18a, 18b -- Mounting hardware, 19a, 19b -- A screw hole, 20 -- Shaft, 21 -- bush, 22 -- contact type switch, 23 -- sub key board, 23 a -- sub key, 24 -- connecting cable, 25 -- stand, 26 -- sub key board cover, 27 a -- drain driver, 27 b -- gate driver, 28 -- interface controller, 29 a -- main screen frame buffer memory, 29 b -- sub screen frame buffer memory, 30 -- coordinate transformation circuit, 31 -- display processing device, 32 -- microprocessor, 33 -- ROM, 34 -- RAM.

[Translation done.]

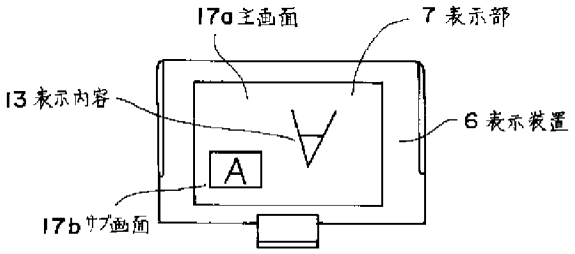
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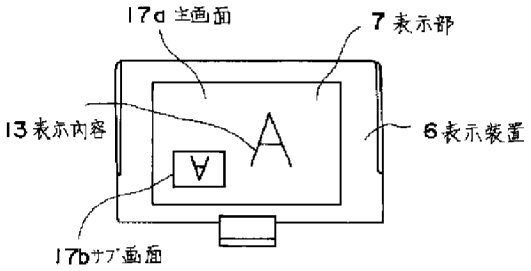
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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

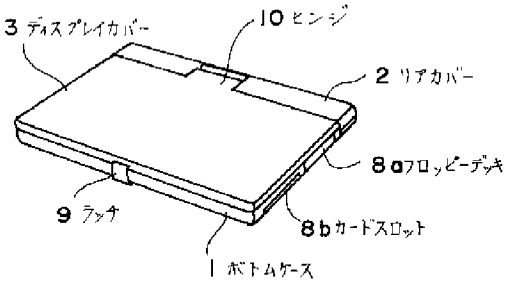
[Drawing 1]
[図 1]



[Drawing 2]
[図 2]

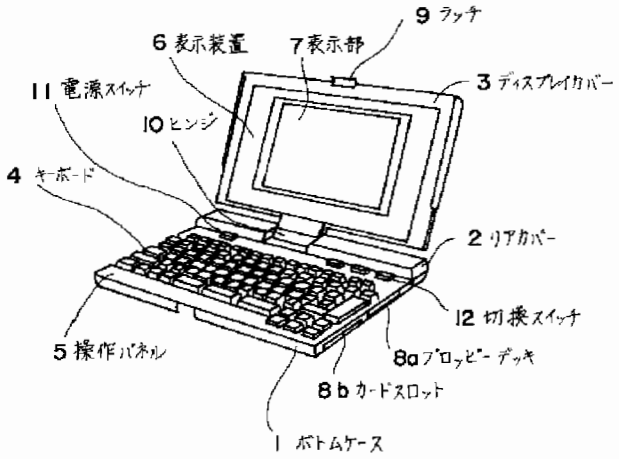


[Drawing 3]
[図 3]



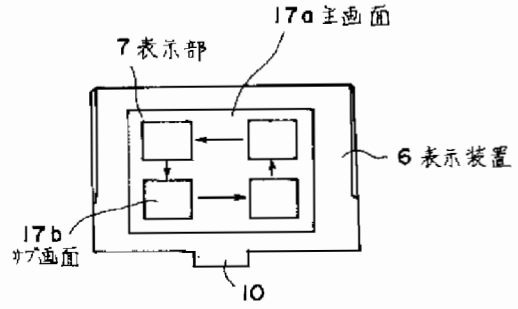
[Drawing 4]

【図 4】



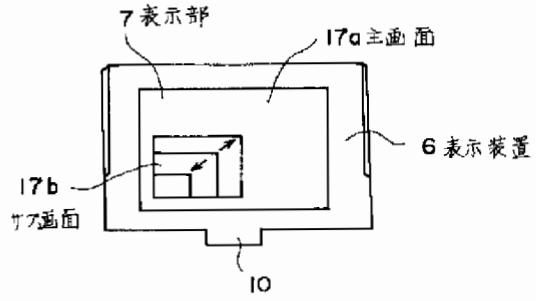
[Drawing 5]

【図 5】



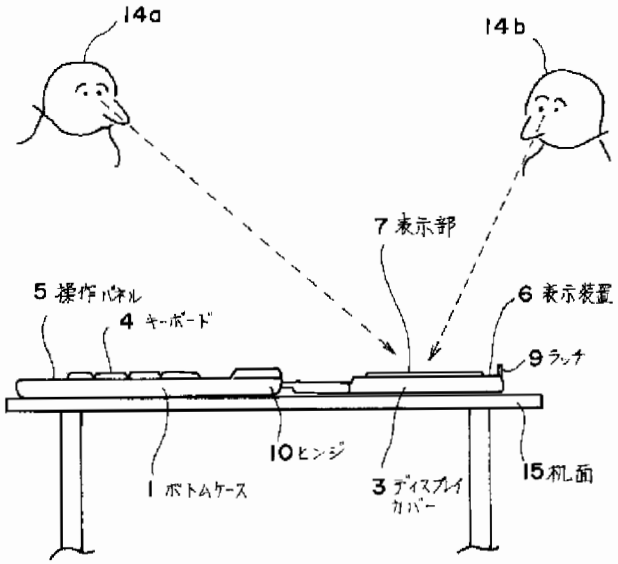
[Drawing 6]

【図 6】

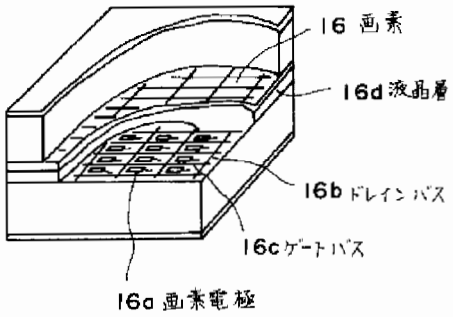


[Drawing 7]

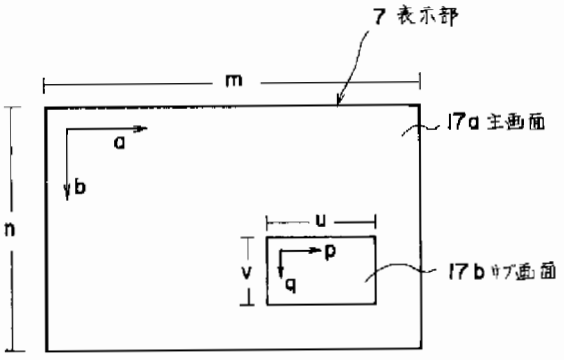
[図 7]



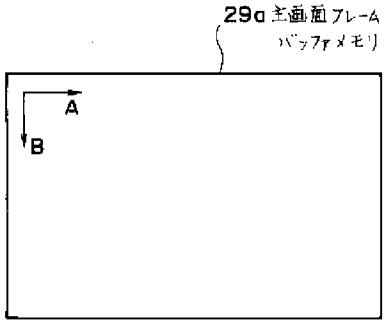
[Drawing 8]
[図 8]



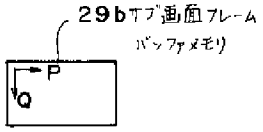
[Drawing 10]
[図 10]



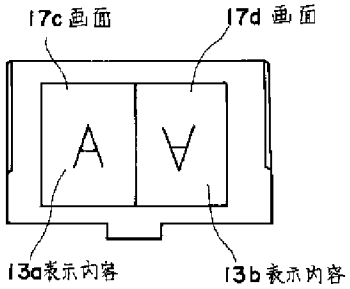
[Drawing 11]
[図 11]



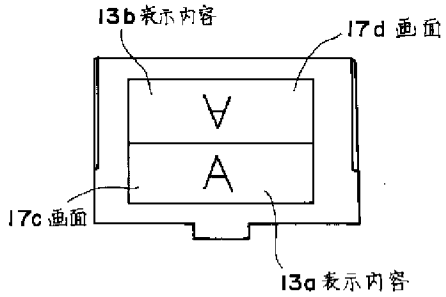
[Drawing 12]
[図 12]



[Drawing 13]
[図 13]

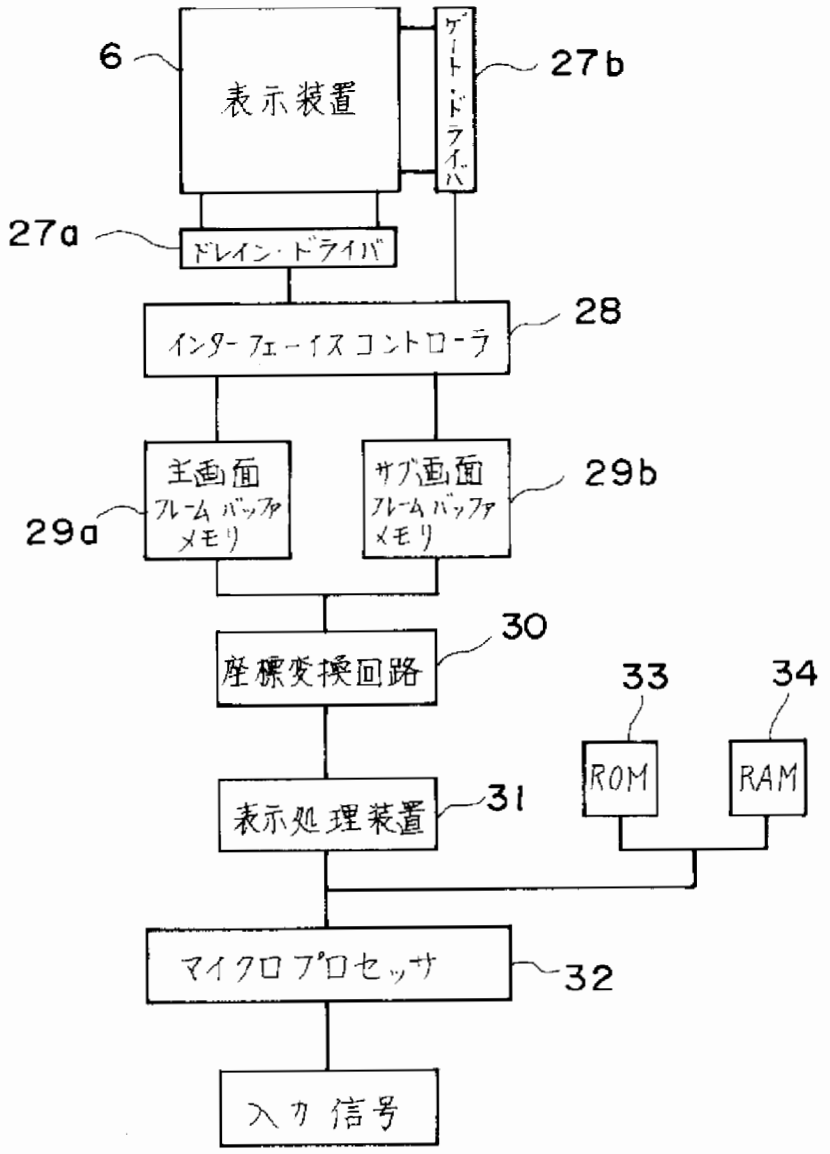


[Drawing 14]
[図 14]

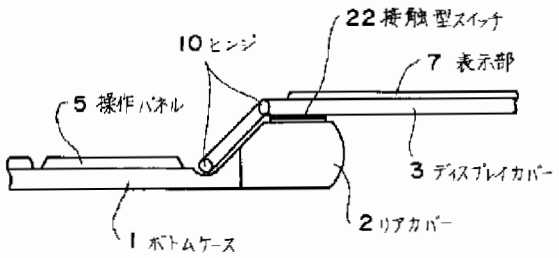


[Drawing 9]

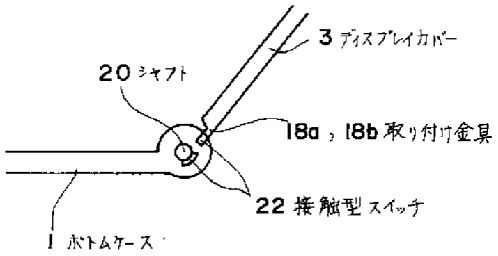
[図 9]



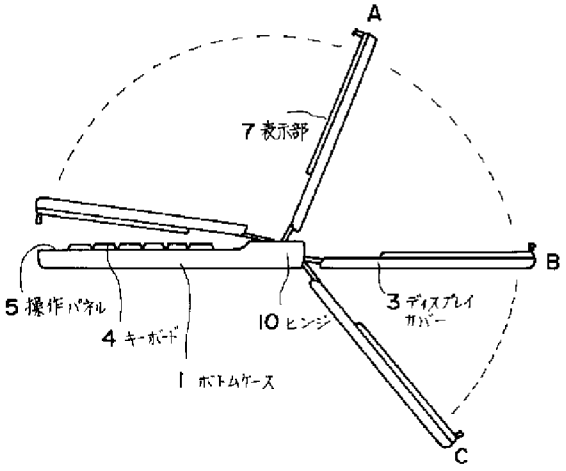
[Drawing 17]
[図 17]



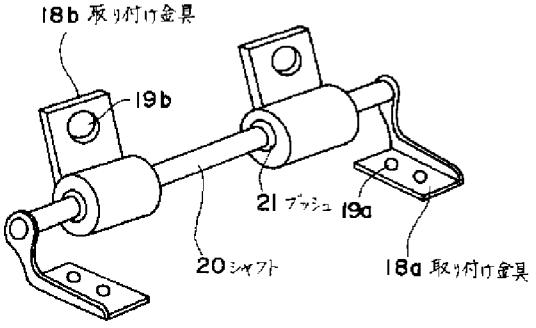
[Drawing 18]
[図 18]



[Drawing 15]
[図 15]

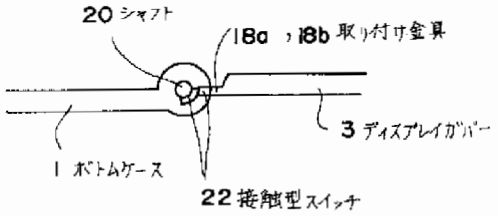


[Drawing 16]
[図 16]



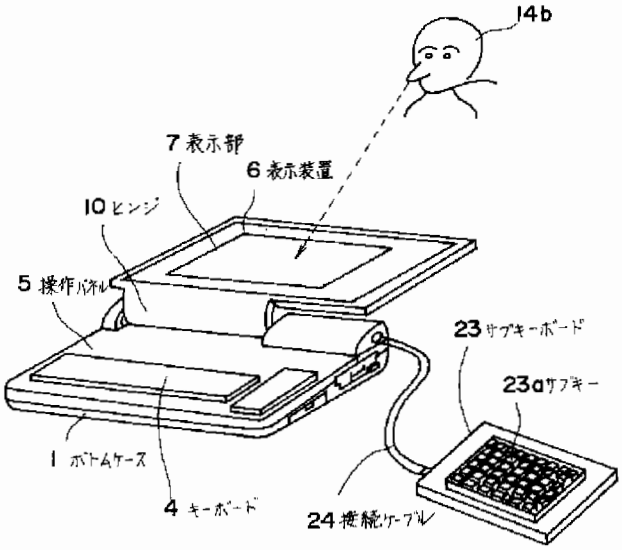
[Drawing 19]

[図 19]



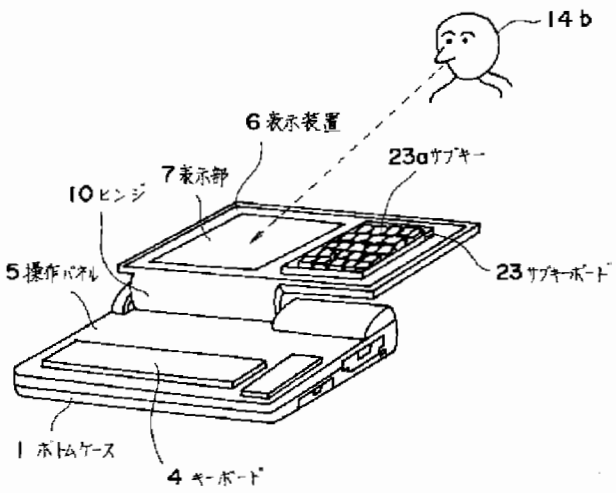
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[図 20]



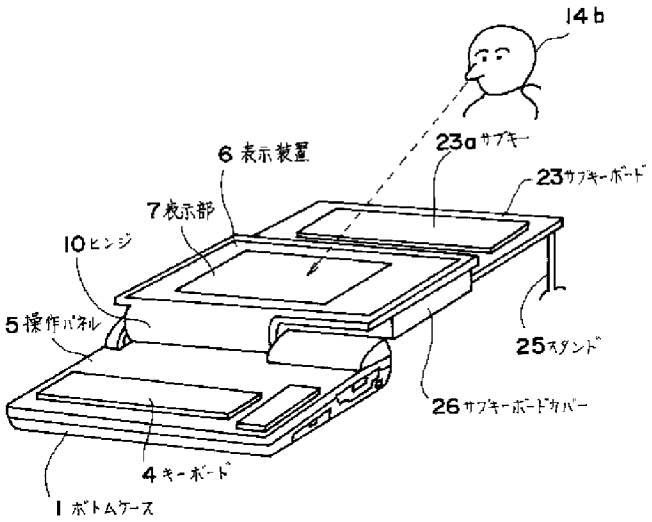
[Drawing 21]

[図 21]



[Drawing 22]

【図２２】



[Translation done.]

[19]中华人民共和国国家知识产权局

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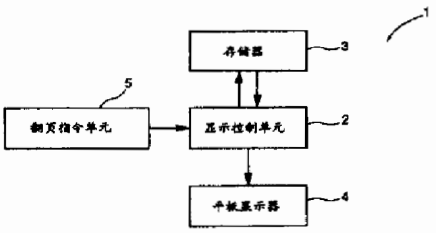
[22]申请日 1999.2.15 [21]申请号 99803247.6
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权利要求书5页 说明书22页 附图页数27页

[54]发明名称 显示装置

[57]摘要

一种能够达到给人好像真正翻页的感觉来翻页的显示装置,包括用于存储信息 的存储器;用于显示信息的显示器;用于检测指令单元本身倾斜的情况,输出 指示该倾斜方向的检测信号的翻页指令单元;以及用于从翻页指令单元接收指 令,以便根据所述倾斜的方向从存储器中读取下页或上页的信息,并且在显示 器上显示读取的信息的显示控制单元。



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1. 一种显示装置，包括:

信息存储装置，用于存储信息;

信息显示装置，用于显示信息;

翻页指令装置，用于检测翻页指令装置自己的倾斜，以输出指示倾斜方向的检测信号; 以及

显示控制装置，用于从所述翻页指令装置接收指令，以便根据倾斜方向从所述信息存储装置读取下页或前页信息，并在所述信息显示装置上显示读取的信息。

2. 如权利要求 1 所述的显示装置，其中

所述翻页指令装置具有覆盖了一层薄膜的表面。

3. 一种显示装置，包括:

信息存储装置，用于存储信息;

信息显示装置，用于显示信息;

翻页指令装置，用于检测指针移动的方向，以便输出指示移动方向的检测信号; 以及

显示控制装置，用于从所述翻页指令装置接收指令，以便根据指针移动的方向从所述信息存储装置读取下页或前页的信息，并在所述信息显示装置上显示读取的信息。

4. 如权利要求 3 所述的显示装置，其中

所述翻动指令装置包含用于覆盖所述信息显示装置的透明触摸板。

5. 如权利要求 3 所述的显示装置，其中

所述显示控制装置包括用于从所述翻页指令装置接收指令，以便根据指针移动的方向以及该指针与所述翻页指令单元接触的时间段从所述的信息存储装置中读取确定页的信息，并在所述信息显示装置上显示读取的信息的装置。

6. 一种显示装置，包括:

信息存储装置，用于存储信息;

信息显示装置，用于显示信息;

翻页指令装置，用于检测被指针接触的位置，以便输出指示触摸位置的

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检测信号；以及

显示控制装置，用于从所述翻页指令装置接收指令，以便根据被指针接触的位置变化，从所述信息存储装置中读取下页或前页的信息，并在所述显示装置上显示读取的信息。

7. 一种显示装置，包括：

信息存储装置，用于存储信息；

由至少两个可打开和可关闭的屏幕构成的信息显示装置，用于显示信息；

翻页指令装置，用于检测所述显示装置的开/关操作，以输出检测信号；以及

显示控制装置，用于从翻页指令装置接收指令，以便根据被检测到的开/关操作，切换被显示在所述显示装置上的信息。

8. 如权利要求 7 所述的显示装置，其中

由至少两个屏幕形成的所述信息显示装置安装成面对面。

9. 如权利要求 7 所述的显示装置，其中

所述翻页指令装置包含至少两个被分别装在由至少两个屏幕的所述信息显示装置上的翻页指令装置，以及

所述显示控制装置包含用于从所述至少两个翻页指令装置中接收指令，以便依据每个翻页指令装置输出的检测信号在不同方向上切换信息的装置。

10. 一种显示装置包括：

信息存储装置，用于存储信息；

信息显示装置，用于显示信息；

声音输出装置，用于输出声音；

翻页指令装置，用于发送指令，以便切换在所述显示装置上显示的信息；

显示控制装置，用于从所述翻页指令装置接收指令，以便切换在所述显示装置上显示的信息；以及

连接到所述显示控制装置的声音输出控制装置，用于根据显示在所述显示装置上的信息切换从所述声音输出装置中输出翻纸的声音。

11. 如权利要求 10 所述的显示装置，其中

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所述声音输出控制装置包含连接到所述显示控制装置的装置，用于根据显示在所述显示装置上的信息切换从所述声音输出装置中输出翻纸的声音，并依据显示在所述信息显示装置上的信息的切换速度输出不同的声音。

12. 如权利要求 10 所述的显示装置，其中

所述声音输出装置由至少两个声音输出装置形成，以及

所述声音输出控制装置包含连接到所述显示控制装置的装置，用于根据显示在所述显示装置上的信息切换从所述声音输出装置中输出翻纸的声音，并依据切换信息的方向，改变从所述多个声音输出装置中输出的音量大小。

13. 一种显示装置，包括:

信息存储装置，用于存储信息;

由至少两个可打开和可关闭的屏幕构成的信息显示装置，用于显示信息;

转动角度检测装置，用于检测所述显示装置的转动角度; 以及

连接到所述转动角度检测装置的显示控制装置，用于根据所述信息显示装置的转动角度控制是否所述显示装置提供显示;

14. 如权利要求 13 所述的显示装置，其中

所述转角检测装置包括:

配置在所述信息显示装置的屏幕之一上的一个开关; 以及

配置在所述信息显示装置的另一个屏幕之上的开关挤压器，它的定位要使得当所述信息显示装置的转角等于预定角度时，能够挤压所述开关，以及

所述显示控制装置包括连接到所述开关上的装置，用于根据所述开关的输出控制所述显示装置是否提供显示。

15. 如权利要求 13 所述的显示装置，其中

所述转角检测装置包括:

配置在所述信息显示装置的屏幕之一上的多个开关; 以及

配置在所述信息显示装置的另一个屏幕之上的多个开关挤压器，它的定位要使得当所述信息显示装置的转角等于预定角度时，能够分别挤压所述多个开关，以及

所述显示控制装置包括连接到所述多个开关上的装置，用于根据所述多个开关的输出控制所述显示装置是否提供显示。

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16. 如权利要求 13 所述的显示装置，其中

所述转角检测装置包括:

配置在所述信息显示装置的屏幕之一上的一个开关；以及

配置在所述信息显示装置的另一个屏幕之上的多个开关挤压器，它的定位要使得当所述信息显示装置的转角等于预定角度时，能够挤压所述开关，以及

所述显示控制装置包括连接到所述开关上的装置，用于根据所述开关的输出控制所述显示装置是否提供显示。

17. 如权利要求 13 所述的显示装置，还包括翻页指令装置，用于发送指令，以便切换显示在所述信息显示装置上的信息，其中

所述显示控制装置包含:

连接到所述转动角度检测装置的装置，用于根据所述信息显示装置的转动角度控制是否所述显示装置提供显示；以及

连接到所述翻页指令装置的装置，用于根据所述翻页指令装置的输出，对应于所述信息显示装置提供显示的屏幕数按单元切换信息。

18. 如权利要求 17 所述的显示装置，其中

所述显示控制装置还包含用于压缩的装置，若所述信息显示装置提供显示的屏幕数量减少，那么在提供显示的屏幕数量减少之前，压缩显示在所述信息显示装置上的信息，并在所述信息显示装置提供显示的屏幕上显示压缩过的信息。

19. 如权利要求 13 所述的显示装置，还包括固定装置，用于把所述信息显示装置固定在预定范围的一个旋转角上。

20. 如权利要求 19 所述的显示装置，还包括防滑装置，所述的装置配置在接触板底部的部分，用于防止固定在预定范围的一个旋转角度上的信息显示装置的滑动。

21. 一种显示装置，包括:

信息存储装置，用于存储信息;

由至少两个可打开和可关闭的屏幕构成的信息显示装置，用于显示信息;

由至少两个分别配置在所述信息显示装置屏幕上的组件形成的接触面积检测装置，用于检测被指针接触的所述信息显示装置上的面积；以及

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连接到所述接触面积检测装置的显示控制装置，用于根据由指针接触的所述接触面积检测装置的面积，控制是否所述显示装置提供显示。

22. 如权利要求 21 所述的显示装置，其中

所述显示控制装置包括使所述信息显示装置的屏幕不提供显示的装置，该屏幕对应于被指针接触的面积是最大的的所述接触面积检测装置的一部分。

23. 如权利要求 21 所述的显示装置，其中

所述显示控制装置包括:

用于根据由指针接触的所述接触面积检测装置的面积，控制是否所述显示装置提供显示的装置；以及

用于从所述信息存储装置中，根据接触所述检测装置的指针的移动方向读取下页或前页的信息，并在所述信息显示装置上显示读取的信息的第一装置。

24. 如权利要求 23 所述的显示装置，其中

所述第一装置包括用于根据由指针接触的所述接触面积检测装置的面积，控制是否所述显示装置提供显示，根据接触所述检测装置的指针的移动方向，把对应于所述信息显示装置提供显示的屏幕数作为一个单元，从所述信息存储装置中读取下页或前页的信息并在所述信息显示装置上显示读取的信息的装置。

25. 如权利要求 23 所述的显示装置，其中

所述显示控制装置还包含用于压缩的装置，若所述信息显示装置提供显示的屏幕数量减少，那么在提供显示的屏幕数量减少之前，压缩显示在所述信息显示装置上的信息，并在所述信息显示装置提供显示的屏幕上显示压缩过的信息。

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说　明　书

显示装置

技术领域

本发明涉及显示装置，具体地讲，本发明涉及能够通过使用象书一样可打开显示数据，并能允许用户以用户真正翻页的感觉翻页的显示装置。

背景技术

显示电子书籍等的传统的便携式显示装置通过按向前页按钮或向后页按钮来翻页。

日本专利第 258076 号（日本专利公开号 2-230313）公开了一种浏览装置，它通过用户转动转动检测器发出指令来翻页。这份日本专利也公开了用于通过压力检测器翻页的指令。根据这份日本专利，浏览的方向和速度由正向浏览压力检测器和负向浏览压力检测器之间的压力差确定。以上这份专利还公开了用于通过使用曲率检测器和开关翻页的指令。根据这份专利，浏览的速度基于被曲率检测器检测到的曲率大小计算，而浏览的方向基于开关的状态确定。

日本专利公开号 2-148257 公开了一种便携式文件处理器，具有一个相当于一页的显示屏幕。这种处理器通过按向前页键以使得相当于一页的显示数据从存储器 3 中读出，并且读出的显示数据存储在显示缓冲存储器 3。因此，相当于一页的显示数据被存储在显示缓冲存储器 3 中，以便显示一页数据到显示屏上。这样，用户可以象用户通过翻页来读书一样地来读文件。

日本专利公开号 63-116287 公开了一种显示装置，它有两个可打开的显示屏幕。用户可以通过操作一个输入键来翻页。

以上提到的浏览装置通过按一个按钮或转动一个滚轮（roller）来翻页，它不同于一般的书或杂志翻页。既然这样，电子书籍不能以给人一种真正地翻由纸张、塑料等印制的书或杂志的书页的感觉那样来读。

如果不用手指等触摸按钮或滚轮就能够翻页，那将是很方便的。

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以上的浏览装置和便携式文件处理器只有一个显示屏幕，这不便于装置的使用。

虽然以上所述的显示装置具有两个显示屏幕，但作为一个整体该屏幕不能被背靠背地折叠起来使用。结果，该显示装置占较大的地方，使它难于握在手上，从而产生关于便携性的问题。即使显示装置能够背靠背地折叠起来，但数据总是还显示在不被用户观看的那个屏幕上，引起信息泄漏以及电源浪费。

此外，既然以上的显示装置不能够背靠背地折叠起来，如果本装置用于玩比赛性游戏，例如，那种一个玩家最好不示出自己的牌的游戏，则该玩家就不能对对家隐瞒其牌的秘密。

发明的公开

因此本发明的一个目的是提供一种能够翻电子书籍的页的显示装置，以给人一种由纸张、塑料等印制的书或杂志的页真正翻动感觉。

本发明的另一个目的是提供一种能够翻页的显示装置，这种装置通过同一种操作不但能够给人一种书页真正翻动的感觉，而且还有一页一页地翻页和连续地翻页的能力。

本发明的再另一个目的是提供一种显示装置，即使用户不移动象手和手指这样的指针到按钮，也能够翻页。

本发明的另外一个目的是提供一个能够被折叠成背对背形式，并且能够握在手中的显示装置，它具有尺寸小、携带方便、耗能低并且适合于玩比赛性游戏。

本发明的再另外一个目的是提供一种显示装置，它在防止信息泄漏方面具有优势，并且能耗低。

根据发明的一方面，显示装置包括：存储器，用于存储信息；显示器，用于显示信息；翻页指令单元，用于检测指令单元自己倾斜的情况，以输出一个指示该倾斜方向的检测信号；以及显示控制单元，用于从翻页指令单元接收指令，以便根据所述倾斜的方向从存储器中读取下一页或上一页的信息，并且在显示器上显示读取的信息。

响应于用户的手指或手在翻页指令单元之上的滑动，显示控制单元翻一

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页。这样，用户能够以好像用户是在真正地用手翻一页纸一样地翻页。

根据发明的另一方面，显示装置包括：存储器，用于存储信息；显示器，用于显示信息；翻页指令单元，用于检测指针移动方向，以输出一个指示该移动方向的检测信号；以及显示控制单元，用于从翻页指令单元接收指令，以便根据所述移动的方向从存储器中读取下一页或上一页的信息，并且在显示器上显示读取的信息。

响应于如用户的手指或手这样的指针在翻页指令单元之上的移动，显示控制单元翻一页。这样，用户能够以好像用户是在真正地用手翻一页纸一样地翻页。

显示控制单元最好包括用于从翻页指令单元接收指令的单元，以便从根据指针移动的方向和指针接触翻页指令单元的时间长度确定的一页的存储器信息中，读取下一页或上一页的信息，并且在显示器上显示读取的信息。

显示控制单元根据指针接触翻页指令单元的时间长度变化将要翻的页数。这样，书页能以同样的操作一页一页地翻页，也能连续地翻页。

根据发明的再另一方面，显示装置包括：存储器，用于存储信息；显示器，用于显示信息；翻页指令单元，用于检测被指针接触的位置，以输出一个指示触摸位置的检测信号；以及显示控制单元，用于从翻页指令单元接收指令，以便根据被指针接触的位置变化，从存储器中读取下一页或上一页的信息，并且在显示器上显示读取的信息。

用户能够通过用指针接触翻页指令单元两次来翻一页。翻页的方向根据触摸位置的变化确定。这样，用户能够以好像用户是在真正地用手翻一页纸一样地翻页。

根据发明的另外一方面，显示装置包括：存储器，用于存储信息；由至少两个可打开和可关闭的屏幕构成的显示器，用于显示信息；翻页指令单元，用于检测显示器的开/关操作，以输出一个检测信号；以及显示控制单元，用于从翻页指令单元接收指令，以便根据被检测到的开/关操作，切换被显示在显示器上的信息。

用户能够通过显示器的开/关操作翻页。这样，在手握显示装置的同时，还能够不移动象手和手指之类的指针到按钮就翻页。

根据发明的再另外一方面，显示装置包括：存储器，用于存储信息；显示器，用于显示信息；音箱，用于输出声音；翻页指令单元，用于发送一个

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指令，以便切换在显示器上显示的信息；显示控制单元，用于从翻页指令单元接收指令，以便切换在显示器上显示的信息；以及连接到显示控制单元的声音输出控制单元，用于根据显示在显示器上的切换信息从音箱中输出翻纸的声音。

声音输出控制单元在翻页的同时输出翻纸的声音。这样，用户能够以好像用户在翻一页纸一样的感觉翻页。

音箱最好由至少两个扬声器构成。声音输出单元包括和显示控制单元相连的电路，以根据显示在显示器上的切换信息从扬声器中输出翻纸的声音，并且根据切换信息的方向，在变化声音输出的音量的同时，从至少两个扬声器中输出声音。

根据用户翻页的方向，翻纸的声音以移动声音的中心的方式产生。这样，用户能够以好像用户在真正地翻一页纸一样的感觉翻页。

根据发明的再另外一方面，显示装置包括：存储器，用于存储信息；由至少两个可打开和可关闭的屏幕构成的显示器，用于显示信息；转动角度检测单元，用于检测显示器的转动角度；以及连接到转动角度检测单元的显示控制单元，用于根据显示器的转动角度控制是否该显示器提供显示。

显示控制单元在用户背靠背地折叠显示器时，能够产生一个控制来促使不被用户观看的屏幕不提供显示。因此，可以提供一种在防止信息泄漏方面有优势的显示装置。也可以降低显示装置的能耗。此外，还可以提供一种更加便携，具有能够由用户自由转动，以使得即使显示装置所占的地方减少用户也能够观看显示的显示器之优势的显示装置。

该显示装置最好包括一个固定单元，用于把显示器固定在预定范围的一个转动角度上。

用户能够把显示器固定在预定范围的一个转动角度上。这样，用户能够玩不允许用户的牌泄漏给对家的比赛性游戏。

根据发明的再另外一方面，显示装置包括：存储器，用于存储信息；由至少两个可打开和可关闭的屏幕构成的显示器，用于显示信息；有至少两个对应于各自的显示屏幕配置的组成部件构成的图形输入板单元，用于检测指针接触的显示器的面积；以及连接到图形输入板的显示控制单元，用于根据指针接触的图形输入板单元的面积控制是否显示器提供显示。

显示控制单元根据诸如手指之类的指针接触的图形输入板单元的面

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积，确定显示器屏幕中的那一个被用户观看，以便于在不被观看的屏幕上不提供显示。因此，可以提供一种在防止信息泄漏方面有优势的显示装置。也可以降低显示装置的能耗。

附图的简要描述

图 1 示出的是本发明的第一实施例的显示装置的结构方框图。

图 2 示出本发明的第一实施例的显示装置的外观。

图 3 是翻页指令单元的截面图。

图 4 是翻页指令单元的等效电路图。

图 5 示出的是本发明的第二实施例的显示装置的结构方框图。

图 6 示出本发明的第二实施例的显示装置的外观。

图 7 和 8 示出的是翻页处理的流程图。

图 9 示出具有触摸位置的检测器的显示装置的外观。

图 10 图解表示触摸板的翻页有效区。

图 11 示出的是本发明的第三实施例的显示装置的结构方框图。

图 12 示出本发明的第三实施例的显示装置的外观。

图 13 示出倾斜检测器的结构。

图 14 示出的是翻页处理的流程图。

图 15 示出的是本发明的第四实施例的显示装置的结构方框图。

图 16 示出本发明的第四实施例的显示装置的外观。

图 17 示出的是声音输出处理的流程图。

图 18 示出的是本发明的第五实施例的显示装置的结构方框图。

图 19 示出本发明的第五实施例的显示装置的外观。

图 20 从侧面示出了显示装置。

图 21 示出了开关和开关挤压器的结构。

图 22 示出了施加到图 21 所示的开关上的压力和该开关的状态。

图 23 图解表示翻页指令单元。

图 24 示出了开关和开关挤压器的结构。

图 25 示出了施加到图 24 所示的开关上的压力和该开关的状态。

图 26 示出了通过图 25 中形成的开关状态产生的开关的状态。

图 27 和 28 图解表示翻页指令单元。

图 29 示出的是本发明的第六实施例的显示装置的结构方框图。

图 30 示出了第一开关和第一开关挤压器的结构。

图 31A 示出了第一开关的一种状态。

图 31B 示出了第二开关的一种状态。

图 32 图解表示第一和第二开关的状态之间的关系，以及在平板显示器 4A 和 4B 上的显示状态。

图 33 是本发明的第七实施例的显示装置的结构方框图。

图 34 示出了一个开关与第一和第二开关挤压器的结构。

图 35 是本发明的第八实施例的显示装置的结构方框图。

图 36 示出本发明的第八实施例的显示装置的外观。

图 37A 示出了开着的显示装置的外观。

图 37B 图解表示手指接触被背靠背地折叠起来的平板显示器的区域。

图 38 从侧面示出了关着时显示装置。

图 39 图解表示在开关状态、指针和平板显示器 4A 和 4B 之间的接触状态以及在平板显示器 4A 和 4B 上的显示状态之间的关系。

图 40 是本发明的第十实施例的显示装置的结构方框图。

图 41 示出了第三开关的状态。

图 42 图解表示在第一到第三开关的状态与在平板显示器 4A 和 4B 上的显示状态之间的关系。

图 43 示出了被背靠背地折叠起来的平板显示器 4A 和 4B 的外观。

图 44 示出了第三开关和第三开关挤压器的结构。

图 45 示出了具有一个带钉的平板显示器和一个带挂钩的平板显示器的显示装置的外观。

图 46 示出了一种显示装置的外观，该显示装置被施加了一层防滑外壳。

图 47 示出了一种显示装置的外观，该显示装置安装在一个用于防滑的底座上。

图 48 是本发明的第十一实施例的显示装置的结构方框图。

图 49 示出了一个开关和第一到第三开关挤压器的结构。

实现本发明的最佳实施例

第一实施例

参考图 1，第一实施例的显示装置 1 包括：存储器 3，它由象半导体存储器、硬盘、MO（Magneto-Optical，磁光盘）那样的磁性存储装置构造而成，用于存储图像信息、字符信息等；平板显示器 4，它由液晶板、PDP（Plasma Display Panel，等离子体显示板）等构造而成，用于显示图像信息、字符信息等；显示控制单元 2，用于控制存储在存储器 3 中的图像信息、字符信息等的读取，以及读取的信息在平板显示器 4 上的显示；翻页指令单元 5，用于从用户那里接收翻页指令，以便指示显示控制单元 2 翻页。

这以后所述的用户包括除了动物如人类之外的软件动作者（software agent），诸如机器人之类的人造肢体。

参考图 2，显示装置 1 采用两个平板显示器 4 和两个翻页指令单元 5。平板显示器 4 的数量和翻页指令单元 5 的数量都不限制成二，可以是一个，也可以至少三个。如果平板显示器 4 和翻页指令单元 5 的数量都是两个或者更多，那么它们可以被构造成在它们不被使用和打开成使用状态时，该显示器和指令单元被折叠起来。虽然图 2 示出了放成背靠背的平板显示器 4，但这安排不因此限制成这种形式。

翻页指令单元 5 安排在显示装置 1 的一条边上。显示控制单元 2 和存储器 3 装在显示装置 1 中。

图 3 是图 2 中的翻页指令单元 5 沿线 III-III 的截面图。翻页指令单元 5 由以下部分构造而成：支撑轴 5d，围绕 5d 转动的柱状形物体之中的开关 5c，触点 5a’和 5b’。开关 5c 在两个边上有触点 5a 和 5b。在图 3 中的开关 5c 绕着支撑轴 5d 反时针转动，以允许触点 5a 和 5a’实现相互接触。在图 3 中，开关 5c 绕着支撑轴 5d 顺时针转动允许触点 5b 和 5b’处于相互接触状态。开关 5c 由弹簧支撑（未显示），并且当触点不相互接触时，是稳定的。开关 5c 的表面被覆盖上一层橡胶件、硅、塑料等薄膜 5e。因此，翻页指令单元 5 被加固，任何电器损害都可以避免，并且象灰尘之类的外部物质不能进入显示装置 1。

图 4 是翻页指令单元 5 的等效电路图。该指令单元被构造成满足：当触点 5b 和 5b’相互接触时，触点 5a 和 5a’互相不接触。当所有触点都不相

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互接触时，时常是稳定状态。当触点 5a 和 5a’成为相互接触时，在 5a”点的电压变化。当触点 5b 和 5b’成为相互接触时，在 5b”点的电压变化。显示控制单元 2 通过在点 5a”和点 5b”的电压变化来检测翻页的指令。

再参考图 3，用户在翻页指令单元 5 的左上角和右下角之内滑动手指或手。因此 5c 被转动。这里的“滑动”词也指在接近 5a 和 5b 的任何位置，用手指或手按。换句话说，这个词指的是一个类似于用手翻用纸印刷的书的操作。开关 5c 的转动促使在 5a”或 5b”点的电压变化，因此显示控制单元 2 能够检测到用户想要的方向。

例如，当用户在左边翻页指令单元 5 右上方内滑动手指或手时，显示控制单元 2 朝前翻页。当用户在右边翻页指令单元 5 左上方内滑动手指或手时，显示控制单元 2 往回翻页。因此，用户能够像用户真正在用手翻纸一样执行翻页。

当用户在左边翻页指令单元 5 左下方内滑动手指或手时，显示控制单元 2 往回翻页。当用户在右边翻页指令单元 5 右下方内滑动手指或手时，显示控制单元 2 朝前翻页。通过显示控制单元 2 的这样一个控制，使得用户通过仅仅一个指令单元 5 就能够朝前和往回翻页。因此，用户能够用一只手翻页。

第二实施例

参考图 5，第二实施例的显示装置 11 包括：类似于第一实施例中的存储器 3；类似于第一实施例中的平板显示器 4；显示控制单元 12，用于控制存储在存储器 3 中的图像信息、字符信息等的读取，以及读取的信息在平板显示器 4 上的显示；以及触摸板 15，摆成完全覆盖平板显示器 4，以接收从用户那里来的翻页指令，并送一个指令给显示控制单元 12 以便翻页。

参考图 6，第二实施例中的显示装置 11 包括两个平板显示器 4 和两个触摸板 15。两组平板显示器 4 和触摸板 15 背靠背地安排。平板显示器 4 和触摸板 15 的数量不限制为两个，可以是一个，也可以至少三个。显示控制单元 12 和存储器 3 被装在显示装置 11 中。

触摸板 15 是一个检测由象手指和笔一样的指针接触的位置的检测器。显示控制单元 12 根据指针接触触摸板的时间长度，改变翻页的页数。

参考图 7，描述了由显示控制单元 12 执行的翻页控制处理。这里所指的书被假定显示在右边的平板显示器 4 上的、页码较小的一页是垂直书写的。如果显示在右边的平板显示器 4 上、页码较小的一页是水平书写的，则前后

方向互相交换。

显示控制单元 12 确定是否触摸板 15 检测到用象手指和笔之类的指针的接触（S11）。如果触摸板 15 没有检测到与指针的接触（在 S11 中“否”），则显示控制单元 12 重复 S11 中的处理，直到触摸板 15 检测到与指针的接触。

当触摸板 15 检测到与指针的接触（在 S11 中“是”），则显示控制单元 12 确定指针在触摸板 15 上移动的方向（S12）。如果指针从左到右移动（在 S12 中“左到右”），则显示控制单元 12 在朝前方向翻一页（S13）。在这以后，显示控制单元 12 确定指针与触摸板 15 之间的接触是延续了一个预定的时间长度还是更长（S14），如果指针与触摸板 15 之间的接触时间小于一个预定的时间长度（在 S14 中“否”），则显示控制单元 12 重复 S14 中的处理。如果指针与触摸板 15 之间的接触时间至少是预定的时间长度（在 S14 中“是”），则显示控制单元 12 再在朝前方向翻一页（S13）。当指针离开触摸板 15 时（在 S14 中“离开触摸板 15”），由显示控制单元 12 执行的处理结束。

如果指针从右到左移动（在 S12 中“右到左”），则显示控制单元 12 在朝后方向翻一页（S15）。在这以后，显示控制单元 12 确定指针与触摸板 15 之间的接触是延续了一个预定的时间长度还是更长（S16），如果指针与触摸板 15 之间的接触时间小于一个预定的时间长度（在 S16 中“否”），则显示控制单元 12 重复 S16 中的处理。如果指针与触摸板 15 之间的接触时间至少是预定的时间长度（在 S16 中“是”），则显示控制单元 12 再在朝后方向翻一页（S13）。当指针离开触摸板 15 时（在 S16 中“离开触摸板 15”），由显示控制单元 12 执行的处理结束。

参考图 8，显示控制单元 12 可以控制以下描述的翻页。根据图 7 图解的处理实例，用户通过用指针接触触摸板 15 和移动与触摸板 15 接触的指针，指定朝前或朝后的方向。根据在图 8 中图解的处理实事例。朝前或朝后的方向通过移动指针，而又不使指针接触触摸板 15 来指定。

显示控制单元 12 确定是否触摸板 15 检测到与指针的接触（S40）。如果触摸板 15 没有检测到与指针的接触（在 S40 中“否”），显示控制单元 12 重复 S40 中的处理，直到触摸板 15 检测到与指针的接触为止。

如果触摸板 15 检测到与指针的接触（在 S40 中“是”），显示控制单元 12 记录下接触的位置，并且确定在触摸板 15 和指针之间是否存在第二次接触（S41）。如果在一个预定的时间段或更长的时间段之内没有第二次接触（在

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S41 中“在预定时间之内没有任何”），显示控制单元 12 的处理结束。

当触摸板 15 检测到与指针的第二次接触（在 S41 中“是”）时，显示控制单元 12 根据第一和第二次触摸位置之间的差计算指针移动的方向，以确定移动的方向（S42）。如果指针从左到右移动（在 S42 中“左到右”），则显示控制单元 12 在朝前方向翻一页（S43）。在这以后，显示控制单元 12 确定指针与触摸板 15 之间的接触是否延续了一个预定的时间长度或更长（S44），如果指针与触摸板 15 之间的接触时间小于一个预定的时间长度（在 S44 中“否”），则显示控制单元 12 重复 S44 中的处理。如果指针与触摸板 15 之间的接触时间至少是预定的时间长度（在 S44 中“是”），则显示控制单元 12 再在朝前方向翻一页（S43）。当指针离开触摸板 15 时（在 S44 中“离开触摸板 15”），由显示控制单元 12 执行的处理结束。

如果指针从右到左移动（在 S42 中“右到左”），则显示控制单元 12 在朝后方向翻一页（S45）。在这以后，显示控制单元 12 确定指针与触摸板 15 之间的接触是否延续了一个预定的时间长度或更长（S46），如果指针与触摸板 15 之间的接触时间小于一个预定的时间长度（在 S46 中“否”），则显示控制单元 12 重复 S46 中的处理。如果指针与触摸板 15 之间的接触时间至少是预定的时间长度（在 S46 中“是”），则显示控制单元 12 再在朝后方向翻一页（S43）。当指针离开触摸板 15 时（在 S46 中“离开触摸板 15”），由显示控制单元 12 执行的处理结束。

当采用图 6 所示的、具有两屏幕结构的显示装置 11 时，指针与触摸板 15 之间的第一和第二次接触可以对同一触摸板 15 产生影响。作为选择，指针在第一次接触时可以与左触摸板 15 接触，而在第二次接触时与右触摸板 15 接触。通过这样的操作，用户能够以好像用户翻用纸印刷的书一样的感觉翻页。

如果第一次接触的位置十分接近第二次接触的位置，特别地，例如，两次触摸位置之间的距离是 10mm 或更小，且同时允许指针与触摸板 15 接触，那么显示控制单元 12 可以确定用户移动指针位置，并且根据图 7 所示的流程图执行翻页处理。

参考图 9，用现在正被笔记本式个人电脑用作指针装置的触摸位置检测器 16 替代触摸板 15。既然这样，触摸位置检测器 16 与平板显示器 14 分开安排。

参考图 10，触摸板 15 可以有一部分作为翻页有效区 15a，用户可以仅仅通过翻页有效区 15a 发出翻页指令。既然这样，能够防止由于手指的偶然接触引起的错误操作。虽然图 10 中的翻页有效区 15a 形状是一个三角形，但形状并不限于此，可以是另一个多边形、弧形、圆形等。翻页有效区 15a 的位置不限于左下角和右下角，可以在相当于触摸板的底部三分之一的带状区域之内。

如以上描述的那样，用户可以通过用指针接触或移动指针变化一页。因此，用户能够以好像用户翻用纸印刷的书一样的感觉翻页。

将要翻动的页数根据指针与触摸板 15 之间的接触时间长度变化。因此，同一种操作既能达到一页一页地翻页，也能达到连续地翻页的目的。

此外，翻页有效区 15a 的安排能够防止由手指偶然接触引起的错误操作。

第三实施例

参考图 11，根据第三实施例的显示控制单元 21 包括：类似于第一实施例的存储器 3；类似于第一实施例中的平板显示器 4；显示控制单元 22，用于控制图像信息、字符信息等存储在存储器 3 中信息的读取操作，以及读取的信息在平板显示器 4 上显示操作，以及倾斜度检测器 25，用于发送翻页指令给显示控制单元 22。

参考图 12，根据第三实施例的显示控制单元 21 包括：两个平板显示器 4 和两个倾斜度检测器 25，并且平板显示器 4 和倾斜度检测器 25 的两组面对面安排。显示控制器 22 和存储器 3 装在显示装置内。倾斜度检测器 25 的位置不限于图 12 所示的那样。但从倾斜度检测器 25 的特性考虑，检测器尽可以远离平板显示器 4 的转轴。

参考图 13，倾斜度检测器 25 包括：一个中空的柱体 25d；一个被包在柱体 25d 之中的导电球 25c；以及安装在柱体 25d 的上部的电极 25a 和 25b。如图 13 所示，当倾斜度检测器 25 处于正常状态时（“关”状态），球 25c 位于柱体 25d 的下部，球 25c 与电极 25a 和 25b 不接触。整个检测器的转动和倾斜引起球 25c 在柱体 25d 中移动，并接触到安装在柱体 25d 的上部的电极 25a 和 25b。结果，电流在电极 25a 和 25b 之间流动，从而检测到倾斜度检测器 25 的倾斜度（“开”状态）。

这里假设，当显示控制单元 121 是如图 12 所示的开状态时，左和右边

的倾斜度检测器 25 都是处于“关”状态。如果平板显示器 4 中的一个是固定的，而别的平板显示器 4 被关闭接着又打开，则斜度检测器 25 之一进入“开”状态。然后显示控制单元 22 能够检测右和左边平板显示器 4 中的那一个被打开和关闭。

参考图 14，描述了由显示控制单元进行的翻页控制处理。在图 14 所示的处理中，假设这里所指的书显示在右边的平板显示器 4 上的、页码较小的一页是垂直书写的。

显示控制单元 22 一直等待到斜度检测器 25 进入“开”状态（S21）为止。当斜度检测器 25 的状态变成“开”（在 S21 中“开”）时，显示控制单元确定右和左斜度检测器 25 中的那一个处于“开”（S22），如果左边的斜度检测器 25 处于“开”（S22 中“左”），则显示控制单元 22 一直等待到斜度检测器 25 进入“关”状态（S23）为止。当斜度检测器 25 的状态变成“关”（在 S25 中处于“关”）时，显示控制单元 22 控制在朝前方向翻一页。

如果右边的斜度检测器 25 变成“开”（S23 中“右”），则显示控制单元 22 一直等待到右边的斜度检测器 25 变成“关”状态（S25）。当右边的斜度检测器 25 的状态变成“关”（在 S25 中处于“关”）时，显示控制单元 22 控制在朝后方向翻一页。

因此，用户能够通过打开和关闭显示装置来翻页。故在用户手握显示装置 21 的同时，不用移动手或手指到按钮就能翻页。

第四实施例

参考图 15，根据第四实施例的显示装置 31 包括：由象硬盘、MO 这样的磁性存储装置构造而成的存储器 33，用于存储图像信息、字符信息、音频信息等；类似于第一实施例中的平板显示器 4；显示控制器 32，用于控制存储在存储器 3 中的图像信息、字符信息等的读取，以及读取的信息在平板显示器 4 上的显示；类似于第二实施例中的触摸板 15；以及音频控制器 36，用于读取存储在存储器 3 中的声音信息，以便在显示控制器 32 翻动有在平板显示器 4 上显示的信息的页时，经音箱 37 输出翻一页纸的声音。音频控制器 36 根据翻页的速度输出不同的声音。

参考图 16，根据第四实施例的显示装置 31 包括：两个平板显示器 4 和两个触摸板 15，并且平板显示器 4 和触摸板 15 的两组面对面安排。此外，两个扬声器 37 分别摆在显示装置 31 的左右两边。显示控制器 32、音频控制

器 36 和存储器 33 装在 31 内。可以使用通用的开关等代替触摸板 15。

显示控制器 32 以类似于根据以结合图 7 和 8 描述过的第二实施例的显示装置 1 中的显示控制单元 12 中使用的方式控制翻页。故该控制的描述不再在这里重复。显示控制器 32 从触摸板 15 来的、关于指针与触摸板 15 之间的接触信息，提供给声音控制单元 36。

参考图 17，描述了由声音控制单元 36 进行的声音输出控制处理。音频控制器 36 确定由触摸板 15 翻页的指令指的是正常翻页还是高速翻页（S31）。正常翻页意味着仅仅翻一页，而高速翻页意味着连续翻页或者同时翻作为一个单位的几页。如果翻页指令指的是正常翻页（S31 处于“正常”），则音频控制器 36 从存储器 33 中读取声音样本 A（S32）。如果翻页指令指的是高速翻页（S31 处于“高速”），则音频控制器 36 从存储器 33 中读取声音样本 B（S33）。声音样本 A 产生慢慢翻一页纸的声音，而声音样本 B 产生闪过和跳越多页的声音。

在 S32 和 S33 中的处理之后，音频控制器 36 确定将要朝那一个方向上翻页。如果正在翻的页的方向是从左到右（在 S34 中“左到右”），则在 S32 和 S33 的处理中读取的声音数据以声音中心被从左到右（S35）移动方式输出。如果正在翻的页的方向是从右到左（在 S34 中“右到左”），则在 S32 和 S33 的处理中读取的声音数据以声音中心被从右到左（S35）移动方式输出。这里，从左到右移动声音中心指的是输出声音的操作，它首先从左扬声器 37 发出较大的声音音量，然后左扬声器 37 的声音音量逐渐减小，而又扬声器 37 的音量增大。从右到左移动声音中心指的是相反方式的操作。

正如以上所讨论的那样，显示装置 31 在翻页操作的同时输出翻纸的声音，并且根据将要翻的页数输出不同的声音。这样，用户能够以好像用户翻用纸印刷的书一样的感觉翻页。

另外，显示装置 31 按照翻页的方向改变输出声音的平衡。从而用户能够好像真正发书籍一样地翻页。

第五实施例

参考图 18，根据第五实施例的显示装置包括：存储器 3；平板显示器 4；开关 46，用于检测平板显示器 4 的打开程度（转动角度）；开关挤压器 47，用于挤压开关 46；显示控制单元 42，用于控制图像信息、字符信息等存储在存储器 3 中信息的读取，以及读取的信息在平板显示器 4 上显示，并且根

据开关 46 的状态控制平板显示器 4 显示/不显示；以及翻页指令单元 45，用于从用户那里接收翻页指令并发送翻页指令给显示控制单元 42。该显示装置还包括显示缓冲存储器（未显示），用于保存将要在平板显示器 4 显示的数据。

参考图 19，该显示装置有两个平板显示器 4A 和 4B。这两个平板显示器 4A 和 4B 通过铰链 51 连接，使得显示器 4A 和 4B 能够绕相当于一本书的装订边部分的转轴 53 转动，在这里如果没有特别的说明，为了在平板显示器 4A 和 4B 上显示页数据，它们要被通电。

参考图 20，平板显示器 4A 包括底板 56A 和在底板 56A 上形成的显示表面 54A。平板显示器 4B 包括底板 56B 和在底板 56B 上形成的显示表面 54B。开关 46 配置在底板 56B 上。底板 56A 连接到铰链 51 上，以便能够绕转轴 53 转动。开关 46 的顶部被挤压，以使得开关 46 处于“开”状态，如果没有压力加到开关 46，则它处于“关”状态。在图 20 中，被示出的平板显示器 4 的转动角度为 0°。

参考图 21，开关挤压器 47 形成在铰链 51 周围。当铰链 51 以图 21 中的箭头所指方向转动（顺时针）时，促使开关挤压器 47 和开关 46 在角度范围为 200°到 300°时相互接触，以使得开关挤压器 47 挤压开关 46。注意：200°角允许平板显示器 4A 被确认成翻到平板显示器 4B 的背面。360°角意味着平板显示器 4A 和平板显示器 4B 背靠背放置。

虽然平板显示器 4A 和 4B 能够互相作相对转动，但为了方便，平板显示器 4B 在这里是作为水平放置来描述的，而平板显示器 4A 是转动的。

参考图 22，铰链 51 的转动角度和施加到开关 46 上的压力之间的关系使用实线示出。压力能够根据一个预定的阈值数字化，以得到由虚线表示的关系。然后能够确定开关 46 的状态（“开”或者“关”状态）。

当开关 46 处于“开”状态时，显示控制单元 42 使平板显示器 4A 和 4B 中的一个不提供显示。

参考图 23，翻页指令单元 45 分别嵌入平板显示器 4A 和 4B 的翻页指令单元 45A 和 45B。翻页指令单元 45A 和 45B 由图形输入装置（触摸板）构成。每个翻页指令单元 45A 和 45B 的每一个都相当于在这样的位置处形成的一个三角形区域，该位置就是翻拿在手中的小册子的书页的手指所在的位置。

当用户在这个区域内从左到右移动他的手指，而且允许该手指接触该区

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域时，翻页指令单元 45 输出一个用于向前翻页的信号。显示控制单元 42 接收该信号并从存储器 3 中读取下一页的页数据，以便得到正要向前翻的那一页并更新在平板显示器 4A 和 4B 的显示。当用户以相反的方向移动他的手指时，翻页指令单元 45 输出一个用于向后翻页的信号。显示控制单元 42 接收该信号并从存储器 3 中读取前一页的页数据，以便得到正在向回翻的那一页并更新在平板显示器 4A 和 4B 的显示。

手指移动的方向能够通过跟踪考虑了时间的接触的位置来检测。翻页指令单元 45 可以构造在平板显示器 4A 和 4B 的整个表面之上。但为了避免由于手指等的接触引起的误操作，翻页指令单元 45 能够构造在如图 23 所示的平板显示器 4A 和 4B 的特殊区域中。

当平板显示器 4A 和 4B 两者都处于显示状态时，显示控制单元 42 一次可以翻两页，而当平板显示器 4A 和 4B 中只有一个处于显示状态时，显示控制单元 42 一次翻一页，既然这样，如果以上提到的显示缓冲区能够存储相当于两页的数据，那么显示控制单元 42 一次从存储器 3 中读去两页数据，并且把这些数据写入显示缓冲存储器中。如果以上提到的显示缓冲区能够存储相当于一页的数据，那么显示控制单元 42 一次从存储器 3 中读去一页数据，并且把这些数据写入显示缓冲存储器中。

如果已经给出显示的平板显示器 4A 和 4B 两者之一停止提供显示，那么显示控制单元 42 可以把相当于当前显示的两页的数据压缩成一页数据，并重写显示缓冲存储器的内容，以便在处于显示状态的平板显示器 4A 或者 4B 上显示该压缩数据。页压缩是众所周知的技术。例如，如果显示信息仅仅是文本信息，页压缩能够通过减小字符尺寸来获得。如果显示信息是图像数据，页压缩能够通过稀疏该数据来实现。

将要显示的页数据压缩可以只在已经给出显示的平板显示器 4A 和 4B 两者之一停止提供显示时进行。在这以后，当翻页指令发出时，显示控制单元 42 不压缩数据并且一页一页地翻页。

正如图 23 所时，既然翻页指令单元 45A 和 45B 对称地安排，所以无论显示装置是拿在右手还是拿在左手中，或者由右撇子还是左撇子拿着，都能方便地翻页。

开关挤压器 47 的变形

参考图 24，开关挤压器 47 可以只在相应于铰链 51 的转动角度接近 200°

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的位置处配置。

参考图 25，铰链 51 的转动角度和施加到开关 46 上的压力之间的关系由实线示出。压力能够根据一个预定的阈值数字化，以得到由虚线表示的关系，因此能够确定开关 46 的状态（“开”状态或者“关”状态）。参考图 26，开关 46 还包括一个电路，用于形成由图 25 中的虚线表示的信号，并在开关 46 处于角度范围 200°到 360°中时输出变成“开”状态的信号。当铰链的转动角度由小于 200°变化到大于 200°时，也就是相当于图 5 中由虚线表示的信号的上升段时，该电路提供“开”输出，而当铰链的转动角度由大于 200°变化到小于 200°时，也就是相当于图 5 中由虚线表示的信号的下降段时，该电路提供“关”输出。这样的电路能够容易地通过著名的触发电路构造而成。

翻页指令单元 45 的第一种变形

参考图 27，翻页指令单元 45 可以配置在相当于在平板显示器 4A 和 4B 的底部约四分之一的区域中。

翻页指令单元 45 的第二种变形

参考图 28，翻页指令单元 45 可以配置在平板显示器 4A 和 4B 的两边和类似于图 23 中的三角区域上。

如上所述的显示装置具有能够自由地由用户在 0°到 360°范围内打开的平板显示器 4A 和 4B。因此即使被显示装置占用的地方减小，用户也能够看到平板显示器 4A 和 4B。这样能够提供一种十分便捷的显示装置。

此外，这种显示装置具有能够背靠背地折叠起来的平板显示器 4A 和 4B。以上各点产生的优势是：即使平板显示器 4A 和 4B 有大显示面积，用户也能够用一只手支撑该显示装置。

此外，这种具有能够背靠背地折叠起来的平板显示器 4A 和 4B 的显示装置允许平板显示器 4A 和 4B 之一给出显示，而平板显示器 4A 和 4B 中的另一个不给出显示。因此即使在拥挤的地方，例如有轨电车里，页数据也不会被别人偷看到。故能够提供一种防止信息泄漏性能极好的显示装置。在降低能耗方面也有效果。

此外，当显示装置拿在一只手中时，翻页指令单元 45A 和 45B 放在相应于手指的放置位置的地方。故用户能够用一只手翻页显示装置。

翻页指令单元 45A 和 45B 对称地安排，所以无论显示装置被拿在右手还是拿在左手中，用户都能方便地翻页。此外，无论用户是右撇子还是左撇子，

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用户都能方便而且类似地翻页。

第六实施例

参考图 29，根据第六实施例的显示装置包括：存储器 3；平板显示器 4；第一和第二开关 76A 和 76B，用于检测平板显示器 4 的打开程度（转动角度）；第一和第二开关挤压器 77A 和 77B，用于分别按压第一和第二开关 76A 和 76B；显示控制单元 72，用于控制图像信息、字符信息等存储在存储器 3 中信息的读取，以及控制是否在平板显示器 4 上给出显示；以及翻页指令单元 45。

参考图 30，该第一开关挤压器 77A 配置在图 19 的铰链 51 的 0°附近转动角处。参考图 31A，第一开关 76A 当铰链 51 的旋转角度超过 0°时，变成“开”状态。

该第二开关挤压器 77B 和第二开关 76B 被构造成和结合图 24 所描述的开关挤压器 47 和开关 46 类似。因此，这部分的描述不再重复。参考图 31B，的铰链 51 的 0°附近转动角处。参考图 31A，当铰链 51 的转动角度处于 200°到 360°范围中时，第二开关 76B 变成“开”状态。

参考图 32，显示控制单元 72 接收第一和第二开关 76A 和 76B 的输出，以便控制平板显示器 4A 和 4B 显示/不显示。当第一和第二开关 76A 和 76B 都处于“开”状态时，即铰链 51 的转动角度处于 200°到 360°范围中时，显示控制单元 72 使平板显示器 4A 不显示，而不使平板显示器 4B 显示。而当第一开关 76A 处于“开”状态，第二开关 76B 处于“关”状态时，即铰链 51 的转动角度处于 0°到 200°范围时，显示控制单元 72 允许平板显示器 4A 和平板显示器 4B 都提供显示。当第一开关 76A 处于“关”状态，即平板显示器 4 关闭时，显示控制单元 72 使平板显示器 4A 和平板显示器 4B 都不提供显示。

以上所述的显示装置能够有第五实施例中所拥有的类似效果。

第七实施例

参考图 33，根据第七实施例的显示装置 包括：存储器 3；平板显示器 4；开关 46；第一和第二开关挤压器 77A 和 77B；以及翻页指令单元 45。

参考图 34，第一和第二开关挤压器 77A 和 77B 被分别地配置在铰链 51 的转动角接近于 0°和接近于 200°的地方。开关 46 提供如图 31A 和 31B 所示的输出。因此，显示控制单元 82 以类似于结合图 32 描述的第六实施例的显示控制单元 72 方式，控制平板显示器 4A 和 4B 显示/不显示。

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以上所述的显示装置能够有第五实施例中所拥有的类似效果。

第八实施例

参考图 35，根据第八实施例的显示装置 包括：存储器 3；平板显示器 4；显示控制单元 83，用于控制图像信息、字符信息等存储在存储器 3 中信息的读取，以及控制平板显示器 4 显示/不显示；以及翻页指令单元 45。静电耦合型、压敏型或集成显示器（display-integrated）型图形输入装置（未显示）嵌入在平板显示器 4 种。当象手指那样的指针接触到平板显示器 4 的表面时，指示触摸位置的信号被施加给显示控制单元 83。

参考图 36，平板显示器 4A 和 4B 通过铰链 52 可转动地耦合在一起。

图 37A 示出了被打开的显示装置，左手拇指正接触到平板显示器 4A，而右手拇指正接触到平板显示器 4B。显示装置由手掌或别的手指支撑。在这种状态下，接触平板显示器 4A 和 4B 的手指面积几乎相等。

图 37B 示出当平板显示器 4A 和 4B 之一被转动到与另一个背靠背并且显示装置由一只手拿着时，被手指接触的、平板显示器 4A 和 4B 上的区域 88A 和 88B。通常，用户拿显示装置，使得正支持着的平板显示器 4A 右手指接触到的区域 88A 的面积大于由手指在当前看到的平板显示器 4B 上接触到的区域 88B 的面积。这是由于用户试图以这样一种方式支撑平板显示器 4B，以获得尽可以大的显示面积，也试图通过保护正支撑的平板显示器 4A 中，由手指接触的区域 88A 的更大面积来稳定地支撑显示装置。

如果平板显示器 4A 和 4B 之一有一个接触区域面积至少大于别的平板显示器的接触面积 20%，并且接触时间延续一个预定的时间（例如 3 秒）或更长，那么显示控制单元 83 示的平板显示器的一个具有更大的接触面积不提供显示，而另一个拥有更小的接触面积提供显示。此外，如果平板显示器 4A 拥有几乎等于由指针接触的平板显示器 4B 中的区域的面积的、由指针接触的区域面积，并且接触状态延续一个预定的时间长度，那么显示控制器 83 允许平板显示器 4A 和 4B 给出显示。

用于检测触摸位置的图形输入装置可以位于除平板显示器 4A 和 4B 内部或者表面之上的区域以外的任何区域。

以上描述的显示装置基于由象手指那样的指针接触的平板显示器 4A 和 4B 中的区域的面积，确定平板显示器 4A 和 4B 中的哪一个由用户观看。然后可以只允许被用户观看的平板显示器 4A 或 4B 提供显示，不被用户观看的平

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板显示器 4A 或 4B 不提供显示。因此能够获得关于防止信息泄漏和降低能耗的优点。其他优点类似第五实施例中的。

第九实施例

根据第九实施例的显示装置有类似于根据第五实施例、结合图 18 所描述的显示装置的功能块结构。因此，他的描述不再在这里重复。类似于结合第八实施例描述过的图形输入装置被嵌入平板显示器 4 中。

参考图 38，平板显示器 4A 和 4B 由铰链 51 象图 19 所示的那样耦合在一起。开关挤压器 47 构造在铰链 51 上、当平板显示器 4A 和 4B 形成 200°角时，促使挤压器 47 挤压开关 46 的位置处。

开关 46 在当由平板显示器 4A 和 4B 形成的角小于 200°时处于“关”状态，而当该角度等于或者大于 200°时处于“开”状态。

显示控制单元 42 根据图 39 控制平板显示器 4A 和 4B 的显示/不显示。当开关 46 处于“开”状态（由平板显示器 4A 和 4B 形成的角至少为 200°），并且被指针接触的平板显示器 4A 和 4B 上各自区域的面积之间的差等于或者小于一个预定值时，显示控制单元 42 判定用户观看平板显示器 4A 和 4B 的两个显示面 54A 和 54B，因此允许平板显示器 4A 和 4B 都提供显示。如果开关 46 处于“开”状态，并且被指针接触的平板显示器 4A 和 4B 上各自区域的面积之间的差大于一个预定值，则显示控制单元 42 判定用户仅仅观看平板显示器 4B 的显示面 54B，并使得平板显示器 4A 不提供显示，而只有平板显示器 4B 提供显示。如果开关 46 处于“关”状态，则显示控制单元 42 判定用户观看平板显示器 4A 和 4B 各自的显示面 54A 和 54B 两者，并使得平板显示器 4A 和 4B 都提供显示，而不管接触面积的差的大小。

因此，以上所述的显示装置有类似于根据第五实施例的显示装置的效果。

第十实施例

参考图 40，根据第十实施例的显示装置包括：存储器 3；平板显示器 4；第一、第二和第三开关 76A、76B 和 76C，用于检测平板显示器 4 的打开程度（转动角度）；第一、第二和第三开关挤压器 77A、77B 和 77C，用于给第一、第二和第三开关 76A、76B 和 76C 挤压；显示控制单元 102，用于控制图像信息、字符信息等存储在存储器 3 中信息的读取，以及控制平板显示器 4 显示/不显示；翻页指令单元 45；以及由键盘、功能键、操纵杆、图形输入装置

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等构成的信息输入单元 102，用于给显示装置输入信息。

第一和第二开关 76A 和 76B 具有类似于结合第六实施例描述的那种结构，并且当平板显示器 4 的转动角度大于 0°和等于或小于 360°时，第一开关 76A 变成“开”状态。当平板显示器 4 的转动角度范围在 200°至 360°之间时，第二开关 76B 变成“开”状态。参考图 41，第三开关挤压器 77C 类似于结合图 21 描述的开关挤压器 47、被构造在铰链 51 周围，以使得当平板显示器 4 的转动角度范围在 300°至 350°之间时，第三开关 76C 变成“开”状态。

显示控制单元 102 根据图 42 控制平板显示器 4A 和 4B 是否提供显示。特别地，如果由平板显示器 4A 和 4B 形成的角度大于 0°和等于或小于 200°，那么第一开关 76A 变成“开”状态，而第二和第三开关 76B 和 76C 变成“关”状态。然后显示控制单元 102 判定用户观看两个平板显示器 4A 和 4B，并且允许两个平板显示器 4A 和 4B 提供显示。

如果由平板显示器 4A 和 4B 形成的角度大于 200°和等于或小于 300°，那么第一和第二开关 76A 和 76B 变成“开”状态，而第三开关 76C 变成“关”状态。然后显示控制单元 102 判定用户仅仅观看平板显示器 4B，并且使得平板显示器 4A 不提供显示，而仅仅平板显示器 4B 提供显示。

参考图 43，如果由平板显示器 4A 和 4B 形成的角度超过 300°和等于或小于 350°，那么第一、第二和第三开关 76A 至 76C 全部变成“开”状态。然后显示控制单元 102 判定用户玩比赛性等，并折叠显示器装置，以使得不显示用户的牌给对家，因此允许平板显示器 4A 和 4B 均提供显示。

如果由平板显示器 4A 和 4B 形成的角度为 0°，那么第一、第二和第三开关 76A 至 76C 全部变成“关”状态。然后显示控制单元 102 判定用户关闭显示装置，并促使使平板显示器 4A 和 4B 均不提供显示。

参考图 44，第三开关形成一个允许第三开关挤压器 77C 装入的形状。因此，当第三开关 76C 处于“开”状态，即由平板显示器 4A 和 4B 形成的角度处于特殊范围 300°至 350°时，平板显示器 4A 和 4B 均被固定。这样，用户能够方便地享受比赛性游戏等。为了取消这种固定状态，用户可以使用比平常大些的力转动平板显示器 4A 和 4B。

参考图 45，平板显示器 4A 可以有一个销钉 116，而平板显示器 4B 可以有一个挂钩 118。通过适当地确定挂钩 118 的长度和销钉 116 的位置，当挂钩 118 挂到销钉 116 上时，通过由平板显示器 4A 和 4B 形成的角度能够被设

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置在一个特殊范围 300°至 350°中。

参考图 46，当平板显示器 4A 和 4B 立在使用的平面上时，平板显示器 4A 和 4B 的每一个中与该平面相连的一边，套一层具有大摩擦系数的材料，如用于防止显示装置滑动的橡胶件 120。

参考图 47，为了防止显示装置的滑动，平板显示器 4A 和 4B 可以安装在使用的底座 122 中。底座被包上一层具有大摩擦系数的材料，如用于防止底座 122 的滑动的橡胶件 124。

如果由平板显示器 4A 和 4B 形成的角度大于 350°和等于或小于 360°，那么第一和第二开关 76A 和 76B 变成“开”状态，而第三开关 76C 变成“关”状态。然后显示控制单元 102 判定用户让平板显示器 4A 和 4B 背靠背，以便仅仅看平板显示器 4B，并且因此来促使平板显示器 4A 不提供显示，而仅仅平板显示器 4B 提供显示。

以上描述的显示装置示的用户能够享受比赛性游戏，而不会把用户的牌泄漏给对家。

平板显示器 4A 和 4B 经过用于防滑的处理，因此，用户能够舒适地执行游戏等的操作。

别的效果类似于第五实施例中的显示装置的效果。

第十一实施例

参考图 48，根据第十一实施例的显示装置包括：存储器 3；平板显示器 4；开关 46，用于检测平板显示器 4 的打开程度（转动角度）；第一、第二和第三开关挤压器 77A、77B 和 77C，用于给开关 46 挤压；显示控制单元 112，用于控制图像信息、字符信息等存储在存储器 3 中信息的读取，以及控制平板显示器 4 显示/不显示；翻页指令单元 45；以及由键盘、功能键、操纵杆、图形输入装置等构成的信息输入单元 1 存储器 3，用于给显示装置输入信息。

参考图 49，第一和第二开关挤压器 77A 和 77B 构造在铰链 51 的周围，以使得当铰链 51 的转动角度分别为 0°和 200°时，挤压开关 46。第三开关挤压器 77C 构造在铰链 51 的周围，以使得当铰链 51 的转动角度为 300°至 350°时，挤压开关 46。开关 46 提供如图 31A、31B 和 41 所示的输出。因此显示控制单元 112 类似于根据图 42 描述的第十实施例的显示装置中的显示控制单元 102 地，控制平板显示器 4A 和 4B 的显示/不显示。

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这种显示装置能够获得类似于第五实施例中的显示装置的效果。

工业实用性

如上所述，本发明的显示装置允许象真正地翻一页纸一样来翻页，在防止信息泄漏方面有优势，并且具有小能耗的优势。因此，这种显示装置适合用于制造一种给出和在正常读书时一样的感觉的信息访问。

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说 明 书 附 图

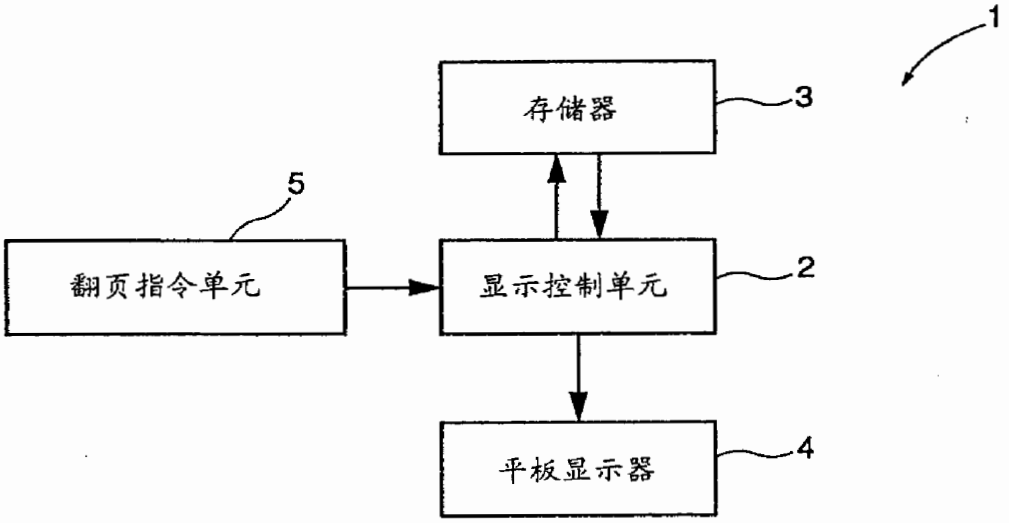


图 1

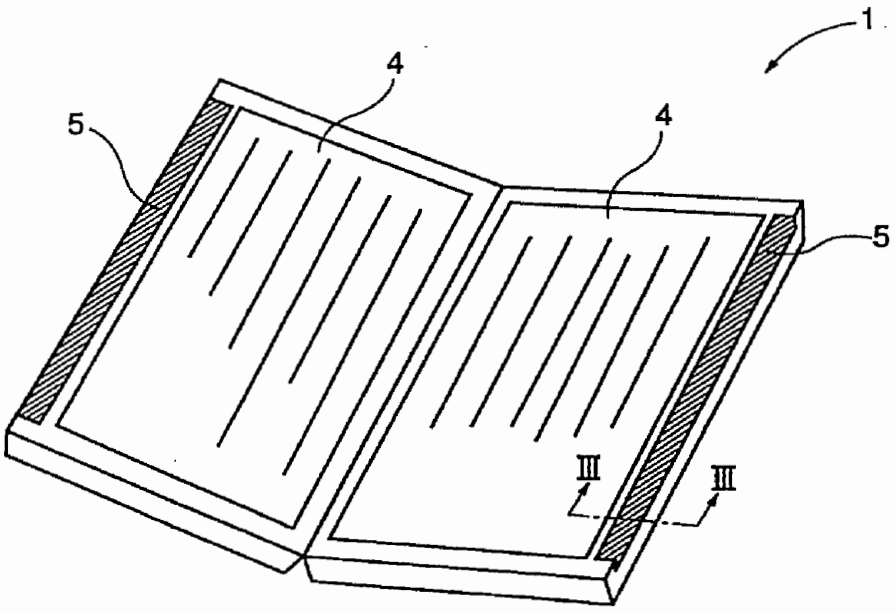


图 2

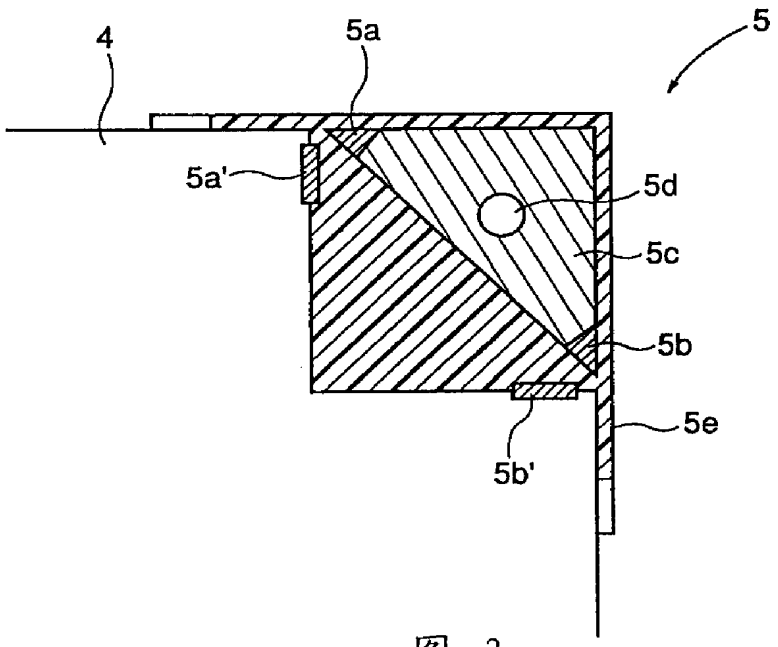


图 3

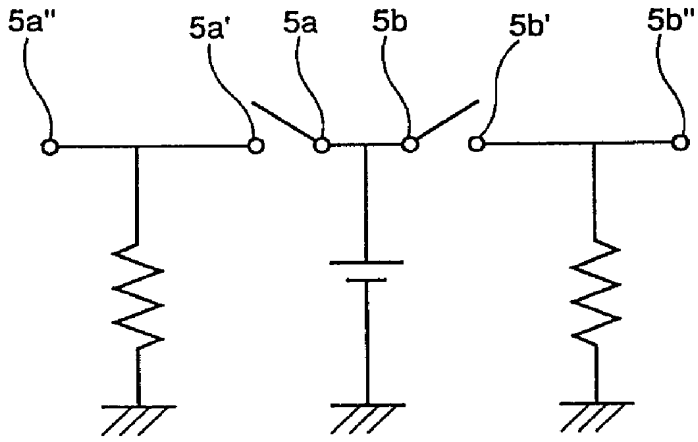


图 4

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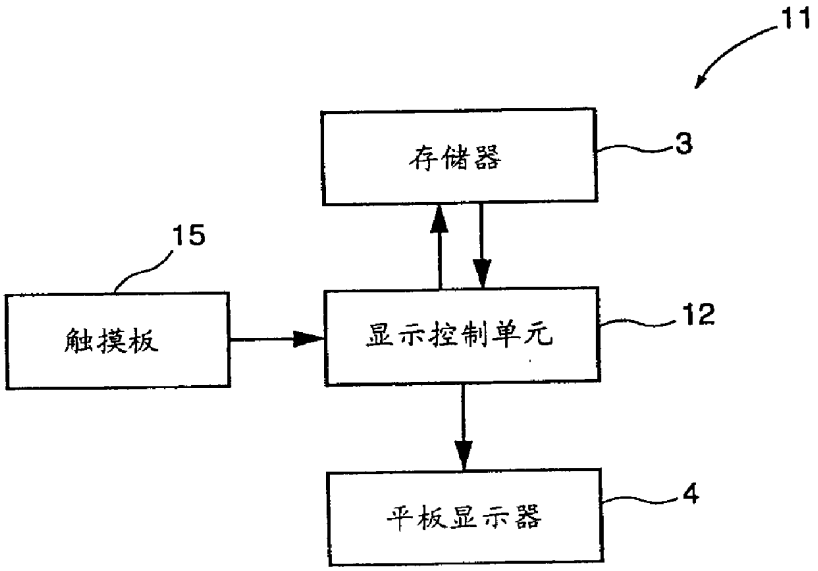


图 5

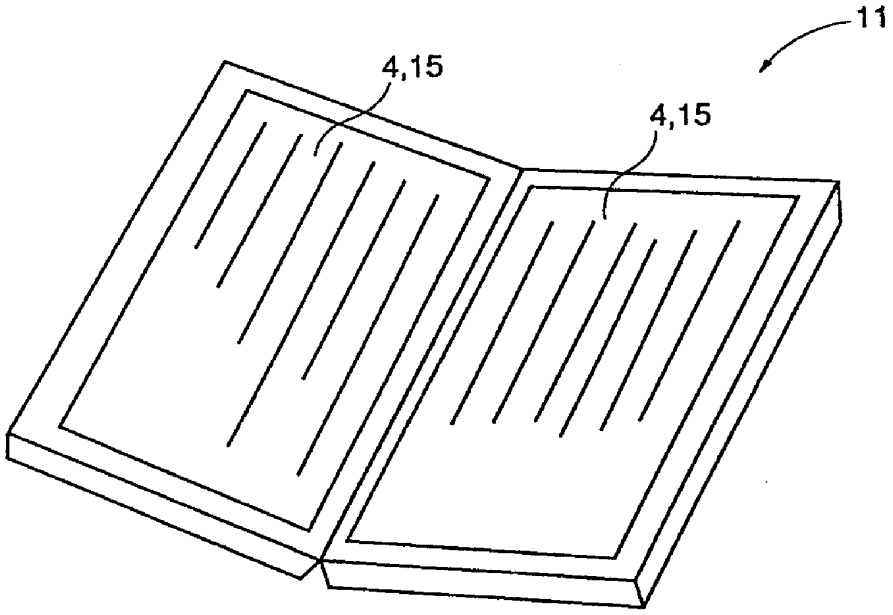


图 6

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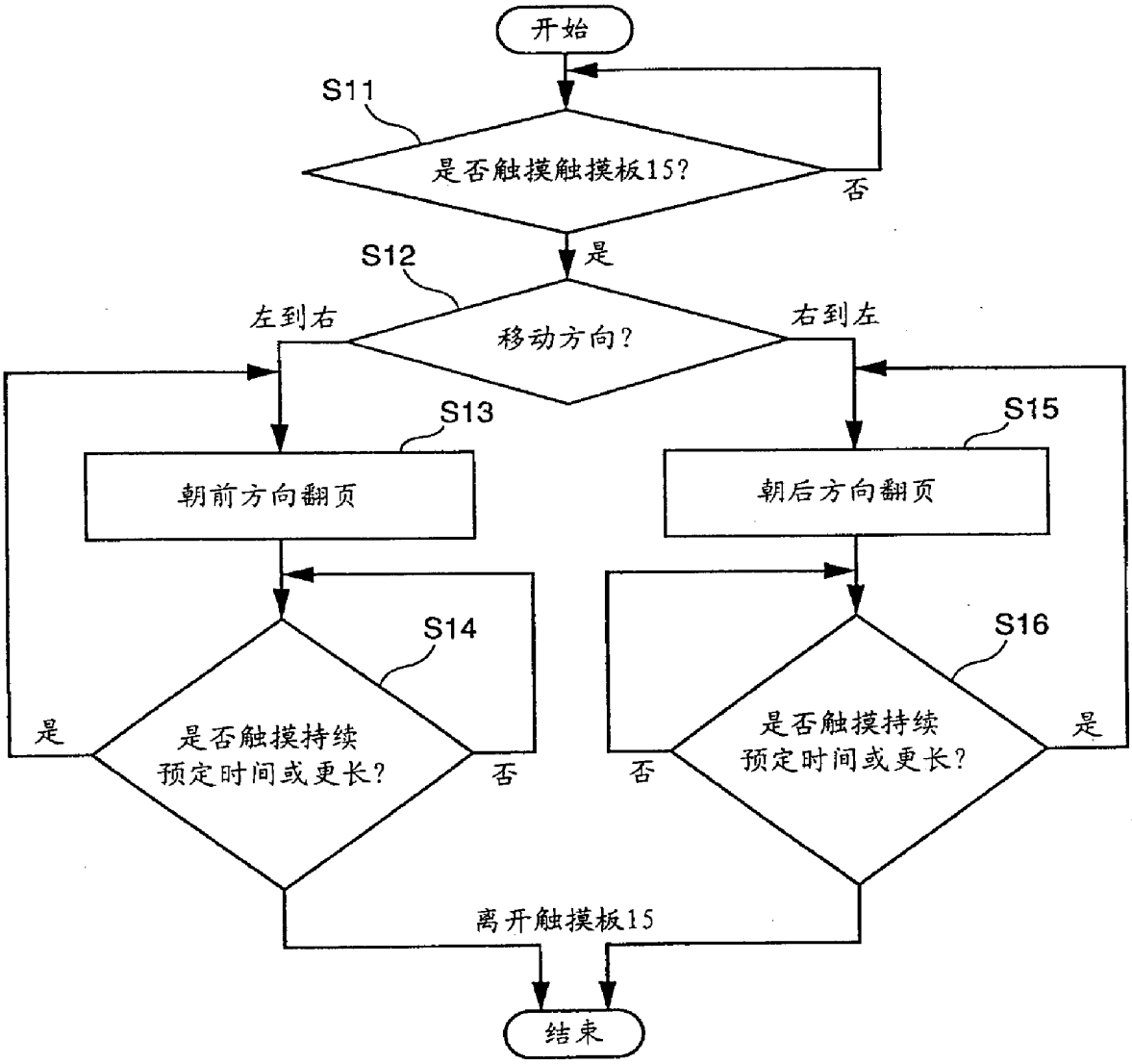


图 7

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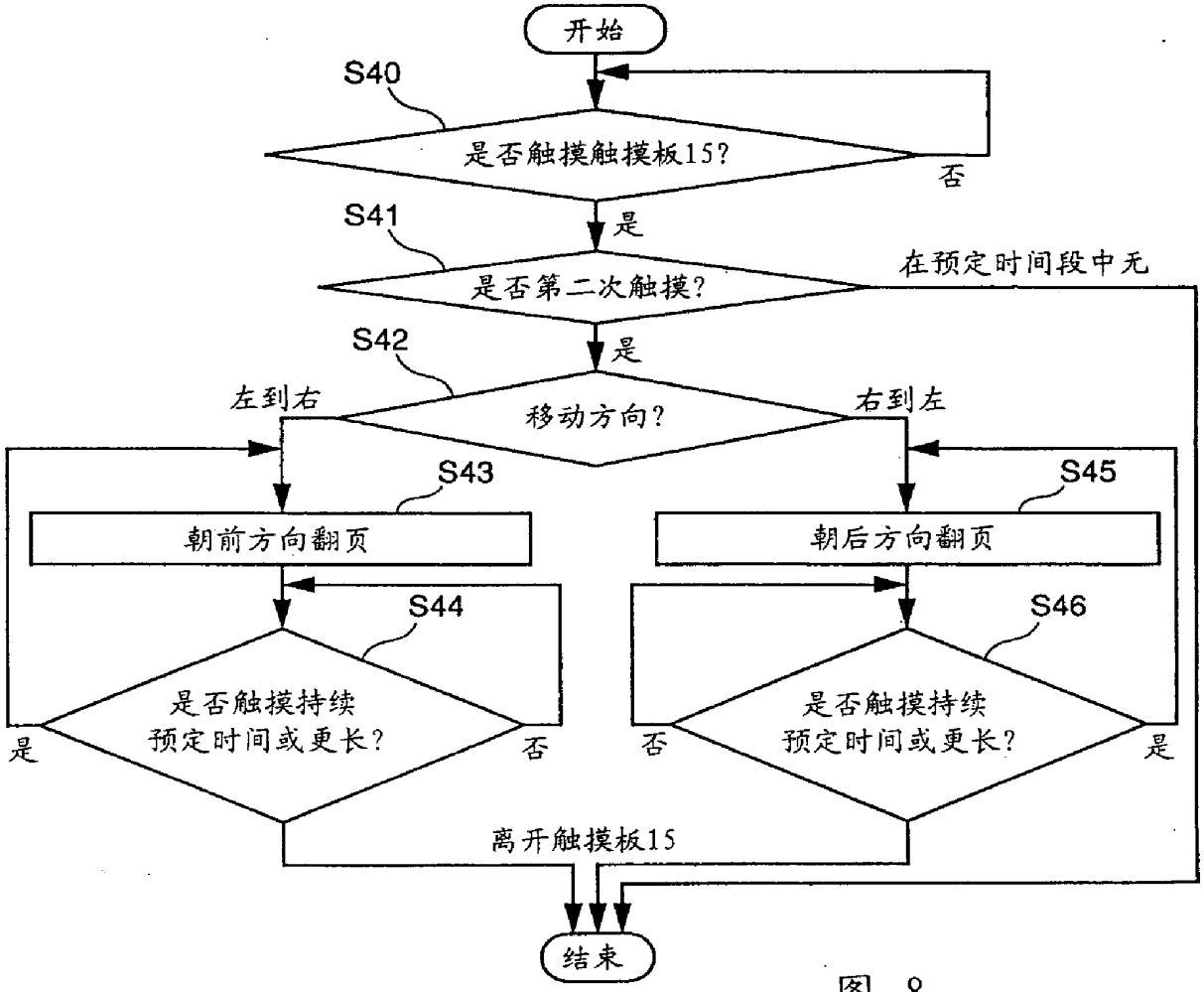


图 8

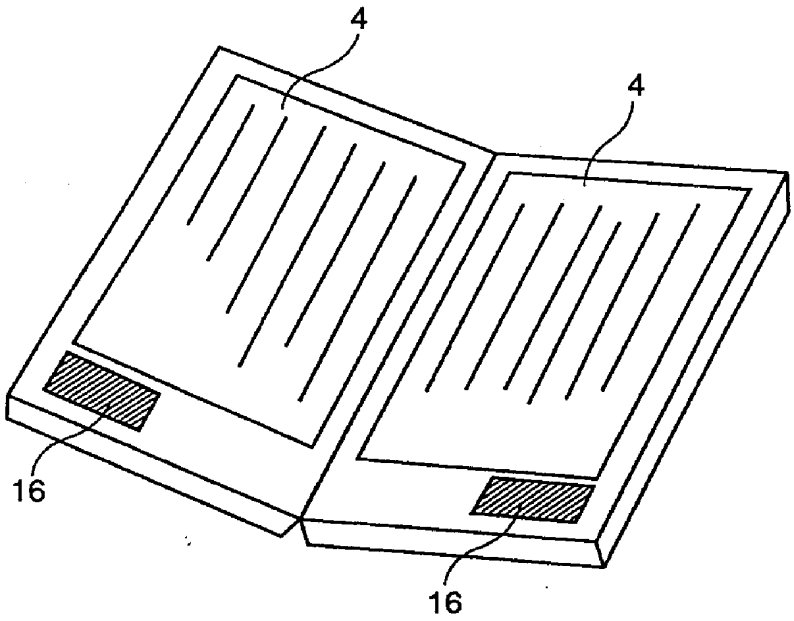


图 9

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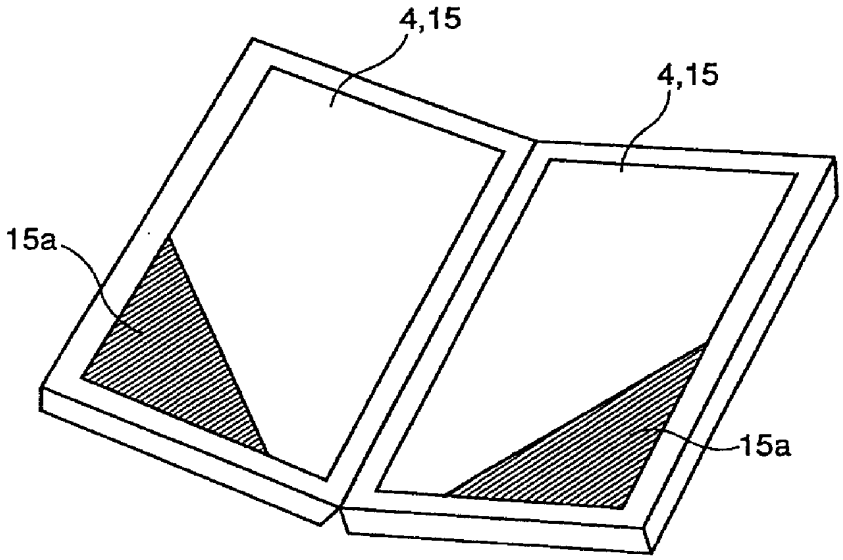


图 10

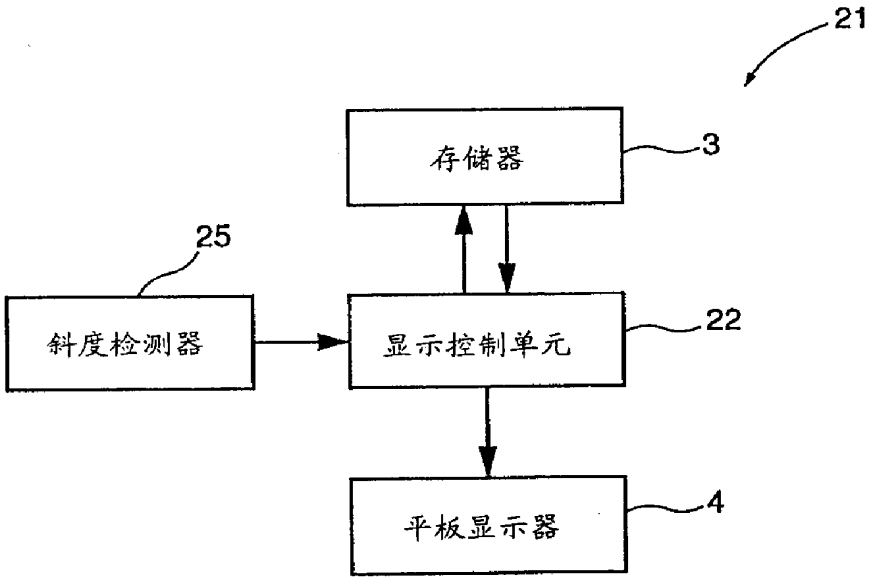


图 11

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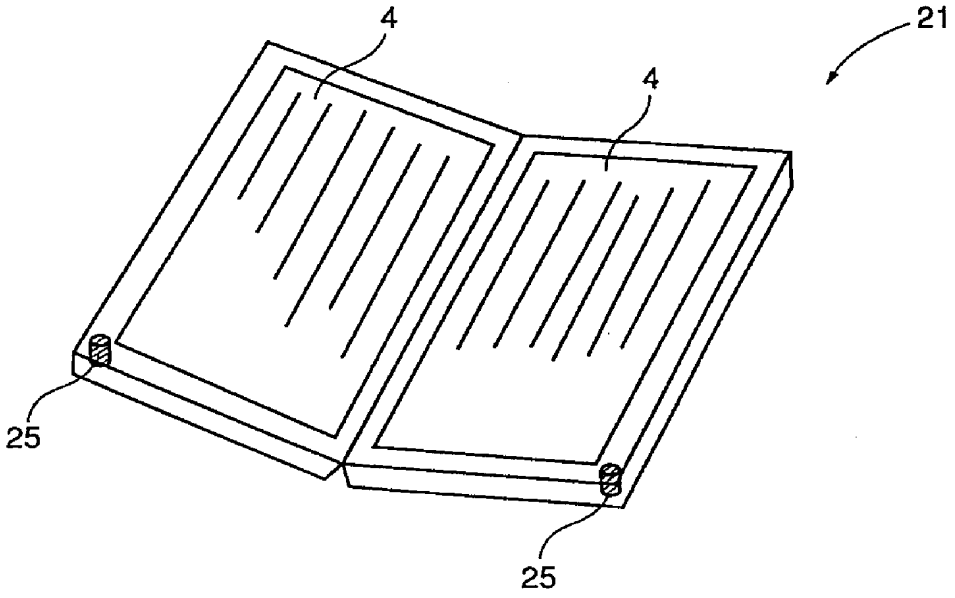


图 12

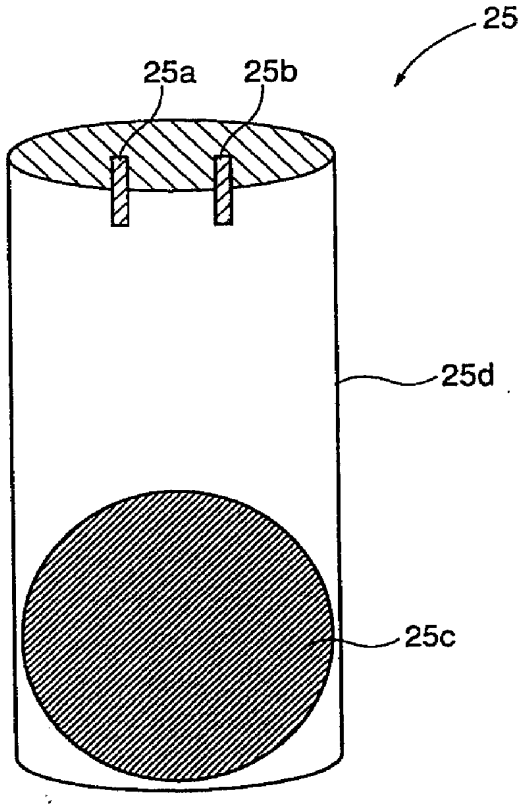


图 13

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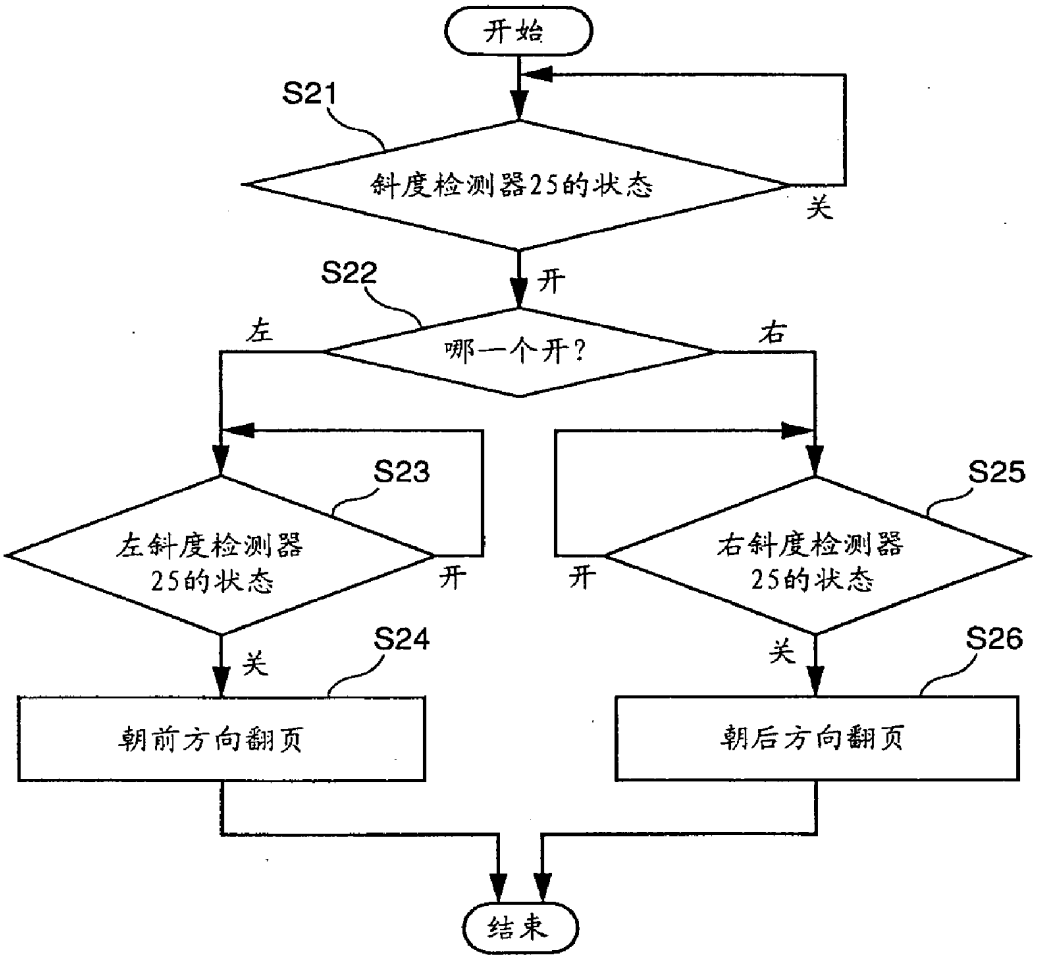


图 14

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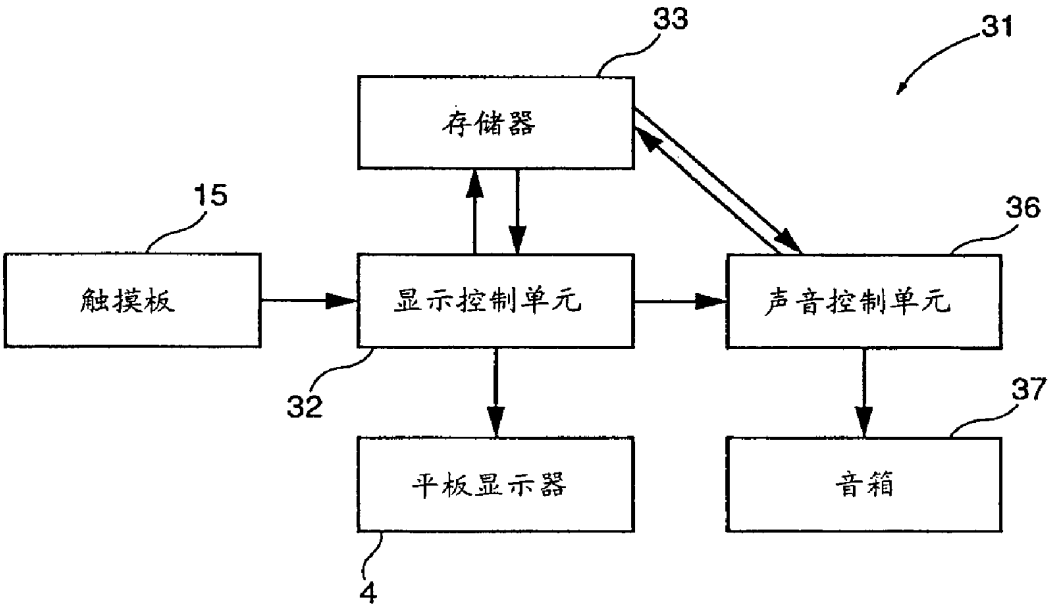


图 15

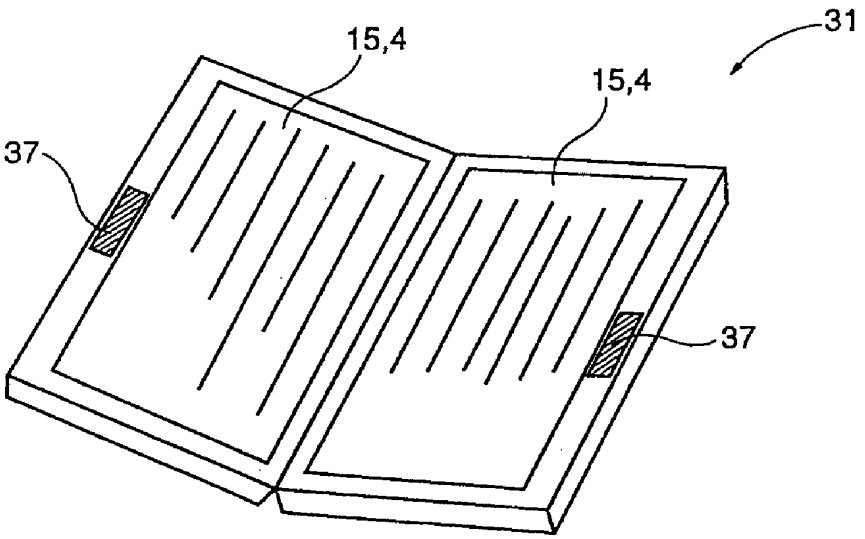


图 16

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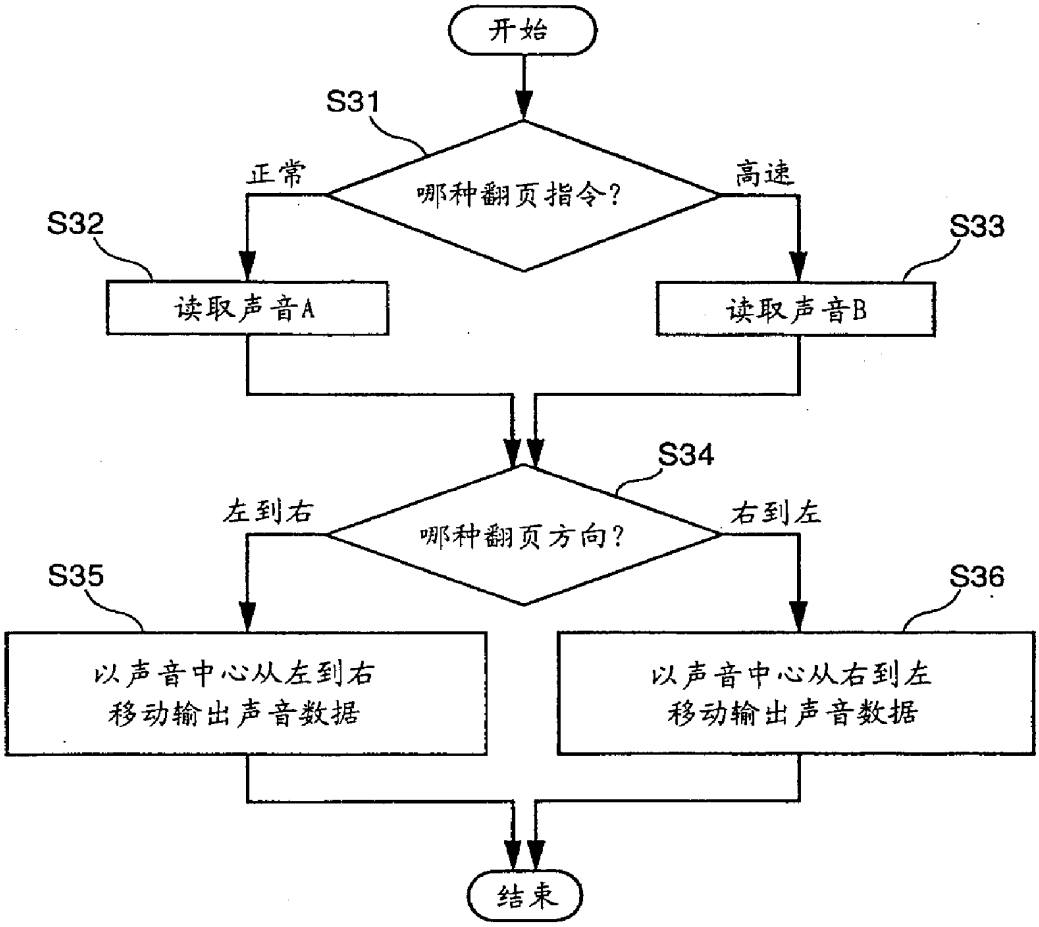


图 17

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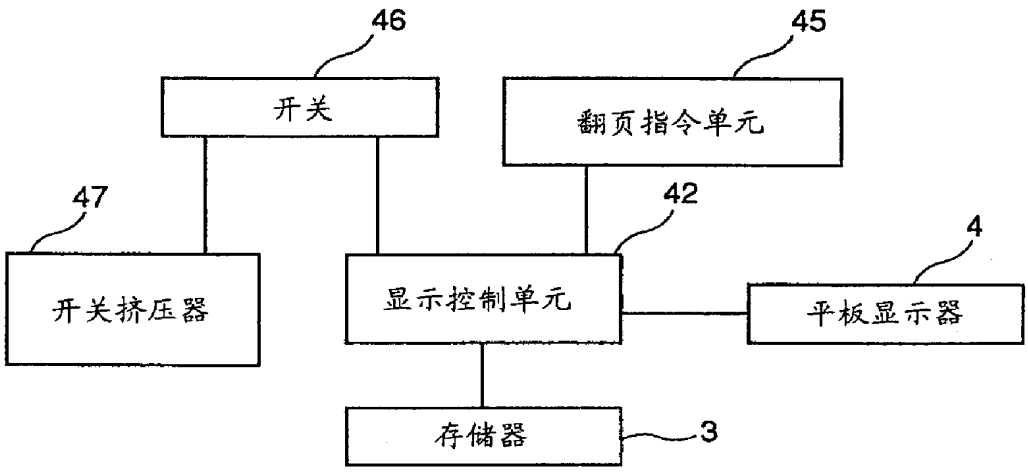


图 18

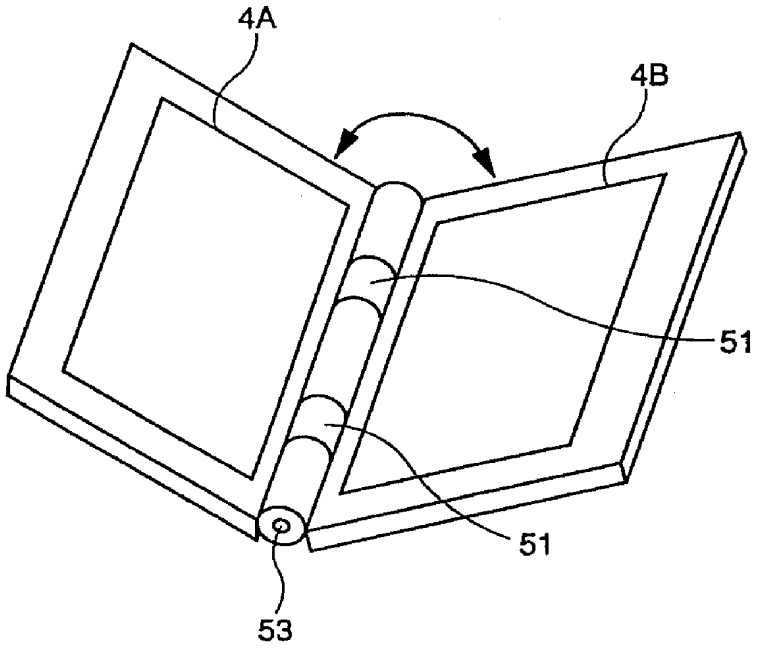


图 19

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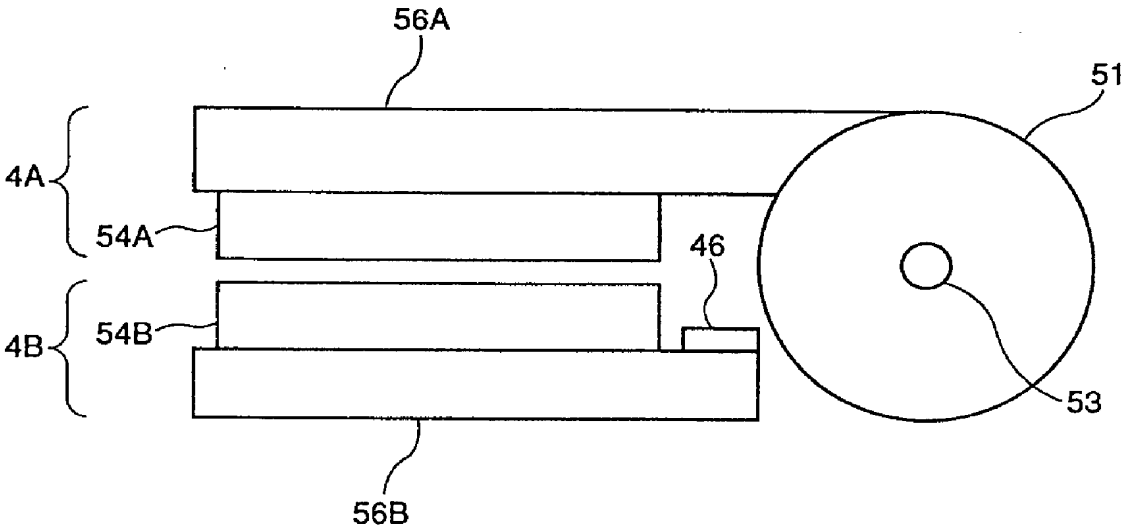


图 20

Petitioners - Exhibit 1002, page 261

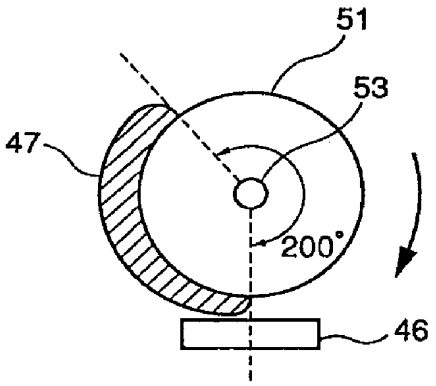


图 21

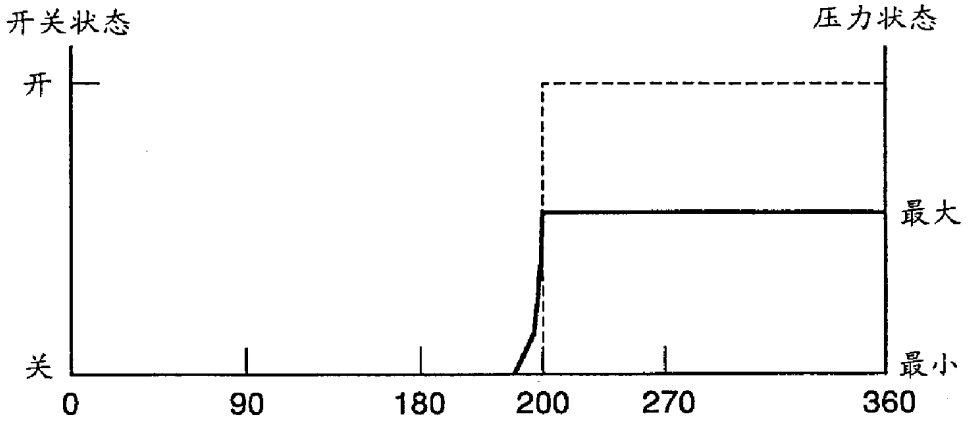


图 22

Petitioners - Exhibit 1002, page 262

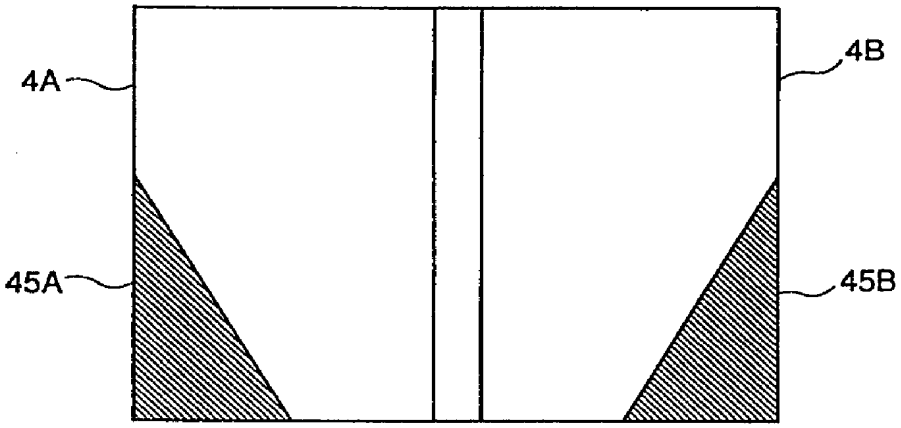


图 23

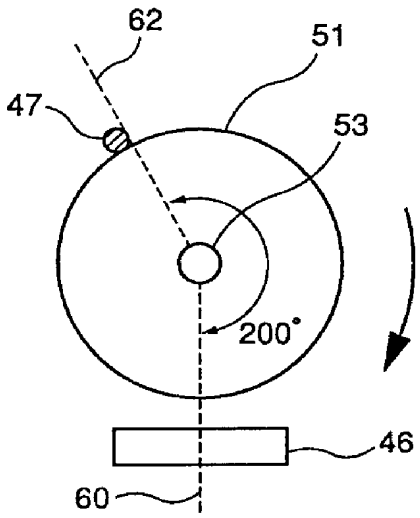


图 24

Petitioners - Exhibit 1002, page 263

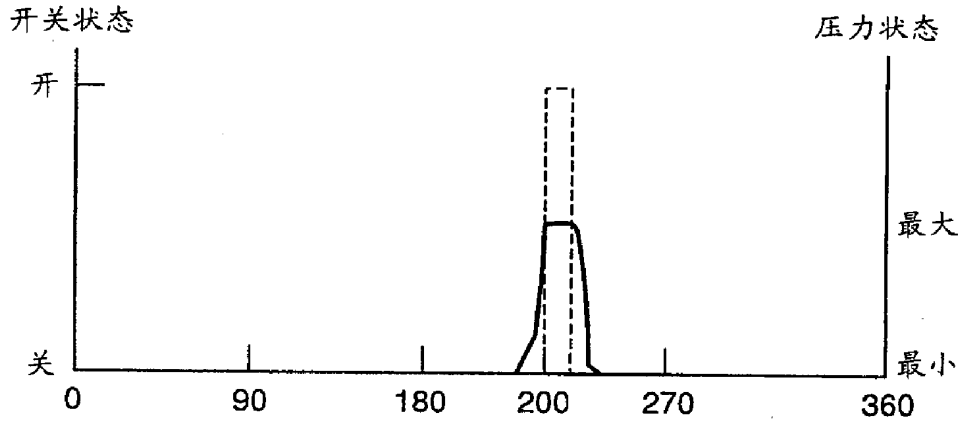


图 25

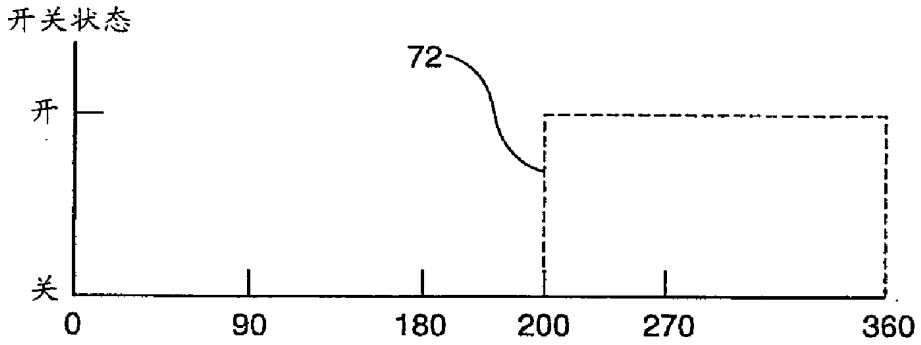


图 26

Petitioners - Exhibit 1002, page 264

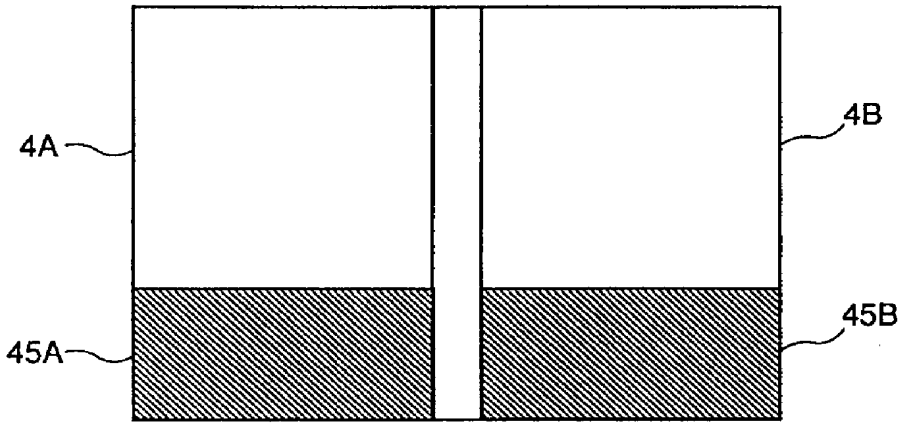


图 27

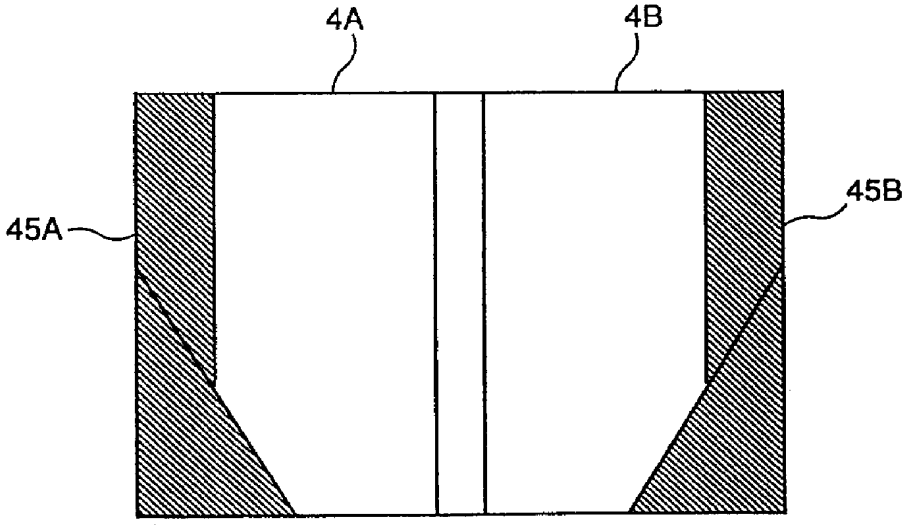


图 28

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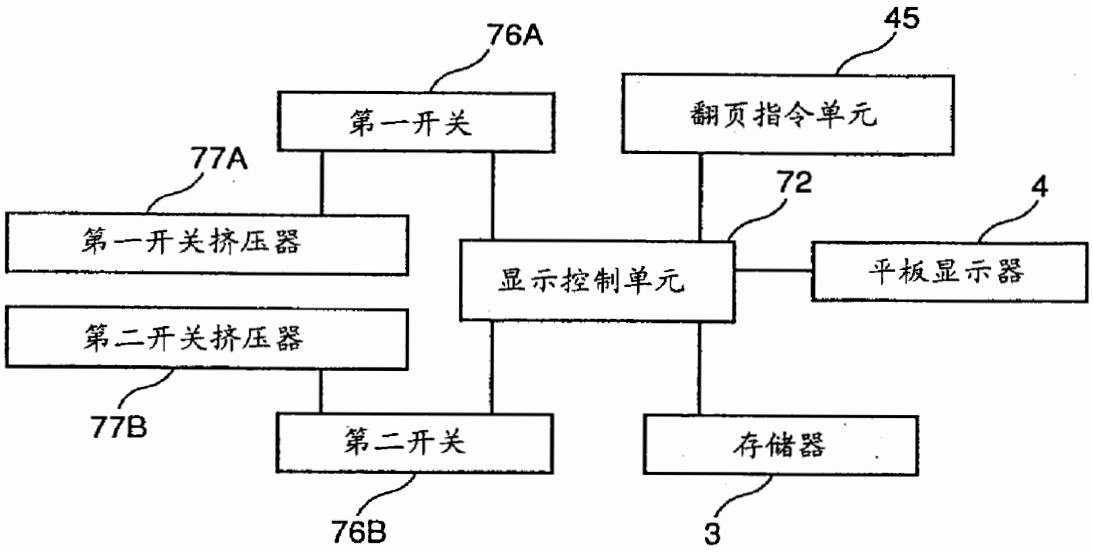


图 29

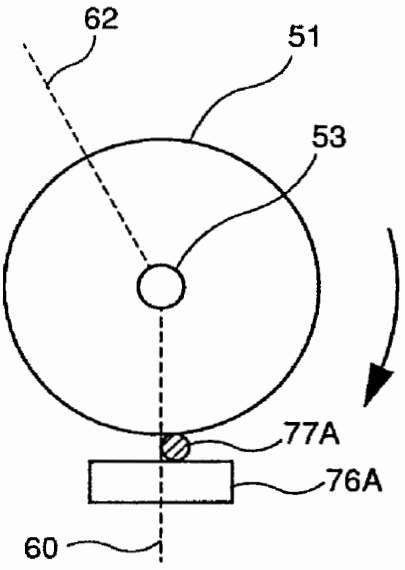


图 30

Petitioners - Exhibit 1002, page 266

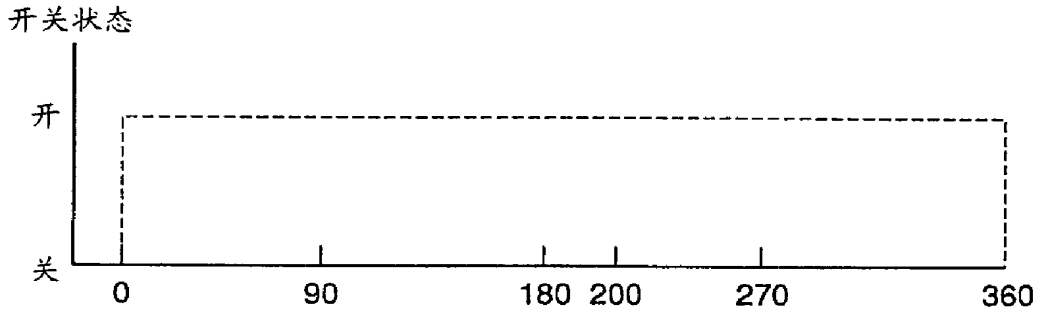


图 31A

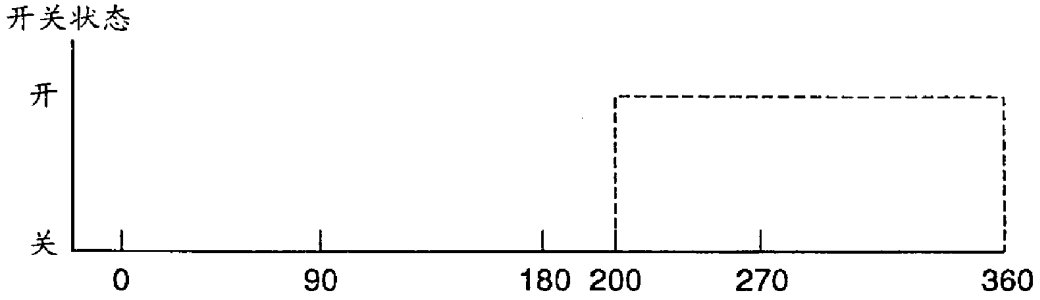


图 31B

第一开关的状态	第二开关的状态	平板显示器4A的状态	平板显示器4B的状态
开	开	不显示	显示
开	关	显示	显示
关	开	不显示	不显示
关	关	不显示	不显示

图 32

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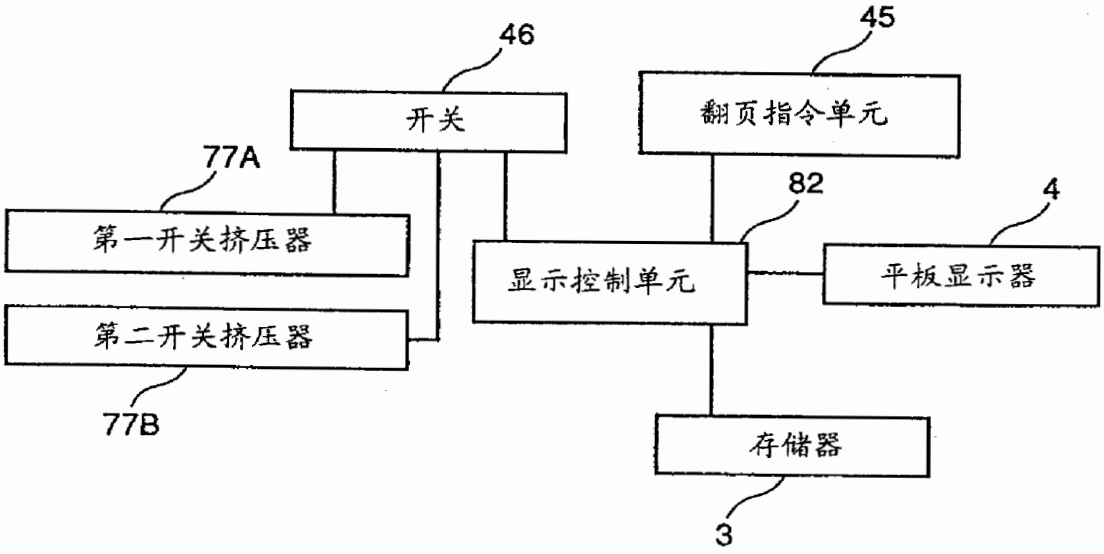


图 33

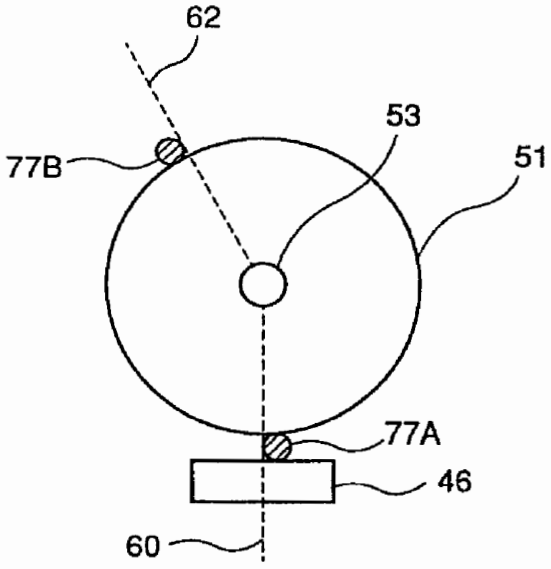


图 34

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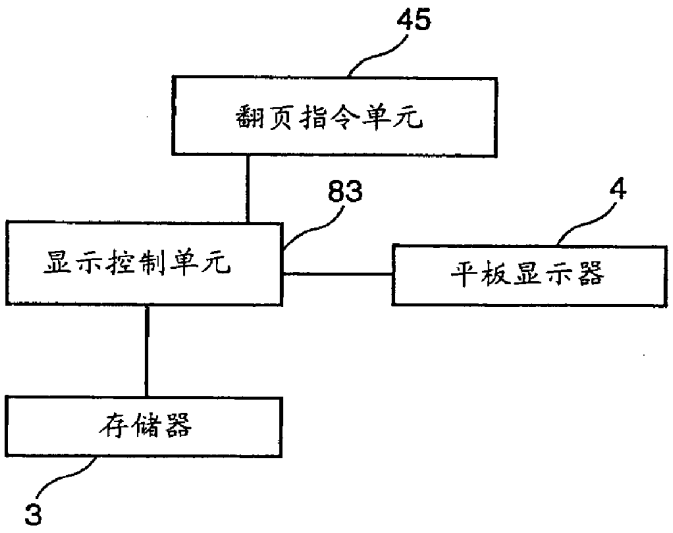


图 35

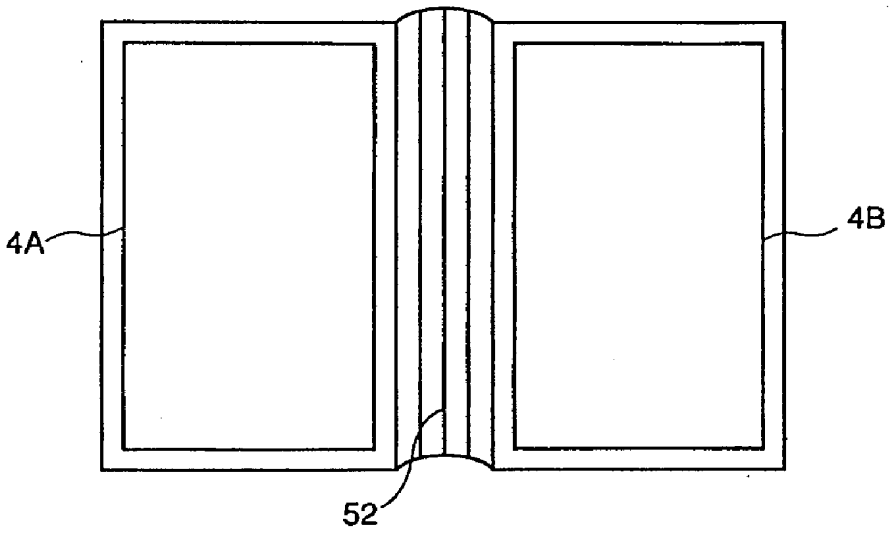


图 36

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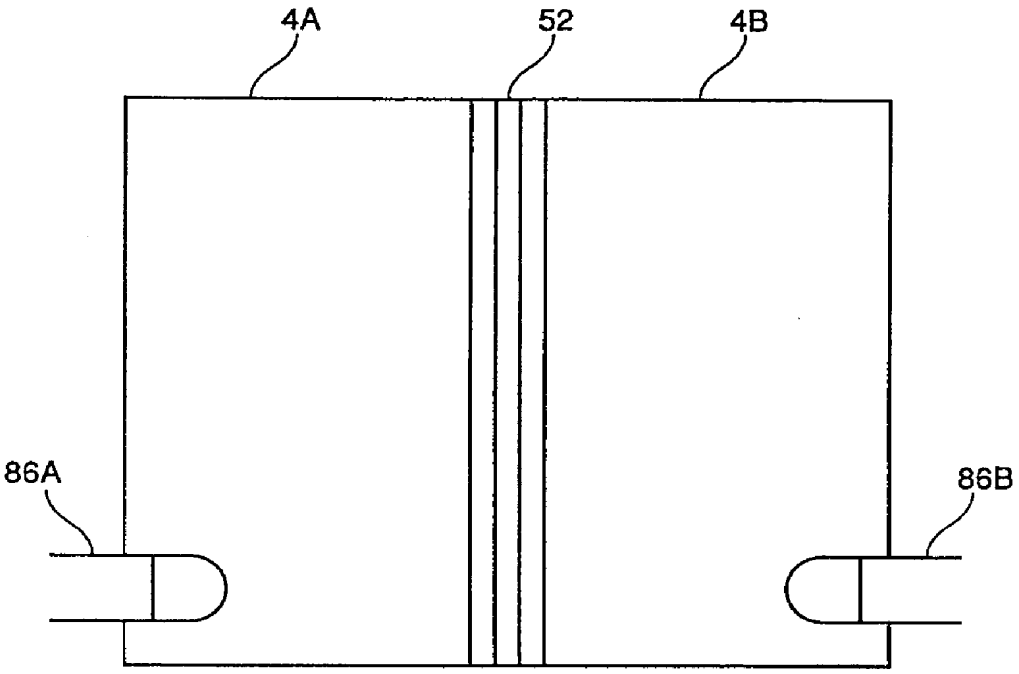


图 37A

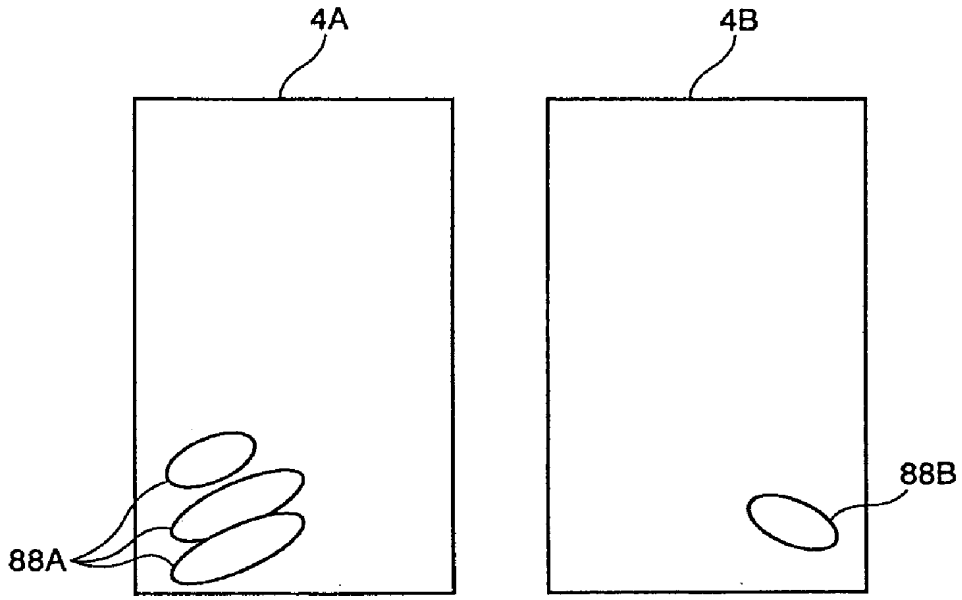


图 37B

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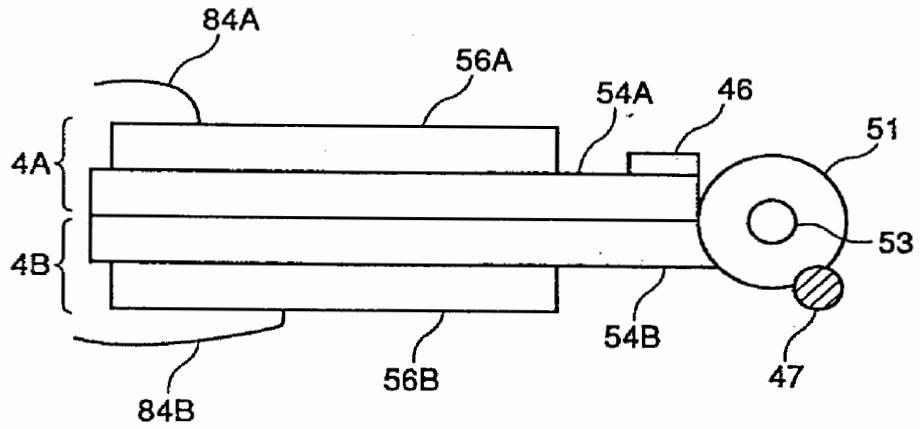


图 38

开关状态	触摸状态	平板显示器 4A的状态	平板显示器 4B的状态
开	一致	显示	显示
开	不一致	不显示	显示
关	一致	显示	显示
关	不一致	显示	显示

图 39

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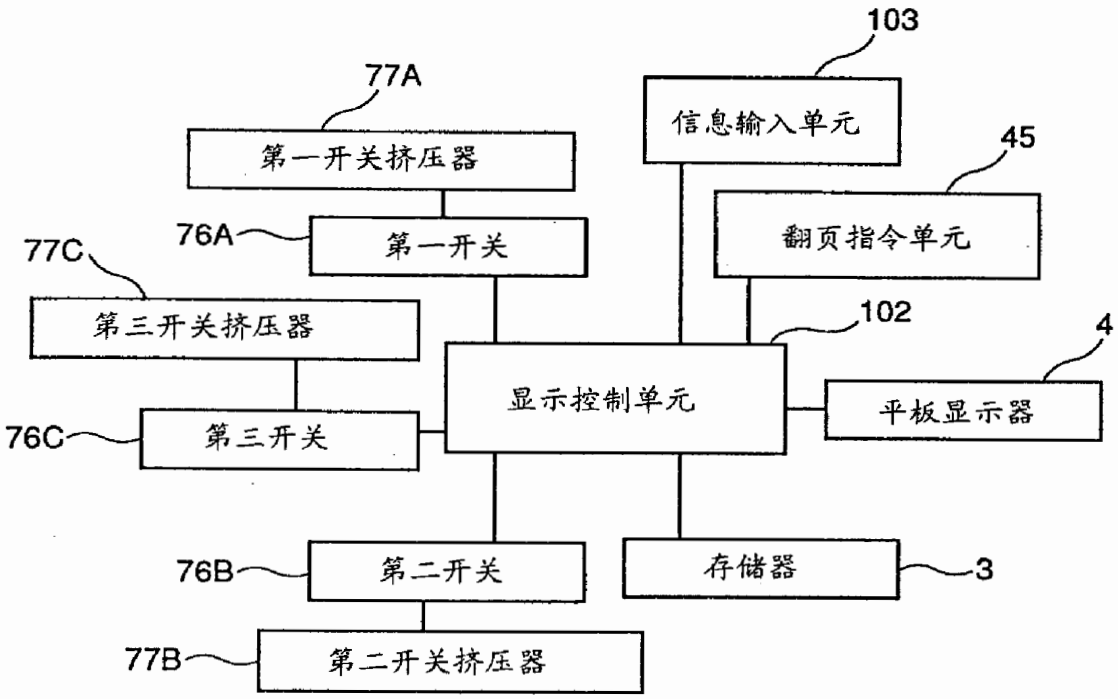


图 40

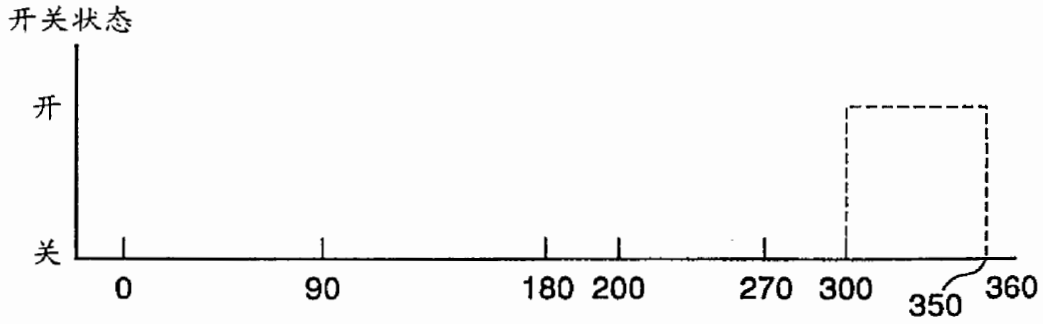


图 41

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第一开关状态	第二开关状态	第三开关状态	平板显示器 4A的状态	平板显示器 4B的状态
关	开	关	不显示	不显示
关	开	开	不显示	不显示
关	关	开	不显示	不显示
关	关	关	不显示	不显示
开	开	开	显示	显示
开	开	关	不显示	显示
开	关	关	显示	显示
开	关	开	显示	显示

图 42

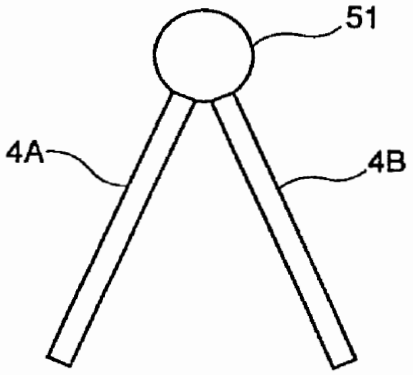


图 43

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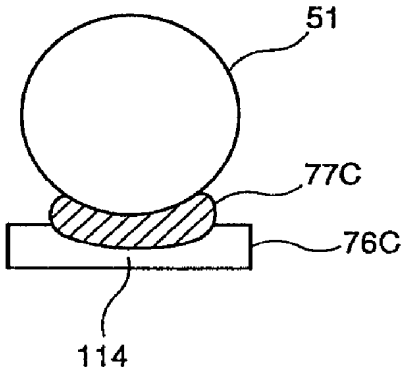


图 44

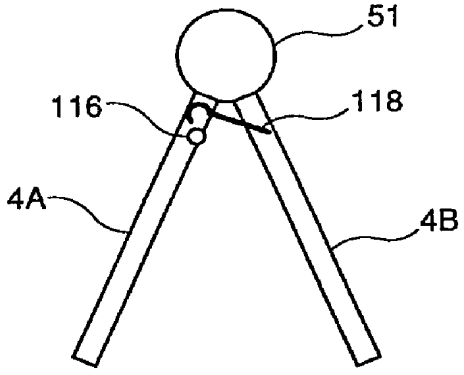


图 45

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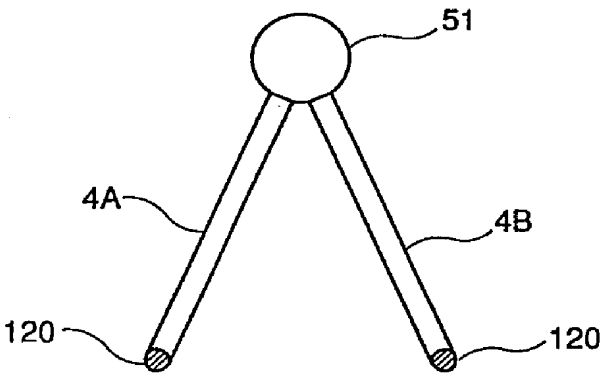


图 46

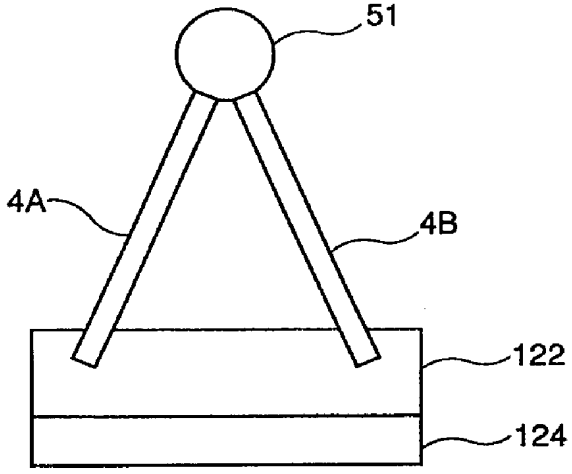


图 47

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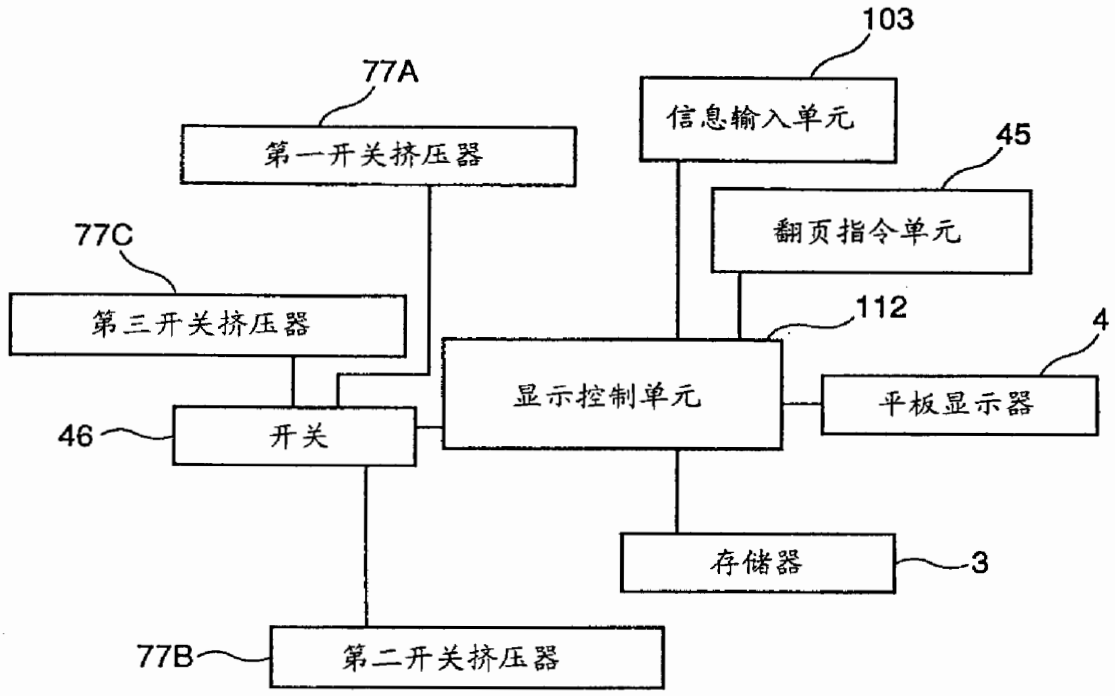


图 48

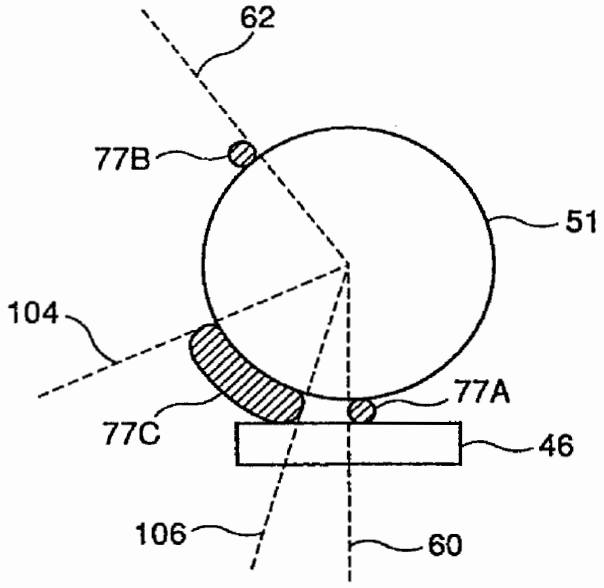


图 49

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DESCRIPTION CN1292112

Technical Field

The present invention relates to a display device, specifically, the present invention relates can be like a book by using can

Open the display data and allows the user to display device users really flip the page feeling.

Background Art

A conventional portable display apparatus press the Prev button or rearwardly page display electronic books, etc.

Button to turn the pages.

Japanese Patent No. 258076 (Japanese Patent Publication No. 2-230313) discloses a browser installed

Set it to issue commands to page through the user rotates the rotation detector.

This Japanese patent also discloses the use of

On an instruction by the pressure detector flip.

According to Japanese Patent browse the direction and speed by

To browse the pressure between the pressure detector to the browser of the pressure detector and negative Poor OK.

Above this patent

Also disclosed for the page by using the a curvature detector and a switch instruction.

According to this patent, the browser

Speed calculated based on the curvature of the curvature detector detected size, while browsing the direction based on the switching

Status determination.

Japanese Patent Publication No. 2-148257 discloses a portable document processor having a phase

When in a display screen.

This processor through the display to the previous page key to making it equivalent to a

The data read out from the memory 3 and reads out the display data stored in the display buffer memory 3.

Because

Here, equivalent to the one of the display data is stored in the display buffer memory 3, in order to display a number of pages

According to the display.

In this way, users like the user through flip to reading as to read the file.

Japanese Patent Publication No. 63-116287 discloses a display device, which has two open display

The display screen.

The user can input by operating a key to flip.

Above mentioned device is turned by pressing a button or turn a wheel (roller)

Page, which is different from a book or magazine page.

In this case, e-books are not giving a true

Positive to turn the pages of the printed book or magazine by the paper, plastics, etc. feeling as to read.

If you do not have a finger touch button or scroll wheel to be able to flip, it would be very convenient.

The above browsing means and the portable document processor only one display screen, which is not convenient means

Use.

Although the above-described display device has two display screens, but as a whole of the screen are not

Can be folded back to back up and use.

As a result, the display device is accounted for a larger place, making it difficult to grip

In the hand, resulting in the problem of portability.

Even if the display apparatus can be folded back to back from

, But the data is always also cause information leakage users to watch on the screen, as well as electric

Source of waste.

In addition, since the above display apparatus can not be folded back to back up, if the means for

Playing game sex games, for example, the kind of a player is best not shown his cards game, the players

It can not be a secret to conceal its brand of home.

Disclosure of the Invention

Accordingly, an object of the present invention is to provide a way to turn the page of the electronic book display apparatus in order to

Printed, such as paper, plastic sheet or magazine page real by giving a flip feeling.

It is another object of the present invention to provide a flip display device, which through the same

An operation will not only be able to give people the feeling really ruffled a book page, but a page flip

And the ability to continuously flip.

Still another object of the present invention is to provide a display device, even if the user does not move as hand and hand

Refers to such a pointer to the button, it is possible to flip.

Another object of the present invention is to provide a can be folded back to back, form, and can

Display device in hand, it has a small size, easy to carry, low energy consumption and suited to play the game

Sex games.

Is another object of the present invention further provides a display device, it is to prevent information leakage

Advantages, and low energy consumption.

According to an aspect of the invention, the display device comprising: a memory for storing information; display,

For displaying information; the flip instruction unit, for detecting an instruction unit own inclined to output

A detection signal; indicates that the direction of inclination, and a display control unit for the instruction unit from the flip

Receiving instructions, in order to read from the memory according to the direction of said inclined Next or Previous Letter

Interest rates, and the read information is displayed on the display.

In response to the sliding of the user's finger or hand on top of the flip instruction unit, the display control unit to turn a

Page.

In this way, the user can be if the user is a real hand turn pages to flip.

In accordance with another aspect of the invention, the display apparatus comprising: a memory for storing information; monitors

For displaying information; next page instruction unit, for detecting a pointer moving direction, and to output an indication to the

The moving direction of the detection signal;, and a display control unit for the instruction unit receives an instruction from the next page,

In order according to the direction of movement to the next or previous page read from the memory information, and in significant

The indicator displayed on the information read.

In response to such a movement of the pointer such as a user's finger or hand on top of the next page instruction unit, the display

The control unit turned one.

In this way, the user is able to if the user is in really hand turned one page

The land next page.

The display control unit preferably includes a unit for the instruction from the the flip instruction unit receives, from the root

A storage determined by the length of time of the instruction unit according to the direction of pointer movement in contact and pointer flip

The device information, the reading of the information of the next or previous page, and the read information is displayed on the display.

Display control unit according to the pointer contact with the flip instruction unit changes in the length of time of the page to be turned

Number.

Thus, pages can be one in the same operation as a flip, also can continuously Goto.

According to another aspect of the invention, further, the display device including: a memory for storing information; display

For displaying information; flip instruction unit, for detecting the position of the pointer in contact, to output a

Two directions of the touch position detection signal; as well as a display control unit for the unit receives from the flip instruction

Instructions so that, based on a change of position of the pointer contact, read from the memory Next or Previous of

Information, and the read information is displayed on the display.

User contact page by using a pointer the instruction unit twice to turn a.

Page according to the direction of

Determined by the change of the touch position.

In this way, the user is able to if the user is really hand turned one page

Like to flip.

According to another aspect of the invention, the display device comprising: a memory for storing information; from to

At least two openable and closable screen configuration of a display for displaying information; flip instruction single

Element for detecting ON / OFF operation of the monitor, to output a detection signal; and a display control unit

Element for flip instruction unit receives an instruction, so that according to the ON / OFF operation is detected, the switching

Is displayed on the display of the information.

The user can display the ON / OFF operation flip.

Thus, the display device at the same time in the hand,

Can not move like hands and fingers like a pointer to the button on the next page.

According to the further of the present invention, on the other hand, the display device comprising: a memory for storing information; significant

Shown, for displaying information; speaker, for outputting sound; flip instruction unit for transmitting a

Instructions, in order to switch the display of the information on the display; display control unit for single flip instruction

Receives an instruction to switch the display of the information on the display; well connected to the display control unit

The sound output control unit, for turning paper based on the switching information is displayed on the display output from the speakers

Sound.

The sound output control unit in the next page while the voice output reversing sheet.

In this way, the user can be good

Feeling like the user to turn pages flip.

The speaker is preferably constituted by at least two speakers.

A sound output unit and a display control unit phase

A circuit connected to the output from the speaker based on the switching information is displayed on the display turned paper sound,

And according to the direction of the switching information, the output changing sound volume at the same time, from at least two speakerphones

Sound output device.

According to the direction of the next page by the user, the voice of the inverted paper generated in the manner of moving the center of the sound.

This

Like the user if the user really turn a sheet of paper the same feeling flip.

According to the further of the present invention, on the other hand, the display apparatus comprising: a memory for storing information; by

At least two openable and closable screen configuration of a display for displaying information; rotational angle of the subject

Measurement means for the rotational angle of the detection display; well connected to the display of the rotation angle detection unit

A control unit to control whether the display is used according to the rotational angle of the display provides a display.

The display control unit when the user back to back folding the monitor, it is possible to generate a control to induce

The screen is not viewed by the user does not provide a display.

Therefore, in the prevention of information leakage can be provided a

Have the advantage of the display device.

Can also reduce the energy consumption of the display device.

Can also provide a more

Plus portable, capable by the user freely rotatable, so that even if the display apparatus accounts for fewer places

Households are also able to watch the display apparatus of the advantages of the display monitor.

The display device preferably includes a fixing unit for the monitor is fixed in a predetermined range of a

A rotation angle.

The user can mount the monitor in a predetermined range of a rotational angle.

Thus, the user can

Play the license does not allow the user to leak to the game home game.

According to the further of the present invention, on the other hand, the display apparatus comprising: a memory for storing information; by

At least two openable and closable screen configuration of a display for displaying information; has at least two

Graphical input panel unit constituted by the configuration of the component parts corresponding to the respective display screen, means for detecting

A needle contact area of the display; as well as the display control unit connected to the tablet for

Control whether the display the tablet unit area pointer contact display.

Display the graphic input of the control unit according to the pointer such as a finger in contact the surface of the plate element

Plot, to determine that one of the monitor screen being viewed by the user, in order to not be viewed on the screen does not

Providing display.

Therefore, it is possible to provide a display device has an advantage in the prevention of information leakage.

Also

Can reduce the energy consumption of the display device.

BRIEF DESCRIPTION

Figure 1 shows a block diagram showing a configuration of a display device of the first embodiment of the present invention.

Figure 2 is a diagram showing the appearance of a display device of the first embodiment of the present invention.

Figure 3 is a sectional view of the flip instruction unit.

Figure 4 is an equivalent circuit diagram of the flip instruction unit.

Shown in Figure 5 is a block diagram showing a configuration of a display device of the second embodiment of the present invention.

Figure 6 illustrates the appearance of a display device of the second embodiment of the present invention.

Figures 7 and 8, shown is a flowchart of the page turning processing.

Figure 9 illustrates the appearance of the display apparatus having a touch position of the detector.

Figure 10 diagrammatically represents the flip effective region of the touchpad.

Figure 11 shows a block diagram showing a configuration of the display device of the third embodiment of the present invention.

Figure 12 illustrates the appearance of the display apparatus of the third embodiment of the present invention.

Figure 13 illustrates the structure of the tilt detector.

Figure 14 is a diagram showing a page turning processing flowchart.

Shown in Figure 15 is a block diagram showing a configuration of the display device of the fourth embodiment of the present invention.

Figure 16 illustrates the appearance of the display apparatus of the fourth embodiment of the present invention.

Figure 17 illustrates a flowchart of processing of the sound output.

Shown in Figure 18 is a block diagram showing a configuration of the display device of the fifth embodiment of the present invention.

Figure 19 is a diagram showing the appearance of the display device of the fifth embodiment of the present invention.

Figure 20 shown from the side of the display device.

Figure 21 illustrates the structure of the switch and the switch extrusion.

Figure 22 shows a state that is applied to the pressure on the switch shown in Figure 21 and the switch.

Figure 23 illustrates that the next page of the instruction unit.

Figure 24 illustrates the structure of the switch and the switch extrusion.

Figure 25 shows a state applied to the pressure on the switch shown in Figure 24, and the switch.

Figure 26 shows the state of the switch that generated by the switching state is formed in Figure 25.

Figures 27 and 28 are a graphical representation of the flip instruction unit.

Figure 29 shows a block diagram showing a configuration of a sixth embodiment of the display device of the present invention.

Figure 30 shows the structure of the first switch and the first switch extruder.

Figure 31A shows a state of the first switch.

Figure 31B shows a state of the second switch.

Figure 32 diagrammatically shows the relationship between the first and second state of the switch, as well as in flat panel displays

4A and 4B, the display on the state.

Figure 33 is a block diagram showing a configuration of the seventh embodiment of the present invention the display device.

Figure 34 is a diagram showing the structure of a switch with a first and second switch extrusion device.

Figure 35 is a block diagram showing a configuration of the display apparatus of the eighth embodiment of the present invention.

Figure 36 shows the appearance of the display apparatus of the eighth embodiment of the present invention.

Figure 37A shows the appearance of the display device of the open.

Figure 37B diagrammatic representation of the area of finger contact with the flat panel display is folded back to back.

Figure 38 from the side shows a closed when the display device.

Figure 39 a graphical representation of the shape of the contact in the switch status, pointers, and the flat panel display 4A and 4B

State as well as the relationship between the display state on the flat panel display 4A and 4B.

Figure 40 is a block diagram showing a configuration of the display device of the tenth embodiment of the present invention.

Figure 41 shows the state of the third switch.

Figure 42 is a diagrammatic representation in the first to third switching state in the flat panel display 4A and 4B

The relationship between the state is displayed.

Figure 43 shows the appearance of the flat panel display is folded back to back, 4A and 4B.

Figure 44 shows the structure of the third switch and the third switch extruder.

Figure 45 shows a flat panel display with a nail and a flat panel display with a hook

The appearance of the display apparatus.

Figure 46 shows the appearance of a display device, the display device is applied to a layer of non-slip outer

Shell.

Figure 47 is a diagram showing an appearance of a display device, the display device installed in a non-slip

Base.

Figure 48 is a block diagram showing a structure of a display device of the eleventh embodiment of the present invention.

Figure 49 is a diagram showing the structure of a switch and the first to third switching extruder.

Preferred embodiment of the present invention is implemented

First Example

Referring to Figure 1, the first embodiment of the display device 1 includes: a memory 3, which consists of as the semiconductor memory

Memory, hard disk, MO (Magneto-Optical, magneto-optical disc) as a magnetic storage device is configured

Into, for storing image information, character information, etc.; flat panel display 4 by the liquid crystal panel, a PDP (the Plasma

Display Panel, the plasma display panel) and the like constructed from, for displaying image information, character

Information, etc.; display control unit 2, for controlling the image information stored in the memory 3, character information

Information, etc. read, and the read information is displayed on the flat panel display 4; flip instruction unit 5,

Flip instructions for receiving from the user, the display control unit 2 so as to indicate the next page.

After this the user includes in addition to the the software dynamic of animals such as humans outside (software

agent), such as robots like artificial limbs.

Referring to Figure 2, the display device 1 of the display 4 of the two plates and two flip instruction unit 5.

The number of the flat panel display 4 and flip instruction do not limit the number of unit 5 into two, may be one,

Can also be at least three.

If the number of flat panel displays and flip instruction unit 5 are two or

More, then they can be configured when they are not being used, and open into a use state of the display

And instruction unit is folded up.

Although Figure 2 illustrates a flat display put into a back-to-back 4, but

This arrangement is not limiting this form.

The flip instruction unit 5 is arranged in an edge of the display device 1.

The display control unit 2 and the memory

3 is mounted on the display device 1.

Figure 3 is a a cross-sectional view of the flip instruction unit 5 in Figure 2 along the line III-III.

Page instruction unit

5 constructed from the following parts: a support shaft 5d, around the switch 5d rotating columnar-shaped object being

5c, the contacts 5a 'and 5b'.

The switch 5c on two opposite sides of the contacts 5a and 5b.

In Figure 3 in the open

OFF 5c, 5d around the supporting shaft is rotated counterclockwise to allow the contacts 5a and 5a 'to achieve mutual contact.

In

In Figure 3, the switch 5c around the supporting shaft 5d rotated clockwise to allow contact 5b and 5b ', in a mutually connected

Touch state.

The switch 5c is supported by a spring (not shown), and when the contacts are not in contact with each other, are stable

's.

The surface of the switch 5c is covered film on the layer of pieces of rubber, silicon, plastics, etc. 5E.

Therefore, flip

The instruction unit 5 is reinforcement, any electrical damage could have been avoided, and external substances like dust like

Can not enter the display device 1.

Figure 4 is a next page equivalent circuit diagram of the instruction unit 5.

The instruction unit is configured so as to satisfy: when the touch

Point 5b and 5b 'contact with each other, the contacts 5a and 5a' mutual contact.

When all the contacts are not relative

Contact with each other, often is a stable state.

When the mutual contact of contacts 5a and 5a 'Be, 5a "point

A voltage change.

When the mutual contact, contact 5b and 5b ', 5b "point of the voltage change.

Noticeable

The display control unit 2 is detected by a voltage change at the point 5a "and point 5b" flip

instruction.

Referring again to Figure 3, the user flip instruction unit 5, the upper left and lower right corner of the sliding finger or

Hand.

Therefore 5c is rotated.

Here term also refers to "slide" in close 5a and 5b any position,

With your fingers or hands on.

In other words, the term refers to a similar hand turned the paper printed book

Operation.

The rotation of the switch 5c procure a voltage change in the point 5a "5b", and thus the display control unit

2 is able to detect the user in the desired direction.

For example, when the user on the left page instruction unit 5 upper right slide within the fingers or hands, the display control

System unit to move forward flip.

Slide your finger or hand 5 top left of the page on the right when the user command unit

, The display control unit 2 back flip.

Therefore, users like real paper in hand turned

Perform next page.

When the user on the left page instruction unit 5 lower left slide within the fingers or hands, the display control unit

2 back flip.

When the user is on the right page instruction unit 5 bottom right of the slide your finger or hand,

the display

Control unit forward flip.

By the display control unit 2, such a control allows the user through the

Only one instruction unit 5 will be able to flip forward and back.

Therefore, the user can with one hand and flip.

Second Example

Referring to Figure 5, a second embodiment of a display device 11 includes: similar to the first embodiment of the deposit

Reservoir 3; similar to the first embodiment of the flat panel display 4; the display control unit 12 for controlling the

The picture information, character information and the like stored in the memory 3 to read, and to read the information in the Tablet

Display on the monitor 4; completely cover the flat panel display touchpad 15, placed into a 4, to receive from the

User to flip instruction, and send an instruction to the display control unit 12 in order to flip.

With reference to Figure 6, a second embodiment of the display device 11 in the embodiment includes a display 4, and two of the two plates

Touchpad 15.

15 back-to-back arrangement of the two sets of flat panel displays 4 and touchpad.

Flat display 4 and

The number of the touch panel 15 is not limited to two, and may be one, can also be at least three.

Display control

Unit 12 and the memory 3 is mounted on the display device 11.

The touchpad 15 is a detector detecting the position of contact by the pointer as a finger and a pen like.

The display control unit 12 is changed according to the length of time of the pointer is contacting the touch panel, the number of pages of the next page.

Referring to Figure 7, described by the display control unit 12 performs the flip control process.

Referred to here

The book was supposed to display on the right of the flat panel display 4, page numbers, the smaller one is written vertically.

If the display in the right flat panel displays 4, page numbers, the smaller one is the level of writing, before and after

The direction of mutual exchange.

Display control unit 12 determines whether the touch panel 15 detects a pointer like a finger and a pen or the like

Contact (S11).

If the touch pad 15 does not detect contact with the pointer ("NO" in S11),

Then the display control unit 12 repeats S11, the processing, until the touch pad 15 into contact with the pointer is detected.

When the touchpad 15 detects the contact with the pointer ("Yes" in S11), the display control unit

12 determines the pointer in the touch panel 15, the moving direction (S12).

If the pointer moves from left to right (in

S12 is "left to right"), and then turned in the forward direction, the display control unit 12 a (S13).

After this,

Display control unit 12 determines that the contact between the pointer with the touchpad 15 is a continuation of a predetermined time

The length or longer (S14), if the contact time between the pointer and the touch pad 15 is less than a predetermined

The length of time ("NO" in S14), the display processing in the control unit 12 repeats S14.

As

The contact time between the fruit pointer with a touch pad 15 is at least a predetermined length of time (in S14

"Yes"), then the display control unit 12 is then turned in the forward direction, a (S13).

When the pointer away from the touch

The plate 15 (in S14 touchpad 15 "), by the display control unit 12 executes the process ends.

If the pointer is right-to-left movement (in S12 "right to left"), the display control unit 12 in the

Turned a backwards direction (S15).

After this, the display control unit 12 determines that the pointer and the touch pad 15

The contact between the continuation of a predetermined length of time or longer (S16), if the pointer with the touch

The contact time between the plate 15 is less than a predetermined length of time ("NO" in S16), the display

The control processing unit 12 repeats S16.

If the pointer with the touch panel 15 between the contact time of at least

Is a predetermined length of time ("YES" in S16), the display control unit 12 and the rearward facing direction Total

A (S13).

When the pointer touchpad 15:00 (in S16 touchpad 15 ") by

The display control unit 12 executes the process ends.

Referring to Figure 8, the display control unit 12 may control the following description of the flip.

According to Figure 7 illustrates

Processing example, the user through the pointer is contacting the touch panel 15 and the moving contact with the touch panel 15 pointer,

Specifies the forward or backward direction.

According to the the processing practical cases illustrated in Figure 8.

Forward or rearward side

By moving the pointer, without the pointer contact with the touch pad 15 to specify.

The display control unit 12 determines whether the touch panel 15 detects contact (S40) with the pointer.

If

Touchpad 15 does not detect contact with the pointer (in S40, "NO"), the display control unit 12 by weight

Complex S40, processing until the touch panel 15 detects the contact with the pointer up.

If the touch pad 15 detects the contact with the pointer ("Yes" in S40), the display control unit

12 records the contact position, and determines whether there is between the touch panel 15 and the pointer to the second pick

Touch (S41).

If no second contact (in a predetermined time period or longer period of time within

S41 "No"), the end of the processing of the control unit 12 is displayed within a predetermined time.

When the touch pad 15 is detected with the pointer of the second contact ("Yes" in S41), the display control

Process unit 12 according to the direction of movement of a difference between the calculated first

and second touch position pointer to ensure

Set the moving direction (S42).

If the pointer moves from left to right (in S42, "left to right"), an explicit

The display control unit 12 is turned in the forward direction, a (S43).

After this, the display control unit 12 determines

The contact between the pointer and the touch pad 15 whether to extend a predetermined length of time or longer (S44),

If the contact time between the pointer and the touch pad 15 is less than a predetermined length of time (in S44

"No"), the display processing in the control unit 12 repeats S44.

If the pointer with the touchpad 15

The contact time is at least a predetermined length of time ("YES" in S44), the display control unit 12

Turn a page in the forward direction (S43).

When the pointer touchpad 15:00 ("left touch in S44

Moban 15 "), by the display control unit 12 executes the processing ends.

If the pointer is right-to-left movement (in S42, the "right to left"), the display control unit 12 in the

Turned a backwards direction (S45).

After this, the display control unit 12 determines that the pointer and the touch pad 15

Whether the contact between the continuation of a predetermined length of time or longer (S46), if the pointer with the touch

The contact time between the plate 15 is less than a predetermined length of time ("NO" in S46), the display

The control processing unit 12 repeats S46.

If the pointer with the touch panel 15 between the contact time of at least

Is a predetermined length of time ("YES" in S46), the display control unit 12 and the rearward facing direction Total

A (S43).

When the pointer touchpad 15:00 (in S46 touchpad 15 ") by

The display control unit 12 executes the process ends.

When the display device 11 shown in Figure 6, having a two-screen structure, the pointer and touchpad

15 between the first and second contact may be the same of the touchpad 15 impact.

Alternatively, means

The needle in the first contact with the left touch pad 15 contacts, while in the second contact with the right touchpad

15 contacts.

Through this operation, the user is able to if the user turned the same feeling of paper printed book

Next page.

If the first contact position is very close to the second contact position, in particular, for example, two

Times the distance between the touch position is 10 mm or smaller, and at the same time allows the pointer contact with the touch panel 15,

Then the display control unit 12 may determine that the user moves the pointer position, and according to the flow shown in Figure 7

Perform flip chart processing.

Reference to Figure 9, with the current being a notebook-type personal computer is used as a

touch position detection of the pointer device

16 alternative touchpad 15.

In this case, the touch position detector 16 and the flat panel display 14 is separated

Arrangements.

Referring to Figure 10, the touchpad 15 can have as part of a page active area 15a, the user can only

Only effective area by page 15a the issue next page directive.

Since this way, it is possible to prevent accidental finger

An erroneous operation caused by the contact.

Although the shape of the flip effective region 15a in Figure 10 is a triangle,

But the shape is not limited to this, and may be another polygon, arc, circle, etc..

Flip the effective area 15a

The position is not limited to the lower left and right, one-third of the strip can be equivalent to the bottom of the touchpad

Within the region.

Such as described above, the user can by using the pointer to the touch or move the pointer changes a.

Because

Here, the user is able to if the user turned the same feeling of paper printed book pages.

Will flip the pages according to the change in length of the contact time between the pointer and the touch pad 15.

Therefore,

The same kind of operation can achieve a one page can achieve the purpose of the continuous

page.

In addition, the flip-effective area 15a arrangements to prevent erroneous operation caused by casual contact fingers

For.

Third Example

Referring to Figure 11, the display control unit 21 according to the third embodiment including: similar to the first embodiment

The example of the memory 3; similar to the first embodiment of a flat panel display; the display control unit 22, with

The reading of the information for controlling the picture information, character information, etc. is stored in the memory 3 in operation, and a reading

The information is displayed on the flat panel display 4 operation, and the inclination of the detector 25 for transmitting page refers

Order to the display control unit 22.

Referring to Figure 12, according to a third embodiment of the display control unit 21 includes: two flat display 4

And two tilt detector 25, and the flat panel display 4 and the inclination of the detector 25 the two groups face

Surface arrangements.

The display controller 22 and the memory 3 is mounted in the display device.

The bits of the inclination of the detector 25

Set is not limited to, as shown in Figure 12.

From the characteristics of the inclination of the detector 25 is considered, the detector as possible

4 shaft away from the flat panel display.

Referring to Figure 13, the tilt detector 25 comprising: a hollow cylinder 25d; one package

Cylinder 25d of the conductive balls 25c; and electrodes 25a and 25b are mounted on the upper portion of the cylinder 25d.

Shown in Figure 13, when the inclination of the detector 25 is in the normal state ("off" state), the ball 25c

In the lower portion of the cylinder 25d, the ball 25c and the electrodes 25a and 25b are not in contact.

Rotation of the entire detector and

Due to tilting of the ball 25c is moved in the cylinder 25d and come into contact with an electrode mounted on the upper portion of the cylinder 25d

25a and 25b.

Result, the current flowing between the electrodes 25a and 25b, thereby detecting the inclination seized

The inclination of the measuring device 25 ("open" state).

Assumed here that, when the display control unit 121 is the open state shown in Figure 12, left and right

Inclination detector 25 are in the "off" state.

If the flat panel display 4 is a solid

Given, while the other flat panel display 4 is closed, turn opened, then one of the slope detector 25 to enter

"On" state.

Then the display control unit 22 is able to detect that the right and left flat-panel display 4

An open and close.

Referring to Figure 14, describes the processing of the flip control by the display control unit.

Shown in Figure 14

Processing referred to herein, it is assumed that book are displayed on the right side of the tablet on the display 4, page numbers, smaller

A vertical writing.

The display control unit 22 has been waiting to skew detector 25 into the "on" state (S21)

Ended.

When the state of the slope detector 25 becomes "ON" ("ON" in S21), the display control unit

Determine the right and left inclination of the detector 25 that is in the "open" (S22), if the left gradient

The detector 25 is in the "open" left "(S22), the display control unit 22 waits until the inclination seized

Measurement device 25 into the "off" state (S23).

When the state of the slope detector 25 becomes "OFF" (in

S25, is in the "Off"), the display control unit 22 controls a turning in the forward direction.

If the right side of the slope of the detector 25 becomes "ON" (S23 "right"), the display control unit

22 waits until the right side of the slope of the detector 25 becomes "OFF" state (S25).

When the inclination to the right

When the status of the detector 25 becomes "OFF" ("off") in S25, the display control unit 22 controls the

System moving in the direction of turn one.

Therefore, the user can open and close the display device to flip.

So in a user holding the display device

Set to 21 at the same time, do not move the hand or fingers to the button will be able to turn the

pages.

A fourth embodiment

Referring to Figure 15, according to the fourth embodiment of the display device 31 includes: image hard disk, MO such

Magnetic storage device constructed from a memory 33 for storing image information, character information, audio

Information, etc.; similar to the first embodiment of a flat panel display; display controller 32 for controlling the deposit

The picture information, character information and the like stored in the memory 3 to read, and to read the information in the flat panel display

Diagram 4 on the display; similar to the second embodiment of the touchpad 15; audio controller 36,

For reading data stored in the memory 3 of the sound information for the display controller 32 is turning in flat

When the page of information is displayed on the panel display 4 turn a sheet of paper, by the speaker 37 outputs sound.

Audio control

Made 36 different sounds flip speed output.

With reference to Figure 16, according to the fourth embodiment of the display device 31 includes: two flat display 4 and

Two touchpad 15, and the two groups of the flat-panel display 4 and the touch panel 15 is face to face arranged.

In addition,

Two loudspeakers 37 are placed in the left and right sides of the display device 31, respectively.

A display controller 32, the audio control

36 and the memory 33 is mounted on the inner 31.

Can use the generic switch instead of the touchpad 15.

Display controller 32 in a manner similar according to the described in conjunction with Figure 7 and 8, a second embodiment of explicit

The display device 1 of the display control unit 12 used in the control page.

The control description is not

Repeat here.

From the touch panel 15 to display controller 32, the pointer with the touchpad of 15

The contact between the information provided to the sound control unit 36.

With reference to Figure 17, describes the sound output control process carried out by the voice control unit 36.

Audio frequency

The controller 36 determines that the instruction refers to the flip by the touchpad 15 is normal flip or high-speed flip

(S31).

Normal page means just turned one, while the high-speed flip means continuous page, or both

Turned a few pages as a unit.

If the flip instruction refers to the normal flip (S31 is "normal"),

The audio controller 36 is read from the memory 33 the voice samples A (S32).

If the page directive refers to the

Is a high-speed page (S31 in the "high-speed"), the audio controller 36 to read from the memory 33 sound

Sample B (S33).

Sound sample A voice slowly turned a page, while the sound sample B flash

Over and skip the voice of a multi-page.

After the processing in S32 and S33, the audio controller 36 determines a direction to be chaona

Next page.

If the orientation of the page is being turned from left to right (in S34 "left to right"), then in S32

The sound data is read and the process of S33 of the sound center left to right (S35) moves lose

A.

If the orientation of the page is being turned from right to left (in S34, the "right to left"), then in S32, and

The processing of S33 of the read audio data to the sound center is from right to left (S35) mobile means output.

Here, the moving sound from left to right center refers to the operation of the output sound, it first left speaker 37

Send a large volume of the sound, the sound volume of the left speaker 37 is then gradually reduced, but the speaker

37 volume increases.

Right-to-left mobile voice center is the opposite way of operating.

As discussed above, the display device 31 is output while the flip operation reversing sheet acoustic

Different voices sound output, and based on the number of pages to turn.

Thus, the user is able to if the user turned

The same feeling of paper printed book page.

In addition, the display device 31 is changed in accordance with the next page in the direction the

balance of the output sound.

Whereby the user can

Enough like real hair books page.

The fifth embodiment

With reference to Figure 18, according to the fifth embodiment of the display device comprising: a memory 3; flat panel display 4;

Switch 46, for detecting a flat panel display 4, the opening degree (rotation angle); switch extruder 47

For extrusion switch 46; display control unit 42 for controlling the image information, character information, etc. is stored

In the read information in the memory 3, and the read information is displayed on the flat panel display 4, and the root

According to the state control of the switch 46 of the flat-panel display 4 display / not display; flip instruction unit 45, with

Flip command is received from the user and sends the next page instruction to the display control unit 42.

The display device

Further comprising a display buffer memory (not shown), is used to hold in the flat panel display 4, the number displayed in

It is.

Referring to Figure 19, the display device has two flat panel displays. 4A and 4B.

These two flat panel displays

4A and 4B by a hinge 51 is connected, so that the monitor 4A and 4B can be about the equivalent of one of the binding of the book

The side portion of the rotary shaft 53 is rotated, if not particularly described here, to the flat panel

display 4A

And 4B display the page data, which is to be energized.

Referring to Figure 20, the flat panel display 4A includes a bottom plate 56A and is formed on the bottom plate 56A of the display table

Surface 54A.

The flat panel display 4B includes a bottom plate 56B and the display surface 54B is formed on the base plate 56B.

The switch 46 is disposed on the base plate 56B.

The bottom plate 56A is connected to the hinge 51, and around the shaft 53 in order to be able to

Rotation.

The top of the switch 46 is squeezed, so that the switch 46 is in the "on" state, if no pressure

The force is applied to the switch 46, then it is in the "off" state.

In Figure 20 is shown a flat panel display 4

A rotation angle is 0 °.

Referring to Figure 21, the switch extrusion 47 is formed around the hinge 51.

When the hinge 51 in Fig 21

Arrow the direction of rotation (clockwise), prompting switch extruder 47 and the switch 46 is in the angle range

Contact with each other for 200 ° to 300 °, so that the switch extrusion 47 is extruded switch 46.

Note: 200 °

The angle allows the flat panel display 4A to be recognized into a turn to the back surface of the flat panel display 4B.

360 ° angle means flat

4B back-to-back of the the board monitor 4A and flat panel displays placed.

While flat panel displays 4A and 4B to each other for relative rotation, but for convenience, the flat panel display

Up 4B here are placed horizontally to be described herein, while the flat panel display 4A is rotated.

Referring to Figure 22, the rotational angle of the hinge 51, and applied to the relationship between the pressure on the switch 46

Shown by solid lines.

The pressure can be digitized according to a predetermined threshold value, to obtain a relationship indicated by dashed lines

Department.

Then be able to determine the switch 46 state ("ON" or "OFF" state).

When the switch 46 is in the "on" state, the display control unit 42 so that the flat panel display. 4A and 4B

One does not provide the display.

Referring to Figure 23, flip instruction unit 45 are respectively embedded in the flat panel display. 4A and 4B flip instruction

Units 45A and 45B.

Flip instruction units 45A and 45B are constituted by a graphic input device (touch panel).

Each flip instruction unit 45A and 45B are each equivalent is formed at such a position at a

The triangular region, the position is turned to hold the location of the finger of the hands of the booklet pages of the book.

When the user moves his finger from left to right in this region, and allows the finger contact area

Domain when the the flip command unit 45 outputs a signal for page forward.

The display control unit 42 is connected

The signal received and the page data for the next page is read from the memory 3, so as to obtain about Backward which

The page and updates the display of the flat panel display 4A and 4B.

When the user moves his finger in the opposite direction

The when, flip instruction unit 45 outputs a signal Pagedown.

The display control unit 42 receives

Page data of the previous page of the signal and read from the memory 3, so that one is being turned back

And profile in a display of the flat panel display 4A and 4B.

The direction of movement of the finger can be considered by tracking the time of contact position detection.

Page refers to

So that the unit 45 may be configured in a flat panel display 4A and 4B over the entire surface.

However, in order to avoid

To a malfunction caused by the contact of a finger or the like, the flip instruction unit 45 shown in Figure 23 can be constructed in the

Flat panel displays, 4A and 4B and the special area.

When the flat panel display 4A and 4B are both in the display state, the display control unit 42 is once

Can be turned to two, while the flat panel display 4A and 4B is only one in a display state, the display control

System unit 42 once turned a In this case, if the above-mentioned display buffer capable of storing phase

In two of the data, then the display control unit 42 time go two data read from the memory 3

And these data written into the display buffer memory.

If the above-mentioned display buffer be able to deposit

The reservoir is equivalent to the one of the data, then the display control unit 42 the time is read from the memory 3 to a Pages

Data, and the data written in the display buffer memory.

If you have given display flat panel display 4A and 4B either stop the display,

The display control unit 42 may be equivalent to the currently displayed page of data compression into a data, and

Rewrite of display buffer memory contents, so that in the display state of the flat panel display 4A or 4B

Is displayed on the compressed data.

Page compression is a well known technique.

For example, if the display information is merely

The text information, page compression can be obtained by reducing the character size.

If the display information is the number of images

According to page compression can be achieved by thinning the data.

Page data compression to be displayed only in a flat panel display has been given of the display 4A and 4B two

By one stop providing display.

After this, the display control unit, when the flip instruction issuing

42 non-compressed data and a page to page.

As Figure 23, since the next page instruction unit 45A and 45B symmetrically arranged, so no matter

Display device is in your right hand or to get in the left hand, or by right-handed or left-handed holding a can

Convenient to flip.

The deformation of the switch extruder 47

Referring to Figure 24, switches the extruder 47 may be only in the rotational angle corresponding to the hinge 51 to close to 200 °

At the position of configuration.

Referring to Figure 25, the rotational angle of the hinge 51, and the relationship between the pressure to the switch 46 is applied by

The solid line shows.

The pressure can be digitized according to a predetermined threshold value, to obtain a relationship indicated by dashed lines

System and therefore be able to determine the status (of the switch 46 "on" state or "OFF" state).

Referring to Figure 26,

The switch 46 also includes a circuit for forming the signal represented by the dashed line in Figure 25, and in the switch

46 is in the angle range of 200 ° to 360 ° when the output becomes "on" state of the signal.

When the transfer of the hinge

Activity angle changes by less than 200 ° to more than 200 °, that is equivalent to the letter indicated by the dotted line in Figure 5

When the number of the rising section, the circuit provides the output of the "open", and when the rotation angle of the hinge formed from greater than 200 °

Changes to less than 200 °, which is equivalent to the falling section of the signal represented by

the dotted line in Figure 5, the

The circuit provides the output of the "OFF".

Such a circuit can be easily constructed from a flip-flop circuit through the famous.

Flip a first modification of the instruction unit 45

Referring to Figure 27, the flip instruction unit 45 may be configured corresponding to the flat panel display. 4A and 4B

About a quarter of the bottom region.

Flip a second deformation of the instruction unit 45

Referring to Figure 28, the flip instruction unit 45 may be disposed at both sides of the flat panel display 4A and 4B and

Similar to FIG triangular region 23.

The display device as described above, having can be freely opened by the user within the range of 0 ° to 360 °

A flat panel display, 4A and 4B.

Therefore, even if display means the place occupied by reduced, the user can see

To the flat panel display 4A and 4B.

This display device can provide a very convenient.

Furthermore, this display device has a flat panel display that can be folded back to back up 4A and 4B.

The advantage of above points is: even if the flat panel display has a large display area 4A and 4B, the user can

Enough for a hand to support the display device.

In addition, such a flat panel display can be folded back to back up the display device 4A and 4B

The set allows the flat panel display one of 4A and 4B shows the display, while the other in the flat panel display 4A and 4B

Not a given show.

Therefore, even in a crowded place, such as the streetcar, the page data will not be

The others stole see.

Therefore possible to provide an excellent display means to prevent information leakage performance.

In reducing energy

The Consume aspects are also effective.

Furthermore, when the display device and hold it in one hand, flip instruction units 45A and 45B are placed in the appropriate

Finger placement.

So the user can use one hand to flip the display device.

Page instruction units 45A and 45B are arranged symmetrically, so regardless of the display device in my right hand.

Take in the left hand, the user can easily flip.

In addition, regardless of whether the user is right-handed or left-handed,

The user can be convenient and similar to flip.

A sixth embodiment

Referring to Figure 29, according to the sixth embodiment of the display device comprising: a memory 3; flat panel display 4;

First and second switches 76A and 76B, for detecting the degree of opening (the rotational angle) of the flat panel display 4;

First and second switches extruder 77A and 77B, for pressing the first and second switches 76A

and

76B; the display control unit 72 for controlling the image information, character information, etc. is stored in the memory 3.

Reading of the information, as well as control whether the display is given in the flat panel display 4; flip instruction unit

45.

Referring to Figure 30, the first switch extruder 77A is disposed in the vicinity of 0 ° of the hinge 51 of Figure 19 rotated

Corner.

Referring to FIG 31A, the first switch 76A when the rotation angle of the hinge 51 is more than 0 °, into the "open"

Status.

The second switch extruder 77B and the second switch 76B is configured so as to be described and with reference to Fig 24 of the

Switching extruder 47 and is similar to the switch 46.

Therefore, this part of the descriptions are not repeated.

Referring to Figure 31B,

The hinge 51 is near 0 ° to turn the corner.

Referring to Figure 31A, when the rotational angle of the hinge 51 in the 200 °

Into the range of 360 ° when the second switch 76B is turned into the "ON" state.

Referring to Figure 32, the display control unit 72 receives the first and second switches 76A and 76B output,

In order to control the flat panel display 4A and 4B show / display.

When the first and second switches 76A and 76B

Are in the "on" state, i.e., the rotational angle of the hinge 51 is in the range of 200 ° to 360 °,

The display control unit 72 causes the flat panel display 4A does not display, instead of the flat panel display 4B shows.

And when

The first switch 76A is in the "on" state, the second switch 76B is in the "off" state, i.e., the hinge 51

When the rotational angle is 0 ° to 200 ° range, the display control unit 72 allows the flat panel display. 4A peace

The board monitor 4B display.

When the first switch 76A is in the "off" state, i.e. the plate display 4

Is turned off, the display control unit 72, 4A, the flat panel displays, and flat panel display 4B do not provide display.

The above-described display device can have a fifth embodiment has a similar effect in the Examples.

Seventh embodiment

Referring to Figure 33, according to the seventh embodiment of the display device comprising: a memory 3; flat panel display 4;

Switch 46; the first and second switches extruder 77A and 77B; flip instruction unit 45.

Referring to Figure 34, the first and second switches extruder 77A and 77B are respectively arranged at the hinge 51

Rotational angle close to 0 ° and approximately 200 °.

The switch 46 shown in Figures 31A and 31B

Output.

Thus, the display control unit 82 is similar to the binding Figure 32 described in the sixth

embodiment of the display

The display control unit 72, control the flat panel display, 4A and 4B display / no display.

The above-described display device can have a fifth embodiment has a similar effect in the Examples.

Eighth embodiment

Referring to Figure 35, according to the eighth embodiment of the display device comprising: a memory 3; flat panel display;

The display control unit 83 for controlling the image information, character information, etc. stored in the memory 3 information

Read, and control the display of flat-panel display 4 / no display; flip instruction unit 45.

Electrostatic coupling

Aggregate type, pressure-sensitive type or an integrated display (display-integrated) type pattern input means (not

Shown) are embedded in the four kinds of flat panel displays.

When contact like finger as a pointer to the table of flat panel displays

Surface, the directions of the touch position signal is applied to the display control unit 83.

Referring to Figure 36, a flat panel display. 4A and 4B via a hinge 52 is rotatably coupled together.

Figure 37A illustrates a display device to be opened, the left thumb is come into contact with the flat panel display. 4A

Right thumb was exposed to flat panel displays 4B.

The display device is supported by the palm of your hand or other fingers.

In this

State, the contact of the finger area of the flat panel display 4A and 4B is almost equal.

Figure 37B illustrates when the flat panel display. 4A and 4B is rotated to the back to back with one another and substantially

The display device by the one hand holding the finger contact, 4A and 4B, a region on the flat panel display 88A

And 88B.

Typically, the user to take the display device, so that is supporting the flat panel display 4A the right hand finger contacts

To the region 88A of the area is larger than the area to the contact by the finger in the currently seen on the flat panel display 4B

Area domains 88B.

This is because the user attempt is supported in such a manner that the flat panel display 4B, eligible

Obtained can do a large display area, but also tried are supporting a flat panel display by protecting 4A, by hand

Refers to the area of contact 88A of the larger area to stably support the display device.

If the flat panel display 4A and 4B one has a contact area of at least greater than the other flat panel display

Illustrates a contact area of 20%, and the contact time is continued for a predetermined time (e.g. 3 seconds) or more

Long, then the display control unit 83 shows a flat panel display having a greater contact area without mentioning

For display, while the other has a smaller contact area to provide display.

In addition, if the flat panel display 4A

Have almost equal to the area of the region of the pointer contact with a flat panel display 4B, contact by the pointer

The size of the area, and the contact state continues for a predetermined length of time, then the

display controller 83

Flat panel display 4A and 4B show the display are allowed.

A graphical input device for detecting a touch position may be located at the top of a flat panel display. 4A and 4B the internal

Or any region other than the region above the surface.

Like finger as a pointer contact of the above-described display device is based on a flat panel display. 4A and

4B in the area of the region to determine which one of the flat panel display 4A and 4B viewed by the user.

Then

Provides a display of the tablet can only be allowed to be viewed by the user display device 4A or 4B, not to be viewed by the user level

The plate display device 4A or 4B does not provide display.

Therefore able to obtain to prevent information leaks and reduce energy consumption.

Advantages.

Other advantages similar to the fifth embodiment.

Ninth embodiment

Similar according to the ninth embodiment of the display device according to the fifth embodiment, in conjunction with FIG 18 described

Function block configuration of the display apparatus.

Therefore, his descriptions are not repeated here.

Similar to the combination of

Described in the eighth embodiment of the graphical input device is embedded in a flat-panel display 4.

Referring to Figure 38, the flat panel display. 4A and 4B by the hinge 51 as shown in Figure 19, as coupler in an

Onwards.

The switch extrusion 47 is constructed in the hinge 51 to form an angle of 200 °, when the flat panel display 4A and 4B,

Prompting the extrusion 47 is extruded at a position of the switch 46.

The switch 46 is in the "off" when the angle formed by the flat panel display 4A and 4B is smaller than 200 °

State, while when the angle is equal to or greater than 200 ° is in the "on" state.

The display control unit 42 according to Figure 39 controls the display of the flat panel display 4A and 4B / no display.

When the switch 46 is in the "on" state of at least 200 ° (the angle formed by the flat panel display 4A and 4B).

And by the pointer in contact with the flat panel display 4A and 4B, the difference between the area of the respective regions is equal to or

Less than a predetermined value, the display control unit 42 determines that a user viewing a flat panel display 4A and 4B

Two display surfaces 54A and 54B, thus allowing the flat panel display. 4A and 4B are provided display.

If open

The switch 46 is in the "ON" state, and a flat panel display of the pointer contact respective regions 4A and 4B

A difference between the area is greater than a predetermined value, display control unit 42 determines that the user merely viewing flat

The display surface of the panel display 4B, 54B, and such that the flat panel display 4A does not provide the display, whereas only Tablet

Monitor 4B offers.

If the switch 46 is in the "off" state, then the display control unit 42 contracting

Given user to see the flat panel display 4A and 4B, each of the display surface 54A and 54B of both, and makes the tablet

Monitor 4A and 4B are provided in the display, regardless of the magnitude of the difference of the area of contact.

Therefore, the above-described display device are similar to the efficiency of the display device according to a fifth embodiment of the

Fruit.

Tenth embodiment

With reference to Figure 40, according to the tenth embodiment of the display device comprising: a memory 3; flat panel display 4;

The first, second and third switch 76A, 76B, and 76C, for the degree of opening of the detector flat panel display 4

(Rotation angle); first, second and third switching extruder 77A, 77B and 77C, are used to first,

Second and third switches 76A, 76B, and 76C extrusion; the display control unit 102 for controlling the image-

Interest, character information, etc. stored in the flat panel display 4 of the reading of the information of the memory 3, and a control display

/ No display; the flip instruction unit 45; as well as by the keyboard, the function keys, a joystick, graphic input means

Etc. constituting the information input unit 102, to the display device the input information.

First and second switches 76A and 76B having a similar combination of a sixth embodiment described kind Results

Structure, and when the rotational angle of the flat panel display 4 is greater than 0 ° and equal to

or less than 360 °, the first switch

76A becomes "on" state.

When the rotational angle of the flat panel display 4 in the range between 200 ° to 360 °,

The second switch 76B into the "on" state.

Referring to Figure 41, the third switch extrusion 77C similar binding

Switches described in Figure 21 the extruder 47, is configured around the hinge 51, so that when the flat panel display 4

The rotational angle range between 300 ° to 350 °, the third switch 76c is turned into the "ON" state.

The display control unit 102 control the flat panel display according to Figure 42, 4A and 4B, whether to provide a display.

In particular, if the angle formed by the flat panel display 4A and 4B is greater than 0 ° and equal to or less than 200 °,

Then the first switch 76A is turned into the "ON" state, while the second and the third switch 76B and 76C becomes "OFF"

Status.

Then the display control unit 102 determines that the user views the two flat panel displays. 4A and 4B, and

Allow two flat monitor 4A and 4B provides a display.

If the angle formed by the flat panel display 4A and 4B is greater than 200 ° and equal or less than 300 °,

Mody first and second switches 76A and 76B into the "on" state, and the third switch 76c becomes "off"

Status.

And display control unit 102 determines that the user merely viewing flat panel display 4B, and

makes flat

Panel display 4A provides the display, but only the flat panel display 4B provides a display.

Referring to Figure 43, if the angle formed by the flat panel display. 4A and 4B over 300 ° and equal to or smaller

At 350 °, then the first, second and third switches 76A to 76C are all "on" state.

Then

The display control unit 102 determines that the user is playing a game resistance, etc., and folding the display apparatus, so that not displayed

User card to the family, thus allowing flat panel displays 4A and 4B provide a display.

If the angle formed by the flat panel display 4A and 4B is 0 °, then the first, second and third opening

Off 76A to 76C all become the "off" state.

And display control unit 102 determines that the user is significantly off

Display device, and 4A and 4B are not to provide the display and prompted to make flat panel displays.

Referring to Figure 44, the third switch is formed shapes allow to third switching extruder 77C loaded.

Because

Here, when the third switch 76c is in the "on" state, i.e. the angle formed by the flat panel display 4A and 4B

In a special range from 300 ° to 350 °, a flat panel display. 4A and 4B are fixed.

Thus, the user can

Enough to easily enjoy the game sex games.

Users can use To cancel this fixed state than usual

The bigger the force of rotation of the flat panel display device 4A and 4B.

With reference to Figure 45, a flat panel display. 4A may have a pin 116, while the flat panel display 4B

There is a hook 118.

When hanging by appropriately determining the position of the length of the hook 118 and pins 116,

When the hook 118 is linked to the pin 116, can be set by the angle formed by the flat panel display 4A and 4B

Disposed in a special range from 300 ° to 350 °.

Referring to Figure 46, when the flat panel display 4A and 4B are established in the use of the plane, the flat panel display 4A

And 4B each one connected to one side of the plane, sets of layer material having a large coefficient of friction, such as

For preventing the slide display apparatus of the rubber member 120.

Referring to Figure 47, in order to prevent sliding of the display device, flat panel display, 4A and 4B may be mounted on

Using the base 122.

Cradle is wrapped in a layer having a large friction coefficient materials, such as for preventing the bottom

Block 122 of the sliding of the rubber member 124.

If the angle formed by the flat panel display 4A and 4B is greater than 350 ° and equal or less than 360 °,

Mody first and second switches 76A and 76B into the "on" state, and the third switch 76c becomes "off"

Status.

Then the display control unit 102 determines that the user allows the flat panel display 4A and 4B are back to back, so

Just look of the flat panel display 4B, and therefore to urge the flat panel display 4A does not provide the display, but only

4B provides display of flat panel displays.

The user of the display apparatus shown in the above described games, without the user will be able to enjoy the game sexual licensing

Leaked to the home.

Flat panel display 4A and 4B after processing for a non-slip, therefore, the user can comfortably perform

The operation of the games.

The other effects similar to the effect of the fifth embodiment of the display apparatus.

Eleventh embodiment

Referring to Figure 48, according to the eleventh embodiment of the display device comprising: a memory 3; flat panel display

4; switch 46, for detecting a flat panel display 4 opening degree (rotation angle); first, second, and

Third switching extruders 77A, 77B, and 77C, have been used to switch 46 extrusion; display control unit 112,

Stored in the reading of the information of the memory 3, and a control level for controlling the image information, character information, etc.

Board display 4 display / non-display; flip instruction unit 45; well as by the keyboard, function keys, joystick,

A graphical input device and the like of the information input unit 1, memory 3, for the input signal to the display device

Interest rates.

Referring to Figure 49, the first and second switches extruder 77A and 77B configured in the periphery of the hinge 51,

Such that when the rotational angle of the hinge 51 are 0 ° and 200 °, the pressing switch 46.

Third switch squeeze

Pressure device 77C configured around the hinge 51, so that when the rotational angle of the hinge 51 to 300 ° to 350 °

, The pressing switch 46.

The switch 46 shown in Figure 31A, 31B and 41, the output shown.

Therefore show

The control unit 112 is similar to that according to Figure 42 depicts a tenth embodiment of a display device in a display control

Unit 102, control the flat panel display 4A and 4B and the display / no display.

Such a display device can be obtained effects similar to the fifth embodiment of the display device.

Industrial Applicability

As described above, the display device of the present invention allows the like actually turning a sheet of paper to next page, in the anti-

Stop information leaks advantage, and has the advantages of small energy consumption.

Therefore, such a display device is suitable

For manufacture of information access to a given and in the normal reading when the feeling.

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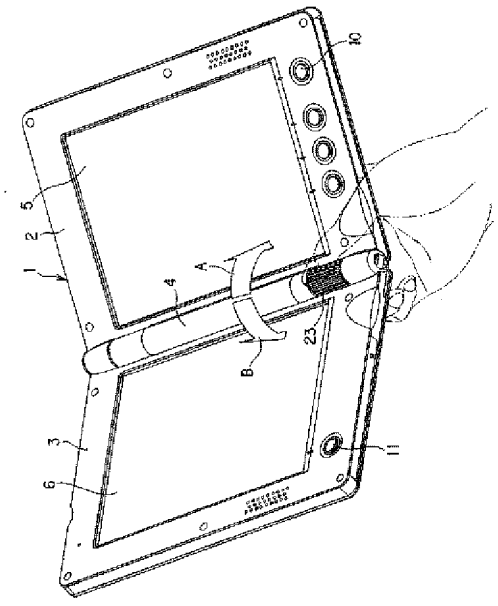
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最終頁に続く

(54)【発明の名称】電子書籍

(57)【要約】
【課題】　電子書籍を片手で挟み持つ力を弱めることなく、頁更新操作を容易に行うことができるようにする。
【解決手段】　文章データを頁単位に表示する平板状の表示装置５、６を収納する筐体２、３と、筐体２、３を連結するヒンジ部分に設けられたジョグダイヤル２３と、ジョグダイヤル２３が所定位置まで回動されたことを検出したとき検出信号を出力する検出信号出力手段と、この検出信号出力手段から前記検出信号が出力されたとき表示装置５、６に表示する文章データの頁更新を行う制御手段とを備える。ジョグダイヤル２３を片手で回動させるだけで頁更新が行われるため、電子書籍を持つ力を弱めることなく、頁更新操作を行うことができる。
【選択図】　図５



【特許請求の範囲】
【請求項1】
文章データを頁単位に表示する平板状の表示装置を収納する筐体と、前記筐体の一部に設けられたジョグダイヤルと、前記ジョグダイヤルが所定位置まで回動されたことを検出したとき検出信号を出力する検出信号出力手段と、前記検出信号出力手段から前記検出信号が出力されたとき前記表示装置に表示する文章データの頁更新を行う制御手段とを備えることを特徴とする電子書籍。
【請求項2】
前記表示装置を２面備え、各面の表示装置を夫々収納する筐体をヒンジにより開閉可能に連結して折り畳み型としたことを特徴とする請求項１に記載の電子書籍。
【請求項3】
前記ヒンジの部分に前記ジョグダイヤルを配置したことを特徴とする請求項２に記載の電子書籍。
【請求項4】
前記検出信号出力手段は前記ジョグダイヤルの時計方向の回動と反時計方向の回動を検出し、前記制御手段は前記時計方向の所定位置までの回動が前記検出信号出力手段で検出されたとき頁を先に進める更新処理を行い前記反時計方向の所定位置までの回動が前記検出信号出力手段で検出されたとき頁を前に戻す更新処理を行うことを特徴とする請求項１乃至請求項３のいずれかに記載の電子書籍。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は電子書籍に係り、特に、頁更新操作を片手で容易に行うことができる電子書籍に関する。
【背景技術】
【0002】
記憶型液晶表示装置を搭載した電子書籍（電子ブック）は、筐体に設けられている入力キーを所定操作することで、メモリ内に格納されている書籍の文章データのうち１頁分あるいは２頁分を読み出して記憶型液晶表示装置に表示する。この電子書籍では、その頁の表示データは消えずに残り、ユーザはその文章を読むことができる。
【0003】
次に、入力キーから、頁を先に進める指示を入力すると、次の１頁分あるいは２頁分の文章データがメモリから読み出されて表示される。
【0004】
この様に、電子書籍における主な操作は頁更新操作であり、このため、電子書籍の筐体には、少なくとも、頁を先に進めるキーと、頁を前に戻すキーが設けられている（特許文献１参照）。
【0005】
【特許文献1】特開平２００１－２５５９７７号公報
【発明の開示】
【発明が解決しようとする課題】
【0006】
電子書籍を持ち歩き、例えば電車の吊革につかまりながら文章データを読む場合には、片手の親指と人差し指との間に電子書籍を挟み持つことになる。そして、頁更新操作を行う場合には、親指を少しずらして、頁を先に進めるキーあるいは頁を前に戻すキーのいずれかを押すことになる。この頁更新操作を行うとき、電子書籍を持つ親指を電子書籍から若干浮かす必要があり、このため、電子書籍を挟み持つ力が弱くなり、電子書籍を落としてしまう虞が生じる。
【0007】
本発明の目的は、電子書籍を片手で挟み持つ力を弱めることなく、頁更新操作を容易に

行うことができる電子書籍を提供することにある。
【課題を解決するための手段】
【0008】
本発明の電子書籍は、文章データを頁単位に表示する平板状の表示装置を収納する筐体と、前記筐体の一部に設けられたジョグダイヤルと、前記ジョグダイヤルが所定位置まで回動されたことを検出したとき検出信号を出力する検出信号出力手段と、前記検出信号出力手段から前記検出信号が出力されたとき前記表示装置に表示する文章データの頁更新を行う制御手段とを備えることを特徴とする。
【0009】
この構成により、親指による回動操作によつて容易にジョグダイヤルから頁更新指示を入力できるため、片手で持った電子書籍の頁更新操作が容易となる。
【0010】
本発明の電子書籍では、前記表示装置を２面備え、各面の表示装置を夫々収納する筐体をヒンジにより開閉可能に連結して折り畳み型としたことを特徴とする。
【0011】
この構成により、２頁分の文章データを読むことができ、しかも、折り畳んで仕舞った場合には表示画面が隠れるため表示画面の保護を図ることができる。
【0012】
本発明の電子書籍で、前記ヒンジの部分に前記ジョグダイヤルを配置したことを特徴とする。
【0013】
この構成により、折畳型の電子書籍を開いて片手で持ったとき、丁度ジョグダイヤル部分に親指が来るようになり、操作が更に容易となる。
【0014】
本発明の電子書籍の前記検出信号出力手段は前記ジョグダイヤルの時計方向の回動と反時計方向の回動を検出し、前記制御手段は前記時計方向の所定位置までの回動が前記検出信号出力手段で検出されたとき頁を先に進める更新処理を行い前記反時計方向の所定位置までの回動が前記検出信号出力手段で検出されたとき頁を前に戻す更新処理を行うことを特徴とする。
【0015】
この構成により、頁を先に進める操作と頁を前に戻す操作を行う位置が同じとなり、ジョグダイヤルを回動させる方向のみ違えれば良くなるため、操作が容易となる。
【発明の効果】
【0016】
本発明によれば、親指を載せたジョグダイヤルをその位置で若干回動させるだけで、頁更新操作ができるため、頁更新操作が容易となり、しかも、電子書籍を落とす虞がなくなる。
【発明を実施するための最良の形態】
【0017】
以下、本発明の一実施形態について、図面を参照して説明する。
【0018】
図１は、本発明の一実施形態に係る折畳型電子書籍の正面図であり、１８０°開いた状態を示している。この電子書籍１は、３つの主要筐体で構成され、矩形平板状の右側本体部２と、矩形平板状の左側本体部３と、両者間に設けられる円筒状の電池ケース４とを備える。
【0019】
右側本体部２と左側本体部３には、夫々、薄型表示装置たとえば記憶型液晶装置５、６が搭載され、右側本体部２の下辺部には４つの操作ボタン７、８、９、１０が設けられ、左側本体部３の左下隅には１個の操作ボタン１１が設けられている。
【0020】

左側本体部３の左下隅に設けられた操作ボタン１１は、頁を先に進めるキーであり、右側本体部２の右下隅に設けられた操作ボタン１０は、頁を前に戻すキーである。これらの操作ボタン１０、１１は、この電子書籍１を両手で開いて読んでいるときの頁更新操作を容易にするためのものである。

【0021】

右側本体部２の左辺には、上下に離間する２つのヒンジ部１２、１３が突設されており、左側本体部３の右辺にも、上下に離間する２つのヒンジ部１４、１５（ヒンジ１５（図２参照）は、後述のジョグダイヤル機構２０によって外面が覆われている。）が突設されている。そして、右側のヒンジ部１２、１３と左側のヒンジ部１４、１５とを夫々回動自在に連結することで、右側本体部２と左側本体部３とが開閉自在に結合されている。

【0022】

この電子書籍１では、右側本体部２と左側本体部３とを結合するときにヒンジ部１２、１３間に形成される円柱状の空きスペースに、円筒状の電池ケース４を取り付け、電子書籍１の省スペース化を図っている。そして、ヒンジ部１５に重複する場所に、片手で頁更新操作を行うことができるジョグダイヤル機構２０が設けられる。

【0023】

図２は、電子書籍１からジョグダイヤル機構２０を分解した図である。ジョグダイヤル機構２０は、右側本体部２の筐体に一体に突設されたヒンジ部１３に固定される円柱状の固定軸体２１と、固定軸体２１の削成部２１ａに取り付けられた電子基板２２と、固定軸体２１に回動可能に外嵌されるジョグダイヤル２３と、固定軸体２１に外嵌されジョグダイヤル２３の回動位置を常時所定位置に戻す力をジョグダイヤル２３に付与するコイル形状の戻しバネ２４と、ジョグダイヤル機構２０の端部を覆うキャップ部材２５とを備える。電子基板２２には、２方向検出タイプのスイッチ２６が取り付けられている。このスイッチ２６は、本実施形態では、ジョグダイヤル２３が所定位置まで回動されたことを検出したとき検出信号を出力する検出信号出力手段として機能する。

【0024】

図３（ａ）は、図１のIII―III線断面図であり、ジョグダイヤル２３のうち戻しバネ２４が配置された個所の断面図である。円筒状のジョグダイヤル２３の周壁には、周方向に沿う穴２３ａが穿設されており、また、ジョグダイヤル２３が摺接する右側本体部２の円弧壁２ａにも、円周方向に沿う穴２ｂが穿設されている。穴２３ａ、２ｂのジョグダイヤル２３の中心軸に対する開き角θは同一になっており、穴２３ａの周方向の一方の端壁が穴２ｂの端壁に整列した位置では、穴２３ｂ、２ｂの他方の端壁も整列する様になっている。

【0025】

固定軸体２１に外嵌されジョグダイヤル２３の内側に収納されたコイル状の戻しバネ２４の両端部２４ａ、２４ｂは、穴２３ａ、２ｂを通して右側本体部２内に突出している。戻しバネ２４の両端部２４ａ、２４ｂは、バネ弾発力によって拡開方向に付勢されており、このバネ弾発力によって、穴２３ａと穴２ｂとは端部２４ａ、２４ｂによって整列位置に規制される。また、両端部２４ａ、２４ｂの先端は、穴２ｂから容易に脱却しないように、穴２ｂの外側方向に屈曲されている。

【0026】

この状態で、ジョグダイヤル２３を図３（ａ）上で時計方向に回動すると、穴２３ａの端壁に押されたバネ２４の一方の端部２４ｂもバネ弾発力に抗して時計方向に移動する。そして、図３（ｂ）に示す様に、バネ２４の一方の端部２４ｂが、他方の端部２４ａを係止している穴２ｂの他端壁に当接する位置まで来ると、それ以上の回動移動が阻止され、ジョグダイヤル２３は停止する。また、ジョグダイヤル２３に回動力を付与するのを止めてジョグダイヤル２３をフリーにすると、戻しバネ２４のバネ力によって図３（ａ）の状態に戻る。

【0027】

逆に、ジョグダイヤル２３を図３（ａ）上で反時計方向に回動すると、穴２３ａの端壁

に押されたバネ２４の他方の端部２４ａもバネ弾発力に抗して反時計方向に移動する。そして、図３（ｃ）に示す様に、バネ２４の他方の端部２４ａが、一方の端部２４ｂを係止している穴２ｂの端壁に当接する位置まで来ると、それ以上の回動移動が阻止され、ジョグダイヤル２３は停止する。

【0028】

図４（ａ）は、図１のIV―IV線断面図であり、右側本体部２にヒンジ１３を介して固定された軸体２１に取り付けられているスイッチ２６の位置の断面図である。ジョグダイヤル２３が図３（ａ）に示す位置にあるときの状態を図４（ａ）に示し、図３（ｂ）（ｃ）に対応する位置にあるときの状態を夫々図４（ｂ）（ｃ）に示す。

【0029】

ジョグダイヤル２３の内壁には凹部２３ｂが穿設されており、この凹部２３ｂ内に、スイッチ２６のスイッチ投入杆２６ａが挿入されている。このスイッチ投入杆２６ａは、常に正立位置となるように図示しないバネ力で規制されている。そして、ジョグダイヤル２３が時計方向に回動され図３（ｂ）に示す限界位置まで来たとき、図４（ｂ）に示す様に、スイッチ投入杆２６ａは凹部２３ｂの周方向一方端壁に押されて傾倒し、頁更新（頁を前に進める更新）指示スイッチ信号が図示しない電子書籍制御部に出力される。

【0030】

また、ジョグダイヤル２３が反時計方向に回動され図３（ｃ）に示す限界位置まできたとき、図４（ｃ）に示す様に、スイッチ投入杆２６ａは凹部２３ｂの周方向他方端壁に押されて傾倒し、頁更新（頁を前に戻す更新）指示スイッチ信号が図示しない電子書籍制御部に出力される。

【0031】

図５は、上述した構成のジョグダイヤル機構２０を備えた折畳型電子書籍１を片手で持ち、ページ更新操作を行う状態を示した図である。ユーザは、電子書籍１を開き、中央下部の部分を、右手親指と人差し指の間に挟み持つ。この状態で、親指は丁度ジョグダイヤル２３の上に来ることになる。

【0032】

そして、頁を先に進める操作が必要になったときは、スベリ止め模様が外周部に刻設されているジョグダイヤル２３を時計方向Ａに回動する。これにより、ジョグダイヤル２３は図３（ｂ）及び図４（ｂ）に示す位置まで回動し、頁更新が行われる。その後、回動する力を少し弱めれば、ジョグダイヤル２３はバネ２４の弾発力によって元に戻り、スイッチ２６のスイッチ投入杆２６ａは正立位置に復帰する。

【0033】

頁を前に戻す操作が必要になったときは、ジョグダイヤル２３を反時計方向Ｂに回動する。これにより、ジョグダイヤル２３は図３（ｃ）及び図４（ｃ）に示す位置まで回動し、頁更新が行われる。同様に、回動する力を少し弱めれば、ジョグダイヤル２３はバネ２４の弾発力によって元に戻り、スイッチ２６のスイッチ投入杆２６ａは正立位置に復帰する。

【0034】

何頁も先の頁を見たい場合や、何頁も前の頁に戻りたい場合には、何回も連続して頁更新指示スイッチ信号が出力されるように、ジョグダイヤル２３の回動、復帰、回動、復帰を小刻みに繰り返すことで、目的の頁を迅速に表示させることができる。

【0035】

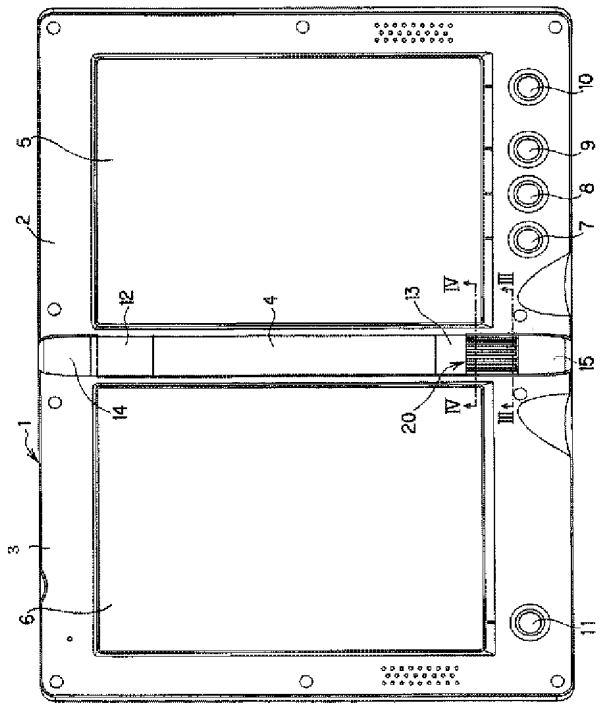
以上述べた様に、本実施形態によれば、ジョグダイヤル２３を用いて頁更新を行うことができるので、電子書籍１の片手操作が容易となり、電子書籍１の使い勝手を向上することができる。

【0036】

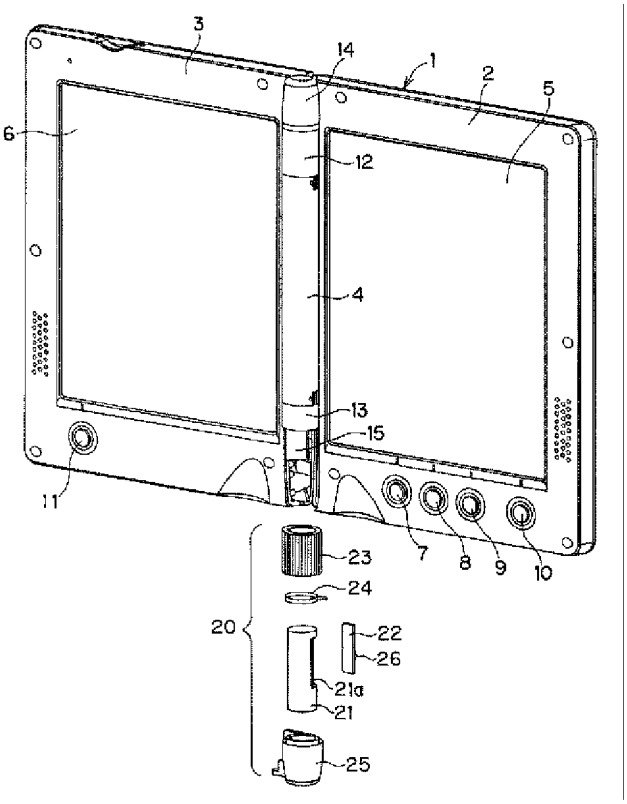
尚、上述した実施形態では、折畳型の電子書籍について述べたが、本発明は１枚板タイプの電子書籍にも適用可能である。この場合には、電子書籍を片手で持ったときに親指が当たる筐体箇所に上述したのと同様の構造を持つジョグダイヤルを設ければよい。

【産業上の利用可能性】
【0037】
本発明は、片手で保持し且つ片手操作によって容易に頁更新操作ができるという効果を奏し、電子書籍に適用すると有用である。
【図面の簡単な説明】
【0038】
【図1】本発明の一実施形態に係る折畳型の電子書籍を１８０°開いた状態の正面図
【図2】本発明の一実施形態に係る電子書籍のうちジョグダイヤル機構部分を分解した分解図
【図3】本発明の一実施形態に係る電子書籍の要部断面図であり、　（ａ）は図１のIII—III線位置の断面図　（ｂ）はジョグダイヤルを時計方向に回動した限界位置の断面図　（ｃ）はジョグダイヤルを反時計方向に回動した限界位置の断面図
【図4】本発明の一実施形態に係る電子書籍の要部断面図であり、　（ａ）は図１のIV—IV線位置の断面図　（ｂ）はジョグダイヤルを時計方向に回動した限界位置の断面図　（ｃ）はジョグダイヤルを反時計方向に回動した限界位置の断面図
【図5】本発明の一実施形態に係る折畳型電子書籍を片手で持って操作するときの斜視図
【符号の説明】
【0039】
１　電子書籍
２　右側本体部（固定側）
３　左側本体部（可動側）
４　電池ケース
５、６　記憶型液晶表示装置
２０　ジョグダイヤル機構部
２１　固定軸体
２２　電子基板
２３　ジョグダイヤル
２４　戻しバネ
２５　キャップ
２６　スイッチ
２６ａ　スイッチ投入杆

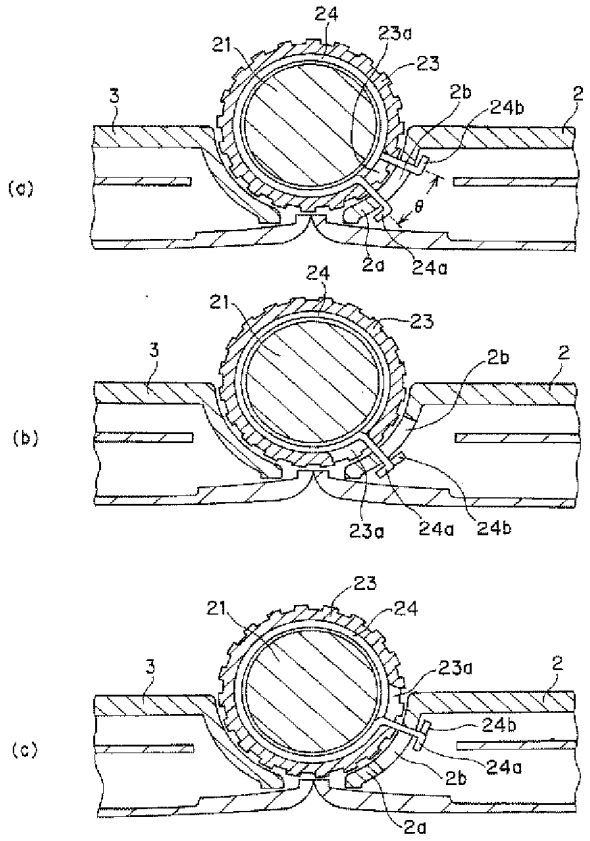
【図1】


10
9
8
7
5
2
12
4
13
IV
III
15
14
20
1
3
6
11

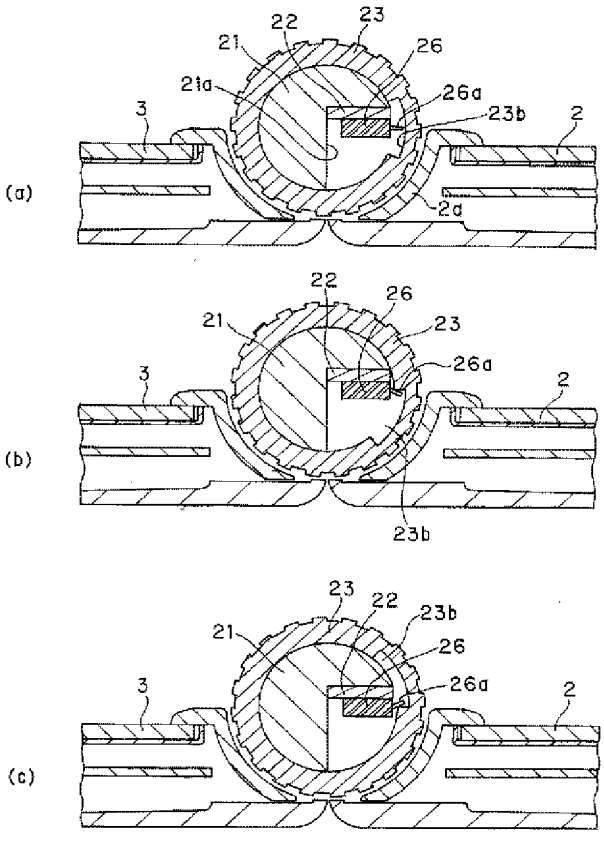
【図2】


3
14
1
2
5
6
12
4
13
15
11
7
8
9
10
20
23
24
22
26
21a
21
25

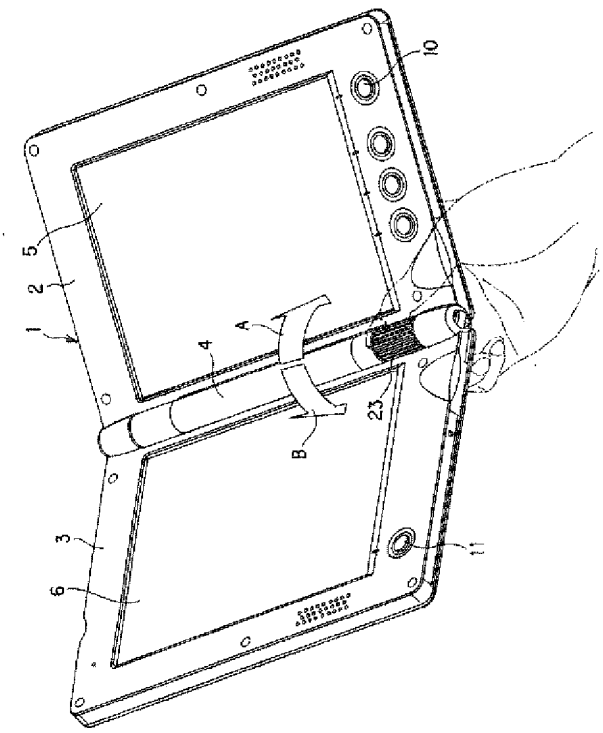
【図3】


(a)
24
21
23a
23
2b
24b
2
3
θ
2a
24a
(b)
24
21
23
3
2b
2
23a
24a
24b
(c)
23
21
24
3
23a
2
24b
2b
24a
2a

【図4】


(a)
22
23
21
26
21a
26a
23b
3
2
2a
(b)
22
26
21
23
26a
3
2
23b
(c)
23
22
23b
21
26
26a
3
2

【図5】



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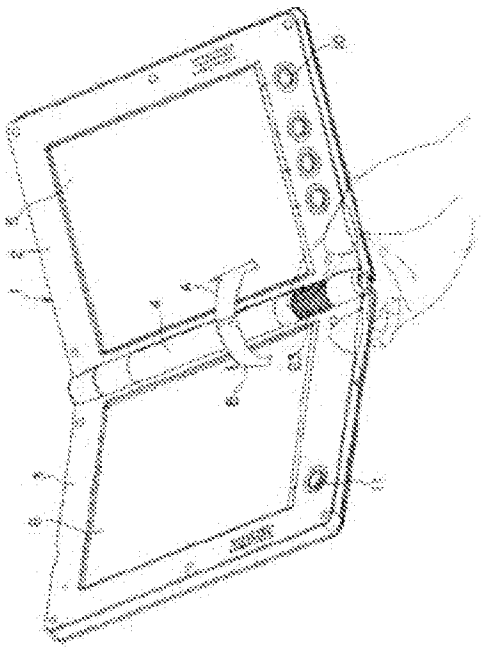
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(54) **ELECTRONIC BOOK**

(57)Abstract:
PROBLEM TO BE SOLVED: To easily perform a page updating operation without weakening strength to hold an electronic book with one hand.
SOLUTION: This electronic book comprises case bodies 2 and 3 in which plate-shaped display devices 5 and 6 for displaying text data by page units are stored; a jog dial 23 installed at a hinge part connecting the case bodies 2 and 3; a detection signal outputting means for outputting a detection signal at the time of detecting that the job dial 23 has been rotated to a predetermined position; and a control means for executing the page update of text data to be displayed at the display devices 5 and 6 when the detection signal is output from the detection signal outputting means. Thus, it is possible to execute the page update only by rotating the jog dial 23 with one hand, and to execute the page updating operation without weakening strength to hold the electronic book.



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CLAIMS

[Claim(s)]
[Claim 1]
A digital book comprising:
A housing which stores a plate-like display device which displays text data on a page unit.
A jog dial provided by some aforementioned housings.
A detecting signal outputting means which outputs a detecting signal when it detects that the aforementioned jog dial rotated to a predetermined position.
A control means which performs page updating of text data displayed on the aforementioned display device when the aforementioned detecting signal is outputted from the aforementioned detecting signal outputting means.

[Claim 2]
The digital book according to claim 1 having connected with hinges a housing which stores a display device of each surface, respectively so that opening and closing were possible, having folded [having had the 2nd page of the aforementioned display device,] it up, and considering it as a mold.
[Claim 3]
The digital book according to claim 2 having arranged the aforementioned jog dial into a portion of the aforementioned hinge.
[Claim 4]
The aforementioned detecting signal outputting means detects rotation of a clockwise rotation of the aforementioned jog dial, and counterclockwise rotation, When rotation to a predetermined position of the aforementioned clockwise rotation is detected by the aforementioned detecting signal outputting means as for the aforementioned control means. The digital book according to any one of claims 1 to 3 performing an update process returned with a page near at hand when an update process which can proceed a page first is performed and rotation to a predetermined position of the aforementioned counterclockwise rotation is detected by the aforementioned detecting signal outputting means.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[Field of the Invention]
[0001]
The present invention relates to a digital book and relates to the digital book which can perform page update operation easily single hand especially.
[Background of the Invention]
[0002]
The digital book (Electronic Book) carrying a memory type liquid crystal display is carrying out prescribed operation of the input key currently provided by the housing, reads 1 page or 2 pages among the text data of the books stored in the memory, and displays it on a memory type liquid crystal display. In this digital book, the displayed data of that page can remain without disappearing, and the user can read that text.
[0003]
Next, if the instruction which can proceed a page first is input from an input key, the text data of the following for for 2 1 page will be read from a memory, and will be displayed.
[0004]
Thus, the main operations in a digital book are page update operation, and, for this reason, the key which can proceed a page first, and the key returned with a page near at hand are provided at least by the housing of the digital book (see Patent Document 1).
[0005]
[Patent document 1] JP,H2001-255977,A
[Description of the Invention]
[Problem to be solved by the invention]
[0006]
When reading text data, walking around with a digital book, for example, holding to the strap of a train, on both sides of a digital book, it will have between the thumb of one hand, and an index finger. And when performing page update operation, a little thumb will be shifted and either of the keys which returns a page before the key or page which he can proceed first will be pushed. When performing this page update operation, it is necessary to float the thumb with a digital book slightly from a digital book, for this reason, the power which it has on both sides of a digital book becomes weak, and a possibility of dropping a digital book arises.
[0007]

There is the object of this invention in providing the digital book which can perform page update operation easily, without weakening the power which it has on both sides of a digital book single hand.
[Means for solving problem]
[0008]
The present invention is characterized by a digital book comprising the following.
A housing which stores a plate-like display device which displays text data on a page unit.
A jog dial provided by some aforementioned housings.
A detecting signal outputting means which outputs a detecting signal when it detects that the aforementioned jog dial rotated to a predetermined position.
A control means which performs page updating of text data displayed on the aforementioned display device when the aforementioned detecting signal is outputted from the aforementioned detecting signal outputting means.

[0009]
By this composition, since page update indication can be easily input from a jog dial by rotating operation with the thumb, the page update operation of the digital book which it had single hand becomes easy.
[0010]
In the digital book of the present invention, with hinges, the housing which stores the display device of each surface, respectively was connected so that opening and closing were possible, and it was folded [it had the 2nd page of the aforementioned display device, and] up, and it was considered as the mold.
[0011]
By this composition, the text data for 2 pages can be read, and since a display screen moreover hides when it folded up and keeps, protection of a display screen can be aimed at.
[0012]
With the digital book of the present invention, the aforementioned jog dial has been arranged into the portion of the aforementioned hinge.
[0013]
When the digital book of a hemming die is opened and it has single hand by this composition, the thumb comes to come to a jog dial portion exactly, and operation becomes still easier.
[0014]
The aforementioned detecting signal outputting means of the digital book of the present invention detects rotation of the clockwise rotation of the aforementioned jog dial, and counterclockwise rotation, The aforementioned control means performs the update process returned with a page near at hand, when the update process which can proceed a page first when rotation to the predetermined position of the aforementioned clockwise rotation is detected by the aforementioned detecting signal outputting means is performed and rotation to the predetermined position of the aforementioned counterclockwise rotation is detected by the aforementioned detecting signal outputting means.
[0015]
Operation becomes easy in order for what is necessary to be coming to change only the direction which rotates the next door where the position which performs operation which can proceed a page first, and operation returned with a page near at hand by this composition is the same, and a jog dial.

[Effect of the Invention]
[0016]
According to the present invention, a possibility of page update operation becoming easy and moreover dropping a digital book only to rotating slightly the jog dial which carried the thumb in the position since page update operation can be performed is lost.
[Best Mode of Carrying Out the Invention]
[0017]
Hereafter, with reference to Drawings, it describes about one embodiment of the present invention.
[0018]
Fig.1 is a front view of the hemming-die digital book concerning one embodiment of the present invention, and shows the state where 180 degrees was opened. This digital book 1 is provided with the following.
It comprises three main housings and is the rectangular plate-like right-hand side body part 2.
The rectangular plate-like left-hand side body part 3.
The cylindrical cell case 4 provided among both.

[0019]
The thin display 5 and 6, for example, memory type liquid crystal devices, is carried in the right-hand side body part 2 and the left-hand side body part 3, respectively, the four manual operation buttons 7, 8, 9, and 10 are provided by the lower edge part of the right-hand side body part 2, and the one manual operation button 11 is provided by the lower left corner of the left-hand side body part 3.
[0020]
The manual operation button 11 provided by the lower left corner of the left-hand side body part 3 is a key which can proceed a page first, and the manual operation button 10 provided by the lower right corner of the right-hand side body part 2 is a key returned with a page near at hand. These manual operation buttons 10 and 11 are for making easy page update operation when opening and reading this digital book 1 with both hands.
[0021]
The two hinge regions 12 and 13 separated up and down protrude on the left side of the right-hand side body part 2, and the two hinge regions 14 and 15 (as for the hinge 15 (refer to Fig.2), the outer surface is covered by the below-mentioned jog dial mechanism 20.) separated up and down also to the right-hand side of the left-hand side body part 3 protrude. And the right-hand side body part 2 and the left-hand side body part 3 are combined by connecting the right-hand side hinge regions 12 and 13 and the left-hand side hinge regions 14 and 15, enabling respectively free rotation, enabling free opening and closing.
[0022]
In this digital book 1, the cylindrical cell case 4 is attached to the cylindrical free space formed between the hinge regions 12 and 13 when combining the right-hand side body part 2 and the left-hand side body part 3, and the space saving of the digital book 1 is attained. And the jog dial mechanism 20 in which page update operation can be performed at the place which overlaps with the hinge region 15 single hand is provided.
[0023]
Fig.2 is the figure which disassembled the jog dial mechanism 20 from the digital book 1. The jog dial mechanism 20 is provided with the following.

The cylindrical fixing axis 21 fixed to the hinge region 13 which protruded on a housing of the right-hand side body part 2 integrally.
The electronic substrate 22 attached to the cutting part 21a of the fixing axis 21.
The jog dial 23 by which outer fitting is carried out to the fixing axis 21 rotatable.
It is the wrap cap member 25 about the return spring 24 of coil shape which gives power of outer fitting being carried out to the fixing axis 21, and always returning a rotating position of the jog dial 23 to a predetermined position to the jog dial 23, and an end of the jog dial mechanism 20.
The 2-way detection type switch 26 is attached to the electronic substrate 22. In this embodiment, this switch 26 functions as a detecting signal outputting means which outputs a detecting signal, when it detects that the jog dial 23 rotated to the predetermined position.
[0024]
Fig.3 (a) is an III-III line cross sectional view of Fig.1, and is a cross sectional view of the part where the return spring 24 is arranged among the jog dials 23.Hole 2b in alignment with a circumferential direction is drilled by the circular arc wall 2a of the right-hand side body part 2 in which the hole 23a which is along circumferentially is drilled by the peripheral wall of the cylindrical jog dial 23, and the jog dial 23 ****s. The difference angle theta to the medial axis of the hole 23a and the jog dial 23 of 2b is the same, and the end wall of the hole 23b and another side of 2b also aligns in the position in which one end wall of the hoop direction of the hole 23a aligned at the end wall of hole 2b.
[0025]
The both ends 24a and 24b of the coiled return spring 24 which outer fitting was carried out to the fixing axis 21, and was stored inside the jog dial 23 are projected in the right-hand side body part 2 through the hole 23a and 2b. The both ends 24a and 24b of the return spring 24 are energized in the extension direction by spring resiliency, and the hole 23a and hole 2b are restricted by this spring resiliency by the ends 24a and 24b in an aligning position. The tip of the both ends 24a and 24b is bent in the outside direction of hole 2b so that it may not be easily freed from hole 2b.
[0026]
In this state, if the jog dial 23 is clockwise rotated on Fig.3 (a), one end 24b of the spring 24 pushed on the end wall of the hole 23a will also resist spring resiliency, and will move clockwise. And if one end 24b of the spring 24 comes to the position to which the other end wall of hole 2b which is locking the end 24a of another side is abutted as shown in Fig.3 (b), rotation movement beyond it will be prevented and the jog dial 23 will stop. If it stops giving rotational force to the jog dial 23 and the jog dial 23 is made free, it will return to the state of Fig.3 (a) according to the spring force of the return spring 24.
[0027]
On the contrary, if the jog dial 23 is counterclockwise rotated on Fig.3 (a), the end 24a of another side of the spring 24 pushed on the end wall of the hole 23a will also resist spring resiliency, and will move counterclockwise. And if the end 24a of another side of the spring 24 comes to the position to which the end wall of hole 2b which is locking one end 24b is abutted as shown in Fig.3 (c), rotation movement beyond it will be prevented and the jog dial 23 will stop.
[0028]
Fig.4 (a) is an IV-IV line cross sectional view of Fig.1, and is a cross sectional view of the position of the switch 26 attached to the axis 21 fixed to the right-hand side body part 2 via the hinge 13.A state in case the jog dial 23 is in the position shown in Fig.3 (a) is shown in Fig.4 (a), and a state when it is in the position corresponding to Fig.3 (b) and (c) is shown in Fig.4 (b) and

(c), respectively.
[0029]
The concave part 23b is drilled by the wall of the jog dial 23, and the switch supply lever 26a of the switch 26 is inserted into this concave part 23b. This switch supply lever 26a is restricted by the spring force which is not illustrated so that it may always become an erection position. And when it comes to the limit position which the jog dial 23 rotates clockwise and is shown in Fig.3 (b), As shown in Fig.4 (b), it is pushed on the hoop direction one end wall of the concave part 23b, and concentrates, and the switch supply lever 26a is outputted to the digital book control part which a page updating (updating which can proceed with page near at hand) directing switch signal does not illustrate.
[0030]
When it comes to the limit position which the jog dial 23 rotates counterclockwise and is shown in Fig.3 (c), As shown in Fig.4 (c), it is pushed on the hoop direction another side end wall of the concave part 23b, and concentrates, and the switch supply lever 26a is outputted to the digital book control part which a page updating (updating returned with page near at hand) directing switch signal does not illustrate.
[0031]
Fig.5 is a figure showing the state of having the hemming-die digital book 1 provided with the jog dial mechanism 20 of composition of having mentioned above single hand, and performing page update operation. A user opens the digital book 1 and has on both sides of the portion of the central lower part between a right hand thumb and an index finger. The thumb will come by this state on the jog dial 23 exactly.
[0032]
And when the operation which can proceed a page first is needed, a slide stop pattern rotates the jog dial 23 currently engraved on the outer peripheral part to the clockwise rotation A. Thereby, the jog dial 23 rotates to the position shown in Fig.3 (b) and Fig.4 (b), and page updating is performed.Then, if slight power to rotate is weakened, the jog dial 23 will return by the resiliency of the spring 24, and the switch supply lever 26a of the switch 26 will return to an erection position.
[0033]
When the operation returned with a page near at hand is needed, the jog dial 23 is rotated to the counterclockwise rotation B. Thereby, the jog dial 23 rotates to the position shown in Fig.3 (c) and Fig.4 (c), and page updating is performed.If similarly slight power to rotate is weakened, the jog dial 23 will return by the resiliency of the spring 24, and the switch supply lever 26a of the switch 26 will return to an erection position.
[0034]
The target page can be promptly displayed [the case where he would like to see a numbers of pages of previous page, and] by repeating gradually rotation of the jog dial 23, a return, rotation, and a return for numbers of pages to return to a front page so that a page update indication switch signal may be outputted continuously repeatedly.
[0035]
Since page updating can be performed using the jog dial 23 according to this embodiment as stated above, one hand operation of the digital book 1 becomes easy, and can improve the usability of the digital book 1.
[0036]
In the embodiment mentioned above, although the digital book of the hemming die was

described, the present invention is applicable also to a single board type digital book. In this case, what is necessary is just to provide a jog dial with the structure same with having mentioned above in the housing part where the thumb hits, when it has a digital book single hand.

[Industrial applicability]

[0037]

If the present invention is held single hand, and generates the effect that page update operation can be easily performed by one hand operation and applies it to a digital book, it is useful.

[Brief Description of the Drawings]

[0038]

[Drawing 1]The front view in the state where 180 degrees of digital books of the hemming die concerning one embodiment of the present invention were opened

[Drawing 2]The exploded view which decomposed the jog dial working part among the digital books concerning one embodiment of the present invention

[Drawing 3]It is an essential part cross sectional view of the digital book concerning one embodiment of the present invention, As for (a), in cross sectional view [of the III-III line position of Fig.1] (b), cross sectional view [of a limit position] (c) which rotated the jog dial clockwise is the cross sectional view of a limit position which rotated the jog dial counterclockwise.

[Drawing 4]It is an essential part cross sectional view of the digital book concerning one embodiment of the present invention, As for (a), in cross sectional view [of the IV-IV line position of Fig.1] (b), cross sectional view [of a limit position] (c) which rotated the jog dial clockwise is the cross sectional view of a limit position which rotated the jog dial counterclockwise.

[Drawing 5]A perspective view when having and operating the hemming-die digital book concerning one embodiment of the present invention single hand

[Explanations of letters or numerals]

[0039]

1 Digital book
2 Right-hand side body part (fixed side)
3 Left-hand side body part (movable side)
4 Cell case
5 and 6 Memory type liquid crystal display
20 Jog dial mechanism part
21 Fixing axis
22 Electronic substrate
23 Jog dial
24 Return spring
25 Cap
26 Switch
26a Switch supply lever

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention]
[0001]
The present invention relates to a digital book and relates to the digital book which can perform page update operation easily single hand especially.

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PRIOR ART

[Background of the Invention]
[0002]
The digital book (Electronic Book) carrying a memory type liquid crystal display is carrying out prescribed operation of the input key currently provided by the housing, reads 1 page or 2 pages among the text data of the books stored in the memory, and displays it on a memory type liquid crystal display. In this digital book, the displayed data of that page can remain without disappearing, and the user can read that text.
[0003]
Next, if the instruction which can proceed a page first is input from an input key, the text data of the following for for 2 1 page will be read from a memory, and will be displayed.
[0004]

Thus, the main operations in a digital book are page update operation, and, for this reason, the key which can proceed a page first, and the key returned with a page near at hand are provided at least by the housing of the digital book (see Patent Document 1).
[0005]
[Patent document 1] JP,H2001-255977,A

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EFFECT OF THE INVENTION

[Effect of the Invention]
[0016]
According to the present invention, a possibility of page update operation becoming easy and moreover dropping a digital book only to rotating slightly the jog dial which carried the thumb in the position since page update operation can be performed is lost.

[Translation done.]

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TECHNICAL PROBLEM

[Problem to be solved by the invention]
[0006]

When reading text data, walking around with a digital book, for example, holding to the strap of a train, on both sides of a digital book, it will have between the thumb of one hand, and an index finger. And when performing page update operation, a little thumb will be shifted and either of the keys which returns a page before the key or page which he can proceed first will be pushed. When performing this page update operation, it is necessary to float the thumb with a digital book slightly from a digital book, for this reason, the power which it has on both sides of a digital book becomes weak, and a possibility of dropping a digital book arises.
[0007]
There is the object of this invention in providing the digital book which can perform page update operation easily, without weakening the power which it has on both sides of a digital book single hand.

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MEANS

[Means for solving problem]
[0008]
The present invention is characterized by a digital book comprising the following.
A housing which stores a plate-like display device which displays text data on a page unit.
A jog dial provided by some aforementioned housings.
A detecting signal outputting means which outputs a detecting signal when it detects that the aforementioned jog dial rotated to a predetermined position.
A control means which performs page updating of text data displayed on the aforementioned display device when the aforementioned detecting signal is outputted from the aforementioned detecting signal outputting means.

[0009]
By this composition, since page update indication can be easily input from a jog dial by rotating operation with the thumb, the page update operation of the digital book which it had single hand becomes easy.
[0010]

In the digital book of the present invention, with hinges, the housing which stores the display device of each surface, respectively was connected so that opening and closing were possible, and it was folded [it had the 2nd page of the aforementioned display device, and] up, and it was considered as the mold.
[0011]
By this composition, the text data for 2 pages can be read, and since a display screen moreover hides when it folded up and keeps, protection of a display screen can be aimed at.
[0012]
With the digital book of the present invention, the aforementioned jog dial has been arranged into the portion of the aforementioned hinge.
[0013]
When the digital book of a hemming die is opened and it has single hand by this composition, the thumb comes to come to a jog dial portion exactly, and operation becomes still easier.
[0014]
The aforementioned detecting signal outputting means of the digital book of the present invention detects rotation of the clockwise rotation of the aforementioned jog dial, and counterclockwise rotation, The aforementioned control means performs the update process returned with a page near at hand, when the update process which can proceed a page first when rotation to the predetermined position of the aforementioned clockwise rotation is detected by the aforementioned detecting signal outputting means is performed and rotation to the predetermined position of the aforementioned counterclockwise rotation is detected by the aforementioned detecting signal outputting means.
[0015]
Operation becomes easy in order for what is necessary to be coming to change only the direction which rotates the next door where the position which performs operation which can proceed a page first, and operation returned with a page near at hand by this composition is the same, and a jog dial.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[0038]

[Drawing 1]The front view in the state where 180 degrees of digital books of the hemming die concerning one embodiment of the present invention were opened
[Drawing 2]The exploded view which decomposed the jog dial working part among the digital books concerning one embodiment of the present invention
[Drawing 3]It is an essential part cross sectional view of the digital book concerning one embodiment of the present invention, As for (a), in cross sectional view [of the III-III line position of Fig.1] (b), cross sectional view [of a limit position] (c) which rotated the jog dial clockwise is the cross sectional view of a limit position which rotated the jog dial counterclockwise.
[Drawing 4]It is an essential part cross sectional view of the digital book concerning one embodiment of the present invention, As for (a), in cross sectional view [of the IV-IV line position of Fig.1] (b), cross sectional view [of a limit position] (c) which rotated the jog dial clockwise is the cross sectional view of a limit position which rotated the jog dial counterclockwise.
[Drawing 5]A perspective view when having and operating the hemming-die digital book concerning one embodiment of the present invention single hand

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[Translation done.]

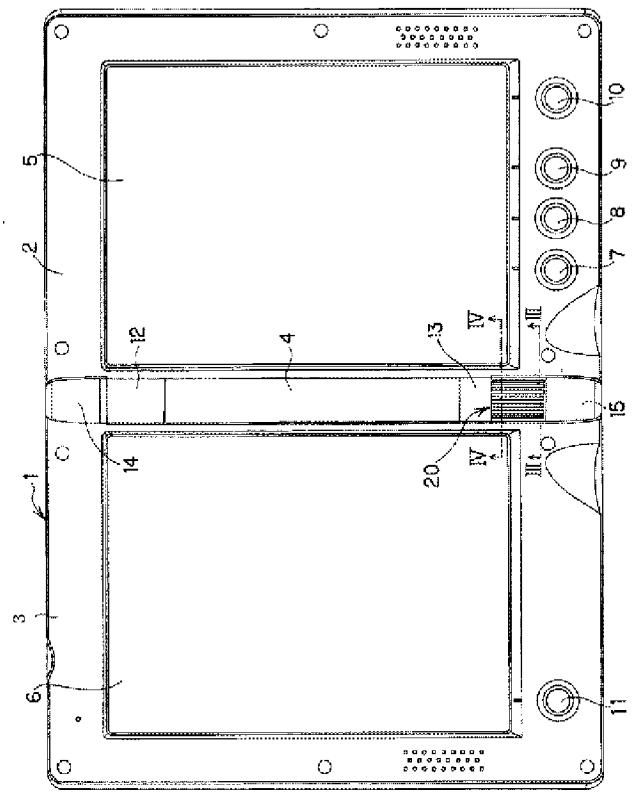
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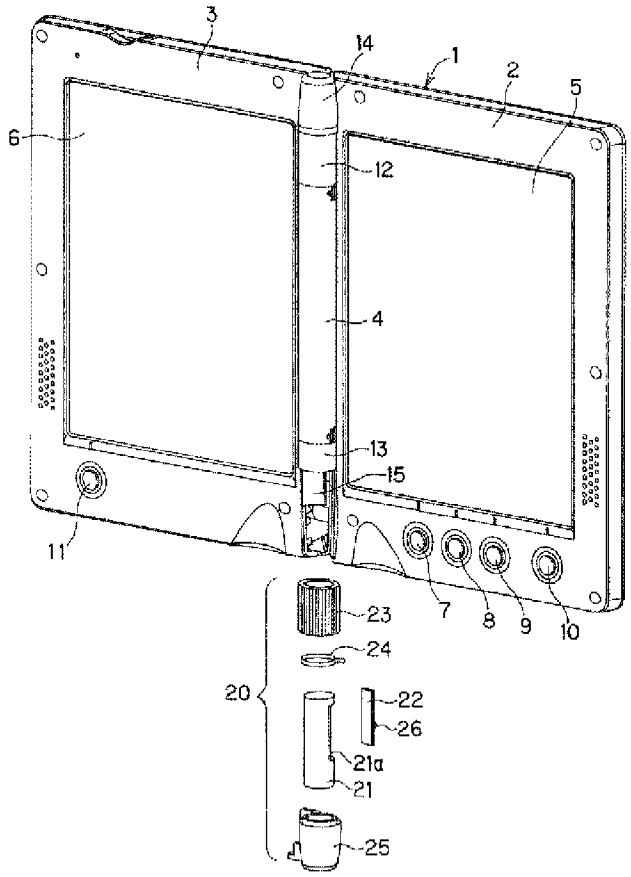
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DRAWINGS

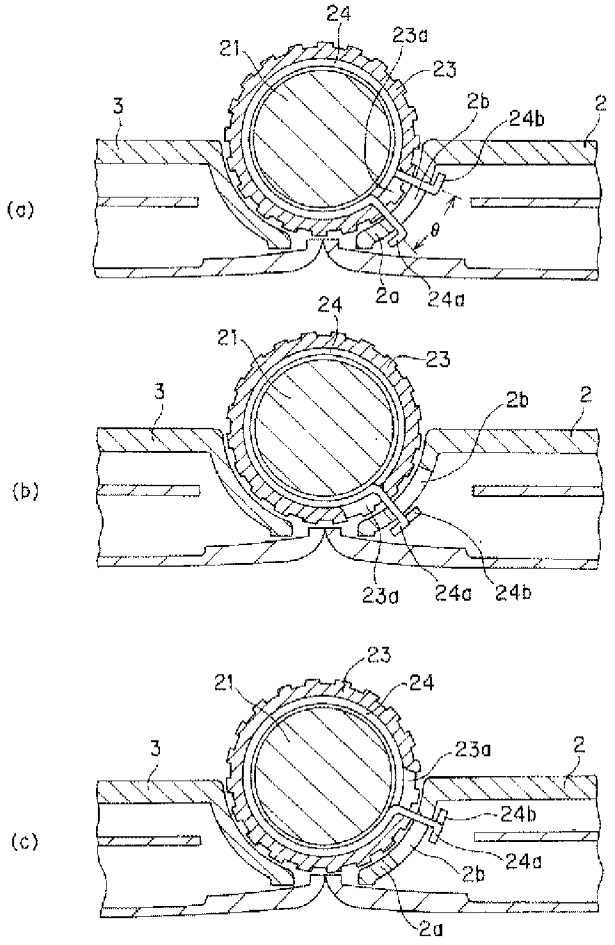
[Drawing 1]



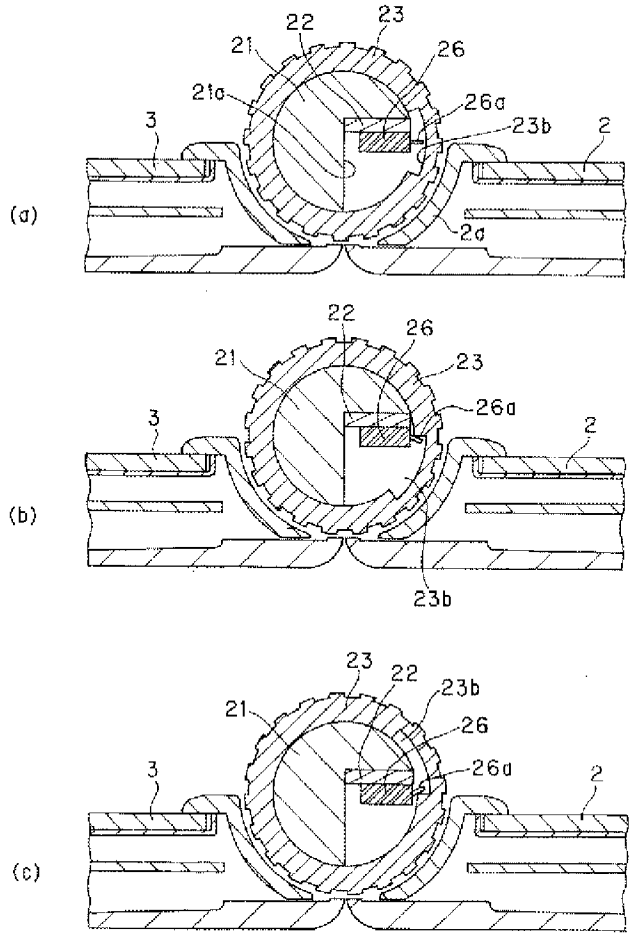
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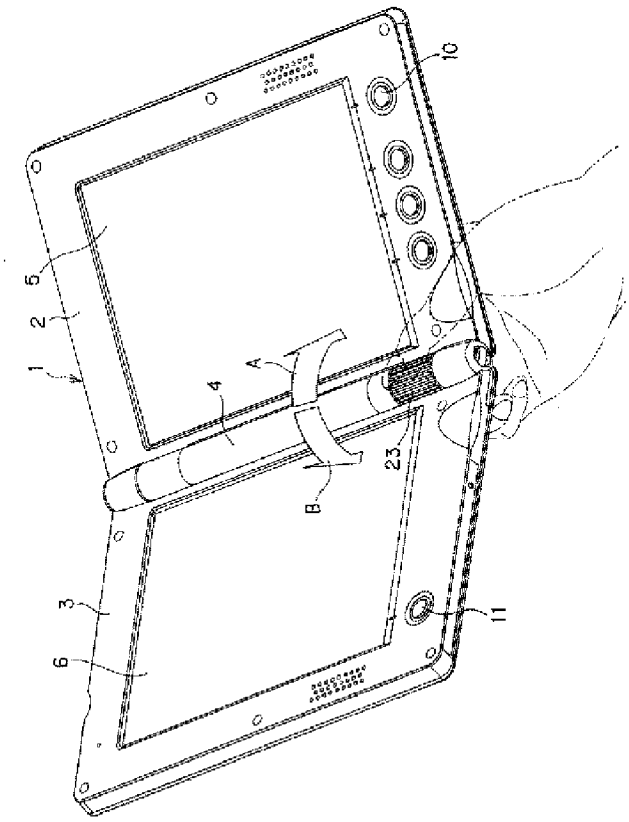
[Drawing 3]


(a)
24
21
23a
23
3
2b
24b
2
θ
2a
24a
(b)
24
21
23
3
2b
2
23a
24a
24b
(c)
23
21
24
3
23a
2
24b
24a
2b
2a

[Drawing 4]


(a)
22
23
21
26
21a
26a
23b
2
3
2a
(b)
22
26
21
23
26a
3
2
23b
(c)
23
22
23b
21
26
26a
3
2

[Drawing 5]



[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2001－167211
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Ｇ０４Ｇ　1/00	３１４	Ｃ０６Ｋ　17/00	Ｌ	３Ｅ０４０
Ｇ０６Ｋ　17/00		Ｃ０６Ｆ　15/30	３５０Ｚ	３Ｅ０４４
Ｇ０７Ｆ　19/00		Ｃ０７Ｄ　9/00	４７６	５Ｂ０５５
7/08		Ｃ０７Ｆ　7/08	Ｒ	５Ｂ０５８

審査請求　未請求　請求項の数９　ＯＬ　（全 32 頁）　最終頁に続く

(21)出願番号　特願平11－347885

(22)出願日　平成11年12月７日(1999.12.7)

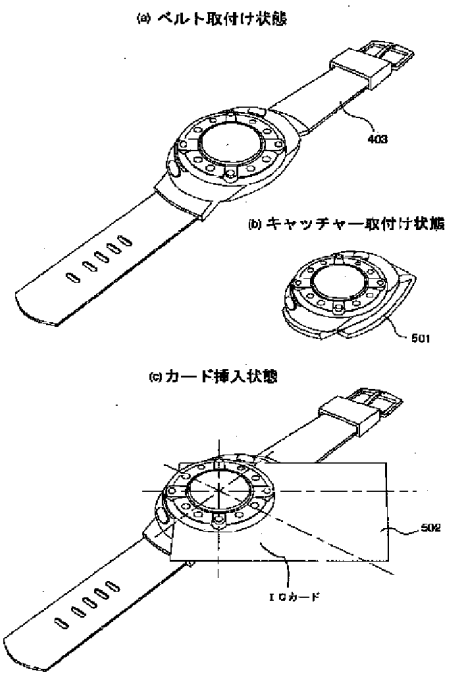
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最終頁に続く

(54)【発明の名称】　ＩＣカード用端末

(57)【要約】
【課題】　各種の電子通貨システム、クレジットカードシステム等に共通に使用することができるマルチアプリケーションＩＣカードを扱うための極めて小型で携帯性に優れたＩＣカード用端末。
【解決手段】　端末本体部がベルトにより腕に取り付ける、あるいは、キャッチャーにより鞄に取り付けることが可能で時刻表示が可能な時計型に構成される。本体部上面に表示部が設けられ、側面に回転可能なＩＣカード挿入口が設けられ、複数の方向からＩＣカードの挿入を可能としている。表示部の周囲には、回転可能なベゼル部が備えられ、ベゼル部を回転させることにより、前記本体部内及びＩＣカード内に格納されている利用可能なアプリケーションの切り替えを行うことができる。

図５



Petitioners - Exhibit 1002, page 354

【特許請求の範囲】
【請求項１】　電子通貨システム、複数のクレジットカードシステムに共通に使用することができるマルチアプリケーションＩＣカードを扱うＩＣカード用端末において、端末本体部がベルトにより腕に取り付ける、あるいは、キャッチャーにより鞄に取り付けることが可能で時刻表示が可能な時計型に構成され、本体部上面に表示部が設けられ、側面に回転可能なＩＣカード挿入口が設けられ、複数の方向からＩＣカードの挿入を可能としたことを特徴とするＩＣカード用端末。
【請求項２】　ＩＣカードが挿入されたとき、ＩＣカード上の接点が本体部の内部に収納された状態になることを特徴とする請求項１記載のＩＣカード用端末。
【請求項３】　前記ＩＣカード挿入口の入り口には、挿入口を開くツマミを持つ蓋が備えられることを特徴とする請求項１または２記載のＩＣカード用端末。
【請求項４】　前記本体部上部に、前記表示部の周囲に回転可能なベゼル部を備え、ベゼル部を回転させることにより、前記本体部内及びＩＣカード内に格納されている利用可能なアプリケーションの切り替えを行うことを特徴とする請求項１、２または３記載のＩＣカード用端末。
【請求項５】　電子通貨システム、複数のクレジットカードシステムに共通に使用することができるマルチアプリケーションＩＣカードを扱うＩＣカード用端末において、端末本体部上面に表示部が設けられ、側面にロータリースイッチを持つ回転可能な円筒部が設けられ、端末本体部下面にＩＣカード挿入口が設けられてキーホルダタイプに構成されたことを特徴とするＩＣカード用端末。
【請求項６】　前記回転可能な円筒部に複数のアプリケーションを記したラベルが貼付されたことを特徴とする請求項５記載のＩＣカード用端末。
【請求項７】　前記回転可能な円筒部は、２重リングにより構成され、さらに、端部に決定ボタンが備えられたことを特徴とする請求項５または６記載のＩＣカード用端末。
【請求項８】　前記表示部の表示が反転可能であることを特徴とする請求項５、６または７記載のＩＣカード用端末。
【請求項９】　電子通貨システム、複数のクレジットカードシステムに共通に使用することができるマルチアプリケーションＩＣカードを扱うＩＣカード用端末において、端末本体部が、周辺部を構成するフレームと、該フレームの上下に設けられるケースによりペンダント型に構成され、端末本体部上面に表示部と、ボタン式十字カーソルと、決定ボタンとが設けられ、端末本体部側面にＩＣカード挿入口が設けられたことを特徴とするＩＣカード用端末。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ＩＣカード用端末に係り、特に、複数のアプリケーションが格納されたＩＣカードを扱うことが可能なＩＣカード用端末に関する。
【０００２】
【従来の技術】近年、ＩＣカードを使用する各種の電子通貨システム、ＩＣカードを使用する各種のクレジットカードシステムが提案されている。これらのシステムに使用するＩＣカードは、その内部に通信機能を有するマイクロプロセッサと、処理プログラム、電子通貨の残額、カードの使用により与えられてその点数が所定値となると所定の金品を受け取ることができるポイントを格納するＥＥＰＲＯＭ等によるメモリとを備えて構成される。そして、電子通貨に使用するＩＣカードは、銀行、商店、個人の住宅等に備えられる端末を通信回線を介して任意に接続可能に構成される電子通貨システムを介して、また、専用の端末を使用することにより、他のＩＣカードとの間で、電子通貨の出し入れが可能である。また、クレジットのために使用するＩＣカードは、商店等に備えられる端末を介してクレジット会社からのカードの正当性の確認を受け、商品購入等の処理後に前述のポイントが格納される。
【０００３】そして、前述したような各種のシステムに対して、１枚のＩＣカードで対応可能としたマルチアプリケーションＩＣカードも提案されている。
【０００４】なお、この種のマルチアプリケーションＩＣカード、及び、マルチアプリケーションＩＣカードを使用するシステムに関する従来技術として、例えば、特開平１１－３９４４５号公報等に記載された技術が知られている。
【０００５】
【発明が解決しようとする課題】前述で提案されている各種の電子通貨システム、各種のクレジットカードシステムに共通なマルチアプリケーションＩＣカードは、金融機関、商店等で使用することだけを考えれば、１枚のＩＣカードを持ち歩くだけで済むので、非常に携帯性のよいものであるということができる。しかし、使用者は、外出先等でＩＣカード内の情報を確認したいという要求を持っており、このために、小型で携帯性に優れた端末が必要である。
【０００６】本発明の目的は、前述した各種の電子通貨システム、クレジットカードシステム等に共通に使用することができるマルチアプリケーションＩＣカードを扱うための小型で携帯性に優れたＩＣカード用端末を提供することにある。
【０００７】
【課題を解決するための手段】本発明によれば前記目的は、電子通貨システム、複数のクレジットカードシステムに共通に使用することができるマルチアプリケーショ

ンＩＣカードを扱うＩＣカード用端末において、端末本体部がベルトにより腕に取り付ける、あるいは、キャッチャーにより鞄に取り付けることが可能で時刻表示が可能な時計型に構成され、本体部上面に表示部が設けられ、側面に回転可能なＩＣカード挿入口が設けられ、複数の方向からＩＣカードの挿入を可能としたことにより達成される。

【０００８】また、前記目的は、ＩＣカードが挿入されたとき、ＩＣカード上の接点が本体部の内部に収納された状態になることにより、また、前記ＩＣカード挿入口の入り口には、挿入口を開くツマミを持つ蓋が備えられることにより、また、前記本体部上部に、前記表示部の周囲に回転可能なベゼル部を備え、ベゼル部を回転させることにより、前記本体部内及びＩＣカード内に格納されている利用可能なアプリケーションの切り替えを行うことにより達成される。

【０００９】また、前記目的は、電子通貨システム、複数のクレジットカードシステムに共通に使用することができるマルチアプリケーションＩＣカードを扱うＩＣカード用端末において、端末本体部上面に表示部が設けられ、側面にロータリースイッチを持つ回転可能な円筒部が設けられ、端末本体部下面にＩＣカード挿入口が設けられてキーホルダタイプに構成されたことにより達成される。

【００１０】また、前記目的は、前記回転可能な円筒部に複数のアプリケーションを記したラベルが貼付されたことにより、また、前記回転可能な円筒部が、２重リングにより構成され、さらに、端部に決定ボタンが備えられたことにより、また、前記表示部の表示が反転可能であることにより達成される。

【００１１】また、前記目的は、電子通貨システム、複数のクレジットカードシステムに共通に使用することができるマルチアプリケーションＩＣカードを扱うＩＣカード用端末において、端末本体部が、周辺部を構成するフレームと、該フレームの上下に設けられるケースによりペンダント型に構成され、端末本体部上面に表示部と、ボタン式十字カーソルと、決定ボタンとが設けられ、端末本体部側面にＩＣカード挿入口が設けられたことにより達成される。

【００１２】

【発明の実施の形態】以下、本発明によるＩＣカード用端末の実施形態を図面により詳細に説明する。

【００１３】図１は本発明の第１の実施形態によるＩＣカード用端末の外観を示す斜視図、図２は第１の実施形態によるＩＣカード端末の外観を示す４面図、図３は第１の実施形態によるＩＣカード用端末の断面図、図４は第１の実施形態によるＩＣカード用端末の全体の構造を説明する分解斜視図である。図１～図４において、１０１は本体上ケース、１０２は回転カードスロット、１０３はベゼルベース部、１０４はＯＫボタン、１０５はＣボタン、１０６はベゼル部、１０７は機能／アプリケーション設定マーク、１０８はイシュアーアプリケーションマーク貼り付け部、１０９はアプリケーション選択マーク、１１０はＬＣＤレンズ、１１１は本体下ケース、１１２は電池交換用蓋、１１３はベルト取り付け部、１１４はベルト取り付け穴、２０１はゴミ取り出し穴、３０１はＬＣＤユニット、３０２はＬＣＤユニットケース、３０３はメイン基板、３０４はインタフェース基板、３０５は接点リング部、３０６、３０７は回転接点部、３０８はＩＣ接点部、３０９は電池、３１０は回転カードスロット、３１１は回転ベース部、４０１は回転スロットユニット、４０２は回転ロックボタン、４０３はベルト、４０４はベルト取り付けピンである。

【００１４】本発明の第１の実施形態は、図１（ａ）に示す上面斜視図、図１（ｂ）に示す裏面斜視図、図２に示す４面図から判るように、腕時計等の小型の時計に適用したものである。そして、図示ＩＣカード用端末は、図１に示すように、本体上ケース１０１と本体下ケース１１１とにより構成される本体部の上に、回転可能に構成されるベゼルベース部１０３、ベゼル部１０６を設け、ベゼルベース部１０３と本体上ケース１０１との間に図示しないＩＣカードを挿入することのできる回転カードスロット３１０を形成して構成されている。本体上ケース１０１のベゼルベース部１０３の外側の位置には、操作用のＯＫボタン１０４とＣ（クリア）ボタン１０５とが配置され、ベゼルベース部１０３の側面にはアプリケーション選択マーク１０９が配置されている。また、円形に形成されるベゼル部１０３の内側部はＬＣＤレンズ１１０が配置され、ベゼル部１０３の周囲には、その機能については後述する機能／アプリケーション設定マーク１０７とイシュアーアプリケーションマーク貼り付け部１０８とが配置されている。さらに、図示ＩＣカード用端末は、その裏面側の本体下ケース１１１に電池交換用蓋１１２が設けられると共に、図示しないベルトを連結するベルト取り付け穴１１４を有するベルト取り付け部１１３が設けられて構成される。また、回転カードスロット３１０の最奥部には、ゴミ排出用のゴミ取りだし穴２０１が設けられている。

【００１５】本発明の第１の実施形態によるＩＣカード用端末の内部には、図３に示す断面図に示すように、ＬＣＤユニットケース３０２に納められたＬＣＤユニット３０１、メイン基板３０３、メイン基板３０３と挿入されたＩＣカードとの接続を行うＩＣ接点部３０８、メイン基板３０３と他の基板との接続を行う接点リング部３０５、回転接点部３０６、３０７、インタフェース基板３０４、電池３０９、回転ベース部３１１が収納されている。また、回転カードスロット３１０の内部は、回転カードスロット３１０として構成される。

【００１６】前述で説明した本発明の第１の実施形態を構成する各部材の組み立て状況を分解斜視図として示し

ているのが図４であり、図４において、ＬＣＤレンズ１１０から回転ベース部３１１までの部分が回転スロットユニット４０１を構成している。この回転スロットユニット４０１のベゼル部１０６から回転カードスロット３１０までの部材は、ＩＣカードの挿入方向を変更する場合に回転可能に構成され、また、ベゼル部１０６から回転接点部３０７までの部材が、カード挿入後のアプリケーション選択等の場合に回転可能である。

【００１７】図４には、本発明の第１の実施形態を、通常腕時計として使用することが可能なように、ベルト４０３にＩＣカード用端末を取り付けるように示している。ＩＣカード用端末のベルト４０３への取り付けは、前述で説明した本体下ケース１１１のベルト取り付け部１１３のベルト取り付け穴１１４とベルト取り付けピン４０４とにより行われる。

【００１８】図５は本発明の第１の実施形態によるＩＣカード用端末の通常の使用状態とＩＣカードの挿入状態とを説明する図、図６は本発明の第１の実施形態によるＩＣカード用端末を腕に付けてＩＣカードを挿入した状態とＩＣカードの挿入方向のバリエーションについて説明する図、図７はカードスロットの挿入方向について説明する図、図８はベゼル部１０３を回転させてアプリケーションを選択することを説明する図、図９はカードスロットに対する防水防塵機構の構成について説明する図、図１０はＩＣカードの挿入方向の他の例について説明する図である。図５～図１０において、５０１はキャッチャー、５０２はＩＣカード、７０１、７０２はカード端支持部材、９０１は防水防塵蓋ツマミ、９０２は上下スライド防水防塵蓋、９０３は上下バネユニット、１００１は挿入用ガイドであり、他の符号は図１～図４の場合と同一である。

【００１９】本発明の第１の実施形態によるＩＣカード用端末は、ベルト４０３に取り付けられたとき、図５（ａ）に示すような状態となり、ＬＣＤユニット３０１に時計情報を表示させて、通常、腕時計として使用することができ、また、図５（ｂ）に示すように、キャッチャー５０１に取り付けることにより、鞄、パンツのベルト等に取り付けて使用することができる。この場合にも、ＬＣＤユニット３０１に時計情報を表示させて、通常、時計として使用することができる。図５（ｃ）には、図５（ａ）に示す腕時計としての状態のＩＣカード用端末にＩＣカード５０２を挿入した状態を示している。ＩＣカード５０２は、カードの隅の２辺がカード端支持部材７０１、７０２により位置決めされて挿入されカード上の接点がＩＣ接点部３０８と接続される。

【００２０】図６（ａ）には、左腕の手の甲側に装着された状態のＩＣカード用端末にＩＣカード５０２を挿入した状態を示しており、ＩＣカード５０２は、右上から挿入されて、時計の１２時の方向に対して４５度の傾きを持って挿入される。このとき、ＩＣカード５０２の端末の外部に出る部分は、手の甲の上に位置することになり、ＩＣカードが安定に保持され、また、右手での操作の邪魔になるようなこともない。なお、図６（ａ）において、ＬＣＤレンズ１１０内に示している四角は、ＩＣカード状の接点のある位置とその寸法とを示している。ＩＣカード５０２は、図６（ｂ）に示すように、図６（ａ）に示した挿入方向に対して、９０度づつ異なる方向から挿入することが可能である。図６（ｂ）に示すａの方向が図６（ａ）の状態に相当し、ＩＣカード用端末が右腕の手の甲側に装着されたときに有効なのがｃ方向からの挿入であり、左腕の手の平側に装着されたときに有効なのがｂ方向からの挿入であり、また、右腕の手の平側に装着されたときに有効なのがｄ方向からの挿入である。

【００２１】ＩＣカード５０２が挿入される回転カードスロット３１０は、図７に示すように、挿入されるＩＣカード５０２の２辺を支持するカード端支持部材７０１、７０２を備えて構成されており、図４により説明した回転スロットユニット４０１を構成する部材の回転により回転させられて、図６により説明した複数のカード挿入方向の１つに設定することができる。そして、１度挿入方向が設定された後は、回転ロックボタン４０２によりＩＣカード５０２の挿入方向が変化しないようにロックされる。また、２つのカード端支持部材７０１と７０２とが繋がっていない部分は、外部に開いた穴となり、この穴が前述で説明したゴミ取り出し穴２０１となる。スロットの内部に入ってしまったゴミは、ＩＣカードの挿入時に、カードの挿入動作により排出される。

【００２２】なお、ＩＣカード５０２の挿入方向は、図６により説明した例に限らず、どのような方向から挿入するようにしてもよい。但し、ＩＣカード５０２が挿入されたとき、ＩＣカードを前述したようにカードの２辺で支持して位置決めできることが必要である。

【００２３】次に、図８を参照して、ベゼル部１０６を回転させることによりアプリケーションの切り替えを行うことについて説明する。図１、図２で説明したように、ベゼル部１０６の周囲には、機能／アプリケーション設定マーク１０７とイシュアーアプリケーションマーク貼り付け部１０８とが配置されており、ベゼル部１０６を回転させて、これらの１つをアプリケーション選択マーク１０９の位置に位置付けることにより、アプリケーションを切り替えることができる。図８において、斜線を施した少し大きい４つの丸印が機能／アプリケーション設定マーク１０７であり、これらの１つをアプリケーション選択マーク１０９の位置に位置付けることにより、本体部に備えられる機能、アプリケーションを選択することができる、本体部に備えられる機能、アプリケーションとは、例えば、時計機能、アラーム機能、電卓機能、簡易ゲーム機能、占い等である。また、８つの小さい丸印で示しているのがとイシュアーアプリケーショ

ンマーク貼り付け部１０８であり、これらの１つをアプリケーション選択マーク１０９の位置に位置付けることにより、ＩＣカード５０２内に備えられるアプリケーションを選択することができる。ＩＣカード内に備えられるアプリケーションとは、例えば、電子マネーの残高確認、商品の購入に対する月別、購入品別等の履歴情報の確認、金銭管理情報、決済情報、名簿、住所録、電話帳等の個人情報、スケジュール情報、個人情報保護ＩＤ管理情報等である。

【００２４】前述したような各種のアプリケーションは、前述したように選択されたとき、ＬＣＤユニット３０１の表示画面に、その初期画面が表示される。その後の操作については後述する。なお、前述において、機能／アプリケーション設定マーク１０７を４個、イシューアプリケーションマーク貼り付け部１０８を８個設けるとして説明したが、これらの数は、任意の数とすることができる。

【００２５】前述までの説明では、回転カードスロット３１０が外部に開いていて、水、塵埃等が入り易いものとなっている。本発明の第１の実施形態は、このようなことを防止するために、回転カードスロット３１０の入り口にスライド式の防水防塵蓋を設けることができる。この防水防塵蓋は、図９に示すように、回転カードスロット３１０の入り口とゴミ取り出し穴２０１とを塞ぐ鍔状部材をもち、上下バネユニット９０３により上下にスライド可能に構成された上下スライド防水防塵蓋９０１と、鍔部に設けられた防水防塵蓋ツマミ９０１とにより構成される。ＩＣカードが挿入されていない状態で、回転カードスロット３１０の入り口とゴミ取り出し穴２０１とは、上下バネユニット９０３により押し上げられた上下スライド防水防塵蓋９０１の鍔状部材により塞がれた状態となり、水、塵埃等の侵入が防止される。ＩＣカードの挿入時、ＩＣカードにより防水防塵蓋ツマミ９０１を押し下げながらＩＣカードを挿入する。すなわち、ＩＣカードにより防水防塵蓋ツマミ９０１を押し下げると、回転カードスロット３１０の入り口とゴミ取り出し穴２０１とが開き、ＩＣカードを容易に挿入することが可能になる。

【００２６】さて、前述では、ＩＣカード５０２をＩＣカード用端末を構成する本体部に対して斜め方向から挿入する幾つかのバリエーションについて説明したが、本発明の第１の実施形態は、図１０に示すように、ＩＣカード５０２を本体部の真横から挿入するようにすることができる。この場合、挿入のためのガイドとカードの所定位置での支持のため、ＩＣカード５０２の表面または裏面に、凸状で直線形状の挿入用ガイド１００１が設けられる。図に示していないが、ＩＣカード用端末のカードスロットの内部には、この挿入用ガイド１００１と係合する溝が設けられる。

【００２７】図１１は前述で説明した本発明の第１の実施形態の変形例を説明する図であり、以下、この第１の実施形態の変形例について説明する。

【００２８】前述した本発明の第１の実施形態は、ベゼル部１０６に多数の機能／アプリケーション設定マーク１０７、イシューアプリケーションマーク貼り付け部１０８を設けていたが、図１１に示す変形例は、ベゼル部１０６にアプリケーション選択マーク１０９のみを設けるようにしてベゼル部１０６を小型化したものである。そして、アプリケーション設定マークをＬＣＤユニットの表示部に表示させるようにしたものである。

【００２９】図１１（ａ）には、表示可能な全てのアプリケーションすなわち、本体部のみで使用可能な基本アプリケーションＡＰ１～ＡＰ４、ＩＣカードに保持されているアプリケーションＣ１～Ｃ８を表示部に表示している例を示している。これらのアプリケーションは、ベゼル部１０６を回転させてベゼル部１０６に設けられるアプリケーション選択マーク１０９を表示されているアプリケーションの位置に位置付けることにより選択することができる。図１１（ｂ）は、初期使用時の状態を示すもので、本体部のみで使用可能なアプリケーションＡＰ１～ＡＰ４が表示され、ＡＰ４の位置にアプリケーション選択マーク１０９が位置付けられていることを示している。そして、図１１（ｃ）に示すように、ＡＰ１の位置にアプリケーション選択マーク１０９を位置付けると、アプリケーションＡＰ１で使用可能なメニューが表示される。そして、これらのメニューは、Ｃボタン１０５とＯＫボタン１０４とが上下スクロールのボタンとして機能し選択可能となる。また、上下スクロールのボタンとして機能するＣボタン１０５またはＯＫボタン１０４を次々と押すと、表示画面が小さいために表示されていなかったメニューをも含めてメニューがサイクリックに表示されてくる。選択されたメニューはＯＫボタン１０４の長押しにより決定され、あるいは、そのメニューの次画面の表示となる。

【００３０】なお、ボタンの長押しを機能させるためには、通常の上下スクロール時には、ボタンを離したときにスクロールを機能行わせるようにし、長押しで決定とするようにすればよい。

【００３１】図１１（ｄ）は、ＩＣカード５０２が挿入されていて、ＩＣカードに保持されているアプリケーションを示すアプリケーションＣ１の位置にアプリケーション選択マーク１０９を位置付けた状態を示しており、基本アプリケーションＡＰ１～ＡＰ４とＩＣカードに保持されている使用可能なアプリケーション、図示例ではアプリケーションＣ１～Ｃ４が表示されている。この例において、アプリケーションＣ１の位置の３角のマークが黒く表示されているのは、そのアプリケーションが、ＩＣカード内のアプリケーションを本体部に移して保存しているものであることを示している。そして、表示されているアプリケーションＣ１の位置にアプリケーショ

ン選択マーク１０９を位置付けると、図１１（ｅ）に示すように、アプリケーションＣ１で使用可能なメニューが表示される。これらのメニューの選択、操作は、図１１（ｃ）と同様に行うことができる。

【００３２】図１２は本発明の第１の実施形態によるＩＣカード用端末の操作処理について説明するフローチャート、図１３は処理の途中で表示される表示画面例を説明する図であり、以下、図１２、図１３を使用して、操作フローと表示画面例とについて説明する。なお、図１２により説明する操作フローは、ベゼル部１０６の上面に、機能／アプリケーション設定マーク１０７とイシューアプリケーション設定マーク１０８とを設けた場合の例である。

【００３３】（１）通常の待機状態において、例えば、図１３（ａ）に示すように、基本アプリケーションである時計機能により時刻が表示されているものとする。この状態で、使用者がＩＣカード５０２を端末に挿入すると、表示画面には、図示していないが、「ベゼルを回転してアプリケーションを選択してください」等の表示が行われる（ステップ１２０１～１２０３）。

【００３４】（２）待機状態の画面から直接またはＩＣカードの挿入後、使用者がベゼルを回転して、基本アプリケーションの選択マークである機能／アプリケーション設定マーク１０７をアプリケーション選択マーク１０９の位置に位置付けると、そのアプリケーションの機能選択のメニューが表示される。この表示の状態は、図１１（ｃ）により説明したようなものである（ステップ１２０４～１２０６）。

【００３５】（３）Ｃボタン１０５とＯＫボタン１０４とにより、機能の１つを選択し、ＯＫボタン１０４の長押しにより決定する。以後、その機能の表示が行われる状態となって待機状態になる（ステップ１２０７、１２０８、１２０１）。

【００３６】（４）また、使用者がベゼルを回転して、カード内のアプリケーションの選択マークであるイシューアプリケーション設定マーク１０８をアプリケーション選択マーク１０９の位置に位置付けると、図１３（ｂ）に示すように、そのアプリケーション名（ブランド）、例えば、ＣＤショップＡ等が表示される（ステップ１２０４、１２０９、１２１０）。

【００３７】（５）このアプリケーションは、挿入されるＩＣカード内のアプリケーションであるため、ＩＣカードが挿入されていない場合、「カードを挿入して下さい」等の表示を行って、カードの挿入を促した後、カード挿入の有無をチェックする（ステップ１２１１、１２１２）。

【００３８】（６）ステップ１２１２のチェックでカードが挿入されていなかった場合、カードからダウンロードしてあるそのアプリケーションの内容が本体内にあれば、図１３（ｃ）に示すように、そのアプリケーションの機能、例えば、ゲーム、買物履歴等のメニューを表示する。また、カードが挿入されていれば、図１１（ｄ）に示すように、ＩＣカード内のアプリケーション機能、例えば、残高表示、ポイント等のメニューの表示を行う（ステップ１２１３、１２１４）。

【００３９】（７）ステップ１２１３、１２１４で表示されたメニューの１つ、Ｃボタン、ＯＫボタンにより上下スクロールして選択し、あるいは、消去、終了を表示させて選択する（ステップ１２１５）。

【００４０】（８）ステップ１２１５で選択したメニューを開始したいとき、あるいは、消去の表示を選択したとき、ＯＫボタンの長押しでそのメニューを決定し、例えば、図１３（ｅ）に示すような表示とさせて、そのメニュー、例えば、ゲームの画面を表示して実行し、あるいは、残高を表示させることができる（ステップ１２１６、１２１７、１２１９、１２２０）。

【００４１】（９）ステップ１２１９、１２２０での決定後、あるいは、メニューの実行途中でＣボタンを長押しすると、それがキャンセルされてステップ１２１５に戻り、また、ゲームの終了後、残高表示後、図１３（ｆ）に示すように戻るメニューが表示されるので、ＯＫボタンを長押しすることにより、ステップ１２１４のアプリケーション開始の状態に戻る（ステップ１２２１、１２２２）。

【００４２】(11) ステップ１２１５で、終了のメニューを表示させて、ＯＫボタンを長押しすることにより、ステップ１２０１の待機状態の表示に戻ることができる（ステップ１２１８、１２２４）。

【００４３】図１４は本発明の第１の実施形態の変形例によるＩＣカード用端末の操作処理について説明するフローチャートであり、以下、これについて説明する。ここで説明する例は、図１１により説明したベゼル部を小型にしてベゼル部にアプリケーション選択マークのみを設けた場合の例であり、基本的には、そのほとんどが図１２に示したフローと同一であるので、以下では、図１２の場合と相違する部分のみ説明することとする。

【００４４】図１４に示すフローで、図１２のフローと相違している点の１つは、図１２のステップ１２０５における、使用者がベゼル部を回転して、基本アプリケーションの選択マークである機能／アプリケーション設定マーク１０７をアプリケーション選択マーク１０９の位置に位置付ける操作に代り、使用者がベゼル部を回転して、表示されている基本アプリケーションの選択マークの位置にアプリケーション選択マーク１０９を位置付けるステップ１４０１の操作とした点である。

【００４５】また、他の１つは、図１２のステップ１２０９における、使用者がベゼルを回転して、カード内のアプリケーションの選択マークであるイシューアプリケーション設定マーク１０８をアプリケーション選択マーク１０９の位置に位置付ける操作に代り、表示部に選択

可能なアプリケーションを表示させ、使用者がベゼル部を回転して、表示されているアプリケーションマークの位置にアプリケーション選択マーク１０９を位置付けるステップ１４０２、１４０３の操作とした点である。

【００４６】図１５は本発明の第２の実施形態によるＩＣカード用端末の外観を示す斜視図、図１６は第２の実施形態によるＩＣカード端末の外観を示す４面図、図１７は第２の実施形態によるＩＣカード用端末の断面図、図１８は第２の実施形態によるＩＣカード用端末へのアプリケーションラベルの貼付について説明する図、図１９は第２の実施形態の外形寸法について説明する図、図２０、図２１は第２の実施形態の変形例を説明する図、図２２は表示の反転について説明する図である。図１５～図２２において、１５０１は本体上ケース、１５０２は本体下ケース、１５０３はアプリケーション切り替えロータリースイッチ、１５０４はサブアプリケーション切り替えロータリースイッチ、１５０５は決定ボタン、１５０６は液晶表示部、１５０７は液晶表示上下反転ボタン、１５０８は電池蓋、１５０９はＩＣカード挿入口、１５１０はアプリケーション設定マーク、１５１１はアプリケーション選択マーク、１７０１は回路基板、１７０２は基板部品、１７０３は液晶窓、１７０４は液晶、１７０５はＩＣカード接点、１７０６はフレーム、１７０７は電池接点、１７０８は電池、１７０９はカード挿入口蓋、１７１０はロータリースイッチ接点及び決定ボタン認識部品である。

【００４７】本発明の第２の実施形態は、本発明をキーホルダタイプとして構成した例であり、図１５に示す全体の斜視図、図１６に示す４面図から判るように、円筒の一部にＩＣカードを挿入するＩＣカード挿入口１５０９を持ち、上面に液晶表示部１５０６を備える４角柱を取り付けたような外観形状を有している。そして、図示ＩＣカード用端末は、本体上ケース１５０１と本体下ケース１５０２とにより構成される本体部の長手方向の側面に円筒状をしたアプリケーション切り替えロータリースイッチ１５０３とサブアプリケーション切り替えロータリースイッチ１５０４とを設け、反対側の側面に設けられる短い円筒状部にストラップ穴を有する電池蓋１５０８が備えられて構成されている。

【００４８】そして、本体上ケース１５０１のアプリケーション切り替えロータリースイッチ１５０３との結合部の近傍上面には、アプリケーション選択マーク１５１１が付けられており、また、アプリケーション切り替えロータリースイッチ１５０３の本体部との結合部の近傍の周囲には、複数、例えば、６個のアプリケーション設定マーク１５１０が付けられている。アプリケーション切り替えロータリースイッチ１５０３を回転させて、これらのアプリケーション設定マーク１５１０の１つをアプリケーション選択マーク１５１１の位置に位置付けることにより、アプリケーション設定マーク１５１０に予め割り付けられているアプリケーションを選択することができる。また、このようにして、１つのアプリケーションを選択した後、サブアプリケーション切り替えロータリースイッチ１５０４を回転させることにより、そのアプリケーションの中で使用可能なサブアプリケーションを選択することができる。

【００４９】本体上ケース１５０１と本体下ケース１５０２とにより構成される本体部の上面には、液晶表示部１５０６と、表示文字の方向を反転させると共に、第１の実施形態におけるＣボタンと同等の機能を有する液晶表示上下反転ボタン１５０７とが設けられ、本体上ケース１５０１と本体下ケース１５０２との合わせ部分の正面側にカード挿入口１５０９が設けられ、さらに、サブアプリケーション切り替えロータリースイッチ１５０４の側面には第１の実施形態におけるＯＫボタンと同等の機能を有する決定ボタン１５０５が設けられている。

【００５０】本発明の第２の実施形態によるＩＣカード用端末の内部には、図１７（ａ）、図１７（ｂ）の図１６のＡ－Ａ断面、Ｂ－Ｂ断面に示すように、液晶表示部１５０６を構成する液晶窓１７０３及び液晶１７０４と、ＩＣカード側の接点との接続のためのＩＣカード接点１７０５及び基板部品１７０２を持つ回路基板１７０１と、カードスロットを構成する２枚のフレーム１７０６と、基板部品１７０２’を持つもう１枚の回路基板１７０１’とが本体部の上面から下面の方向に順に配置されている。また、アプリケーション切り替えロータリースイッチ１５０３の内部には、２つのロータリースイッチ１５０３、１５０４のスイッチ接点及び決定ボタン認識部品１７１０が設けられ、さらに、電池蓋１５０８の内側の位置に電池接点１７０７及び電池１７０８が備えられている。

【００５１】さらに、カード挿入口１５０９の拡大した状態を示す図１７（ｃ）に示すように、カード挿入口１５０９の入り口には、カード挿入口蓋１７０９が設けられており、この蓋１７０９は、ＩＣカードの挿入により矢印に示す方向に内側の下方向に回転させられてカードの挿入を可能にする。そして、カードが挿入されていない状態で、蓋１７０９は、バネ等の力により図示の位置に保持されてカード挿入口１５０９を塞ぎ、水、塵埃等の侵入を防止いている。

【００５２】前述で説明した本発明の第２の実施形態は、アプリケーション切り替えロータリースイッチ１５０３の本体部との結合部の近傍の周囲には、複数、例えば、６個のアプリケーション設定マーク１５１０が付けられているとしたが、このようなマークだけでは、どのようなアプリケーションが設定されているか、一目では判らず、そのアプリケーションを選択して表示された状態により確認するしかないが、本発明の実施形態では、アプリケーション切り替えロータリースイッチ１５０３の周囲にアプリケーション名を示すラベルを貼付して、

一目でアプリケーションの設定状態が判るようにしている。

【００５３】図１８（ａ）に示す例は、単に、アプリケーション設定マーク１５１０の軸方向の隣に、小さなアプリケーション名を記載したラベルを貼付するようにした例である。また、図１８（ｂ）に示す例は、アプリケーション設定マーク１５１０の軸方向の隣に、予め、アプリケーション名を記載したラベルを貼付す領域を示すマークを溝、窪み、印刷等によるラベル貼付ガイドとして設けておき、ここに、アプリケーション名を記載したラベルを貼付するようにした例である。

【００５４】前述で説明した本発明の第２の実施形態によるＩＣカード用端末の大きさの大凡を示しているのが、正面図に寸法を書き入れた図１９である。規格化されているＩＣカードの縦横の寸法が８５㎜×５４㎜であるため、第２の実施形態によるＩＣカード用端末の本体部は、その横方向の寸法を図に示すように６０㎜としており、ＩＣカード上の接点位置が、ＩＣカードの長手方向のエッジから２１．５㎜までの部分にあるので、本体部の奥行き方向の寸法を２４㎜として構成されている。これにより、ＩＣカードの挿入時に、ＩＣカードの接点部を本体内に収納して内部の回路との接続が可能となる。

【００５５】以上説明した本発明の第２の実施形態は、その正面図、斜視図等から理解できるように、本体部と円筒部との関係が、本体部の一部が円筒部の片側に突き出すように構成されている。図２０には、この第２の実施形態の変形例を示しており、この変形例は、本体部と円筒部との関係が、本体部の一部が円筒部の両側に突き出すように構成したものである。この場合にも、本体部の奥行き寸法と幅寸法とを図１９により説明した場合と同一とすることにより、ＩＣカードの挿入時に、ＩＣカードの接点部を本体内に収納して内部の回路との接続が可能となる。

【００５６】図２１に示す第２の実施形態の変形例は、前述で説明した第２の実施形態の円筒部を多角柱とした例であり、図示例では、４角柱である。そして、この例は、４角の各面にアプリケーション設定マーク１５１０が設けられる。多角柱としての変形例は、図示の４角に限らず３角柱、６角柱、８角柱、さらに多い多角柱等として構成することができる。

【００５７】図２２（ａ）には、液晶表示部１５０６に表示される通常の表示状態を示しており、この状態は、左手でＩＣカード用端末の電池蓋側を持ち、右手でロータースイッチ１５０３、１５０４を操作するときに、使用者から正常に文字を見ることができる状態である。これに対して、図２２（ｂ）には、文字を逆転させて表示した状態を示している。この状態は、他の人に表示されている情報を見せる場合に有効であり、また、右手でＩＣカード用端末の電池蓋側を持ち、左手でロータースイッチ１５０３、１５０４を操作するときに、使用者から正常に文字を見ることができる状態である。このような文字の逆転は、液晶表示上下反転ボタン１５０７の長押しにより行うことができる。

【００５８】なお、前述で説明した本発明の第２の実施形態においても、通常持ち歩く状態で、液晶表示部１５０６には、時刻を表示しておくようにすることもでき、あるいは、何も表示させないようにしておくこともできる。また、すでに説明したように、液晶表示上下反転ボタン１５０７は、第１の実施形態におけるＣボタンの機能をも持ち、また、決定ボタン１５０５は、第１の実施形態におけるＯＫボタンの機能を持つものであるので、ロータリースイッチ１５０３、１５０４によりアプリケーションを選択した後の操作は、これらのボタン１５０５、１５０７の操作により第１の実施形態の場合と同様に行うことができるので、ここでは、操作の説明を省略する。また、前述で説明した第２の実施形態は、液晶表示部１５０６の幅が小さいため高々２行程度の表示しか行うことができないが、決定ボタン１５０５により次々に文字列をスクロールさせるようにすることにより、必要な情報の表示を行わせることができる。

【００５９】図２３は本発明の第３の実施形態によるＩＣカード用端末の外観を示す斜視図、図２４は第３の実施形態によるＩＣカード端末の外観を示す３面図、図２５は第３の実施形態によるＩＣカード用端末の断面図、図２６は第３の実施形態の変形例を説明する図、図２７は表示画面の例を説明する図である。図２３～図２６において、２３０１はフレーム、２３０２は本体上ケース、２３０３は液晶表示部、２３０４はカード挿入口、２３０５は決定ボタン、２３０６はボタン式十字カーソル、２３０７はストラップ用穴、２３０８はストラップ、２５０１は本体下ケース、２５０２は回路基板、２５０３は基板部品、２５０４はカード挿入検出スイッチ、２５０５は接点、２６０１は選択・決定ボタンである。

【００６０】本発明の第３の実施形態は、本発明をペンダントタイプとして構成した例であり、図２３に示す全体の斜視図、図２４に示す３面図から判るように、細長い楕円状の平面形状を有し、中心部に向かって膨らみを持って全体の形状が形成されている。そして、本発明の第３の実施形態によるＩＣカード用端末は、図２３、図２５に示すように、周辺部を形成するフレーム２３０１の両面に本体上ケース２３０１、本体下ケース２５０１が取り付けられ、フレーム２３０１の端部にストラップ用穴が２３０７が設けられてその外観が形成されている。本体上ケース２３０２の上面中央には液晶表示部２３０３が配置され、液晶表示部２３０３の両側の部分には、決定・解除の機能を有する決定ボタン２３０５と選択・スクロールの機能を有するボタン式十字カーソル２３０６とが配置されている。また、フレームの長手方向

の一部に切欠きが設けられて、この部分の本体上ケース２３０１と本体下ケース２５０１との間にカード挿入口が形成されている。第３の実施形態の大きさは、図２４に示す３面図の中に大凡の寸法を入れて示しているように、長手方向の寸法９８㎜、最大幅寸法３５㎜、厚さ寸法１６㎜である。また、カード挿入口２３０４の長手方向寸法は、ＩＣカードの幅寸法５４㎜より僅かに大きい幅に設定されている。そして、この場合にも幅寸法は、挿入されたＩＣカード上の接点が内部の回路に接続可能なだけの寸法が必要である。

【００６１】図２６に示す本発明の第２の実施形態の変形例は、図２３～図２５に示す例における決定ボタン２３０５とボタン式十字カーソル２３０６との２つのボタンに代わって、選択・スクロール及び決定・解除の機能を行う選択・決定ボタン２６０１をフレーム２３０１の先端部を切り欠いて設けて構成したものである。この選択・決定ボタン２６０１は、回転及び押下が可能であり、回転によりアプリケーションの選択、スクロールを行わせ、押下により決定・解除を行わせることができる。

【００６２】次に、図２７に示す表示画面の例を参照しながら、操作と表示画面とについて説明する。

【００６３】図２７に示す画面１は、何もしていない通常の状態での表示例であり、この例では、２行表示として、年月日と時刻を表示している状態である。この状態でＩＣカードを挿入することなく、ボタン式十字カーソル２３０６を上下に動かすことにより、本体の内部に備えられているアプリケーションが順次選択可能に表示される。この例が画面４として示されており、決定ボタン２３０５を押すことにより表示されているアプリケーションを決定して利用することができる。画面５は、ここでアプリケーション「ペットとお話し」を選択決定した場合の画面例を示している。２行表示の場合、１画面内に１つの文が表示される。ここで、ボタン式十字カーソル２３０６を上下に動かすことにより、ペットからのお話しの内容を示す文の前後が順次表示されてくる。また、１行表示の場合、ボタン式十字カーソル２３０６を左右に動かすことにより、１画面内に表示しきれない１つの文の前後の文を表示させることができる。また、アプリケーションの操作を終了したい場合、決定ボタン２３０５の長押しにより、アプリケーションを終了して、画面１の状態に戻ることができる。なお、ここでのアプリケーションの種類としては、図に示している「今日の占い」、「ペットとお話し」以外に、例えば、単語帳、住所録、電話帳等がある。

【００６４】また、画面１の状態、あるいは、画面４、５の状態のどのような状態のときにでも、ＩＣカードが挿入されると、まず、画面２として示すように、ＩＣカード内の保持されている電子マネーの残高が表示される。この状態で、ボタン式十字カーソル２３０６を上下に動かすことにより、ＩＣカード内に格納されて使用可能なアプリケーション、例えば、画面３に示すように、種々のショップにおける決済履歴を順次選択して表示させることができる。そして、任意の画面が表示されている状態で決定ボタン２３０５を長押しすれば、カード残高の表示に戻り、あるいは、ＩＣカードを取り出せば、ＩＣカード挿入前の画面の状態に戻る。また、残高表示が行われている状態で決定ボタン２３０５を長押しすれば、ＩＣカード挿入前の画面の状態に戻る。

【００６５】図２８は本発明の第４の実施形態によるＩＣカード用端末の外観を示す斜視図、図２９は第４の実施形態によるＩＣカード端末の外観を示す５面図、図３０は第４の実施形態によるＩＣカード用端末の断面図、図３１はＩＣカード用端末を手にもった状態を説明する図、図３２は第４の実施形態の変形例を説明する図、図３３は表示画面の例を説明する図である。図２８～図３２において、２８０１は本体上ケース、２８０２は本体下ケース、２８０３はＬＣＤレンズ、２８０４は下・次・ＯＫボタン、２８０５はスライドツマミ、２８０６は上・前・キャンセルボタン、２８０７はキーホルダー穴、２８０８はカードスロット、３００１はカードガイドプレート、３００２はメイン基板、３００３は接点部、３００４はＬＣＤユニット、３００５はバッテリー部、３００６はカードケースユニット、３２０１は表示部である。

【００６６】本発明の第４の実施形態は、本発明をキーホルダタイプとして構成した例であり、図２８（ａ）に示す正面の斜視図、図２８（ｂ）に示す裏面の斜視図、図２９に示す５面図から判るように、下面側が上面側より幅広の扇の一部を切り取ったような形状に形成されている。そして、この第４の実施形態によるＩＣカード用端末は、本体上ケース２８０１と本体下ケース２８０２とにより本体部が形成され、本体上ケース２８０１の上面に、内部にＬＣＤユニットを備えて表示部を構成するＬＣＤレンズ２８０３と、本発明の第１の実施形態におけるＣボタン及びＯＫボタンと同等の機能を有する下・次・ＯＫボタン２８０４及び上・前・キャンセルボタン２８０６とが設けられ、上ケース上面の一部を窪ませて形成した部分にアプリケーション選択のためのスライドツマミ２８０５が設けられて構成されている。

【００６７】また、図示ＩＣカード用端末は、本体上ケース２８０１と本体下ケース２８０２との合わせ部の下面側の本体下ケース２８０２にＩＣカードの厚みに窪ませた部分を形成して、ここにカードスロット２８０８を形成し、さらに、本体部の隅にキーホルダ穴２８０７を設けて構成されている。この第４の実施形態の大きさは、図２９に示す５面図の中に大凡の寸法を入れて示しているように、長手方向の寸法７５㎜、最大幅寸法４０㎜、厚さ寸法１２㎜である。また、カード挿入口２８０８の長手方向寸法は、ＩＣカードの幅寸法５４㎜より僅

かに大きい幅に設定されている。そして、この場合にも本体部の幅寸法は、挿入されたＩＣカード上の接点が内部の回路に接続可能なだけの寸法が必要である。

【００６８】本発明の第４の実施形態によるＩＣカード用端末の内部には、図３０の断面図に示すように、液晶表示部を構成するＬＣＤレンズ２８０３、ＬＣＤユニット３００４と、ＩＣカード側の接点との接続のための接点部３００３を持つメイン基板３００２と、カードスロットを構成するカードガイドプレート３００１とが本体部の上面から下面の方向に順に配置されている。また、本体部の内部の上面の側の一部には、カードケースユニット３００６とバッテリー部３００５とが設けられている。

【００６９】図３１（ａ）、図３１（ｂ）には、第４の実施形態によるＩＣカード用端末を手に持った状態を示している。図３１（ａ）に示すように、第４の実施形態によるＩＣカード用端末は、ＩＣカードを挿入後、ＩＣカードの長手方向が上になるように手に持った場合、あるいは、図３１（ｂ）に示すように、ＩＣカードを挿入後、ＩＣカードの長手方向が横になるように手に持った場合のいずれの場合にも、片手だけで保持することができ、しかも、端末を保持している手の指でアプリケーション選択のためのスライドツマミ２８０５を操作することができる。

【００７０】図３１（ｂ）に示すように、ＩＣカードの長手方向が横になるように手に持った場合、表示部の長手方向に文字列を表示すると、表示文字列が読みにくくなるため、これを解消することが可能なようにＩＣカード用端末を構成することができる。この場合、ＩＣカード用端末は、図３２に示す変形例のように、表示部の縦横比を小さくした横表示可能な表示部３２０１を設けて構成される。そして、文字列を９０度回転させて横方向に表示する。この回転の制御は、表示されるメニューの最後に回転のメニューを設けて、下・次・ＯＫボタン２８０４により行うようにすればよい。

【００７１】前述で説明した本発明の第４の実施形態においても、通常持ち歩く状態で、ＬＣＤユニット３００４には、時刻を表示しておくようにすることもでき、あるいは、何も表示させないようにしておくこともできる。また、すでに説明したように、上・前・キャンセルボタン２８０６は、第１の実施形態におけるＣボタンの機能を持ち、また、下・次・ＯＫボタン２８０４は、第１の実施形態におけるＯＫボタンの機能を持つものであるので、スライドツマミ２８０５によりアプリケーションを選択した後の操作は、前述のボタン２８０６、２８０４の操作により第１の実施形態の場合と同様に行うことができるので、ここでは、操作の説明を省略する。また、前述で説明した第４の実施形態は、液晶表示部に３行の表示を行うようにしている。

【００７２】次に、図３３を参照して３行の表示による表示例の幾つかについて説明する。

【００７３】図３３（ａ）には、メニュー画面の例を示しており、左側にスクロールツマミ２８０５により、メニューを上下にスクロールして表示されていないメニューが表示できることを示すマークが表示されている。そして、この例は、いま、アラームのメニューが選択可能であることを示している。また、画面の右側には、選択状態のメニューに次のページ、例えば、設定画面があることを示すマークが表示され、ボタン２８０４により次ページを表示させることができる。なお、前述した表示画面上のマークの意味は、後述の他の例の場合も同一である。

【００７４】図３３（ｂ）には、マネー管理機能／電卓機能を選択決定した場合の表示例を示しており、図では、マネーの現在までの使用金額、今回の使用金額等が表示された状態を示している。図３３（ｃ）には、時計機能／アラーム機能を選択決定した場合の表示例を示しており、現在の時刻と現在の日付とが表示されていると共に、アラームがオンとなっていることを示している。図３３（ｄ）には、簡易スケジュール機能を選択決定した場合の表示例を示しており、３つのスケジュールを時刻と共に表示し、現在時のスケジュールがアラームのマークで示されている。

【００７５】

【発明の効果】以上説明したように本発明によれば、各種の電子通貨システム、クレジットカードシステム等に共通に使用することができるマルチアプリケーションＩＣカードを扱うための小型で携帯性に優れたＩＣカード用端末を提供することができる。

【図面の簡単な説明】

【図１】本発明の第１の実施形態によるＩＣカード用端末の外観を示す斜視図である。

【図２】第１の実施形態によるＩＣカード端末の外観を示す４面図である。

【図３】第１の実施形態によるＩＣカード用端末の断面図である。

【図４】第１の実施形態によるＩＣカード用端末の全体の構造を説明する分解斜視図である。

【図５】本発明の第１の実施形態によるＩＣカード用端末の通常の使用状態とＩＣカードの挿入状態とを説明する図である。

【図６】本発明の第１の実施形態によるＩＣカード用端末を腕に付けてＩＣカードを挿入した状態とＩＣカードの挿入方向のバリエーションについて説明する図である。

【図７】カードスロットの挿入方向について説明する図である。

【図８】ベゼル部１０３を回転させてアプリケーションを選択することを説明する図である。

【図９】カードスロットに対する防水防塵機構の構成に

ついて説明する図である。
【図１０】ＩＣカードの挿入方向の他の例について説明する図である。
【図１１】本発明の第１の実施形態の変形例を説明する図である。
【図１２】本発明の第１の実施形態によるＩＣカード用端末の操作処理について説明するフローチャートである。
【図１３】処理の途中で表示される表示画面例を説明する図である。
【図１４】本発明の第１の実施形態の変形例によるＩＣカード用端末の操作処理について説明するフローチャートである。
【図１５】本発明の第２の実施形態によるＩＣカード用端末の外観を示す斜視図である。
【図１６】第２の実施形態によるＩＣカード端末の外観を示す４面図である。
【図１７】第２の実施形態によるＩＣカード用端末の断面図である。
【図１８】第２の実施形態によるＩＣカード用端末へのアプリケーションラベルの貼付について説明する図である。
【図１９】第２の実施形態の外形寸法について説明する図である。
【図２０】第２の実施形態の変形例を説明する図である。
【図２１】第２の実施形態の他の変形例を説明する図である。
【図２２】表示の反転について説明する図である。
【図２３】本発明の第３の実施形態によるＩＣカード用端末の外観を示す斜視図である。
【図２４】第３の実施形態によるＩＣカード端末の外観を示す３面図である。
【図２５】第３の実施形態によるＩＣカード用端末の断面図である。
【図２６】第３の実施形態の変形例を説明する図である。
【図２７】表示画面の例を説明する図である。
【図２８】本発明の第４の実施形態によるＩＣカード用端末の外観を示す斜視図である。
【図２９】第４の実施形態によるＩＣカード端末の外観を示す５面図である。
【図３０】第４の実施形態によるＩＣカード用端末の断面図である。
【図３１】ＩＣカード用端末を手にもった状態を説明する図である。
【図３２】第４の実施形態の変形例を説明する図である。
【図３３】表示画面の例を説明する図である。
【符号の説明】

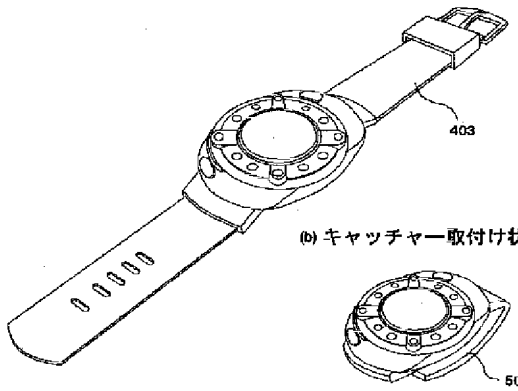
１０１　本体上ケース
１０３　ベゼルベース部
１０４　ＯＫボタン
１０５　Ｃボタン
１０６　ベゼル部
１０７　機能／アプリケーション設定マーク
１０８　イシュアーアプリケーションマーク貼り付け部
１０９　アプリケーション選択マーク
１１０　ＬＣＤレンズ
１１１　本体下ケース
１１２　電池交換用蓋
１１３　ベルト取り付け部
１１４　ベルト取り付け穴
２０１　ゴミ取り出し穴
３０１　ＬＣＤユニット
３０２　ＬＣＤユニットケース
３０３　メイン基板
３０４　インタフェース基板
３０５　接点リング部
３０６、３０７　回転接点部
３０８　ＩＣ接点部
３０９　電池
３１０　回転カードスロット
３１１　回転ベース部
４０１　回転スロットユニット
４０２　回転ロックボタン
４０３　ベルト
４０４　ベルト取り付けピン
５０１　キャッチャー
５０２　ＩＣカード
７０１、７０２　カード端支持部材
９０１　防水防塵蓋ツマミ
９０２　上下スライド防水防塵蓋
９０３　上下バネユニット
１００１　挿入用ガイド
１５０１　本体上ケース
１５０２　本体下ケース
１５０３　アプリケーション切り替えロータリースイッチ
１５０４　サブアプリケーション切り替えロータリースイッチ
１５０５　決定ボタン
１５０６　液晶表示部
１５０７　液晶表示上下反転ボタン
１５０８　電池蓋
１５０９　ＩＣカード挿入口
１５１０　アプリケーション設定マーク
１５１１　アプリケーション選択マーク
１７０１　回路基板
１７０２　基板部品

１７０３　液晶窓
１７０４　液晶
１７０５　ＩＣカード接点
１７０６　フレーム
１７０７　電池接点
１７０８　電池
１７０９　カード挿入口蓋
１７１０　ロータリースイッチ接点及び決定ボタン認識部品
２３０１　フレーム
２３０２　本体上ケース
２３０３　液晶表示部
２３０４　カード挿入口
２３０５　決定ボタン
２３０６　ボタン式十字カーソル
２３０７　ストラップ用穴
２３０８　ストラップ
２５０１　本体下ケース
２５０２　回路基板
２５０３　基板部品
２５０４　カード挿入検出スイッチ
２５０５　接点
２６０１　選択・決定ボタン
２８０１　本体上ケース
２８０２　本体下ケース
２８０３　ＬＣＤレンズ
２８０４　下・次・ＯＫボタン
２８０５　スライドツマミ
２８０６　上・前・キャンセルボタン
２８０７　キーホルダー穴
２８０８　カードスロット
３００１　カードガイドプレート
３００２　メイン基板
３００３　接点部
３００４　ＬＣＤユニット
３００５　バッテリー部
３００６　カードケースユニット
３２０１　表示部

【図５】

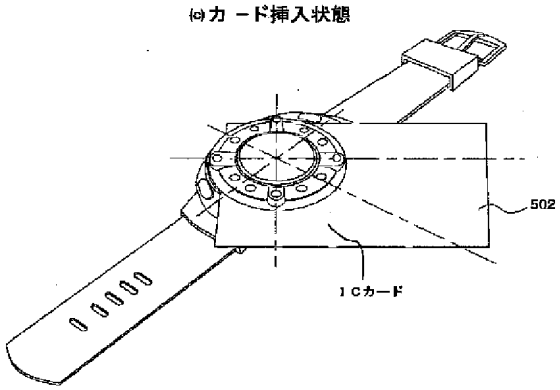
図５

(a) ベルト取付け状態



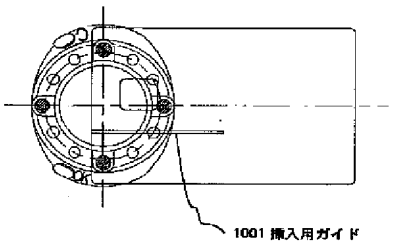
(b) キャッチャー取付け状態

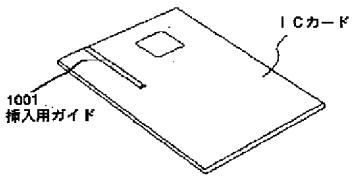
(c) カード挿入状態



【図１０】

図１０

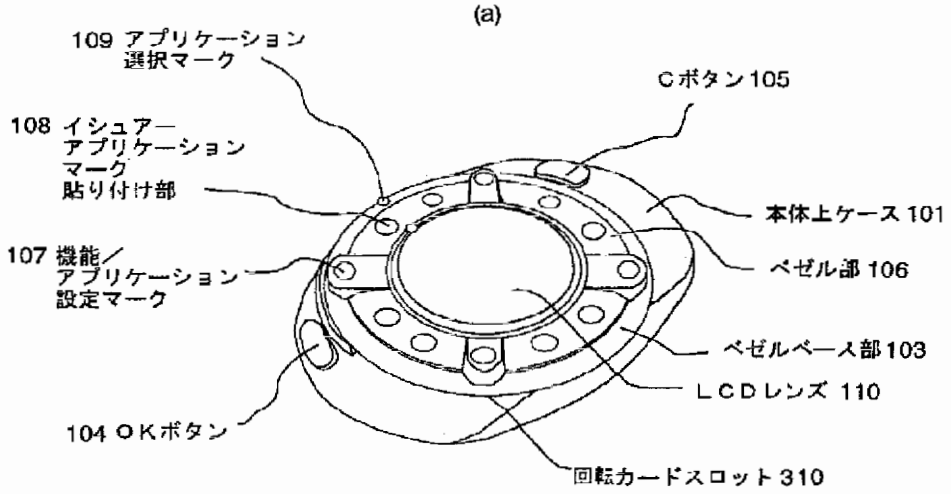




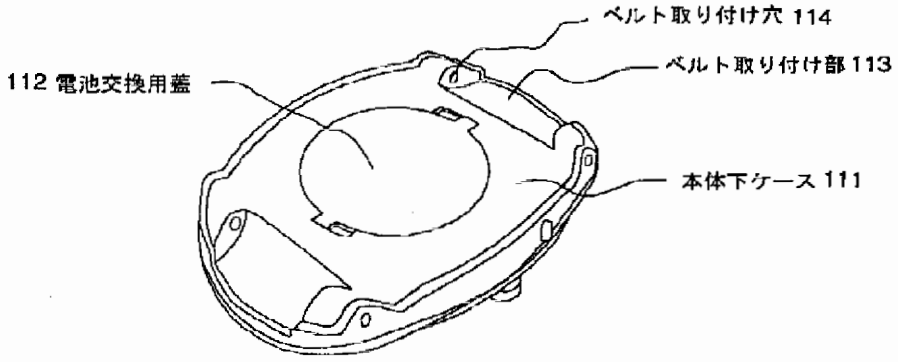
【図1】

図1

(a)

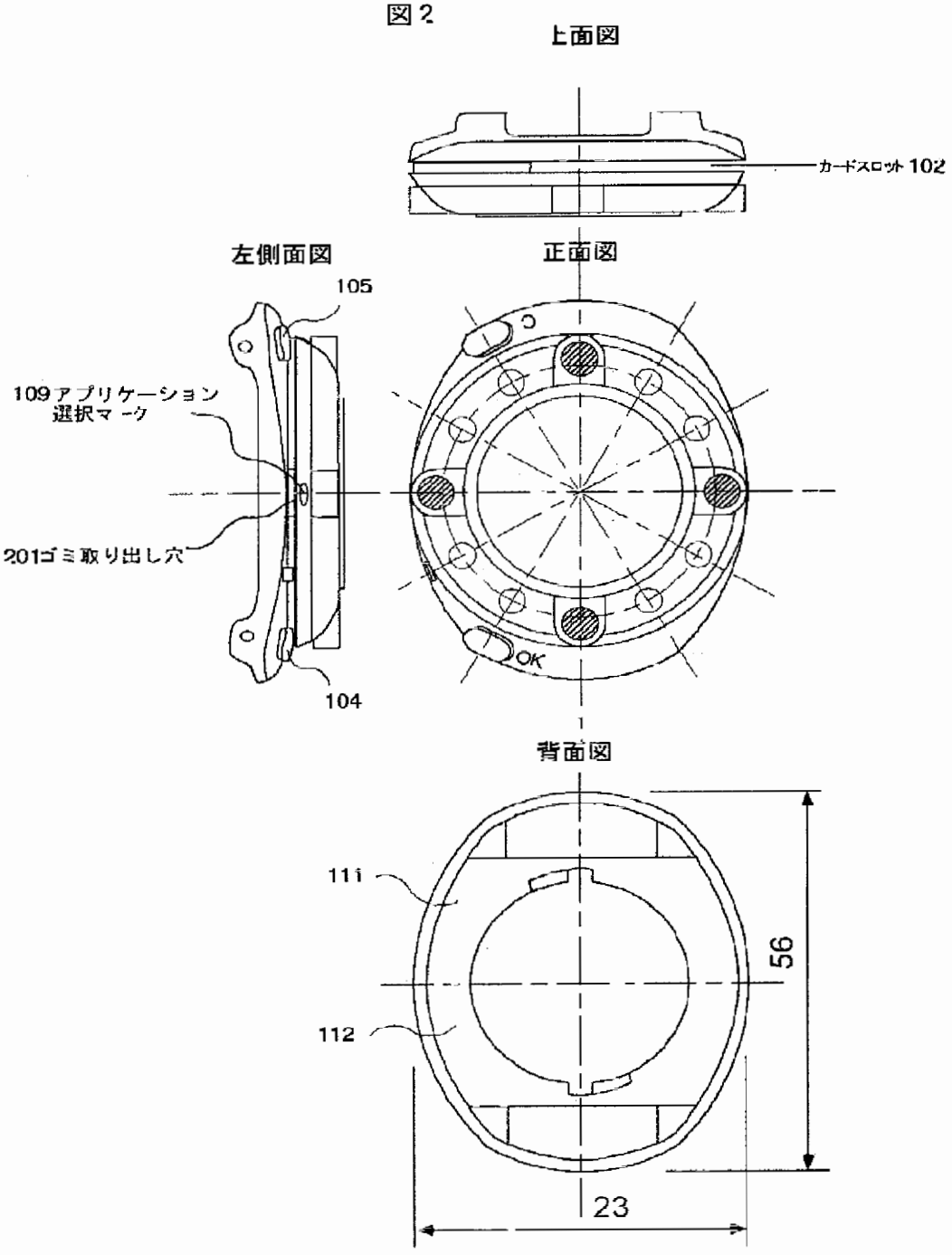

109 アプリケーション
選択マーク
Cボタン105
108 イシュアー
アプリケーション
マーク
貼り付け部
本体上ケース 101
107 機能／
アプリケーション
設定マーク
ベゼル部 106
ベゼルベース部103
LCDレンズ 110
104 OKボタン
回転カードスロット 310

(b)


ベルト取り付け穴 114
ベルト取り付け部 113
112 電池交換用蓋
本体下ケース 111

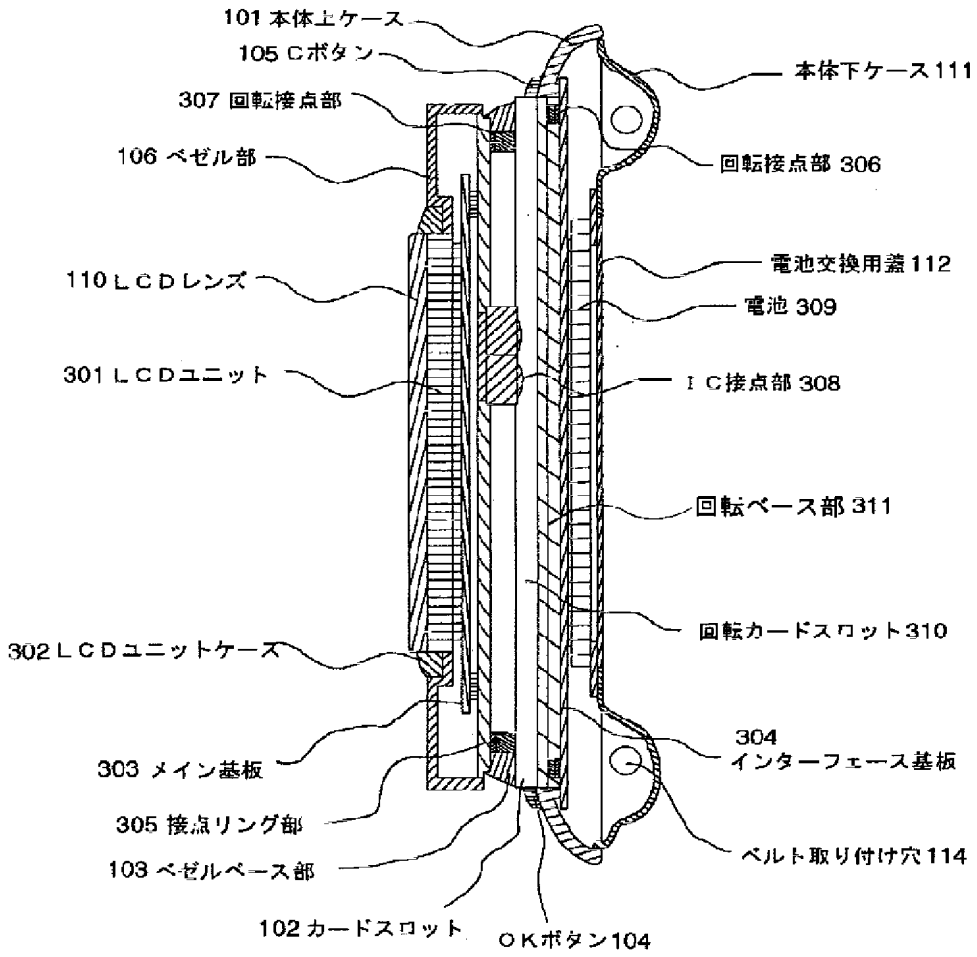
【図２】

図２


上面図
カードスロット102
左側面図
正面図
105
109アプリケーション
選択マーク
201ゴミ取り出し穴
104
OK
背面図
111
112
56
23

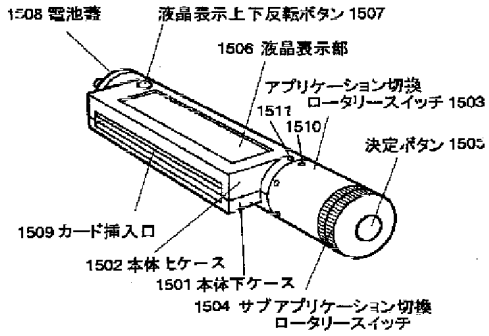
【図３】

図３



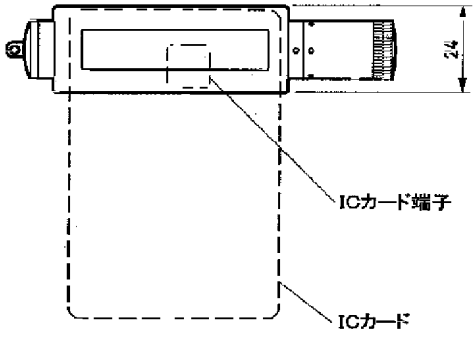
【図１５】

図１５

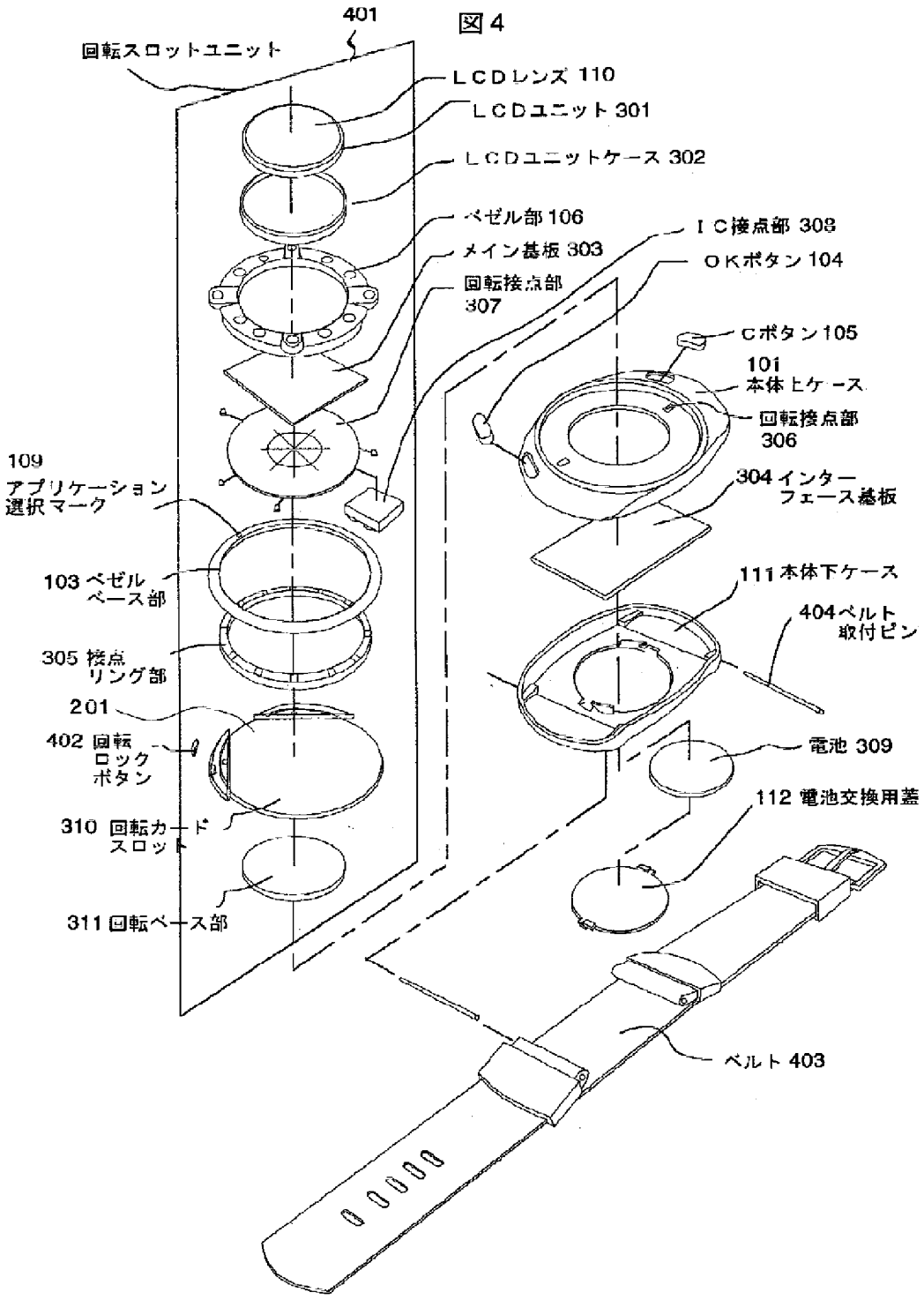


【図２０】

図２０

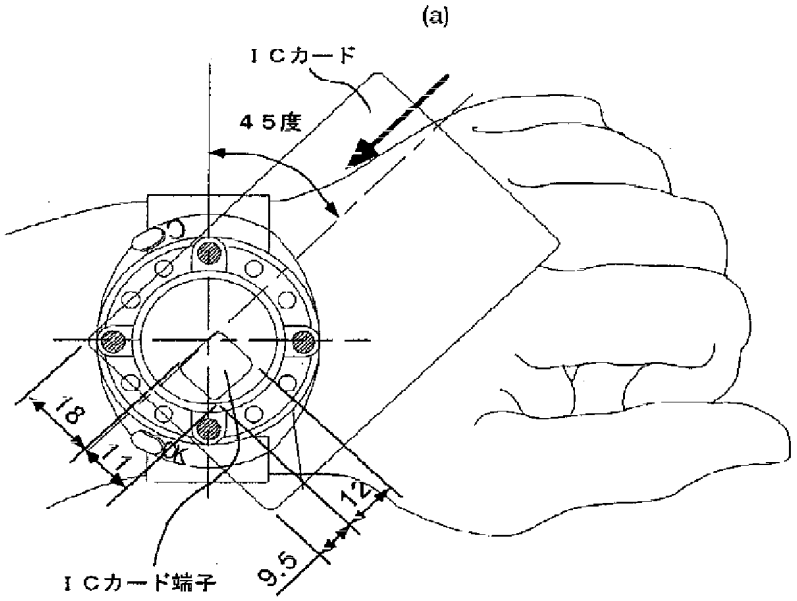


【図4】


401
図4
回転スロットユニット
LCDレンズ 110
LCDユニット 301
LCDユニットケース 302
ベゼル部 106
メイン基板 303
回転接点部 307
IC接点部 308
OKボタン 104
Cボタン 105
101 本体上ケース
回転接点部 306
304 インターフェース基板
109 アプリケーション選択マーク
103 ベゼルベース部
111 本体下ケース
404 ベルト取付ピン
305 接点リング部
201
402 回転ロックボタン
電池 309
112 電池交換用蓋
310 回転カードスロット
311 回転ベース部
ベルト 403

【図6】

図6



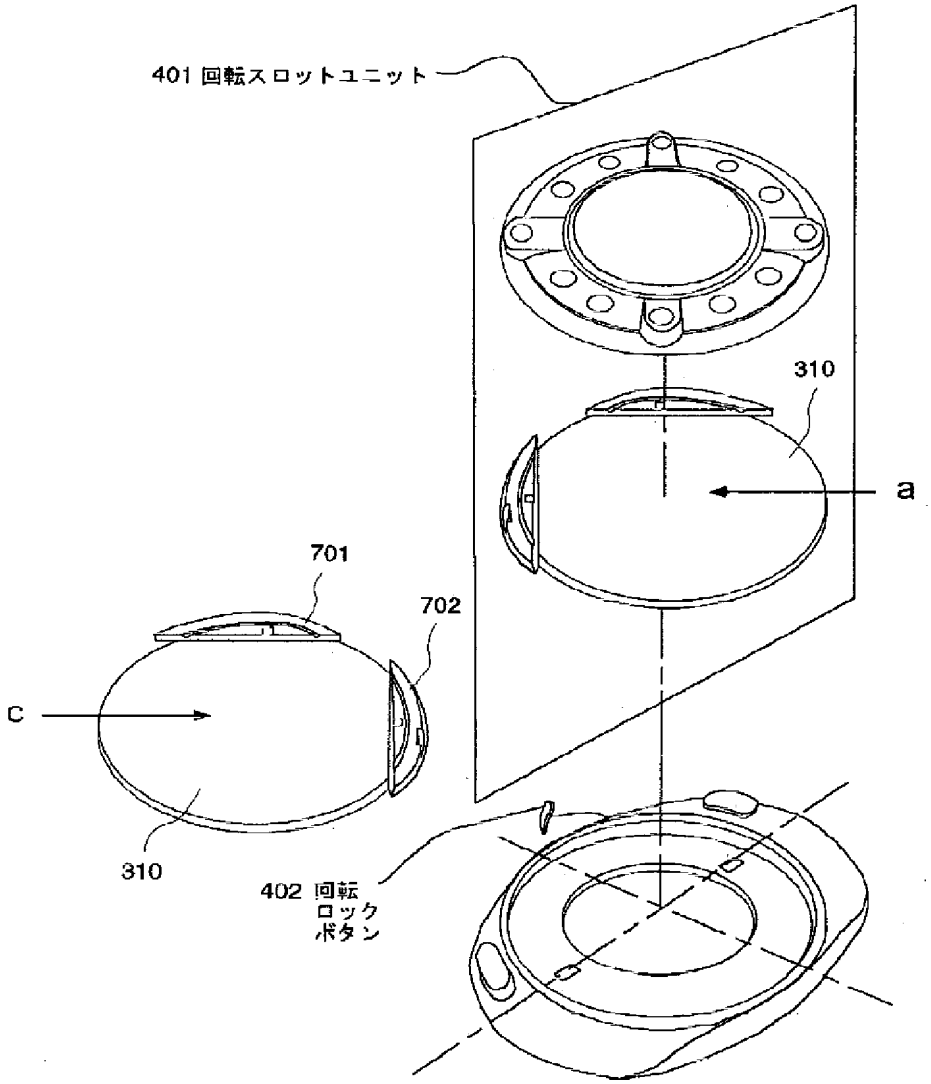
【図32】

図32



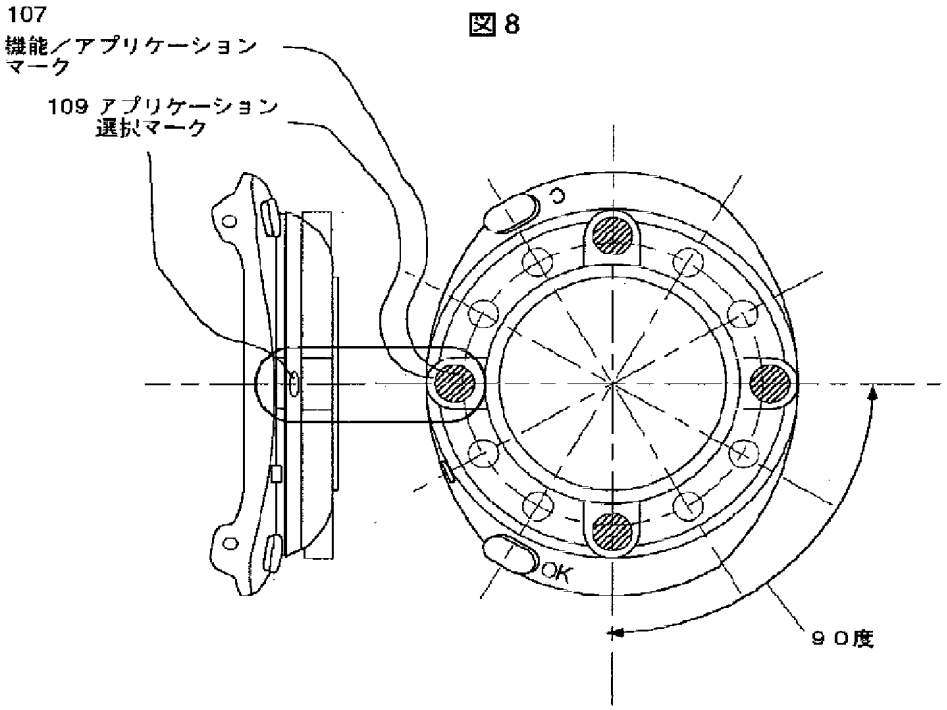
【図7】

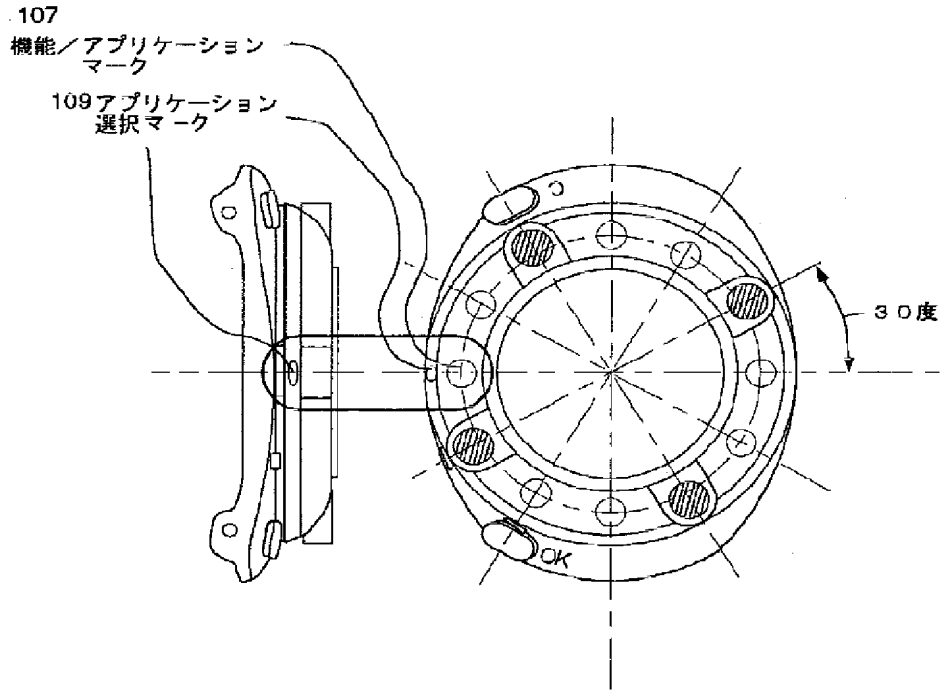
図7



【図8】

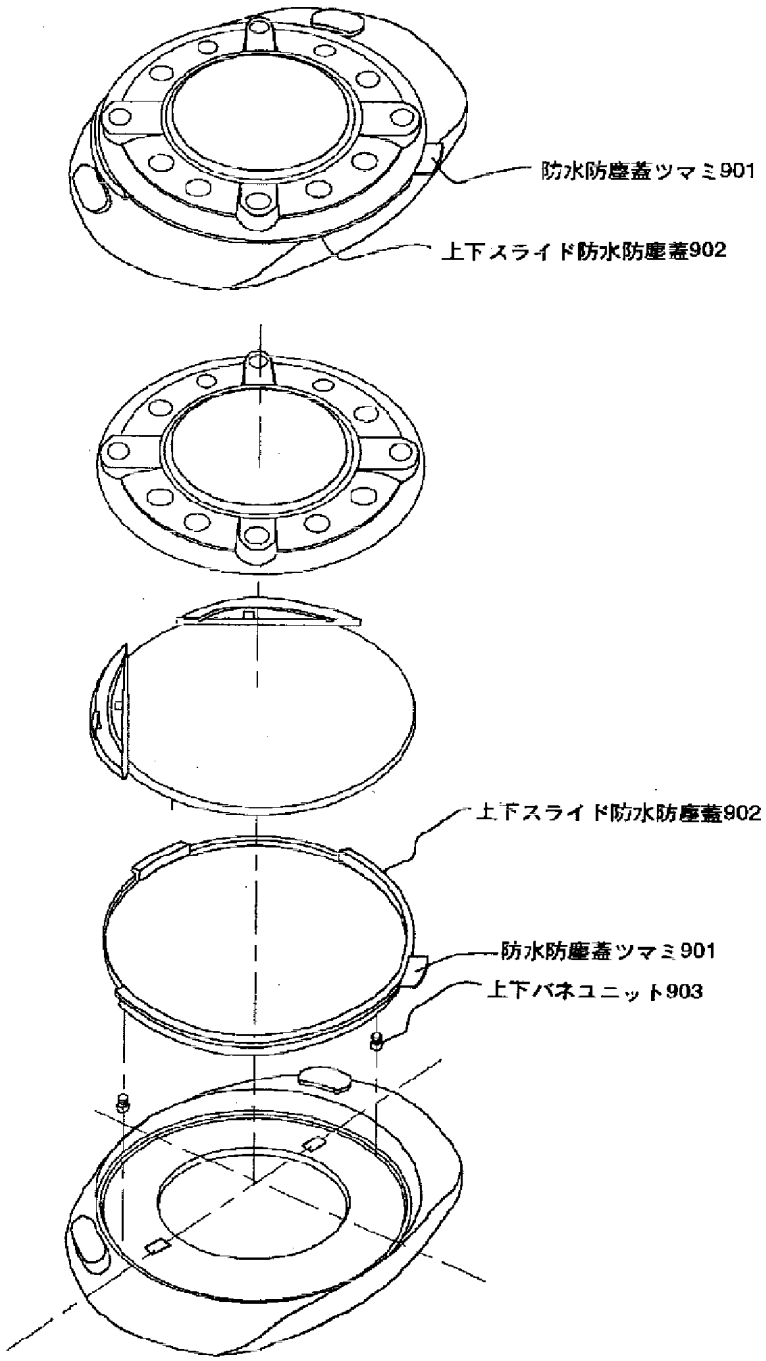
図8


107
機能／アプリケーション
マーク
109 アプリケーション
選択マーク
OK
90度


107
機能／アプリケーション
マーク
109アプリケーション
選択マーク
OK
30度

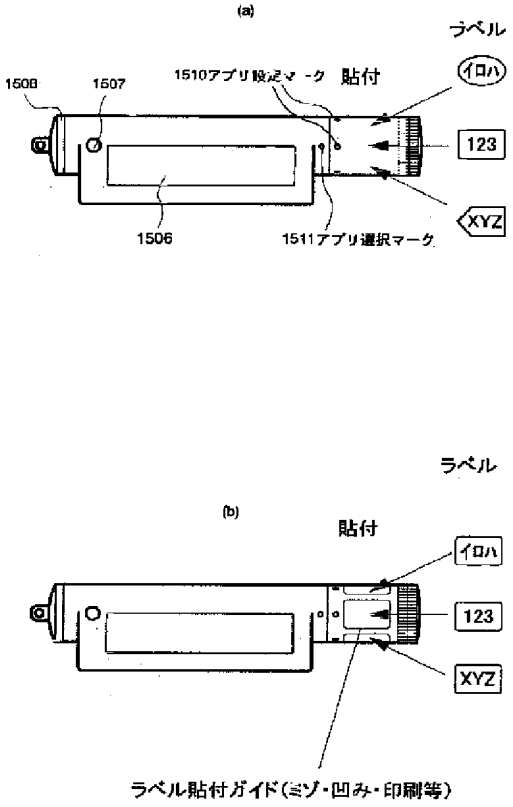
【図9】

図9



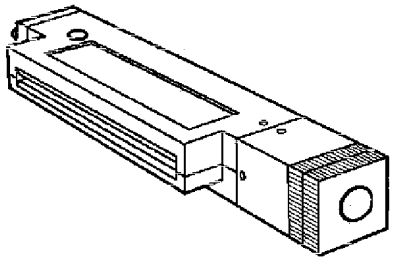
【図18】

図18



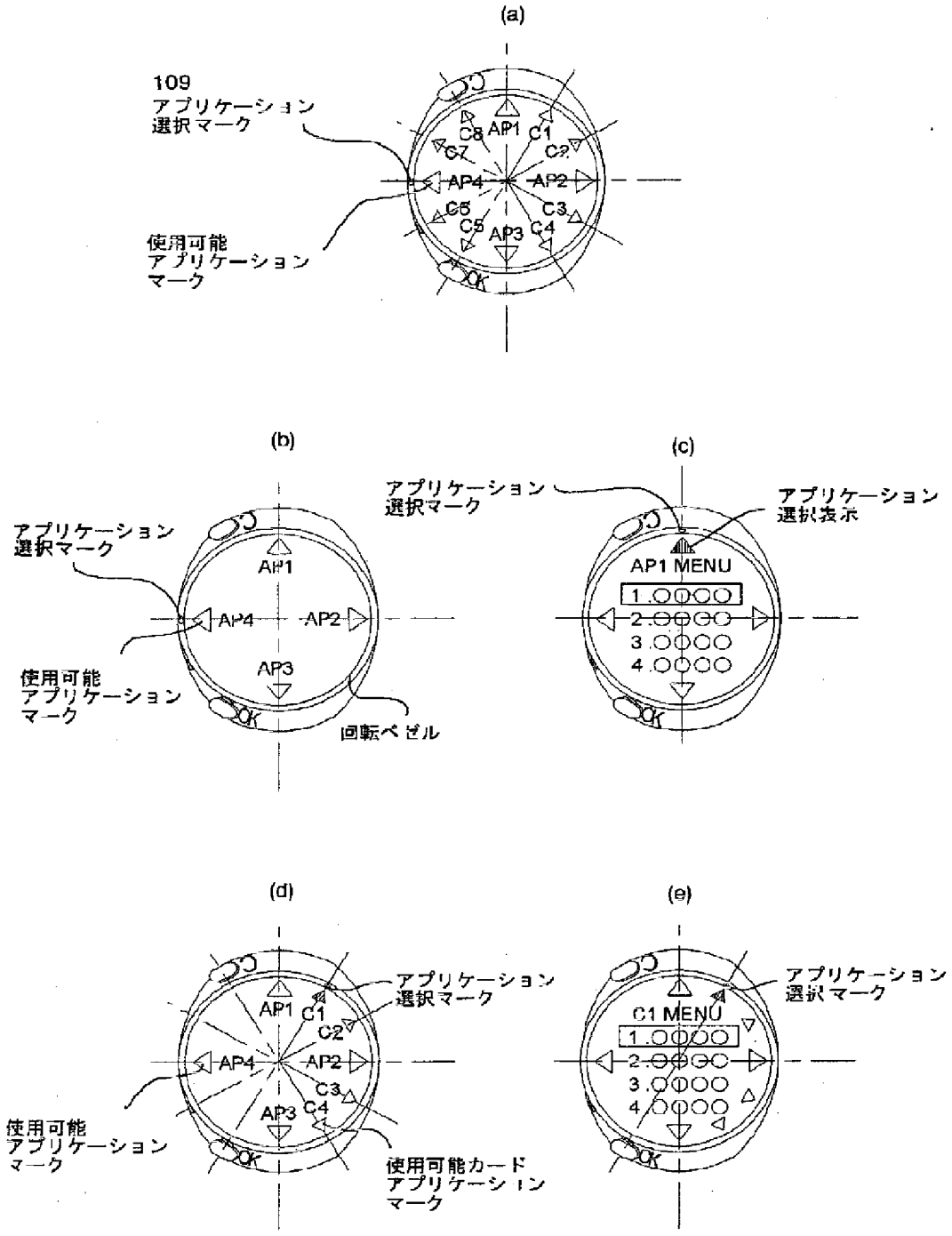
【図21】

図21



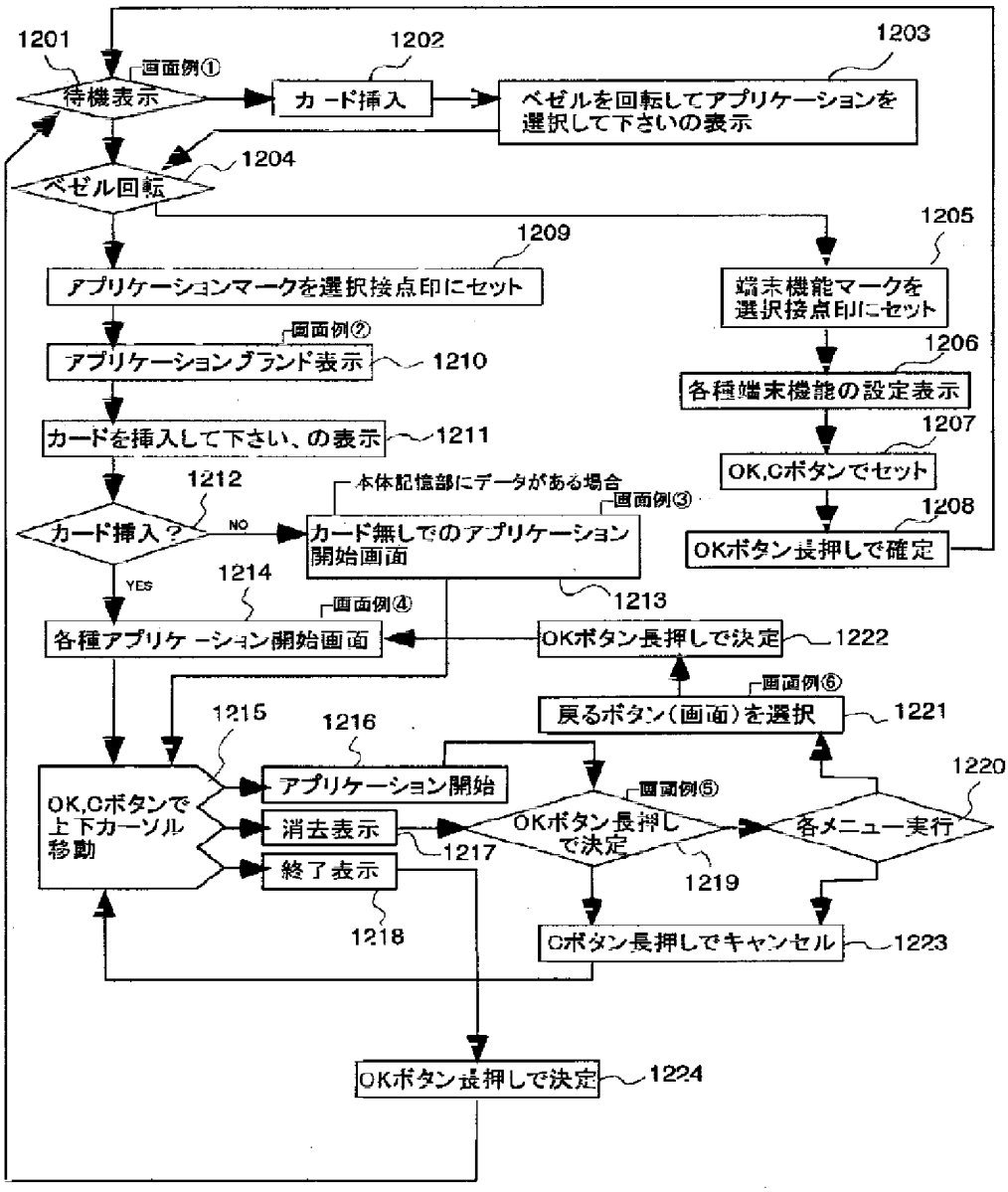
【図11】

図11


(a)
109
アプリケーション
選択マーク
使用可能
アプリケーション
マーク
AP1
AP2
AP3
AP4
C1
C2
C3
C4
C5
C6
C7
C8
OK
(b)
アプリケーション
選択マーク
使用可能
アプリケーション
マーク
回転ベゼル
(c)
アプリケーション
選択マーク
アプリケーション
選択表示
AP1 MENU
1
2
3
4
(d)
アプリケーション
選択マーク
使用可能
アプリケーション
マーク
使用可能カード
アプリケーション
マーク
(e)
アプリケーション
選択マーク
C1 MENU

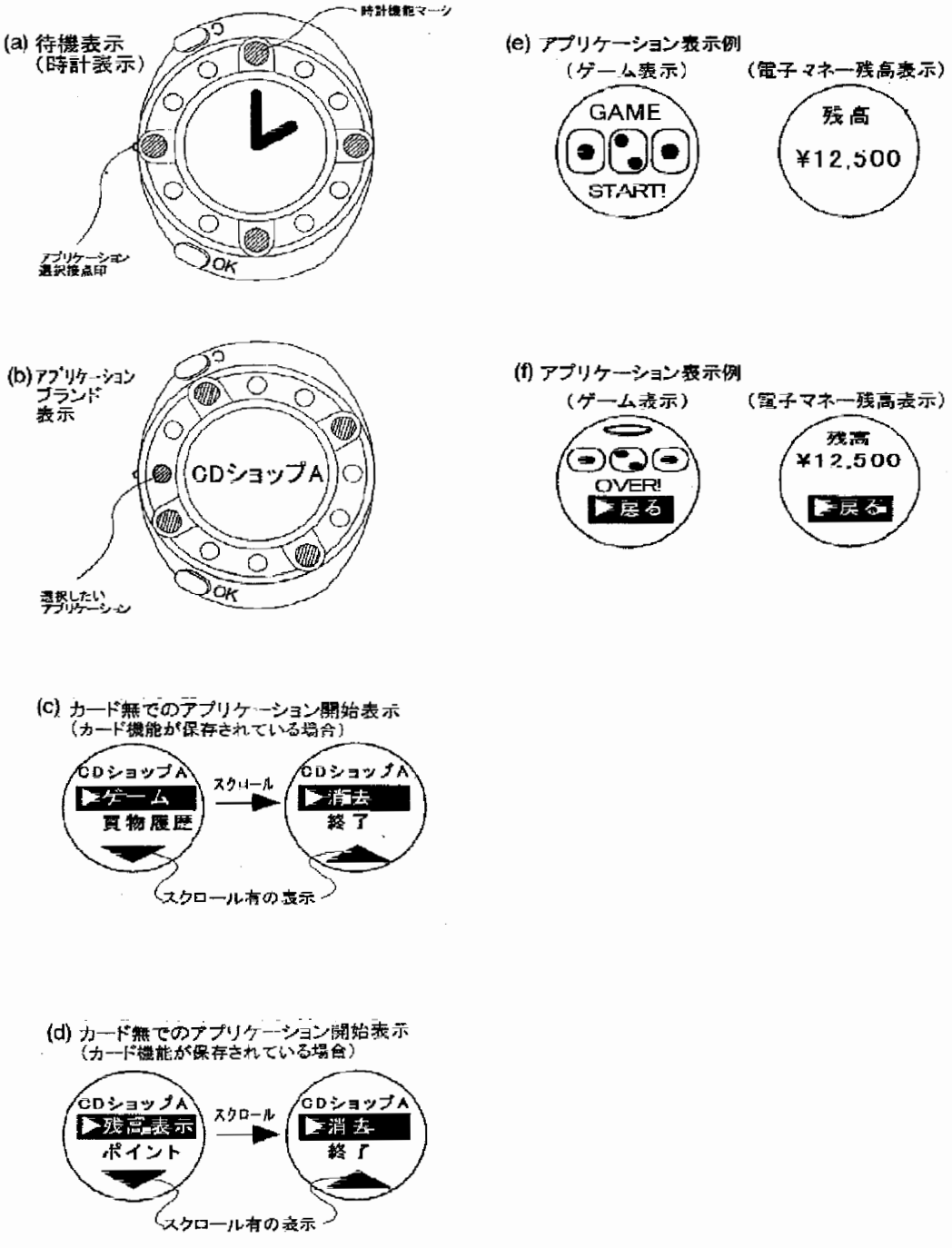
【図12】

図12


ベゼル部にアプリケーションマークを表示
1201
画面例①
待機表示
1202
カード挿入
1203
ベゼルを回転してアプリケーションを選択して下さいの表示
1204
ベゼル回転
1205
1209
アプリケーションマークを選択接点印にセット
端末機能マークを選択接点印にセット
画面例②
アプリケーションブランド表示
1210
1206
各種端末機能の設定表示
カードを挿入して下さい、の表示
1211
1207
OK,Cボタンでセット
1212
本体記憶部にデータがある場合
画面例③
カード挿入？
NO
カード無しでのアプリケーション開始画面
1208
OKボタン長押しで確定
YES
1214
画面例④
各種アプリケーション開始画面
1213
OKボタン長押しで決定
1222
画面例⑥
戻るボタン(画面)を選択
1221
1215
1216
1220
OK,Cボタンで上下カーソル移動
アプリケーション開始
画面例⑤
消去表示
OKボタン長押しで決定
各メニュー実行
1217
1219
終了表示
1218
Cボタン長押しでキャンセル
1223
OKボタン長押しで決定
1224

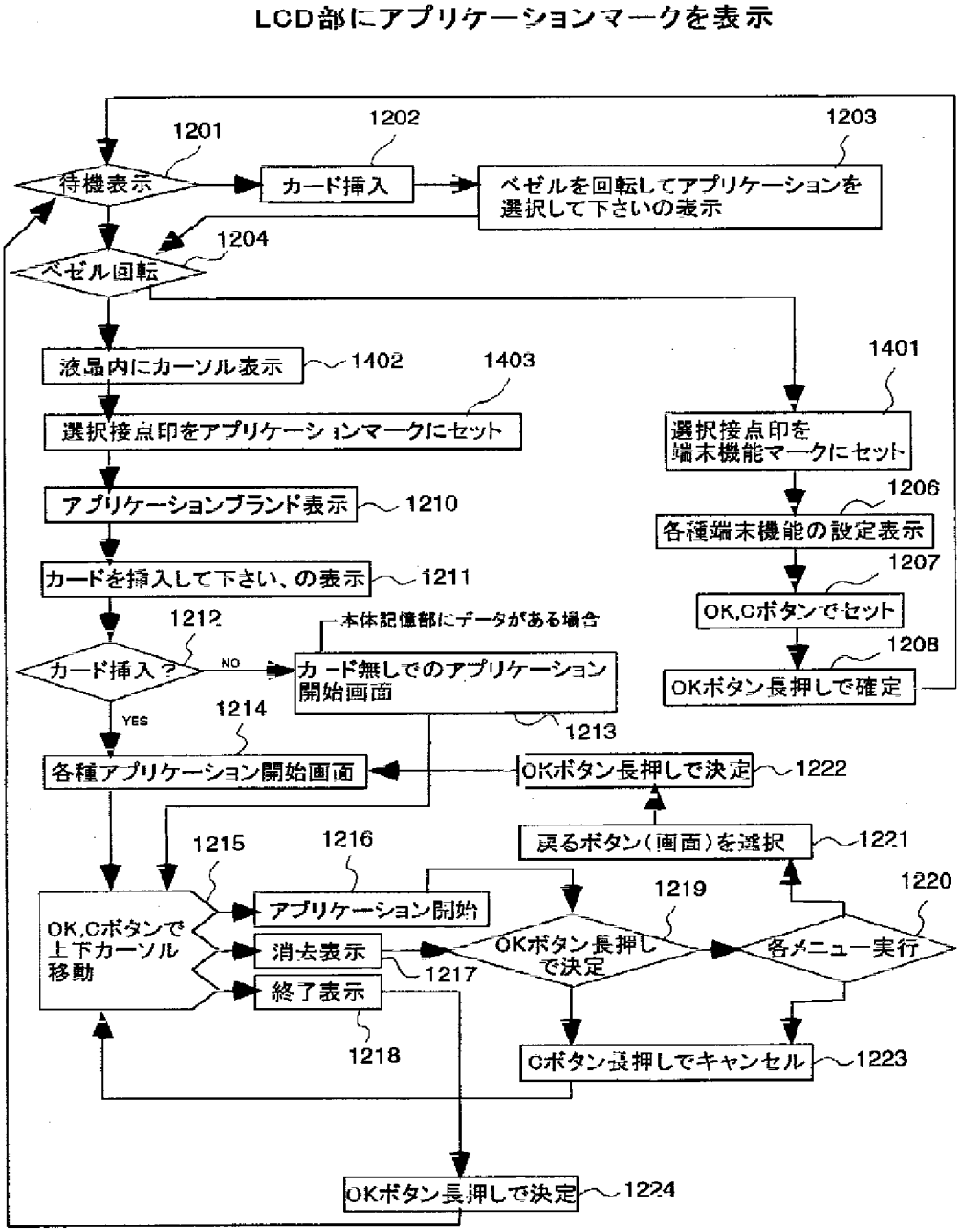
【図13】

図13


(a) 待機表示
(時計表示)
時計機能マーク
アプリケーション
選択確定印
OK
(b) アプリケーション
ブランド
表示
CDショップA
選択したい
アプリケーション
OK
(c) カード無でのアプリケーション開始表示
(カード機能が保存されている場合)
CDショップA
ゲーム
買物履歴
スクロール
CDショップA
消去
終了
スクロール有の表示
(d) カード無でのアプリケーション開始表示
(カード機能が保存されている場合)
CDショップA
残高表示
ポイント
スクロール
CDショップA
消去
終了
スクロール有の表示
(e) アプリケーション表示例
(ゲーム表示)
GAME
START!
(電子マネー残高表示)
残高
¥12,500
(f) アプリケーション表示例
(ゲーム表示)
OVER!
戻る
(電子マネー残高表示)
残高
¥12,500
戻る

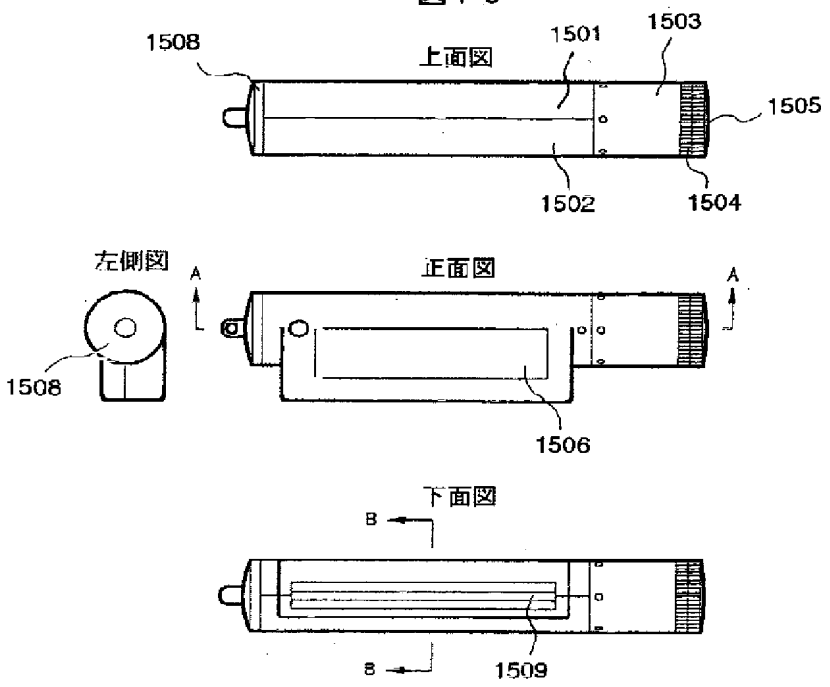
【図14】

図14


LCD部にアプリケーションマークを表示
1201
待機表示
1202
カード挿入
1203
ベゼルを回転してアプリケーションを選択して下さいの表示
1204
ベゼル回転
液晶内にカーソル表示
1402
1403
選択接点印をアプリケーションマークにセット
アプリケーションブランド表示
1210
カードを挿入して下さい、の表示
1211
1212
カード挿入？
NO
本体記憶部にデータがある場合
カード無しでのアプリケーション開始画面
1213
YES
1214
各種アプリケーション開始画面
1401
選択接点印を端末機能マークにセット
1206
各種端末機能の設定表示
1207
OK,Cボタンでセット
1208
OKボタン長押しで確定
OKボタン長押しで決定
1222
戻るボタン(画面)を選択
1221
1215
1216
OK,Cボタンで上下カーソル移動
アプリケーション開始
消去表示
1217
終了表示
1218
1219
OKボタン長押しで決定
1220
各メニュー実行
Cボタン長押しでキャンセル
1223
OKボタン長押しで決定
1224

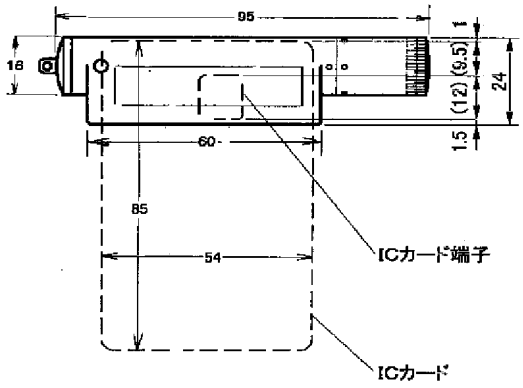
【図16】

図16



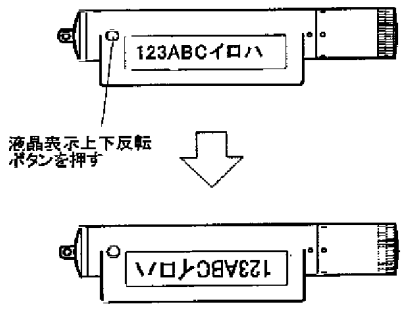
【図19】

図19



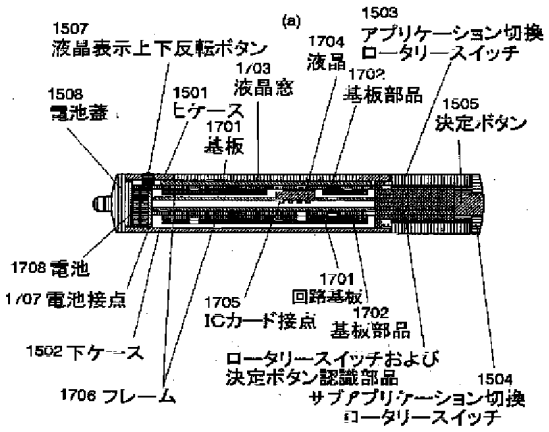
【図22】

図22



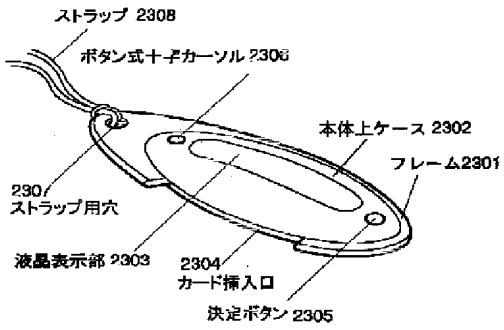
【図17】

図17



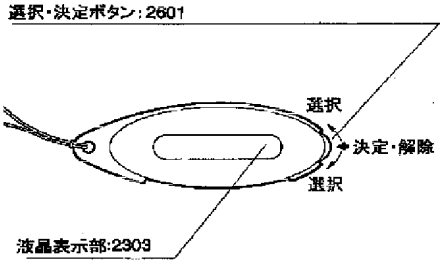
【図23】

図23



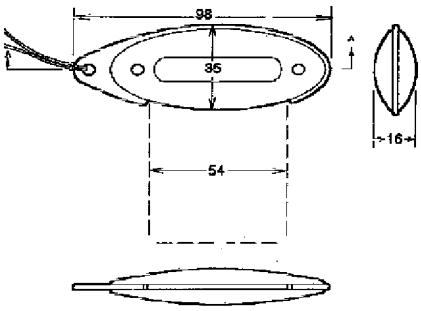
【図26】

図26



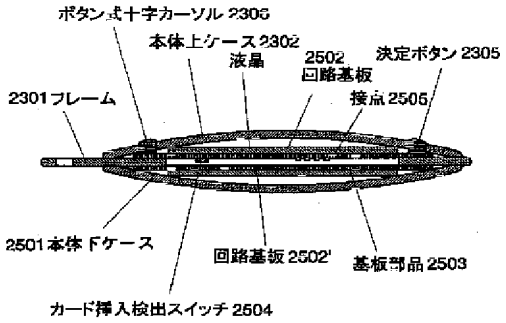
【図24】

図24



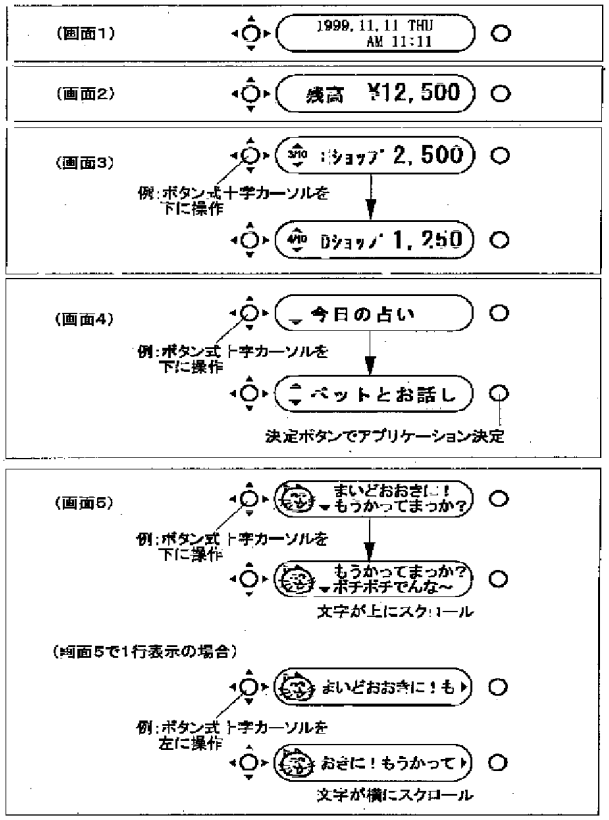
【図25】

図25



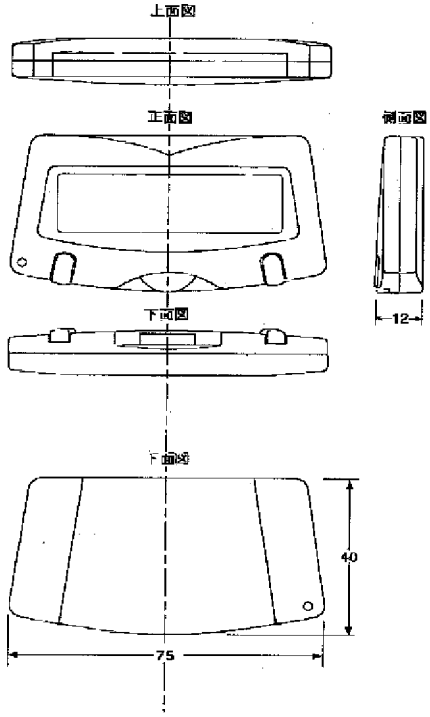
【図27】

図27



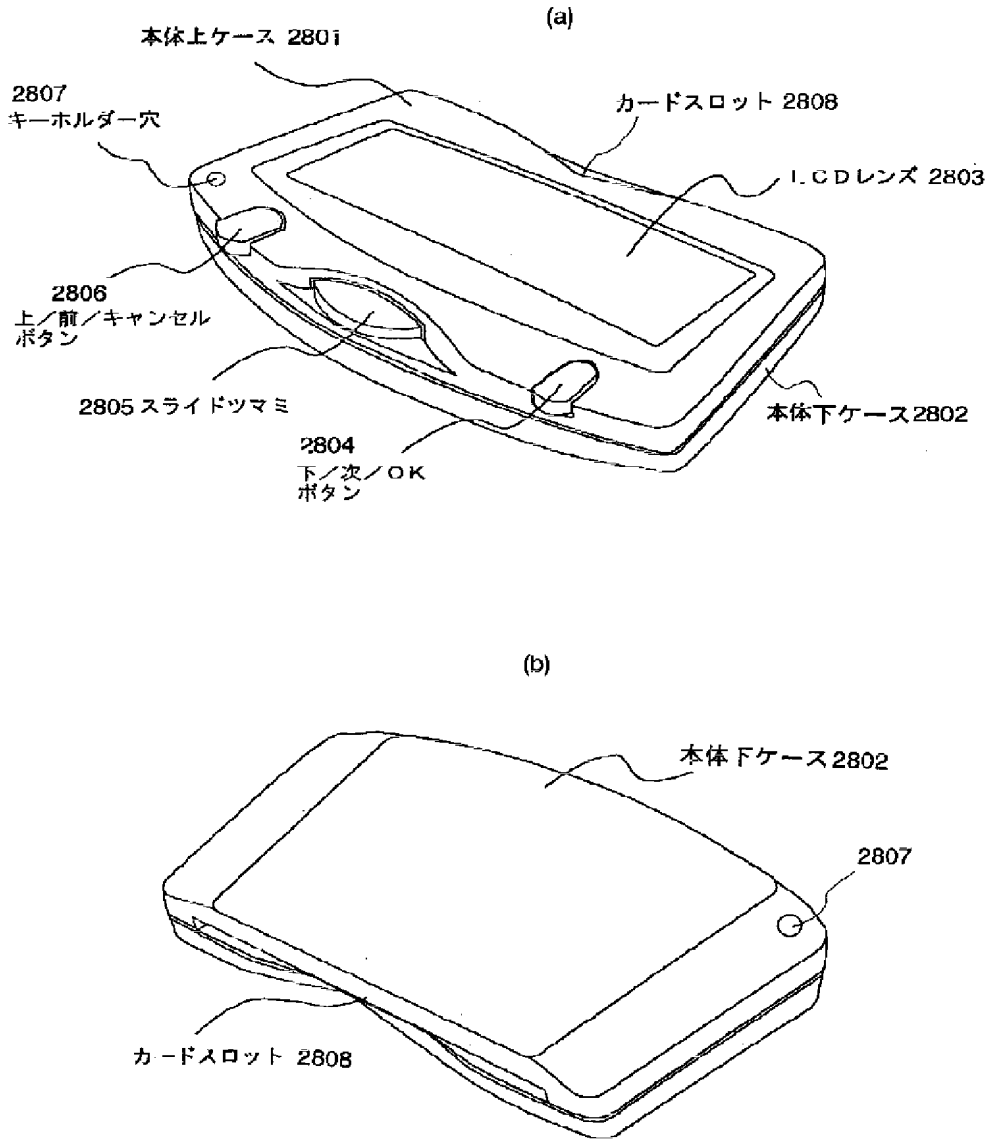
【図29】

図29



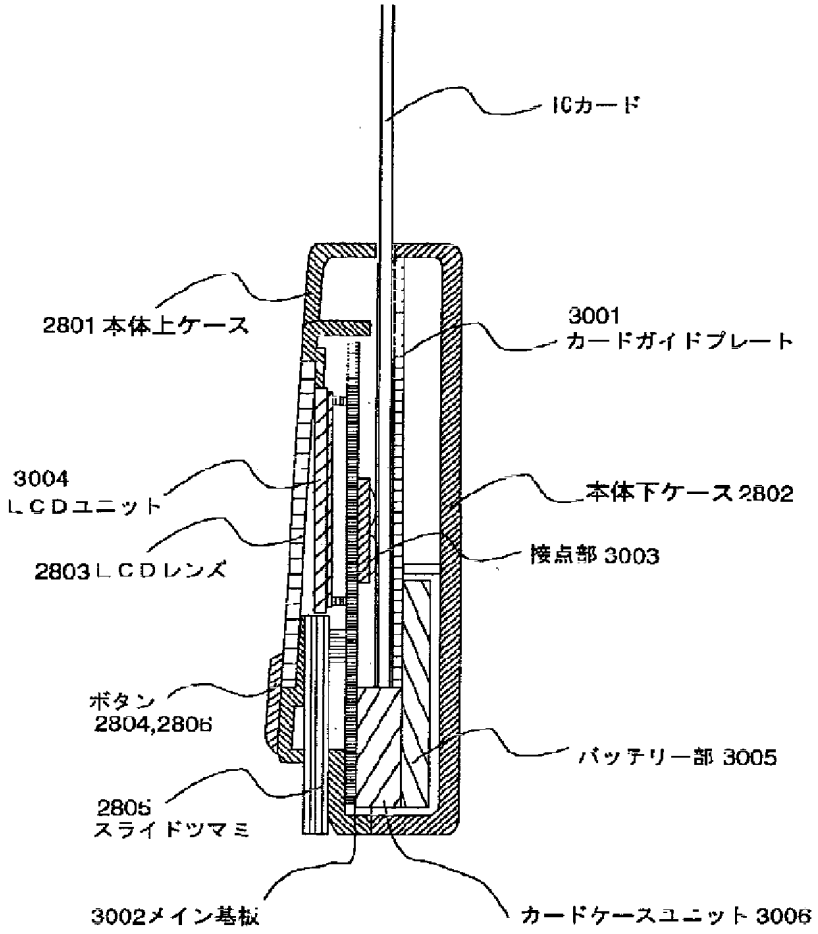
【図28】

図28


(a)
本体上ケース 2801
2807
キーホルダー穴
カードスロット 2808
LCDレンズ 2803
2806
上／前／キャンセル
ボタン
2805 スライドツマミ
本体下ケース2802
2804
下／次／OK
ボタン
(b)
本体下ケース2802
2807
カードスロット 2808

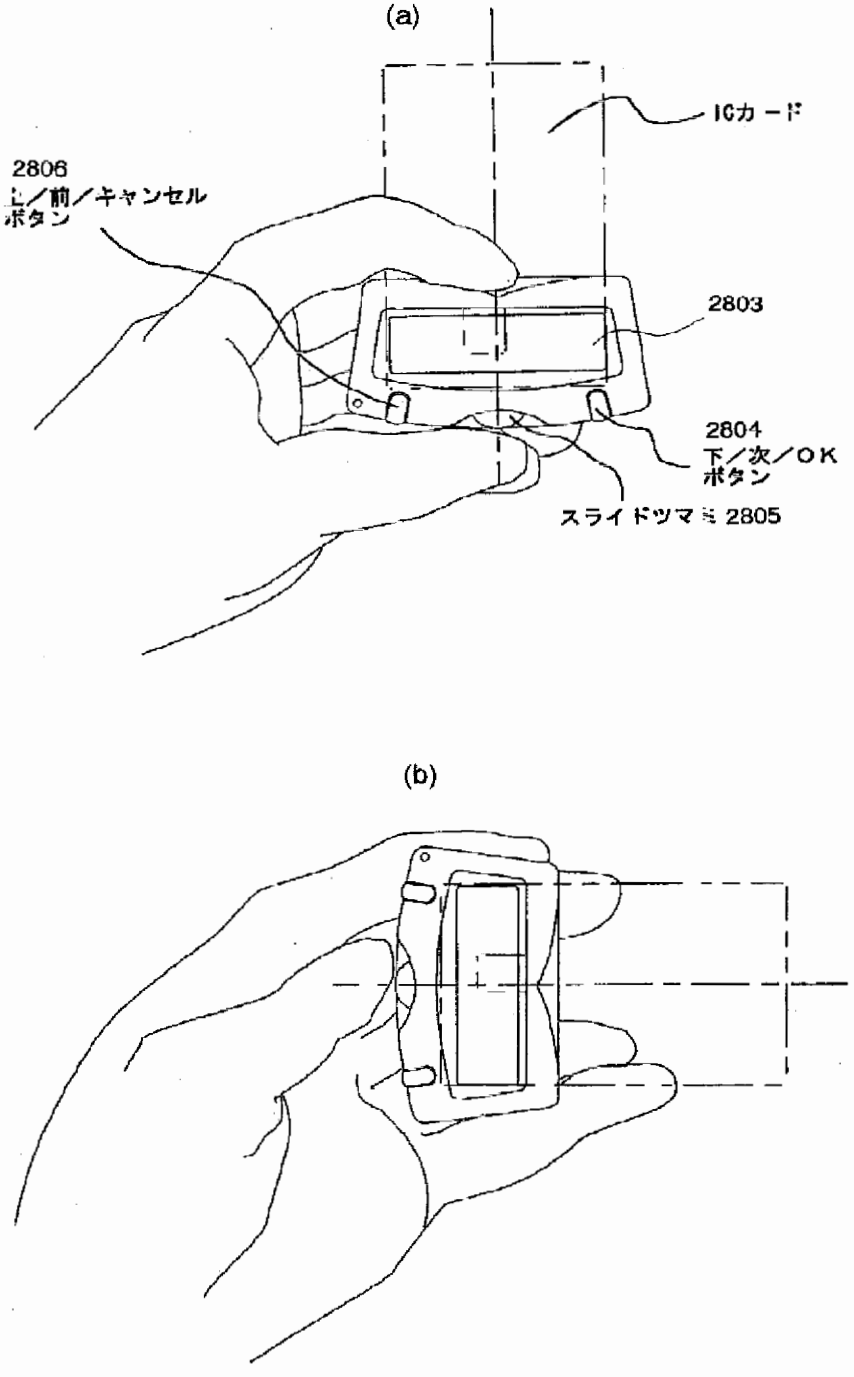
【図30】

図30


ICカード
2801 本体上ケース
3001
カードガイドプレート
3004
LCDユニット
本体下ケース 2802
2803 LCDレンズ
接点部 3003
ボタン
2804,2806
バッテリー部 3005
2805
スライドツマミ
3002メイン基板
カードケースユニット 3006

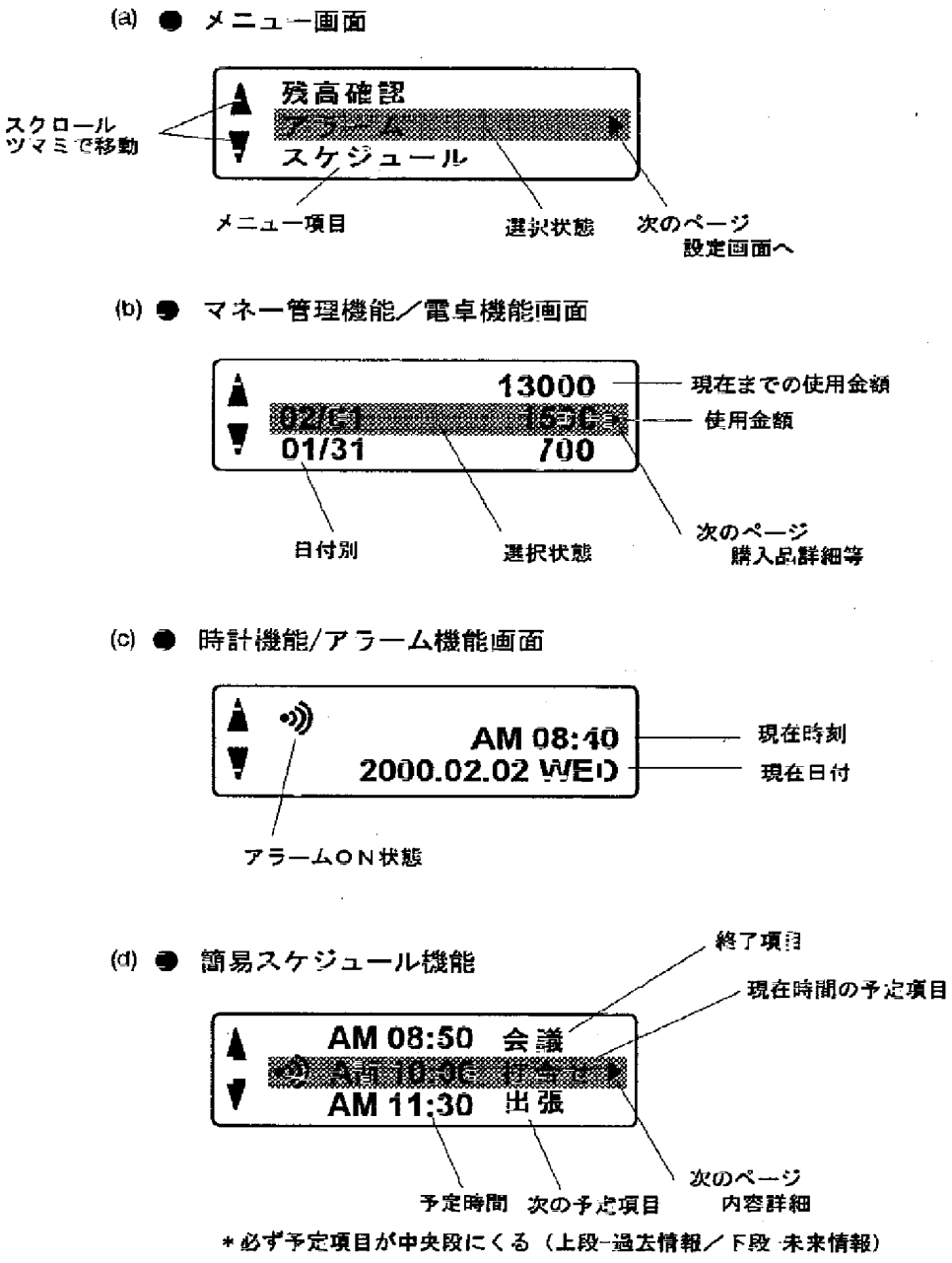
【図31】

図31



【図33】

図３３



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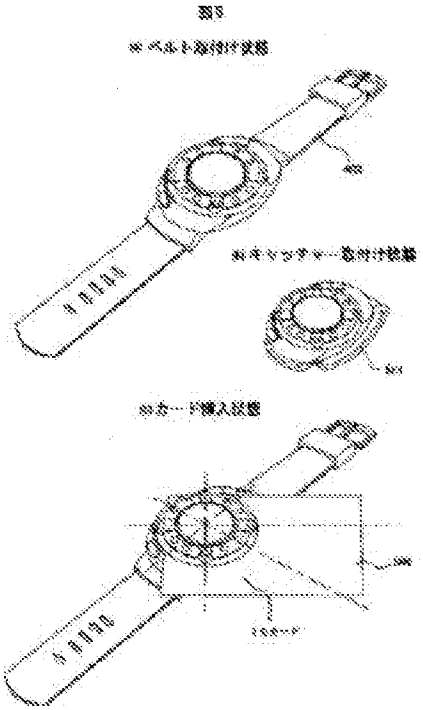
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TAGASHIRA TAKUYA

(54) **TERMINAL FOR IC CARD**

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a terminal for IC card, which can be commonly used for various kinds of electronic currency system and credit card system, extremely miniaturized and improved in portability.
SOLUTION: The main body part of the terminal is constituted into watch so that the terminal can be attached to the arm by a belt or attached to a bag by a catcher and can display time. A display part is provided on the upper surface of the main body part and a rotatable IC card slot is provided on the side so that an IC card can be inserted from plural directions. A rotatable vessel part is provided around the main body part and by rotating the vessel part, usable applications stored in the main body part and in the IC card can be switched.



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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]In a terminal for IC cards treating a multi application IC card which can be used common to an electronic-monetary system and two or more credit card systems, A terminal body part attaches to an arm with a belt, Or a terminal for IC cards having been constituted by clock type in which attaching to a bag by a catcher is possible, and a time stamp is possible, a display part's having been provided by the body part upper surface, and a pivotable IC card loading slot's having been provided by side surface, and enabling insertion of an IC card from two or more directions.
[Claim 2]The terminal for IC cards according to claim 1 when an IC card is inserted, wherein contact on an IC card will be stored inside a body part.
[Claim 3]The terminal for IC cards according to claim 1 or 2, wherein it has a lid which has a knob which opens a loading slot in an entrance of the aforementioned IC card loading slot.
[Claim 4]The terminal for IC cards according to claim 1, 2, or 3 changing available application stored in the aforementioned body part and an IC card by equipping the circumference of the aforementioned display part with a pivotable bezel part, and making the aforementioned body

part upper part rotate a bezel part.
[Claim 5]In a terminal for IC cards treating a multi application IC card which can be used common to an electronic-monetary system and two or more credit card systems, A terminal for IC cards characterized by what a display part was provided by the terminal body part upper surface, a pivotable cylindrical part which has a rotary switch in a side surface was provided, and an IC card loading slot was provided by terminal body subordinate surface, and was constituted by key case type.
[Claim 6]The terminal for IC cards according to claim 5, wherein a label which described two or more applications in said pivotable cylindrical part is stuck.
[Claim 7]The terminal for IC cards according to claim 5 or 6 which said pivotable cylindrical part is constituted by double ring, and is further characterized by equipping an end with a determination button.
[Claim 8]The terminal for IC cards according to claim 5, 6, or 7 being able to reverse a display of the aforementioned display part.
[Claim 9]In a terminal for IC cards treating a multi application IC card which can be used common to an electronic-monetary system and two or more credit card systems,
A terminal for IC cards characterized by comprising the following.
A frame from which a terminal body part constitutes a periphery.
It is constituted by pendant type in a case provided by the upper and lower sides of this frame, and is a display part to the terminal body part upper surface.
A button type crosshair cursor.
A determination button is provided and it is an IC card loading slot to a terminal body part side surface.

[Translation done.]

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3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]The present invention relates to the terminal for IC cards, and relates to the terminal for IC cards which can treat the IC card in which two or more applications were stored especially.

[0002]
[Description of the Prior Art]In recent years, various kinds of electronic-monetary systems which use an IC card, and various kinds of credit card systems which use an IC card are proposed. The microprocessor to which the IC card used for these systems has a communication function in the inside, When it is given by a processing program, the balance of electronic money, and use of a card and the mark serve as a specified value, it has a memory by EEPROM etc. which store the point which can receive predetermined money and goods, and is constituted. And extraction and insertion of electronic money is possible for the IC card used for electronic money among other IC cards by using a terminal for exclusive use via the electronic-monetary system arbitrarily constituted via a communication line in the terminal with which a bank, a store, an individual residence, etc. are equipped so that connection is possible. The IC card used for a credit receives the check of the justification of the card from a credit company via the terminal with which a store etc. are equipped, and the above-mentioned point is stored after processing of merchandise purchase etc.
[0003]And the multi application IC card whose correspondence was enabled by the IC card of one sheet is also proposed to various kinds of systems which were mentioned above.
[0004]The technology described in JP,H11-39445,A etc. is known, for example as a prior art about the system which uses this kind of multi application IC card, and a multi application IC card.
[0005]
[Problem to be solved by the invention]A multi application IC card common to the electronic-monetary system of the various kinds proposed by the above-mentioned, and various kinds of credit card systems, Since what is necessary is just only considering using it at a financial institution, a store, etc. to walk around with the IC card of one sheet, it can be said that portability is dramatically good. However, the user has the demand of liking to check the information in an IC card, by the place where one has gone etc., for this reason it is small and the terminal excellent in portability is required.
[0006]There is the object of this invention in providing the terminal for IC cards which was excellent in portability by the small size for treating the multi application IC card which can be used common to various kinds of electronic-monetary systems mentioned above, a credit card system, etc.
[0007]
[Means for solving problem]In the terminal for IC cards treating the multi application IC card which can use the aforementioned purpose common to an electronic-monetary system and two or more credit card systems according to the present invention, A terminal body part attaches to an arm with a belt, Or it is constituted by the clock type in which attaching to a bag by a catcher is possible, and a time stamp is possible, a display part is provided by the body part upper surface, a pivotable IC card loading slot is provided by the side surface, and it is attained by having enabled insertion of the IC card from two or more directions.
[0008]Again the aforementioned purpose by storing the contact on an IC card inside a body part, when an IC card is inserted in the entrance of the aforementioned IC card loading slot, By having a lid with the knob which opens a loading slot, by equipping the circumference of the aforementioned display part with a pivotable bezel part, and making the aforementioned body part upper part rotate a bezel part, It is attained by changing the available application stored in the aforementioned body part and the IC card.
[0009]In the terminal for IC cards treating the multi application IC card which can use the

aforementioned purpose common to an electronic-monetary system and two or more credit card systems, It is attained, when the display part was provided by the terminal body part upper surface, the pivotable cylindrical part which has a rotary switch in a side surface was provided, the IC card loading slot was provided by the terminal body subordinate surface and it was constituted by the key case type.
[0010]By having stuck the label in which the aforementioned purpose described two or more applications in the above-mentioned pivotable cylindrical part, It is attained by that the display of the aforementioned display part can be reversed again by the above-mentioned pivotable cylindrical part's having been constituted by the double ring, and having equipped the end with the determination button further.
[0011]In the terminal for IC cards treating the multi application IC card which can use the aforementioned purpose common to an electronic-monetary system and two or more credit card systems, It is attained, when the terminal body part was constituted by the pendant type in the frame which constitutes a periphery, and the case provided by the upper and lower sides of this frame, the display part, the button type crosshair cursor, and the determination button were provided by the terminal body part upper surface and the IC card loading slot was provided by the terminal body part side surface.
[0012]
[Mode for carrying out the invention]Hereafter, the embodiment of the terminal for IC cards by the present invention is described in detail with Drawings.
[0013]The perspective view showing the appearance of the terminal for IC cards according [Fig.1] to the first embodiment of the present invention, The 4th page figure showing the appearance of the IC card terminal according [Fig.2] to a first embodiment, the cross sectional view of the terminal for IC cards according [Fig.3] to a first embodiment, and Fig.4 are exploded perspective views which describe the structure of the whole terminal for IC cards by a first embodiment.In Fig.1 - Fig.4, a main part upper case and 102 101 A rotation card slot,103 a bezel base part and 104 an OK button and 105 The C button, 106 a bezel part and 107 a function / application setting mark, and 108 An issuer application mark sticking part, 109 an application selection mark and 110 a LCD lens and 111 A main part lower case, 112 the lid for changing batteries, and 113 a belt mounting part and 114 A belt mounting hole, 201 a garbage extraction hole and 301 an LCD unit and 302 An LCD unit case, 303 a main substrate and 304 an interface board and 305 A contact ring part, 306 and 307 -- a rotation contact surface and 308 -- an IC contact part and 309 -- as for a rotation slot unit and 402, a rotation card slot and 311 are [a belt and 404] belt fitting pins a rotation lock button and 403 a rotatable base part and 401 a cell and 310.
[0014]The first embodiment of the present invention is applied to small clocks, such as a wrist watch, as shown in the top perspective view shown in Fig.1 (a), the back surface perspective view shown in Fig.1 (b), and the 4th page figure shown in Fig.2.And on the body part constituted with the main part upper case 101 and the main part lower case 111 as the terminal for graphic display IC cards is shown in Fig.1, The bezel base part 103 and the bezel part 106 which are constituted pivotable are provided, and the rotation card slot 310 which can insert the IC card which is not illustrated between the bezel base part 103 and the main part upper case 101 is formed, and it is constituted. OK button 104 and the C (clear) button 105 for operation are arranged at the position of the outside of the bezel base part 103 of the main part upper case 101, and the application selection mark 109 is arranged in the side surface of the bezel base part 103. The function / application setting mark 107, and the issuer application mark sticking part 108 for

which the LCD lens 110 is arranged and the inner portion of the bezel part 103 formed circularly mentions the function later around the bezel part 103 are arranged. The lid 112 for changing batteries is provided by the main part lower case 111 by the side of the back surface, and the belt mounting part 113 which has the belt mounting hole 114 which connects the belt which is not illustrated is provided, and the terminal for graphic display IC cards is constituted. The dustpan broth hole 201 for garbage discharge is provided by the innermost part of the rotation card slot 310.

[0015]Inside the terminal for IC cards by the first embodiment of the present invention, As shown in the cross sectional view shown in Fig.3. The IC contact part 308 which makes connection between LCD unit 301, the main substrate 303 and the main substrate 303 which were stored in the LCD unit case 302, and the inserted IC card, the contact ring part 305 which makes connection between the main substrate 303 and other substrates, the rotation contact surfaces 306 and 307, The interface board 304, the cell 309, and the rotatable base part 311 are stored. The inside of the rotation card slot 310 is constituted as the rotation card slot 310.

[0016]Fig.4 shows the assembly situation of each component which constitutes the first embodiment of the present invention described by the above-mentioned as an exploded perspective view, and the portion to the rotatable base part 311 constitutes the rotation slot unit 401 from the LCD lens 110 in Fig.4. The component from the bezel part 106 of this rotation slot unit 401 to the rotation card slot 310, When changing the path of insertion of an IC card, it is constituted pivotable, and in the case of the application selection after card insertion, etc., the component from the bezel part 106 to the rotation contact surface 307 is pivotable.

[0017]It indicates Fig.4 that the terminal for IC cards is attached to the belt 403 so that it may be possible to usually use the first embodiment of the present invention as a wrist watch. Attachment to the belt 403 of the terminal for IC cards is performed by the belt mounting hole 114 and the belt fitting pin 404 of the belt mounting part 113 of the main part lower case 111 which were described by the above-mentioned.

[0018]The figure which describes the anticipated-use state of the terminal for IC cards and the insertion condition of an IC card according [Fig.5] to the first embodiment of the present invention, The figure described about the variation of the path of insertion of the state where Fig.6 attached the terminal for IC cards by the first embodiment of the present invention to the arm, and the IC card was inserted, and an IC card, The figure which Fig.7 describes about the path of insertion of a card slot, the figure which describes that Fig.8 rotates the bezel part 103 and chooses application,Fig.9 is a figure described about the composition of the water proof dustproof mechanism over a card slot, and a figure which Fig.10 describes about other examples of the path of insertion of an IC card.In Fig.5 - Fig.10, a catcher and 502 501 An IC card,As for a water proof dustproof lid knob and 902, 701 and 702 are [an up-and-down spring unit and 1001] the guides for insertion a vertical slide water proof dustproof lid and 903 a card end support component and 901, and other codes are the same as that of the case of Fig.1 - Fig.4.

[0019]The terminal for IC cards by the first embodiment of the present invention, When attached to the belt 403, as can be in the state where it is shown in Fig.5 (a), clock information is displayed on LCD unit 301, and it can usually be used as a wrist watch and it is shown in Fig.5 (b). It can be used by attaching to the catcher 501, being able to attach to the belt of a bag and trousers, etc. Also in this case, clock information can be displayed on LCD unit 301, and it can usually be used as a clock. The state where IC card 502 was inserted in the terminal for IC cards of the state as a wrist watch shown in Fig.5 (a) is shown in Fig.5 (c). Two sides of the corner of a card are positioned by the card end support components 701 and 702, IC card 502 is inserted,

and the contact on a card is connected with the IC contact part 308.
[0020]The state where IC card 502 was inserted is shown in the terminal for IC cards in the state where the back side of the hand of the left arm was equipped, and IC card 502 is inserted in Fig.6 (a) from the upper right, and is inserted in it with 45 inclination to the direction of 12:00 of a clock. At this time, it will be placed on the back of a hand, and an IC card is held stably, and the portion which comes out to the outside of the terminal of IC card 502 does not become the obstacle of operation with the right hand. In Fig.6 (a), the rectangular head shown in the LCD lens 110 shows a position with IC card-like contact, and its dimension. IC card 502 can be inserted from a different direction by a unit of 90 degree to the path of insertion shown in Fig.6 (a), as shown in Fig.6 (b). When the direction of a shown in Fig.6 (b) is equivalent to the state of Fig.6 (a) and the back side of the hand of a right arm is equipped with the terminal for IC cards, the insertion from c is effective, the palm of the left arm -- when a side is equipped, the insertion from b is effective -- the palm of a right arm -- when a side is equipped, the insertion from d is effective.
[0021]The rotation card slot 310 in which IC card 502 is inserted, As shown in Fig.7, have the card end support components 701 and 702 which support two sides of IC card 502 inserted, and it is constituted, It can be rotated by rotation of the component which constitutes the rotation slot unit 401 described by Fig.4, and can be set as one of two or more of the directions of card insertion described by Fig.6.And after the path of insertion is set up once, it is locked so that the path of insertion of IC card 502 may not change with rotation lock buttons 402. The portion with which the two card end support components 701 and 702 are not connected serves as an outside open hole, and serves as the garbage extraction hole 201 which this hole described by the above-mentioned. The garbage included in the inside of a slot is discharged by the insertion operation of a card at the time of insertion of an IC card.
[0022]It may be made to insert the path of insertion of IC card 502 not only from the example described by Fig.6 but from what kind of direction. However, when IC card 502 is inserted, it is required to be able to support and position by two sides of a card, as the IC card was mentioned above.
[0023]Next, with reference to Fig.8, it describes about changing application by rotating the bezel part 106. As described by Fig.1 and Fig.2, around the bezel part 106,The function / application setting mark 107, and the issuer application mark sticking part 108 are arranged, Application can be switched by rotating the bezel part 106 and positioning these one in the position of the application selection mark 109. By four somewhat large round marks which gave the slash being a function / application setting mark 107 in Fig.8, and positioning these one in the position of the application selection mark 109, The functions and applications which can choose the function with which a body part is equipped, and application and with which a body part is equipped are a clock function, an alarm function, a calculator function, simple game functions, fortune-telling, etc., for example. eight small round marks show -- it is the issuer application mark sticking part 108, and the application which it has in IC card 502 can be chosen by positioning these one in the position of the application selection mark 109. The applications which it has in an IC card are the personal information on the check of hysteresis information, such as monthly [to the balance confirmation of electronic money, and the purchase of goods], and a goods-purchased exception, money management information, settlement information, list of names, an address book, a telephone directory, etc., schedule information, private-information-proctection ID management information, etc., for example.
[0024]As various kinds of applications which were mentioned above were mentioned above,

when it is chosen, the initial screen is displayed on the display screen of LCD unit 301. Subsequent operation is mentioned later. In the above-mentioned, the function / application setting mark 107 was described for providing four pieces and the eight issuer application mark sticking parts 108, but these numbers can be made into any number.

[0025]In the description to the above-mentioned, the rotation card slot 310 is outside open, and water, dust, etc. enter easily. The first embodiment of the present invention can provide the water proof dustproof lid of a sliding type at the entrance of the rotation card slot 310, in order to prevent such a thing. This water proof dustproof lid has the collar-like part material which plugs up the entrance and the garbage extraction hole 201 of the rotation card slot 310, as shown in Fig.9, It is constituted by the vertical slide water proof dustproof lid 901 constituted up and down with the up-and-down spring unit 903 so that a slide was possible, and the water proof dustproof lid knob 901 provided by the flange. In the state where the IC card is not inserted, it will be in the state where the entrance and the garbage extraction hole 201 of the rotation card slot 310 were closed by the collar-like part material of the vertical slide water proof dustproof lid 901 pushed up with the up-and-down spring unit 903, and entering of water, dust, etc. will be prevented. An IC card is inserted at the time of insertion of an IC card, depressing the water proof dustproof lid knob 901 by an IC card. That is, if the water proof dustproof lid knob 901 is depressed by an IC card, the entrance and the garbage extraction hole 201 of the rotation card slot 310 will open, and it will become possible to insert an IC card easily.

[0026]Now, although described in the above-mentioned about some variations which insert IC card 502 from an oblique direction to the body part which constitutes the terminal for IC cards, the first embodiment of the present invention can insert IC card 502 from just beside [of a body part], as shown in Fig.10. In this case, the guide 1001 for insertion of linear shape is provided by the surface or the back surface of IC card 502 with convex for support in the guide for insertion, and the predetermined position of a card. Although not shown in a figure, inside the card slot of the terminal for IC cards, the slot which engages with this guide 1001 for insertion is provided.

[0027]Fig.11 is a figure which describes the modification of the first embodiment of the present invention described by the above-mentioned, and describes about the modification of this first embodiment hereafter.

[0028]Although many function / application setting mark 107, and the issue application mark sticking part 108 were provided in the bezel part 106, the first embodiment of the present invention mentioned above, As the modification shown in Fig.11 provides only the application selection mark 109 in the bezel part 106, it miniaturizes the bezel part 106. And it is made to display an application setting mark on the display part of an LCD unit.

[0029]The example which shows all the applications AP1-AP4, i.e., basic applications usable only at a body part, which can be displayed, and the applications C1-C8 currently held at the IC card to the display part is shown in Fig.11 (a). Such applications can be chosen by positioning in the position of the application which is having the application selection mark 109 which makes rotate the bezel part 106 and is provided by the bezel part 106 displayed. Fig.11 (b) shows the state at the time of initial use, and the usable applications AP1-AP4 are displayed only by a body part, and it shows that the application selection mark 109 is positioned in the position of AP4. And if the application selection mark 109 is positioned in the position of AP1 as shown in Fig.11 (c), an usable menu will be displayed by application AP1. And the C button 105 and OK button 104 function as buttons of up-and-down scrolling, and these menus become selectable. If one the C button 105 or OK button 104 after another which functions as a button of up-and-down scrolling is pushed, menus also including the menu which was not displayed since the display

screen was small will be displayed cyclically. The selected menu is determined by the long aggressiveness of OK button 104, or serves as a display of the following screen of the menu.
[0030]in addition -- it is scrolling when a button is detached at the time of the usual up-and-down scrolling, in order to operate the long aggressiveness of a button -- opportunity Yoshiyuki ****** -- to make it like and what is necessary is just made to consider it as determination by long aggressiveness
[0031]IC card 502 is inserted and Fig.11 (d) shows the state where the application selection mark 109 was positioned in the position of the application C1 which shows the application currently held at the IC card, In the basic applications AP1-AP4, the usable application currently held at the IC card, and an illustrated example, the applications C1-C4 are displayed. In this example, that the mark of three angles of the position of the application C1 is displayed black shows that that application is what moves the application in an IC card to a body part, and saves it. And if the application selection mark 109 is positioned in the position of the application C1 currently displayed, as shown in Fig.11 (e), an usable menu will be displayed with the application C1. Selection of these menus and operation can be performed like Fig.11 (c).
[0032]The flow chart which Fig.12 describes about operation processing of the terminal for IC cards by the first embodiment of the present invention, and Fig.13 are figures which describe the example of a display screen displayed in the middle of processing, hereafter, use Fig.12 and Fig.13 and describe about operation flows and the example of a display screen.The operation flows described by Fig.12 are the examples at the time of providing a function / application setting mark 107, and the issuer application setting mark 108 on the upper surface of the bezel part 106.
[0033](1) In the usual waiting state, as shown in Fig.13 (a), time shall be shown by the clock function which is basic applications. In this state, if a user inserts IC card 502 in a terminal, it will not illustrate to a display screen, but the display of "please rotate a bezel and choose application" is performed (Steps 1201-1203).
[0034](2) A user rotates a bezel after insertion of direct or an IC card from the screen of a waiting state, If the function / application setting mark 107 which is a selection mark of basic applications are positioned in the position of the application selection mark 109, the menu of a selection of function of the application will be displayed. The state of this display is what was described by Fig.11 (c) (Steps 1204-1206).
[0035](3) Choose one of the functions with the C button 105 and OK button 104, and determine by the long aggressiveness of OK button 104. Henceforth, it will be in the state where the display of the function is performed, and will be in a waiting state (Steps 1207, 1208, and 1201).
[0036](4) If a user rotates a bezel and positions the issue application setting mark 108 which is a selection mark of the application in a card in the position of the application selection mark 109, As shown in Fig.13 (b), the application name (brand) A, for example, CD shop etc., is displayed (Steps 1204, 1209, and 1210).
[0037](5) After indicating "insert a card" etc. and urging insertion of a card to it when the IC card is not inserted since this application is the application in the IC card inserted, it checks the existence of card insertion (Steps 1211 and 1212).
[0038](6) If the contents of the application downloaded from the card are in a main part when the card is not inserted with the check of Step 1212, as shown in Fig.13 (c), menus, such as the function of the application, for example, a game, and a shopping history, will be displayed. If the card is inserted, as shown in Fig.11 (d), menus, such as the application function in an IC card, for example, a balance display, and a point, will be displayed (Steps 1213 and 1214).

[0039](7) Carry out up-and-down scrolling with one of the menus displayed at Steps 1213 and 1214, the C button, and an OK button, choose, or display elimination and an end and choose (Step 1215).
[0040](8) When you would like to start the menu selected at Step 1215, Or when the display of elimination is chosen, the menu is determined by the long aggressiveness of an OK button, For example, it can be considered as a display as shown in Fig.13 (e), and the menu, for example, the screen of a game, can be displayed and performed, or the balance can be displayed (Steps 1216, 1217, 1219, and 1220).
[0041](9) After determination at Steps 1219 and 1220, Or since the menu which returns as it is canceled, and it returns to Step 1215 and it is shown in Fig.13 (f) after the end of a game and a balance display will be displayed if the long aggressiveness [the C button] in the middle of execution of a menu, By long aggressiveness [an OK button], it returns to the state of an application start of Step 1214 (Steps 1221 and 1222).
[0042](11) It can return to the display of the waiting state of Step 1201 by long aggressiveness [Step 1215 / displaying the menu of an end and / an OK button] (Steps 1218 and 1224).
[0043]Fig.14 is a flow chart described about operation processing of the terminal for IC cards by the modification of the first embodiment of the present invention, and describes about this hereafter. The example described here is an example at the time of making small the bezel part described by Fig.11, and providing only an application selection mark in a bezel part, and since the most is the same as that of the flow shown in Fig.12 fundamentally, below, suppose it that only the portion which is different from the case of Fig.12 is described.
[0044]One of the points which are different from the flow of Fig.12 by the flow shown in Fig.14.The user in Step 1205 of Fig.12 rotates a bezel part, Instead of operation of positioning the function / application setting mark 107 which is a selection mark of basic applications in the position of the application selection mark 109, a user rotates a bezel part, It is the point made into the position of the selection mark of the basic applications currently displayed with the operation of Step 1401 in which the application selection mark 109 is positioned.
[0045]A user [in / in other one / Step 1209 of Fig.12] rotates a bezel, The issue application setting mark 108 which is a selection mark of the application in a card to the operation positioned in the position of the application selection mark 109 Instead of, It is the point which selectable application was displayed on the display part, and the user rotated the bezel part, and was made into the position of the application mark currently displayed with the operation of Steps 1402 and 1403 in which the application selection mark 109 is positioned.
[0046]The perspective view showing the appearance of the terminal for IC cards according [Fig.15] to the second embodiment of the present invention, The 4th page figure showing the appearance of the IC card terminal according [Fig.16] to a second embodiment, The cross sectional view of the terminal for IC cards according [Fig.17] to a second embodiment, the figure which Fig.18 describes about pasting of the application label to the terminal for IC cards by a second embodiment,The figure with which the figure, Fig.20, and Fig.21 which Fig.19 describes about the outside dimension of a second embodiment describe the modification of a second embodiment, and Fig.22 are figures described about reversal of a display.In Fig.15 - Fig.22, a main part upper case and 1502 1501 A main part lower case,An application change rotary switch and 1504 1503 A sub application change rotary switch, 1505 a determination button and 1506 a liquid crystal display section and 1507 A liquid-crystal-display flip vertical button, 1508 a battery lid and 1509 an IC card loading slot and 1510 An application setting mark, 1511 an application selection mark and 1701 a circuit board and 1702 A board part article, 1703

-- a liquid crystal window and 1704 -- as for a battery contact and 1708, IC card contact and 1706 are [a card slot lid and 1710] rotary switch contact and a determination button recognition part article a cell and 1709 a frame and 1707 a liquid crystal and 1705.
[0047]As the second embodiment of the present invention been the example which constituted the present invention as a key case type and shown in the perspective view of the whole shown in Fig.15, and the 4th page figure shown in Fig.16.It has the IC card loading slot 1509 which inserts an IC card in cylindrical [a part of], and has the appearance shape which attached four[which equip the upper surface with the liquid crystal display section 1506] -sided prisms. And the terminal for graphic display IC cards, The application change rotary switch 1503 and the sub application change rotary switch 1504 which made cylindrical shape the side surface of the longitudinal direction of the body part constituted with the main part upper case 1501 and the main part lower case 1502 are provided, The battery lid 1508 which has a strap hole is provided with and constituted by the short cylindrical part provided by the side surface of an opposite side.
[0048]And on the neighborhood upper surface of a bond part with the application change rotary switch 1503 of the main part upper case 1501, The application selection mark 1511 is attached and the plurality 1510, for example, six application setting marks, is attached to the circumference near the bond part with the body part of the application change rotary switch 1503. By rotating the application change rotary switch 1503 and positioning one of the application setting marks 1510 of these in the position of the application selection mark 1511, The application currently previously assigned to the application setting mark 1510 can be chosen. Thus, after choosing one application, usable sub application can be chosen in the application by rotating the sub application change rotary switch 1504.
[0049]On the upper surface of the body part constituted with the main part upper case 1501 and the main part lower case 1502, Reverse the liquid crystal display section 1506 and the direction of a printable character, and the C button in a first embodiment and the liquid-crystal-display flip vertical button 1507 which has an equivalent function are provided, The card slot 1509 is provided at the transverse-plane side of the doubling portion of the main part upper case 1501 and the main part lower case 1502, The determination button 1505 which has a function equivalent to the OK button in a first embodiment is provided by the side surface of the sub application change rotary switch 1504.
[0050]Inside the terminal for IC cards by the second embodiment of the present invention, As shown in the A-A section of the Fig.16 of Fig.17 (a) and Fig.17 (b), and a B-B section.The liquid crystal window 1703 and the liquid crystal 1704 which constitute the liquid crystal display section 1506, The circuit board 1701 with the IC card contact 1705 and the board part article 1702 for connection with the contact by the side of an IC card, The frame 1706 of two sheets which constitutes a card slot, and the circuit board 1701' with the board part article 1702' of one more sheet are arranged in order in the direction of at the bottom from the upper surface of the body part. Inside the application change rotary switch 1503, The switch contact and the determination button recognition part article 1710 of the two rotary switches 1503 and 1504 are provided, and the position inside the battery lid 1508 is further equipped with the battery contact 1707 and the cell 1708.
[0051]As shown in the Fig.17 (c) in which the state where the card slot 1509 was expanded is shown, in the entrance of the card slot 1509, The card slot lid 1709 is provided, and this lid 1709 is rotated by down [inside] in the direction shown in an arrow by insertion of an IC card, and enables insertion of a card. And in the state where the card is not inserted, it is held with power, such as a spring, at an illustrated position, the card slot 1509 is plugged up, and the lid 1709 is

prevention ******** about entering of water, dust, etc.
[0052]Although the second embodiment of the present invention described by the above-mentioned assumed that the plurality 1510, for example, six application setting marks, is attached to the circumference near the bond part with the body part of the application change rotary switch 1503, Only by such a mark. [what kind of application is set up and] Although it cannot but understand at a glance but the application must be checked according to the state where it was chosen and displayed, in the embodiment of the present invention, He sticks the label in which an application name is shown on the circumference of the application change rotary switch 1503, and is trying to know the established state of application at a glance.
[0053]The example shown in Fig.18 (a) is an example which stuck the label which only described the small application name next to the axial direction of the application setting mark 1510. The example shown in Fig.18 (b) next to the axial direction of the application setting mark 1510, The mark which shows pasting ****** for the label which described the application name is previously provided as a label attachment guide by slot, a dent, printing, etc., and it is the example which stuck the label which described the application name here.
[0054]The Fig.19 which wrote the dimension in the front view shows size ** of the size of the terminal for IC cards by the second embodiment of the present invention described by the above-mentioned. Since the dimensions of the IC card standardized in every direction are 85 mm x 54 mm, the body part of the terminal for IC cards by a second embodiment, Since the dimension of the transverse direction is 60 mm as shown in a figure, and the contact position on an IC card is in the portion from the edge of the longitudinal direction of an IC card to 21.5 mm, the dimension of the depth direction of a body part is constituted as 24 mm. Thereby, at the time of insertion of an IC card, the contact surface of an IC card is stored in a main part, and connection with an internal circuit is attained.
[0055]The relation between a body part and a cylindrical part is constituted so that a part of body part may project in one side of a cylindrical part, so that he can understand the second embodiment of the present invention described above from the front view, a perspective view, etc. The modification of this second embodiment is shown in Fig.20, and the relation between a body part and a cylindrical part constitutes this modification so that a part of body part may project on both sides of a cylindrical part. Also in this case, by supposing that it is the same as that of the case where the depth size and width dimension of a body part are described by Fig.19, at the time of insertion of an IC card, the contact surface of an IC card is stored in a main part, and connection with an internal circuit is attained.
[0056]The modification of the second embodiment shown in Fig.21 is an example which used as the multiple pillar the cylindrical part of the second embodiment described by the above-mentioned, and is a four-sided prism in an illustrated example. And as for this example, the application setting mark 1510 is provided by each surface of four angles. The modification as a multiple pillar can be constituted as eight-sided six-sided not only four illustrated angles but triangular prisms and a prism, and a prism, still larger multiple pillars, etc.
[0057]When the usual displaying condition displayed on the liquid crystal display section 1506 is shown in Fig.22 (a), this state has the battery lid side of the terminal for IC cards with the left hand and the rotor switches 1503 and 1504 are operated with the right hand, it is in the state where a character can be normally seen from a user. On the other hand, the state where reversed the character and it displayed is shown in Fig.22 (b). This state is in the state where a character can be normally seen from a user, when showing the information currently displayed on other persons, and it is effective, and it has the battery lid side of the terminal for IC cards with the

right hand and the rotor switches 1503 and 1504 are operated with the left hand. The long aggressiveness of the liquid-crystal-display flip vertical button 1507 can perform the inversion of such a character.

[0058]Time can be displayed on the liquid crystal display section 1506, or it can also prevent from displaying nothing on it in the state of usually carrying around, also in the second embodiment of the present invention described by the above-mentioned. As already described, the liquid-crystal-display flip vertical button 1507, Also have a function of the C button in a first embodiment, and the determination button 1505, Since it has a function of the OK button in a first embodiment, the operation after choosing application with the rotary switches 1503 and 1504, Since operation of these buttons 1505 and 1507 can perform like the case of a first embodiment, the description of operation is omitted here. Since the second embodiment described by the above-mentioned has the small width of the liquid crystal display section 1506, it can perform only the display which is at most about two lines, but it can display required information by making it scroll one character string after another with the determination button 1505.

[0059]The perspective view showing the appearance of the terminal for IC cards according [Fig.23] to a 3rd embodiment of the present invention, The 3rd page figure showing the appearance of the IC card terminal according [Fig.24] to a 3rd embodiment, the cross sectional view of the terminal for IC cards according [Fig.25] to a 3rd embodiment, the figure with which Fig.26 describes the modification of a 3rd embodiment, and Fig.27 are figures which describe the example of a display screen.In Fig.23 - Fig.26, a frame and 2302 2301 A main part upper case,2303 a liquid crystal display section and 2304 a card slot and 2305 A determination button, 2306 -- a button type crosshair cursor and 2307 -- the hole for straps, and 2308 -- as for a board part article and 2504, a main part lower case and 2502 are [contact and 2601] selection and a determination button a card insertion pilot switch and 2505 a circuit board and 2503 a strap and 2501.

[0060]A 3rd embodiment of the present invention is the example which constituted the present invention as a pendant type, as shown in the perspective view of the whole shown in Fig.23, and the 3rd page figure shown in Fig.24, it has the plane shape of long and slender elliptic form, and the whole form is formed with the swelling toward the central part.And the terminal for IC cards by a 3rd embodiment of the present invention, As shown in Fig.23 and Fig.25, the main part upper case 2301 and the main part lower case 2501 are attached to both sides of the frame 2301 which forms a periphery, 2307 is provided for the hole for straps by the end of the frame 2301, and the appearance is formed.The liquid crystal display section 2303 is arranged in the center of the upper surface of the main part upper case 2302, and the determination button 2305 which has a function of determination and release, and the button type crosshair cursor 2306 which has a function of selection and scrolling are arranged at the portion of the both sides of the liquid crystal display section 2303. A notch is provided by a part of longitudinal direction of a frame, and the card slot is formed between the main part upper case 2301 of this portion, and the main part lower case 2501. The sizes of a 3rd embodiment are 98 mm in dimension of a longitudinal direction, 35 mm in maximum width dimension, and 16 mm in width dimension as the near dimension is put in and shown in the 3rd [which is shown in Fig.24] page figure. The longitudinal direction dimension of the card slot 2304 is set as slightly larger width than the width dimension of 54 mm of an IC card. And only the dimension which the contact on the inserted IC card can connect to an internal circuit is required for a width dimension also in this case.

[0061]The modification of the second embodiment of the present invention shown in Fig.26, Instead of two buttons of the determination button 2305 and the button type crosshair cursor 2306 in the example shown in Fig.23 - Fig.25, the point of the frame 2301 is cut, and the selection and the determination button 2601 which performs the function of selection, scrolling, and determination and release are provided, and is constituted.Rotation and a depression are possible for this selection and determination button 2601, and it can make rotation able to perform selection of application, and scrolling, and can make a depression perform determination and release.
[0062]Next, it describes about operation and a display screen, referring to the example of the display screen shown in Fig.27.
[0063]Screen 1 shown in Fig.27 is a display example in the usual state which nothing has carried out, and is in the state which shows a date and time as two line displays in this example. The application with which the inside of a main part is equipped is sequentially displayed selectable by moving the button type crosshair cursor 2306 up and down, without inserting an IC card in this state. This example is shown as Screen 4, and the application currently displayed by pushing the determination button 2305 can be determined and used. Screen 5 shows the example of a screen at the time of carrying out selection decision of the application "speak with a pet" here. In the case of two line displays, one sentence is displayed in 1 screen. moving the button type crosshair cursor 2306 up and down here -- the sentence order which shows the contents of the talk is sequentially displayed from a pet. In the case of one line display, the sentence before and behind one sentence which cannot be displayed in 1 screen can be displayed by moving the button type crosshair cursor 2306 to right and left. By the long aggressiveness of the determination button 2305, application can be ended and it can return to the state of Screen 1 to end operation of application. As a kind of application here, there are a word book, an address book, a telephone directory, etc., for example "today's fortune-telling" who shows in the figure, and besides "speaking with a pet."
[0064]If an IC card is inserted in the state of Screen 1, or a state like the state throat of Screens 4 and 5, the balance of the electronic money in an IC card currently held will be first displayed so that it may be shown as Screen 2. In this state, by moving the button type crosshair cursor 2306 up and down, the settlement-of-accounts history in various shops can be chosen sequentially, and can be displayed so that it may be stored in an IC card and may be shown in the usable application 3, for example, a screen. And if long aggressiveness [the state where any screen is displayed / the determination button 2305], it will return to the display of a card balance, or if an IC card is taken out, it will return to the state of the screen before IC card insertion. If long aggressiveness [the state where the balance display is performed / the determination button 2305], it will return to the state of the screen before IC card insertion.
[0065]The perspective view showing the appearance of the terminal for IC cards according [Fig.28] to a 4th embodiment of the present invention, The 5th page figure showing the appearance of the IC card terminal according [Fig.29] to a 4th embodiment, The cross sectional view of the terminal for IC cards according [Fig.30] to a 4th embodiment, the figure which describes the state where Fig.31 had a terminal for IC cards in the hand, the figure with which Fig.32 describes the modification of a 4th embodiment, and Fig.33 are figures which describe the example of a display screen.In Fig.28 - Fig.32, a main part upper case and 2802 2801 A main part lower case,2803 a LCD lens and 2804 lower, following and the OK button, and 2805 A slide knob, The upper, front and a Cancel button, and 2807 2806 A key case hole, 2808 -- a card slot and 3001 -- as for an LCD unit and 3005, a main substrate and 3003 are [a card case unit and

3201] display parts a battery part and 3006 a contact surface and 3004 a card guide plate and 3002.
[0066]A 4th embodiment of the present invention is formed in form which cut off some fans in which the lower surface side is broader than the upper surface side, as been the example constituted as a key case type and the present invention shown in the perspective view of the transverse plane shown in Fig.28 (a), the perspective view of the back surface shown in Fig.28 (b), and the 5th page figure shown in Fig.29.And the terminal for IC cards by this 4th embodiment, The LCD lens 2803 which a body part is formed with the main part upper case 2801 and the main part lower case 2802, and equips an inside with an LCD unit and constitutes a display part on the upper surface of the main part upper case 2801, Lower, following, OK button 2804, and the upper, front and the Cancel button 2806 which have a function equivalent to the C button and OK button in the first embodiment of the present invention are provided, The slide knob 2805 for application selection is provided and constituted by the portion which a part of upper case upper surface was hollowed, and was formed.
[0067]The terminal for graphic display IC cards forms the portion which hollowed the main part lower case 2802 by the side of the lower surface of the doubling part of the main part upper case 2801 and the main part lower case 2802 in the thickness of the IC card, The card slot 2808 is formed here, and further, the key case hole 2807 is provided in a corner of a body part, and it is constituted. The sizes of this 4th embodiment are 75 mm in dimension of a longitudinal direction, 40 mm in maximum width dimension, and 12 mm in width dimension as the near dimension is put in and shown in the 5th [which is shown in Fig.29] page figure. The longitudinal direction dimension of the card slot 2808 is set as slightly larger width than the width dimension of 54 mm of an IC card. And only the dimension which the contact on the inserted IC card can connect to an internal circuit is required for the width dimension of a body part also in this case.
[0068]Inside the terminal for IC cards by a 4th embodiment of the present invention, The LCD lens 2803 and LCD unit 3004 which constitute a liquid crystal display section as shown in the cross sectional view of Fig.30, The main substrate 3002 with the contact surface 3003 for connection with the contact by the side of an IC card and the card guide plate 3001 which constitutes a card slot are arranged in order in the direction of at the bottom from the upper surface of the body part. The card case unit 3006 and the battery part 3005 are provided by a part of near upper surface inside a body part.
[0069]The state where it had a terminal for IC cards by a 4th embodiment in the hand is shown in Fig.31 (a) and Fig.31 (b). When it has a terminal for IC cards by a 4th embodiment in a hand so that the longitudinal direction of an IC card may turn up after inserting an IC card as shown in Fig.31 (a), In or any [at the time of having in a hand so that the longitudinal direction of an IC card may become width after inserting an IC card as shown in Fig.31 (b)] case, It can hold only single hand and, moreover, the slide knob 2805 for application selection can be operated by the digiti manus holding a terminal.
[0070]Since it will become difficult to read a printable character sequence if a character string is displayed on the longitudinal direction of a display part when it has in a hand so that the longitudinal direction of an IC card may become width as shown in Fig.31 (b), the terminal for IC cards can be constituted so that it may be possible to eliminate this. In this case, the terminal for IC cards provides the display part 3201 which made the aspect ratio of the display part small and in which a lateral display is possible like the modification shown in Fig.32, and is constituted. And a character string is rotated 90 degree and it displays on a transverse direction.

What is necessary is to provide a rotational menu at the last of the menu displayed, and for lower, following, and OK button 2804 just to be made to perform control of this rotation.
[0071]Time can be displayed on LCD unit 3004, or it can also prevent from displaying nothing on it in the state of usually carrying around, also in a 4th embodiment of the present invention described by the above-mentioned. As already described, the upper, front, and Cancel button 2806, Have a function of the C button in a first embodiment, and lower, following, and OK button 2804, Since it has a function of the OK button in a first embodiment, the operation after choosing application with the slide knob 2805, Since operation of the above-mentioned buttons 2806 and 2804 can perform like the case of a first embodiment, the description of operation is omitted here. A 4th embodiment described by the above-mentioned is made to perform the display of three lines to a liquid crystal display section.
[0072]Next, with reference to Fig.33, it describes about some of display examples by the display of three lines.
[0073]The example of the menu screen is shown in Fig.33 (a), and the mark which shows that the menu which scrolls a menu on left-hand side up and down, and is not displayed on it with the scroll knob 2805 can be displayed is displayed. And this example shows that the menu of alarm is selectable now. The mark which shows that there is the next page, for example, a setting screen, to the menu of a selective state is displayed on the right-hand side of a screen, and the following page can be displayed on it with the button 2804. The case of other below-mentioned examples of the meaning of the mark on the display screen mentioned above is also the same.
[0074]The display example at the time of carrying out selection decision of a money controlling function / the calculator function is shown in Fig.33 (b), and, by a diagram, the state where the used amount by the present of money, this used amount, etc. were displayed is shown. The display example at the time of carrying out selection decision of a clock function/the alarm function is shown in Fig.33 (c), and the present time and the present date are displayed, and it is shown that alarm is set to ON. The display example at the time of carrying out selection decision of the simple schedule function is shown in Fig.33 (d), three schedules are displayed with time and the schedule at the time of the present is shown by the mark of alarm.
[0075]
[Effect of the Invention]As described above, according to the present invention, the terminal for IC cards which was excellent in portability by the small size for treating the multi application IC card which can be used common to various kinds of electronic-monetary systems, a credit card system, etc. can be provided.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention]The present invention relates to the terminal for IC cards, and relates to the terminal for IC cards which can treat the IC card in which two or more applications were stored especially.

[Translation done.]

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PRIOR ART

[Description of the Prior Art]In recent years, various kinds of electronic-monetary systems which use an IC card, and various kinds of credit card systems which use an IC card are proposed. The microprocessor to which the IC card used for these systems has a communication function in the inside, When it is given by a processing program, the balance of electronic money, and use of a card and the mark serve as a specified value, it has a memory by EEPROM etc. which store the point which can receive predetermined money and goods, and is constituted. And extraction and insertion of electronic money is possible for the IC card used for electronic money among other IC cards by using a terminal for exclusive use via the electronic-monetary system arbitrarily constituted via a communication line in the terminal with which a bank, a store, an individual residence, etc. are equipped so that connection is possible. The IC card used for a credit receives the check of the justification of the card from a credit company via the terminal with which a store etc. are equipped, and the above-mentioned point is stored after processing of merchandise purchase etc.
[0003]And the multi application IC card whose correspondence was enabled by the IC card of one sheet is also proposed to various kinds of systems which were mentioned above.
[0004]The technology described in JP,H11-39445,A etc. is known, for example as a prior art about the system which uses this kind of multi application IC card, and a multi application IC card.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention]As described above, according to the present invention, the terminal for IC cards which was excellent in portability by the small size for treating the multi application IC card which can be used common to various kinds of electronic-monetary systems, a credit card system, etc. can be provided.

[Translation done.]

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TECHNICAL PROBLEM

[Problem to be solved by the invention]A multi application IC card common to the electronic-monetary system of the various kinds proposed by the above-mentioned, and various kinds of credit card systems, Since what is necessary is just only considering using it at a financial institution, a store, etc. to walk around with the IC card of one sheet, it can be said that portability is dramatically good. However, the user has the demand of liking to check the information in an IC card, by the place where one has gone etc., for this reason it is small and the terminal excellent in portability is required.
[0006]There is the object of this invention in providing the terminal for IC cards which was excellent in portability by the small size for treating the multi application IC card which can be used common to various kinds of electronic-monetary systems mentioned above, a credit card system, etc.

[Translation done.]

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MEANS

[Means for solving problem]In the terminal for IC cards treating the multi application IC card which can use the aforementioned purpose common to an electronic-monetary system and two or more credit card systems according to the present invention, A terminal body part attaches to an arm with a belt, Or it is constituted by the clock type in which attaching to a bag by a catcher is possible, and a time stamp is possible, a display part is provided by the body part upper surface, a pivotable IC card loading slot is provided by the side surface, and it is attained by having enabled insertion of the IC card from two or more directions.
[0008]Again the aforementioned purpose by storing the contact on an IC card inside a body part, when an IC card is inserted in the entrance of the aforementioned IC card loading slot, By having a lid with the knob which opens a loading slot, by equipping the circumference of the aforementioned display part with a pivotable bezel part, and making the aforementioned body part upper part rotate a bezel part, It is attained by changing the available application stored in the aforementioned body part and the IC card.
[0009]In the terminal for IC cards treating the multi application IC card which can use the aforementioned purpose common to an electronic-monetary system and two or more credit card systems, It is attained, when the display part was provided by the terminal body part upper surface, the pivotable cylindrical part which has a rotary switch in a side surface was provided, the IC card loading slot was provided by the terminal body subordinate surface and it was constituted by the key case type.
[0010]By having stuck the label in which the aforementioned purpose described two or more applications in the above-mentioned pivotable cylindrical part, It is attained by that the display of the aforementioned display part can be reversed again by the above-mentioned pivotable cylindrical part's having been constituted by the double ring, and having equipped the end with the determination button further.
[0011]In the terminal for IC cards treating the multi application IC card which can use the aforementioned purpose common to an electronic-monetary system and two or more credit card systems, It is attained, when the terminal body part was constituted by the pendant type in the frame which constitutes a periphery, and the case provided by the upper and lower sides of this frame, the display part, the button type crosshair cursor, and the determination button were provided by the terminal body part upper surface and the IC card loading slot was provided by the terminal body part side surface.

[0012]
[Mode for carrying out the invention]Hereafter, the embodiment of the terminal for IC cards by the present invention is described in detail with Drawings.
[0013]The perspective view showing the appearance of the terminal for IC cards according [Fig.1] to the first embodiment of the present invention, The 4th page figure showing the appearance of the IC card terminal according [Fig.2] to a first embodiment, the cross sectional view of the terminal for IC cards according [Fig.3] to a first embodiment, and Fig.4 are exploded perspective views which describe the structure of the whole terminal for IC cards by a first embodiment.In Fig.1 - Fig.4, a main part upper case and 102 101 A rotation card slot,103 a bezel base part and 104 an OK button and 105 The C button, 106 a bezel part and 107 a function / application setting mark, and 108 An issuer application mark sticking part, 109 an application selection mark and 110 a LCD lens and 111 A main part lower case, 112 the lid for changing batteries, and 113 a belt mounting part and 114 A belt mounting hole, 201 a garbage extraction hole and 301 an LCD unit and 302 An LCD unit case, 303 a main substrate and 304 an interface board and 305 A contact ring part, 306 and 307 -- a rotation contact surface and 308 -- an IC contact part and 309 -- as for a rotation slot unit and 402, a rotation card slot and 311 are [a belt and 404] belt fitting pins a rotation lock button and 403 a rotatable base part and 401 a cell and 310.
[0014]The first embodiment of the present invention is applied to small clocks, such as a wrist watch, as shown in the top perspective view shown in Fig.1 (a), the back surface perspective view shown in Fig.1 (b), and the 4th page figure shown in Fig.2.And on the body part constituted with the main part upper case 101 and the main part lower case 111 as the terminal for graphic display IC cards is shown in Fig.1, The bezel base part 103 and the bezel part 106 which are constituted pivotable are provided, and the rotation card slot 310 which can insert the IC card which is not illustrated between the bezel base part 103 and the main part upper case 101 is formed, and it is constituted. OK button 104 and the C (clear) button 105 for operation are arranged at the position of the outside of the bezel base part 103 of the main part upper case 101, and the application selection mark 109 is arranged in the side surface of the bezel base part 103. The function / application setting mark 107, and the issuer application mark sticking part 108 for which the LCD lens 110 is arranged and the inner portion of the bezel part 103 formed circularly mentions the function later around the bezel part 103 are arranged. The lid 112 for changing batteries is provided by the main part lower case 111 by the side of the back surface, and the belt mounting part 113 which has the belt mounting hole 114 which connects the belt which is not illustrated is provided, and the terminal for graphic display IC cards is constituted. The dustpan broth hole 201 for garbage discharge is provided by the innermost part of the rotation card slot 310.
[0015]Inside the terminal for IC cards by the first embodiment of the present invention, As shown in the cross sectional view shown in Fig.3. The IC contact part 308 which makes connection between LCD unit 301, the main substrate 303 and the main substrate 303 which were stored in the LCD unit case 302, and the inserted IC card, the contact ring part 305 which makes connection between the main substrate 303 and other substrates, the rotation contact surfaces 306 and 307, The interface board 304, the cell 309, and the rotatable base part 311 are stored. The inside of the rotation card slot 310 is constituted as the rotation card slot 310.
[0016]Fig.4 shows the assembly situation of each component which constitutes the first embodiment of the present invention described by the above-mentioned as an exploded perspective view, and the portion to the rotatable base part 311 constitutes the rotation slot unit

401 from the LCD lens 110 in Fig.4. The component from the bezel part 106 of this rotation slot unit 401 to the rotation card slot 310, When changing the path of insertion of an IC card, it is constituted pivotable, and in the case of the application selection after card insertion, etc., the component from the bezel part 106 to the rotation contact surface 307 is pivotable.
[0017]It indicates Fig.4 that the terminal for IC cards is attached to the belt 403 so that it may be possible to usually use the first embodiment of the present invention as a wrist watch. Attachment to the belt 403 of the terminal for IC cards is performed by the belt mounting hole 114 and the belt fitting pin 404 of the belt mounting part 113 of the main part lower case 111 which were described by the above-mentioned.
[0018]The figure which describes the anticipated-use state of the terminal for IC cards and the insertion condition of an IC card according [Fig.5] to the first embodiment of the present invention, The figure described about the variation of the path of insertion of the state where Fig.6 attached the terminal for IC cards by the first embodiment of the present invention to the arm, and the IC card was inserted, and an IC card, The figure which Fig.7 describes about the path of insertion of a card slot, the figure which describes that Fig.8 rotates the bezel part 103 and chooses application,Fig.9 is a figure described about the composition of the water proof dustproof mechanism over a card slot, and a figure which Fig.10 describes about other examples of the path of insertion of an IC card.In Fig.5 - Fig.10, a catcher and 502 501 An IC card,As for a water proof dustproof lid knob and 902, 701 and 702 are [an up-and-down spring unit and 1001] the guides for insertion a vertical slide water proof dustproof lid and 903 a card end support component and 901, and other codes are the same as that of the case of Fig.1 - Fig.4.
[0019]The terminal for IC cards by the first embodiment of the present invention, When attached to the belt 403, as can be in the state where it is shown in Fig.5 (a), clock information is displayed on LCD unit 301, and it can usually be used as a wrist watch and it is shown in Fig.5 (b). It can be used by attaching to the catcher 501, being able to attach to the belt of a bag and trousers, etc. Also in this case, clock information can be displayed on LCD unit 301, and it can usually be used as a clock. The state where IC card 502 was inserted in the terminal for IC cards of the state as a wrist watch shown in Fig.5 (a) is shown in Fig.5 (c). Two sides of the corner of a card are positioned by the card end support components 701 and 702, IC card 502 is inserted, and the contact on a card is connected with the IC contact part 308.
[0020]The state where IC card 502 was inserted is shown in the terminal for IC cards in the state where the back side of the hand of the left arm was equipped, and IC card 502 is inserted in Fig.6 (a) from the upper right, and is inserted in it with 45 inclination to the direction of 12:00 of a clock. At this time, it will be placed on the back of a hand, and an IC card is held stably, and the portion which comes out to the outside of the terminal of IC card 502 does not become the obstacle of operation with the right hand. In Fig.6 (a), the rectangular head shown in the LCD lens 110 shows a position with IC card-like contact, and its dimension. IC card 502 can be inserted from a different direction by a unit of 90 degree to the path of insertion shown in Fig.6 (a), as shown in Fig.6 (b). When the direction of a shown in Fig.6 (b) is equivalent to the state of Fig.6 (a) and the back side of the hand of a right arm is equipped with the terminal for IC cards, the insertion from c is effective, the palm of the left arm -- when a side is equipped, the insertion from b is effective -- the palm of a right arm -- when a side is equipped, the insertion from d is effective.
[0021]The rotation card slot 310 in which IC card 502 is inserted, As shown in Fig.7, have the card end support components 701 and 702 which support two sides of IC card 502 inserted, and it is constituted, It can be rotated by rotation of the component which constitutes the rotation slot

unit 401 described by Fig.4, and can be set as one of two or more of the directions of card insertion described by Fig.6.And after the path of insertion is set up once, it is locked so that the path of insertion of IC card 502 may not change with rotation lock buttons 402. The portion with which the two card end support components 701 and 702 are not connected serves as an outside open hole, and serves as the garbage extraction hole 201 which this hole described by the above-mentioned. The garbage included in the inside of a slot is discharged by the insertion operation of a card at the time of insertion of an IC card.

[0022]It may be made to insert the path of insertion of IC card 502 not only from the example described by Fig.6 but from what kind of direction. However, when IC card 502 is inserted, it is required to be able to support and position by two sides of a card, as the IC card was mentioned above.

[0023]Next, with reference to Fig.8, it describes about changing application by rotating the bezel part 106. As described by Fig.1 and Fig.2, around the bezel part 106,The function / application setting mark 107, and the issuer application mark sticking part 108 are arranged, Application can be switched by rotating the bezel part 106 and positioning these one in the position of the application selection mark 109. By four somewhat large round marks which gave the slash being a function / application setting mark 107 in Fig.8, and positioning these one in the position of the application selection mark 109, The functions and applications which can choose the function with which a body part is equipped, and application and with which a body part is equipped are a clock function, an alarm function, a calculator function, simple game functions, fortune-telling, etc., for example. eight small round marks show -- it is the issuer application mark sticking part 108, and the application which it has in IC card 502 can be chosen by positioning these one in the position of the application selection mark 109. The applications which it has in an IC card are the personal information on the check of hysteresis information, such as monthly [to the balance confirmation of electronic money, and the purchase of goods], and a goods-purchased exception, money management information, settlement information, list of names, an address book, a telephone directory, etc., schedule information, private-information-proctection ID management information, etc., for example.

[0024]As various kinds of applications which were mentioned above were mentioned above, when it is chosen, the initial screen is displayed on the display screen of LCD unit 301. Subsequent operation is mentioned later. In the above-mentioned, the function / application setting mark 107 was described for providing four pieces and the eight issuer application mark sticking parts 108, but these numbers can be made into any number.

[0025]In the description to the above-mentioned, the rotation card slot 310 is outside open, and water, dust, etc. enter easily. The first embodiment of the present invention can provide the water proof dustproof lid of a sliding type at the entrance of the rotation card slot 310, in order to prevent such a thing. This water proof dustproof lid has the collar-like part material which plugs up the entrance and the garbage extraction hole 201 of the rotation card slot 310, as shown in Fig.9, It is constituted by the vertical slide water proof dustproof lid 901 constituted up and down with the up-and-down spring unit 903 so that a slide was possible, and the water proof dustproof lid knob 901 provided by the flange. In the state where the IC card is not inserted, it will be in the state where the entrance and the garbage extraction hole 201 of the rotation card slot 310 were closed by the collar-like part material of the vertical slide water proof dustproof lid 901 pushed up with the up-and-down spring unit 903, and entering of water, dust, etc. will be prevented. An IC card is inserted at the time of insertion of an IC card, depressing the water proof dustproof lid knob 901 by an IC card. That is, if the water proof dustproof lid knob 901 is

depressed by an IC card, the entrance and the garbage extraction hole 201 of the rotation card slot 310 will open, and it will become possible to insert an IC card easily.
[0026]Now, although described in the above-mentioned about some variations which insert IC card 502 from an oblique direction to the body part which constitutes the terminal for IC cards, the first embodiment of the present invention can insert IC card 502 from just beside [of a body part], as shown in Fig.10. In this case, the guide 1001 for insertion of linear shape is provided by the surface or the back surface of IC card 502 with convex for support in the guide for insertion, and the predetermined position of a card. Although not shown in a figure, inside the card slot of the terminal for IC cards, the slot which engages with this guide 1001 for insertion is provided.
[0027]Fig.11 is a figure which describes the modification of the first embodiment of the present invention described by the above-mentioned, and describes about the modification of this first embodiment hereafter.
[0028]Although many function / application setting mark 107, and the issue application mark sticking part 108 were provided in the bezel part 106, the first embodiment of the present invention mentioned above, As the modification shown in Fig.11 provides only the application selection mark 109 in the bezel part 106, it miniaturizes the bezel part 106. And it is made to display an application setting mark on the display part of an LCD unit.
[0029]The example which shows all the applications AP1-AP4, i.e., basic applications usable only at a body part, which can be displayed, and the applications C1-C8 currently held at the IC card to the display part is shown in Fig.11 (a). Such applications can be chosen by positioning in the position of the application which is having the application selection mark 109 which makes rotate the bezel part 106 and is provided by the bezel part 106 displayed. Fig.11 (b) shows the state at the time of initial use, and the usable applications AP1-AP4 are displayed only by a body part, and it shows that the application selection mark 109 is positioned in the position of AP4. And if the application selection mark 109 is positioned in the position of AP1 as shown in Fig.11 (c), an usable menu will be displayed by application AP1. And the C button 105 and OK button 104 function as buttons of up-and-down scrolling, and these menus become selectable. If one the C button 105 or OK button 104 after another which functions as a button of up-and-down scrolling is pushed, menus also including the menu which was not displayed since the display screen was small will be displayed cyclically. The selected menu is determined by the long aggressiveness of OK button 104, or serves as a display of the following screen of the menu.
[0030]in addition -- it is scrolling when a button is detached at the time of the usual up-and-down scrolling, in order to operate the long aggressiveness of a button -- opportunity Yoshiyuki ****** -- to make it like and what is necessary is just made to consider it as determination by long aggressiveness
[0031]IC card 502 is inserted and Fig.11 (d) shows the state where the application selection mark 109 was positioned in the position of the application C1 which shows the application currently held at the IC card, In the basic applications AP1-AP4, the usable application currently held at the IC card, and an illustrated example, the applications C1-C4 are displayed. In this example, that the mark of three angles of the position of the application C1 is displayed black shows that that application is what moves the application in an IC card to a body part, and saves it. And if the application selection mark 109 is positioned in the position of the application C1 currently displayed, as shown in Fig.11 (e), an usable menu will be displayed with the application C1. Selection of these menus and operation can be performed like Fig.11 (c).
[0032]The flow chart which Fig.12 describes about operation processing of the terminal for IC cards by the first embodiment of the present invention, and Fig.13 are figures which describe the

example of a display screen displayed in the middle of processing, hereafter, use Fig.12 and Fig.13 and describe about operation flows and the example of a display screen.The operation flows described by Fig.12 are the examples at the time of providing a function / application setting mark 107, and the issuer application setting mark 108 on the upper surface of the bezel part 106.

[0033](1) In the usual waiting state, as shown in Fig.13 (a), time shall be shown by the clock function which is basic applications. In this state, if a user inserts IC card 502 in a terminal, it will not illustrate to a display screen, but the display of "please rotate a bezel and choose application" is performed (Steps 1201-1203).

[0034](2) A user rotates a bezel after insertion of direct or an IC card from the screen of a waiting state, If the function / application setting mark 107 which is a selection mark of basic applications are positioned in the position of the application selection mark 109, the menu of a selection of function of the application will be displayed. The state of this display is what was described by Fig.11 (c) (Steps 1204-1206).

[0035](3) Choose one of the functions with the C button 105 and OK button 104, and determine by the long aggressiveness of OK button 104. Henceforth, it will be in the state where the display of the function is performed, and will be in a waiting state (Steps 1207, 1208, and 1201).

[0036](4) If a user rotates a bezel and positions the issue application setting mark 108 which is a selection mark of the application in a card in the position of the application selection mark 109, As shown in Fig.13 (b), the application name (brand) A, for example, CD shop etc., is displayed (Steps 1204, 1209, and 1210).

[0037](5) After indicating "insert a card" etc. and urging insertion of a card to it when the IC card is not inserted since this application is the application in the IC card inserted, it checks the existence of card insertion (Steps 1211 and 1212).

[0038](6) If the contents of the application downloaded from the card are in a main part when the card is not inserted with the check of Step 1212, as shown in Fig.13 (c), menus, such as the function of the application, for example, a game, and a shopping history, will be displayed. If the card is inserted, as shown in Fig.11 (d), menus, such as the application function in an IC card, for example, a balance display, and a point, will be displayed (Steps 1213 and 1214).

[0039](7) Carry out up-and-down scrolling with one of the menus displayed at Steps 1213 and 1214, the C button, and an OK button, choose, or display elimination and an end and choose (Step 1215).

[0040](8) When you would like to start the menu selected at Step 1215, Or when the display of elimination is chosen, the menu is determined by the long aggressiveness of an OK button, For example, it can be considered as a display as shown in Fig.13 (e), and the menu, for example, the screen of a game, can be displayed and performed, or the balance can be displayed (Steps 1216, 1217, 1219, and 1220).

[0041](9) After determination at Steps 1219 and 1220, Or since the menu which returns as it is canceled, and it returns to Step 1215 and it is shown in Fig.13 (f) after the end of a game and a balance display will be displayed if the long aggressiveness [the C button] in the middle of execution of a menu, By long aggressiveness [an OK button], it returns to the state of an application start of Step 1214 (Steps 1221 and 1222).

[0042](11) It can return to the display of the waiting state of Step 1201 by long aggressiveness [Step 1215 / displaying the menu of an end and / an OK button] (Steps 1218 and 1224).

[0043]Fig.14 is a flow chart described about operation processing of the terminal for IC cards by the modification of the first embodiment of the present invention, and describes about this

hereafter. The example described here is an example at the time of making small the bezel part described by Fig.11, and providing only an application selection mark in a bezel part, and since the most is the same as that of the flow shown in Fig.12 fundamentally, below, suppose it that only the portion which is different from the case of Fig.12 is described.
[0044]One of the points which are different from the flow of Fig.12 by the flow shown in Fig.14.The user in Step 1205 of Fig.12 rotates a bezel part, Instead of operation of positioning the function / application setting mark 107 which is a selection mark of basic applications in the position of the application selection mark 109, a user rotates a bezel part, It is the point made into the position of the selection mark of the basic applications currently displayed with the operation of Step 1401 in which the application selection mark 109 is positioned.
[0045]A user [in / in other one / Step 1209 of Fig.12] rotates a bezel, The issue application setting mark 108 which is a selection mark of the application in a card to the operation positioned in the position of the application selection mark 109 Instead of, It is the point which selectable application was displayed on the display part, and the user rotated the bezel part, and was made into the position of the application mark currently displayed with the operation of Steps 1402 and 1403 in which the application selection mark 109 is positioned.
[0046]The perspective view showing the appearance of the terminal for IC cards according [Fig.15] to the second embodiment of the present invention, The 4th page figure showing the appearance of the IC card terminal according [Fig.16] to a second embodiment, The cross sectional view of the terminal for IC cards according [Fig.17] to a second embodiment, the figure which Fig.18 describes about pasting of the application label to the terminal for IC cards by a second embodiment,The figure with which the figure, Fig.20, and Fig.21 which Fig.19 describes about the outside dimension of a second embodiment describe the modification of a second embodiment, and Fig.22 are figures described about reversal of a display.In Fig.15 - Fig.22, a main part upper case and 1502 1501 A main part lower case,An application change rotary switch and 1504 1503 A sub application change rotary switch, 1505 a determination button and 1506 a liquid crystal display section and 1507 A liquid-crystal-display flip vertical button, 1508 a battery lid and 1509 an IC card loading slot and 1510 An application setting mark, 1511 an application selection mark and 1701 a circuit board and 1702 A board part article, 1703 -- a liquid crystal window and 1704 -- as for a battery contact and 1708, IC card contact and 1706 are [a card slot lid and 1710] rotary switch contact and a determination button recognition part article a cell and 1709 a frame and 1707 a liquid crystal and 1705.
[0047]As the second embodiment of the present invention been the example which constituted the present invention as a key case type and shown in the perspective view of the whole shown in Fig.15, and the 4th page figure shown in Fig.16.It has the IC card loading slot 1509 which inserts an IC card in cylindrical [a part of], and has the appearance shape which attached four[which equip the upper surface with the liquid crystal display section 1506] -sided prisms. And the terminal for graphic display IC cards, The application change rotary switch 1503 and the sub application change rotary switch 1504 which made cylindrical shape the side surface of the longitudinal direction of the body part constituted with the main part upper case 1501 and the main part lower case 1502 are provided, The battery lid 1508 which has a strap hole is provided with and constituted by the short cylindrical part provided by the side surface of an opposite side.
[0048]And on the neighborhood upper surface of a bond part with the application change rotary switch 1503 of the main part upper case 1501, The application selection mark 1511 is attached and the plurality 1510, for example, six application setting marks, is attached to the circumference near the bond part with the body part of the application change rotary switch

1503. By rotating the application change rotary switch 1503 and positioning one of the application setting marks 1510 of these in the position of the application selection mark 1511, The application currently previously assigned to the application setting mark 1510 can be chosen. Thus, after choosing one application, usable sub application can be chosen in the application by rotating the sub application change rotary switch 1504.
[0049]On the upper surface of the body part constituted with the main part upper case 1501 and the main part lower case 1502, Reverse the liquid crystal display section 1506 and the direction of a printable character, and the C button in a first embodiment and the liquid-crystal-display flip vertical button 1507 which has an equivalent function are provided, The card slot 1509 is provided at the transverse-plane side of the doubling portion of the main part upper case 1501 and the main part lower case 1502, The determination button 1505 which has a function equivalent to the OK button in a first embodiment is provided by the side surface of the sub application change rotary switch 1504.
[0050]Inside the terminal for IC cards by the second embodiment of the present invention, As shown in the A-A section of the Fig.16 of Fig.17 (a) and Fig.17 (b), and a B-B section.The liquid crystal window 1703 and the liquid crystal 1704 which constitute the liquid crystal display section 1506, The circuit board 1701 with the IC card contact 1705 and the board part article 1702 for connection with the contact by the side of an IC card, The frame 1706 of two sheets which constitutes a card slot, and the circuit board 1701' with the board part article 1702' of one more sheet are arranged in order in the direction of at the bottom from the upper surface of the body part. Inside the application change rotary switch 1503, The switch contact and the determination button recognition part article 1710 of the two rotary switches 1503 and 1504 are provided, and the position inside the battery lid 1508 is further equipped with the battery contact 1707 and the cell 1708.
[0051]As shown in the Fig.17 (c) in which the state where the card slot 1509 was expanded is shown, in the entrance of the card slot 1509, The card slot lid 1709 is provided, and this lid 1709 is rotated by down [inside] in the direction shown in an arrow by insertion of an IC card, and enables insertion of a card. And in the state where the card is not inserted, it is held with power, such as a spring, at an illustrated position, the card slot 1509 is plugged up, and the lid 1709 is prevention ******** about entering of water, dust, etc.
[0052]Although the second embodiment of the present invention described by the above-mentioned assumed that the plurality 1510, for example, six application setting marks, is attached to the circumference near the bond part with the body part of the application change rotary switch 1503, Only by such a mark. [what kind of application is set up and] Although it cannot but understand at a glance but the application must be checked according to the state where it was chosen and displayed, in the embodiment of the present invention, He sticks the label in which an application name is shown on the circumference of the application change rotary switch 1503, and is trying to know the established state of application at a glance.
[0053]The example shown in Fig.18 (a) is an example which stuck the label which only described the small application name next to the axial direction of the application setting mark 1510. The example shown in Fig.18 (b) next to the axial direction of the application setting mark 1510, The mark which shows pasting ****** for the label which described the application name is previously provided as a label attachment guide by slot, a dent, printing, etc., and it is the example which stuck the label which described the application name here.
[0054]The Fig.19 which wrote the dimension in the front view shows size ** of the size of the terminal for IC cards by the second embodiment of the present invention described by the above-

mentioned. Since the dimensions of the IC card standardized in every direction are 85 mm x 54 mm, the body part of the terminal for IC cards by a second embodiment, Since the dimension of the transverse direction is 60 mm as shown in a figure, and the contact position on an IC card is in the portion from the edge of the longitudinal direction of an IC card to 21.5 mm, the dimension of the depth direction of a body part is constituted as 24 mm. Thereby, at the time of insertion of an IC card, the contact surface of an IC card is stored in a main part, and connection with an internal circuit is attained.

[0055]The relation between a body part and a cylindrical part is constituted so that a part of body part may project in one side of a cylindrical part, so that he can understand the second embodiment of the present invention described above from the front view, a perspective view, etc. The modification of this second embodiment is shown in Fig.20, and the relation between a body part and a cylindrical part constitutes this modification so that a part of body part may project on both sides of a cylindrical part. Also in this case, by supposing that it is the same as that of the case where the depth size and width dimension of a body part are described by Fig.19, at the time of insertion of an IC card, the contact surface of an IC card is stored in a main part, and connection with an internal circuit is attained.

[0056]The modification of the second embodiment shown in Fig.21 is an example which used as the multiple pillar the cylindrical part of the second embodiment described by the above-mentioned, and is a four-sided prism in an illustrated example. And as for this example, the application setting mark 1510 is provided by each surface of four angles. The modification as a multiple pillar can be constituted as eight-sided six-sided not only four illustrated angles but triangular prisms and a prism, and a prism, still larger multiple pillars, etc.

[0057]When the usual displaying condition displayed on the liquid crystal display section 1506 is shown in Fig.22 (a), this state has the battery lid side of the terminal for IC cards with the left hand and the rotor switches 1503 and 1504 are operated with the right hand, it is in the state where a character can be normally seen from a user. On the other hand, the state where reversed the character and it displayed is shown in Fig.22 (b). This state is in the state where a character can be normally seen from a user, when showing the information currently displayed on other persons, and it is effective, and it has the battery lid side of the terminal for IC cards with the right hand and the rotor switches 1503 and 1504 are operated with the left hand. The long aggressiveness of the liquid-crystal-display flip vertical button 1507 can perform the inversion of such a character.

[0058]Time can be displayed on the liquid crystal display section 1506, or it can also prevent from displaying nothing on it in the state of usually carrying around, also in the second embodiment of the present invention described by the above-mentioned. As already described, the liquid-crystal-display flip vertical button 1507, Also have a function of the C button in a first embodiment, and the determination button 1505, Since it has a function of the OK button in a first embodiment, the operation after choosing application with the rotary switches 1503 and 1504, Since operation of these buttons 1505 and 1507 can perform like the case of a first embodiment, the description of operation is omitted here. Since the second embodiment described by the above-mentioned has the small width of the liquid crystal display section 1506, it can perform only the display which is at most about two lines, but it can display required information by making it scroll one character string after another with the determination button 1505.

[0059]The perspective view showing the appearance of the terminal for IC cards according [Fig.23] to a 3rd embodiment of the present invention, The 3rd page figure showing the

appearance of the IC card terminal according [Fig.24] to a 3rd embodiment, the cross sectional view of the terminal for IC cards according [Fig.25] to a 3rd embodiment, the figure with which Fig.26 describes the modification of a 3rd embodiment, and Fig.27 are figures which describe the example of a display screen.In Fig.23 - Fig.26, a frame and 2302 2301 A main part upper case,2303 a liquid crystal display section and 2304 a card slot and 2305 A determination button, 2306 -- a button type crosshair cursor and 2307 -- the hole for straps, and 2308 -- as for a board part article and 2504, a main part lower case and 2502 are [contact and 2601] selection and a determination button a card insertion pilot switch and 2505 a circuit board and 2503 a strap and 2501.

[0060]A 3rd embodiment of the present invention is the example which constituted the present invention as a pendant type, as shown in the perspective view of the whole shown in Fig.23, and the 3rd page figure shown in Fig.24, it has the plane shape of long and slender elliptic form, and the whole form is formed with the swelling toward the central part.And the terminal for IC cards by a 3rd embodiment of the present invention, As shown in Fig.23 and Fig.25, the main part upper case 2301 and the main part lower case 2501 are attached to both sides of the frame 2301 which forms a periphery, 2307 is provided for the hole for straps by the end of the frame 2301, and the appearance is formed.The liquid crystal display section 2303 is arranged in the center of the upper surface of the main part upper case 2302, and the determination button 2305 which has a function of determination and release, and the button type crosshair cursor 2306 which has a function of selection and scrolling are arranged at the portion of the both sides of the liquid crystal display section 2303. A notch is provided by a part of longitudinal direction of a frame, and the card slot is formed between the main part upper case 2301 of this portion, and the main part lower case 2501. The sizes of a 3rd embodiment are 98 mm in dimension of a longitudinal direction, 35 mm in maximum width dimension, and 16 mm in width dimension as the near dimension is put in and shown in the 3rd [which is shown in Fig.24] page figure. The longitudinal direction dimension of the card slot 2304 is set as slightly larger width than the width dimension of 54 mm of an IC card. And only the dimension which the contact on the inserted IC card can connect to an internal circuit is required for a width dimension also in this case.

[0061]The modification of the second embodiment of the present invention shown in Fig.26, Instead of two buttons of the determination button 2305 and the button type crosshair cursor 2306 in the example shown in Fig.23 - Fig.25, the point of the frame 2301 is cut, and the selection and the determination button 2601 which performs the function of selection, scrolling, and determination and release are provided, and is constituted.Rotation and a depression are possible for this selection and determination button 2601, and it can make rotation able to perform selection of application, and scrolling, and can make a depression perform determination and release.

[0062]Next, it describes about operation and a display screen, referring to the example of the display screen shown in Fig.27.

[0063]Screen 1 shown in Fig.27 is a display example in the usual state which nothing has carried out, and is in the state which shows a date and time as two line displays in this example. The application with which the inside of a main part is equipped is sequentially displayed selectable by moving the button type crosshair cursor 2306 up and down, without inserting an IC card in this state. This example is shown as Screen 4, and the application currently displayed by pushing the determination button 2305 can be determined and used. Screen 5 shows the example of a screen at the time of carrying out selection decision of the application "speak with a pet" here. In

the case of two line displays, one sentence is displayed in 1 screen. moving the button type crosshair cursor 2306 up and down here -- the sentence order which shows the contents of the talk is sequentially displayed from a pet. In the case of one line display, the sentence before and behind one sentence which cannot be displayed in 1 screen can be displayed by moving the button type crosshair cursor 2306 to right and left. By the long aggressiveness of the determination button 2305, application can be ended and it can return to the state of Screen 1 to end operation of application. As a kind of application here, there are a word book, an address book, a telephone directory, etc., for example "today's fortune-telling" who shows in the figure, and besides "speaking with a pet."

[0064]If an IC card is inserted in the state of Screen 1, or a state like the state throat of Screens 4 and 5, the balance of the electronic money in an IC card currently held will be first displayed so that it may be shown as Screen 2. In this state, by moving the button type crosshair cursor 2306 up and down, the settlement-of-accounts history in various shops can be chosen sequentially, and can be displayed so that it may be stored in an IC card and may be shown in the usable application 3, for example, a screen. And if long aggressiveness [the state where any screen is displayed / the determination button 2305], it will return to the display of a card balance, or if an IC card is taken out, it will return to the state of the screen before IC card insertion. If long aggressiveness [the state where the balance display is performed / the determination button 2305], it will return to the state of the screen before IC card insertion.

[0065]The perspective view showing the appearance of the terminal for IC cards according [Fig.28] to a 4th embodiment of the present invention, The 5th page figure showing the appearance of the IC card terminal according [Fig.29] to a 4th embodiment, The cross sectional view of the terminal for IC cards according [Fig.30] to a 4th embodiment, the figure which describes the state where Fig.31 had a terminal for IC cards in the hand, the figure with which Fig.32 describes the modification of a 4th embodiment, and Fig.33 are figures which describe the example of a display screen.In Fig.28 - Fig.32, a main part upper case and 2802 2801 A main part lower case,2803 a LCD lens and 2804 lower, following and the OK button, and 2805 A slide knob, The upper, front and a Cancel button, and 2807 2806 A key case hole, 2808 -- a card slot and 3001 -- as for an LCD unit and 3005, a main substrate and 3003 are [a card case unit and 3201] display parts a battery part and 3006 a contact surface and 3004 a card guide plate and 3002.

[0066]A 4th embodiment of the present invention is formed in form which cut off some fans in which the lower surface side is broader than the upper surface side, as been the example constituted as a key case type and the present invention shown in the perspective view of the transverse plane shown in Fig.28 (a), the perspective view of the back surface shown in Fig.28 (b), and the 5th page figure shown in Fig.29.And the terminal for IC cards by this 4th embodiment, The LCD lens 2803 which a body part is formed with the main part upper case 2801 and the main part lower case 2802, and equips an inside with an LCD unit and constitutes a display part on the upper surface of the main part upper case 2801, Lower, following, OK button 2804, and the upper, front and the Cancel button 2806 which have a function equivalent to the C button and OK button in the first embodiment of the present invention are provided, The slide knob 2805 for application selection is provided and constituted by the portion which a part of upper case upper surface was hollowed, and was formed.

[0067]The terminal for graphic display IC cards forms the portion which hollowed the main part lower case 2802 by the side of the lower surface of the doubling part of the main part upper case 2801 and the main part lower case 2802 in the thickness of the IC card, The card slot 2808 is

formed here, and further, the key case hole 2807 is provided in a corner of a body part, and it is constituted. The sizes of this 4th embodiment are 75 mm in dimension of a longitudinal direction, 40 mm in maximum width dimension, and 12 mm in width dimension as the near dimension is put in and shown in the 5th [which is shown in Fig.29] page figure. The longitudinal direction dimension of the card slot 2808 is set as slightly larger width than the width dimension of 54 mm of an IC card. And only the dimension which the contact on the inserted IC card can connect to an internal circuit is required for the width dimension of a body part also in this case.

[0068]Inside the terminal for IC cards by a 4th embodiment of the present invention, The LCD lens 2803 and LCD unit 3004 which constitute a liquid crystal display section as shown in the cross sectional view of Fig.30, The main substrate 3002 with the contact surface 3003 for connection with the contact by the side of an IC card and the card guide plate 3001 which constitutes a card slot are arranged in order in the direction of at the bottom from the upper surface of the body part. The card case unit 3006 and the battery part 3005 are provided by a part of near upper surface inside a body part.

[0069]The state where it had a terminal for IC cards by a 4th embodiment in the hand is shown in Fig.31 (a) and Fig.31 (b). When it has a terminal for IC cards by a 4th embodiment in a hand so that the longitudinal direction of an IC card may turn up after inserting an IC card as shown in Fig.31 (a), In or any [at the time of having in a hand so that the longitudinal direction of an IC card may become width after inserting an IC card as shown in Fig.31 (b)] case, It can hold only single hand and, moreover, the slide knob 2805 for application selection can be operated by the digiti manus holding a terminal.

[0070]Since it will become difficult to read a printable character sequence if a character string is displayed on the longitudinal direction of a display part when it has in a hand so that the longitudinal direction of an IC card may become width as shown in Fig.31 (b), the terminal for IC cards can be constituted so that it may be possible to eliminate this. In this case, the terminal for IC cards provides the display part 3201 which made the aspect ratio of the display part small and in which a lateral display is possible like the modification shown in Fig.32, and is constituted. And a character string is rotated 90 degree and it displays on a transverse direction. What is necessary is to provide a rotational menu at the last of the menu displayed, and for lower, following, and OK button 2804 just to be made to perform control of this rotation.

[0071]Time can be displayed on LCD unit 3004, or it can also prevent from displaying nothing on it in the state of usually carrying around, also in a 4th embodiment of the present invention described by the above-mentioned. As already described, the upper, front, and Cancel button 2806, Have a function of the C button in a first embodiment, and lower, following, and OK button 2804, Since it has a function of the OK button in a first embodiment, the operation after choosing application with the slide knob 2805, Since operation of the above-mentioned buttons 2806 and 2804 can perform like the case of a first embodiment, the description of operation is omitted here. A 4th embodiment described by the above-mentioned is made to perform the display of three lines to a liquid crystal display section.

[0072]Next, with reference to Fig.33, it describes about some of display examples by the display of three lines.

[0073]The example of the menu screen is shown in Fig.33 (a), and the mark which shows that the menu which scrolls a menu on left-hand side up and down, and is not displayed on it with the scroll knob 2805 can be displayed is displayed. And this example shows that the menu of alarm is selectable now. The mark which shows that there is the next page, for example, a setting

screen, to the menu of a selective state is displayed on the right-hand side of a screen, and the following page can be displayed on it with the button 2804. The case of other below-mentioned examples of the meaning of the mark on the display screen mentioned above is also the same.
[0074]The display example at the time of carrying out selection decision of a money controlling function / the calculator function is shown in Fig.33 (b), and, by a diagram, the state where the used amount by the present of money, this used amount, etc. were displayed is shown. The display example at the time of carrying out selection decision of a clock function/the alarm function is shown in Fig.33 (c), and the present time and the present date are displayed, and it is shown that alarm is set to ON. The display example at the time of carrying out selection decision of the simple schedule function is shown in Fig.33 (d), three schedules are displayed with time and the schedule at the time of the present is shown by the mark of alarm.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a perspective view showing the appearance of the terminal for IC cards by the first embodiment of the present invention.
[Drawing 2]It is a 4th page figure showing the appearance of the IC card terminal by a first embodiment.
[Drawing 3]It is a cross sectional view of the terminal for IC cards by a first embodiment.
[Drawing 4]It is an exploded perspective view which describes the structure of the whole terminal for IC cards by a first embodiment.
[Drawing 5]It is a figure which describes the anticipated-use state of the terminal for IC cards and the insertion condition of an IC card by the first embodiment of the present invention.
[Drawing 6]It is a figure described about the variation of the path of insertion of the state where attached the terminal for IC cards by the first embodiment of the present invention to the arm, and the IC card was inserted, and an IC card.
[Drawing 7]It is a figure described about the path of insertion of a card slot.
[Drawing 8]It is a figure which describes rotating the bezel part 103 and choosing application.
[Drawing 9]It is a figure described about the composition of the water proof dustproof mechanism over a card slot.
[Drawing 10]It is a figure described about other examples of the path of insertion of an IC card.

[Drawing 11]It is a figure which describes the modification of the first embodiment of the present invention.
[Drawing 12]It is a flow chart described about operation processing of the terminal for IC cards by the first embodiment of the present invention.
[Drawing 13]It is a figure which describes the example of a display screen displayed in the middle of processing.
[Drawing 14]It is a flow chart described about operation processing of the terminal for IC cards by the modification of the first embodiment of the present invention.
[Drawing 15]It is a perspective view showing the appearance of the terminal for IC cards by the second embodiment of the present invention.
[Drawing 16]It is a 4th page figure showing the appearance of the IC card terminal by a second embodiment.
[Drawing 17]It is a cross sectional view of the terminal for IC cards by a second embodiment.
[Drawing 18]It is a figure described about pasting of the application label to the terminal for IC cards by a second embodiment.
[Drawing 19]It is a figure described about the outside dimension of a second embodiment.
[Drawing 20]It is a figure which describes the modification of a second embodiment.
[Drawing 21]It is a figure which describes other modifications of a second embodiment.
[Drawing 22]It is a figure described about reversal of a display.
[Drawing 23]It is a perspective view showing the appearance of the terminal for IC cards by a 3rd embodiment of the present invention.
[Drawing 24]It is a 3rd page figure showing the appearance of the IC card terminal by a 3rd embodiment.
[Drawing 25]It is a cross sectional view of the terminal for IC cards by a 3rd embodiment.
[Drawing 26]It is a figure which describes the modification of a 3rd embodiment.
[Drawing 27]It is a figure which describes the example of a display screen.
[Drawing 28]It is a perspective view showing the appearance of the terminal for IC cards by a 4th embodiment of the present invention.
[Drawing 29]It is a 5th page figure showing the appearance of the IC card terminal by a 4th embodiment.
[Drawing 30]It is a cross sectional view of the terminal for IC cards by a 4th embodiment.
[Drawing 31]It is a figure which describes the state where it had a terminal for IC cards in the hand.
[Drawing 32]It is a figure which describes the modification of a 4th embodiment.
[Drawing 33]It is a figure which describes the example of a display screen.
[Explanations of letters or numerals]
101 Main part upper case
103 Bezel base part
104 OK button
105 The C button
106 Bezel part
107 A function / application setting mark
108 Issuer application mark sticking part
109 Application selection mark
110 LCD lens
111 Main part lower case

112 The lid for changing batteries
113 Belt mounting part
114 Belt mounting hole
201 Garbage extraction hole
301 LCD unit
302 LCD unit case
303 Main substrate
304 Interface board
305 Contact ring part
306 and 307 Rotation contact surface
308 IC contact part
309 Cell
310 Rotation card slot
311 Rotatable base part
401 Rotation slot unit
402 Rotation lock button
403 Belt
404 Belt fitting pin
501 Catcher
502 IC card
701 and 702 Card end support component
901 Water proof dustproof lid knob
902 Vertical slide water proof dustproof lid
903 Up-and-down spring unit
1001 The guide for insertion
1501 Main part upper case
1502 Main part lower case
1503 Application change rotary switch
1504 Sub application change rotary switch
1505 Determination button
1506 Liquid crystal display section
1507 Liquid-crystal-display flip vertical button
1508 Battery lid
1509 IC card loading slot
1510 Application setting mark
1511 Application selection mark
1701 Circuit board
1702 Board part article
1703 Liquid crystal window
1704 Liquid crystal
1705 IC card contact
1706 Frame
1707 Battery contact
1708 Cell
1709 Card slot lid
1710 Rotary switch contact and a determination button recognition part article

2301 Frame
2302 Main part upper case
2303 Liquid crystal display section
2304 Card slot
2305 Determination button
2306 Button type crosshair cursor
2307 The hole for straps
2308 Strap
2501 Main part lower case
2502 Circuit board
2503 Board part article
2504 Card insertion pilot switch
2505 Contact
2601 Selection and a determination button
2801 Main part upper case
2802 Main part lower case
2803 LCD lens
2804 Lower, following, and the OK button
2805 Slide knob
2806 The upper, front, and a Cancel button
2807 Key case hole
2808 Card slot
3001 Card guide plate
3002 Main substrate
3003 Contact surface
3004 LCD unit
3005 Battery part
3006 Card case unit
3201 Display part

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

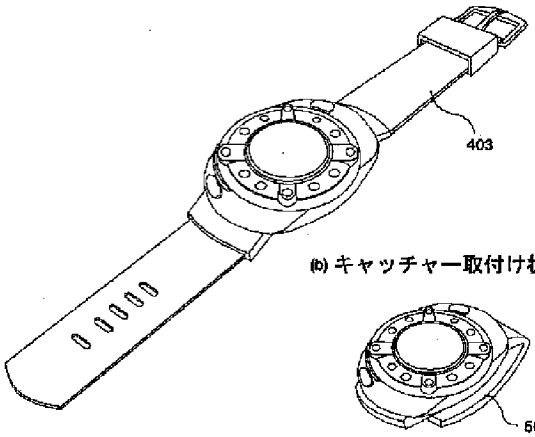
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

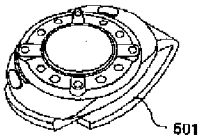
[Drawing 5]

図5

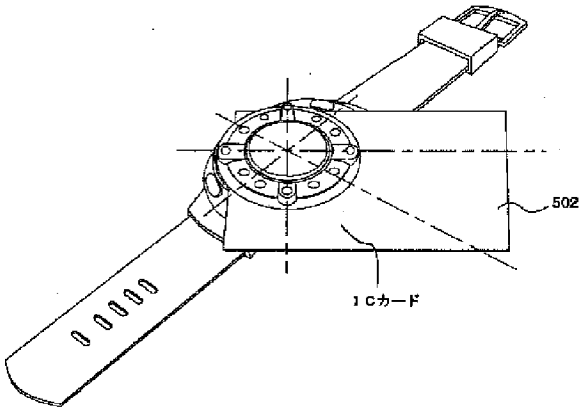
(a) ベルト取付け状態



(b) キャッチャー取付け状態

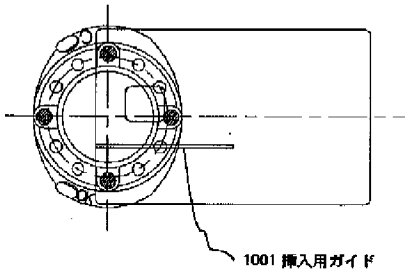


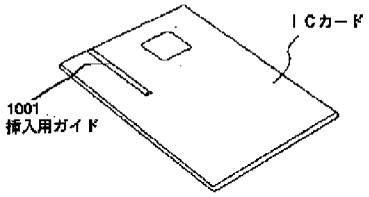
(c) カード挿入状態



[Drawing 10]

図１０

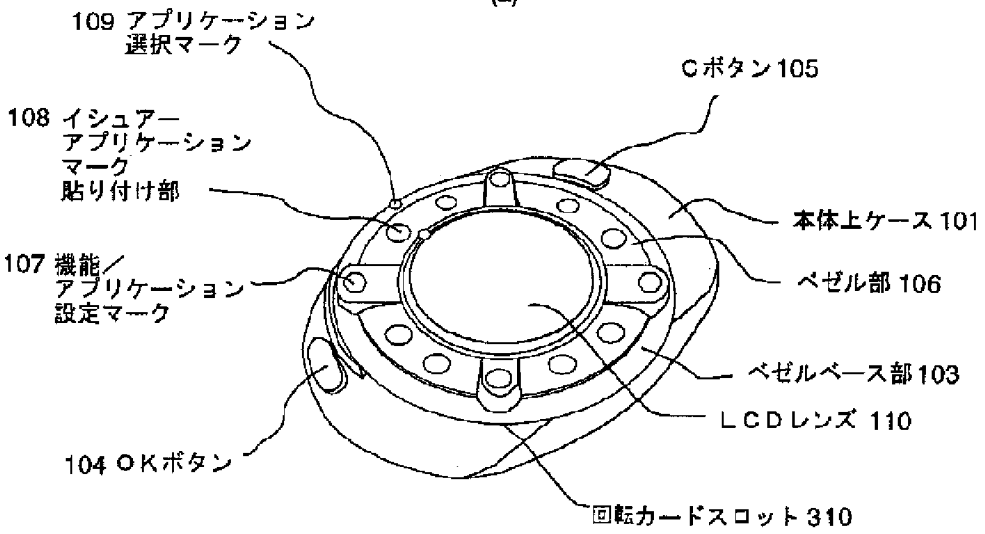




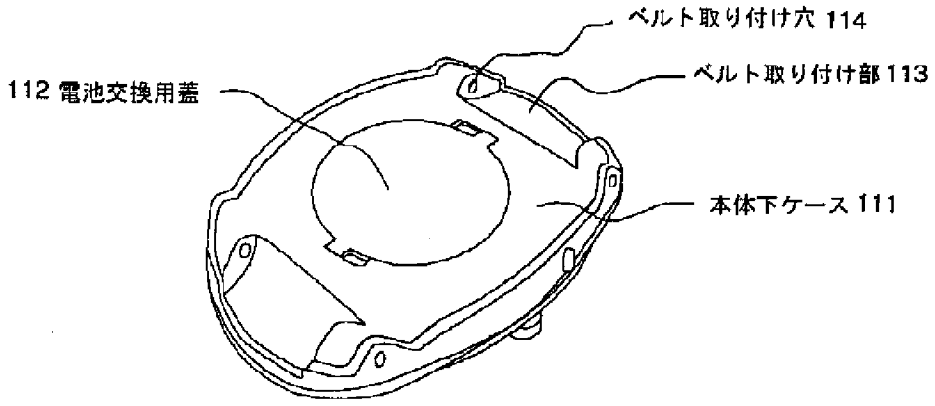
[Drawing 1]

図1

(a)

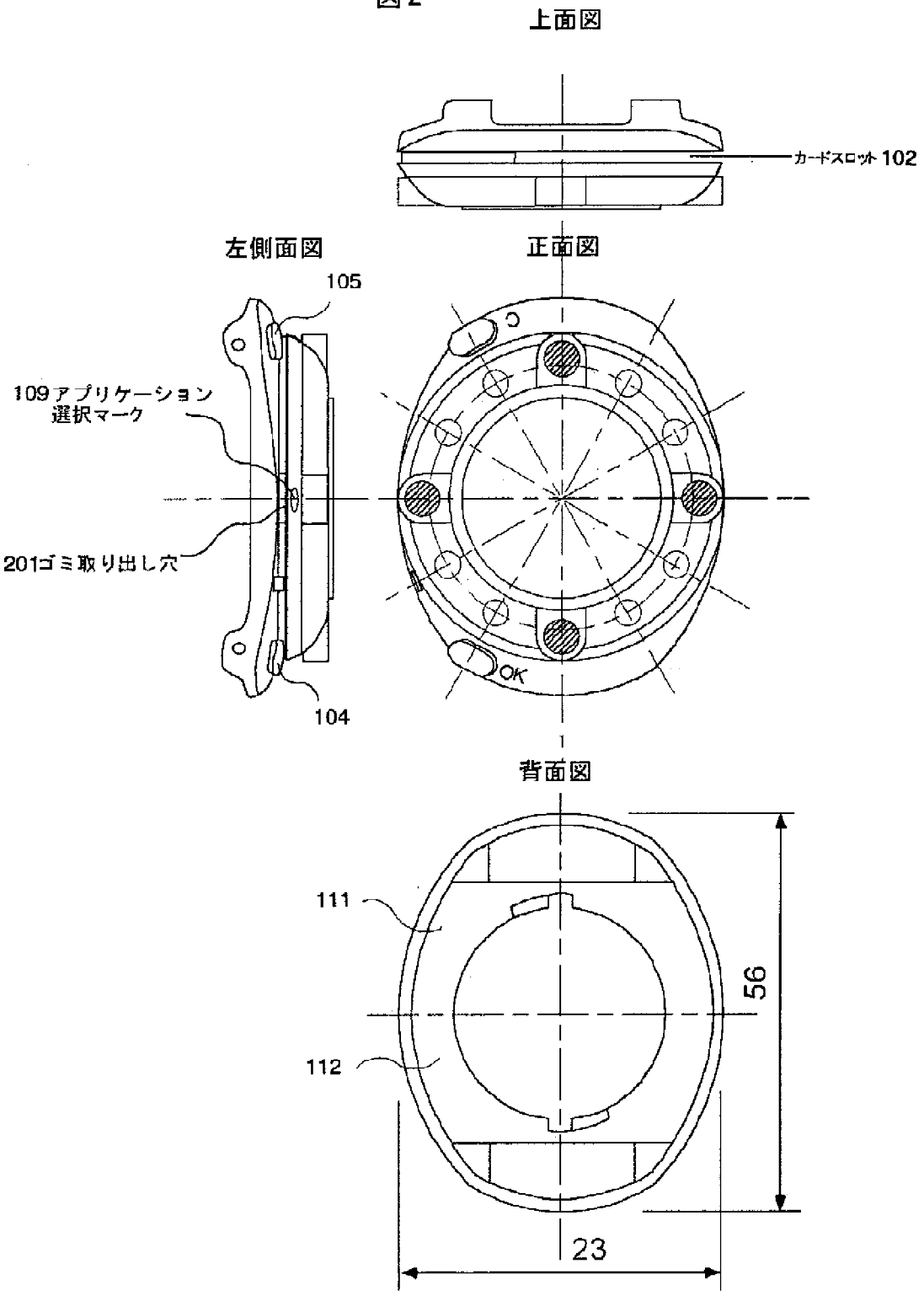


(b)



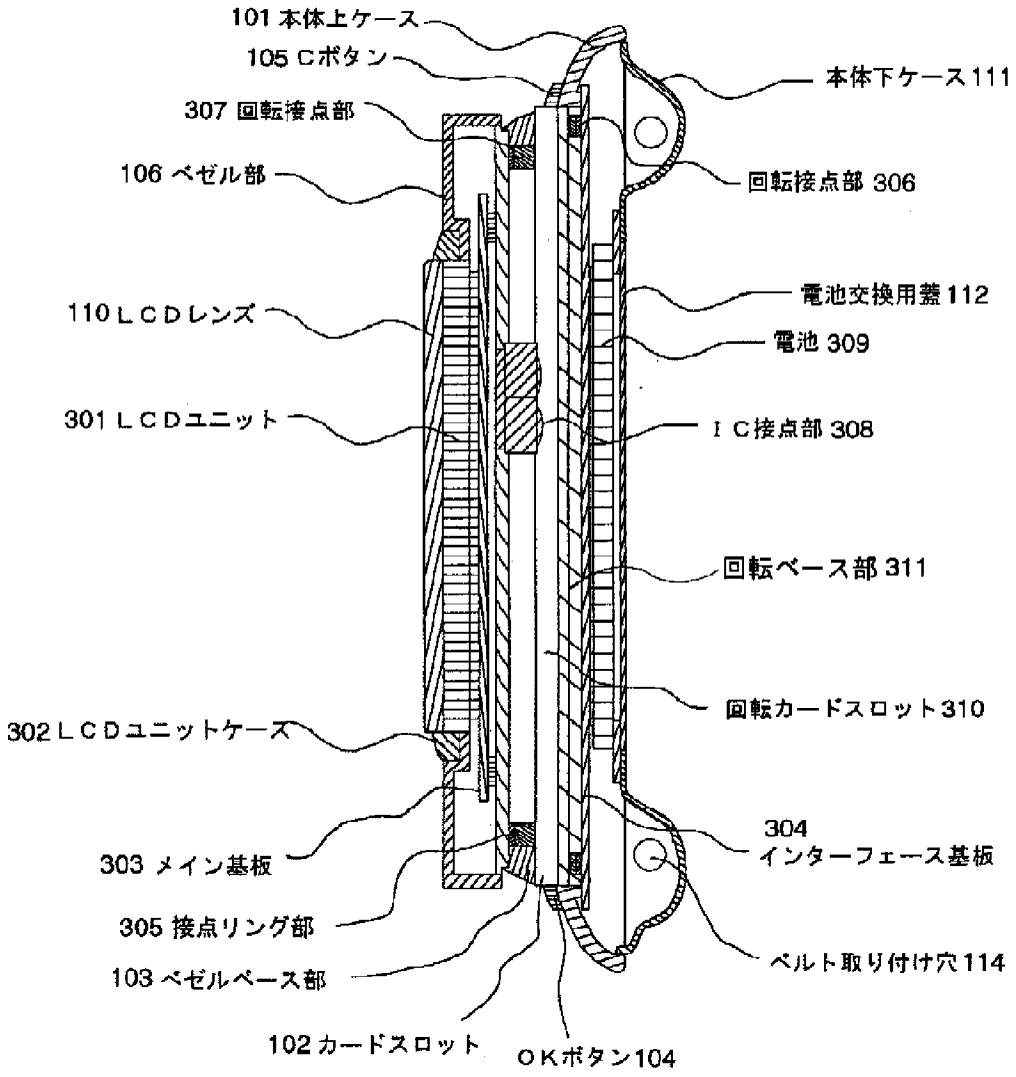
[Drawing 2]

図 2


上面図
カードスロット 102
左側面図
正面図
105
109アプリケーション
選択マーク
201ゴミ取り出し穴
104
OK
背面図
111
112
56
23

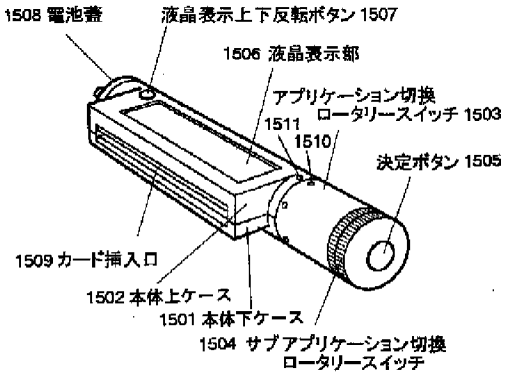
[Drawing 3]

図３



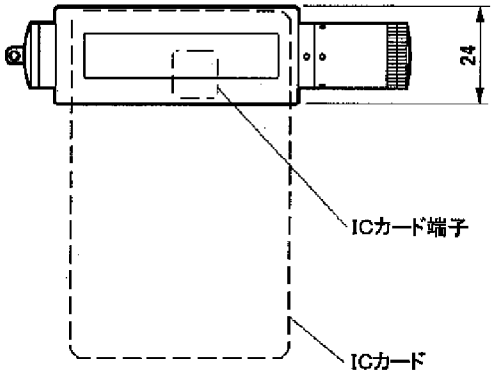
[Drawing 15]

図１５

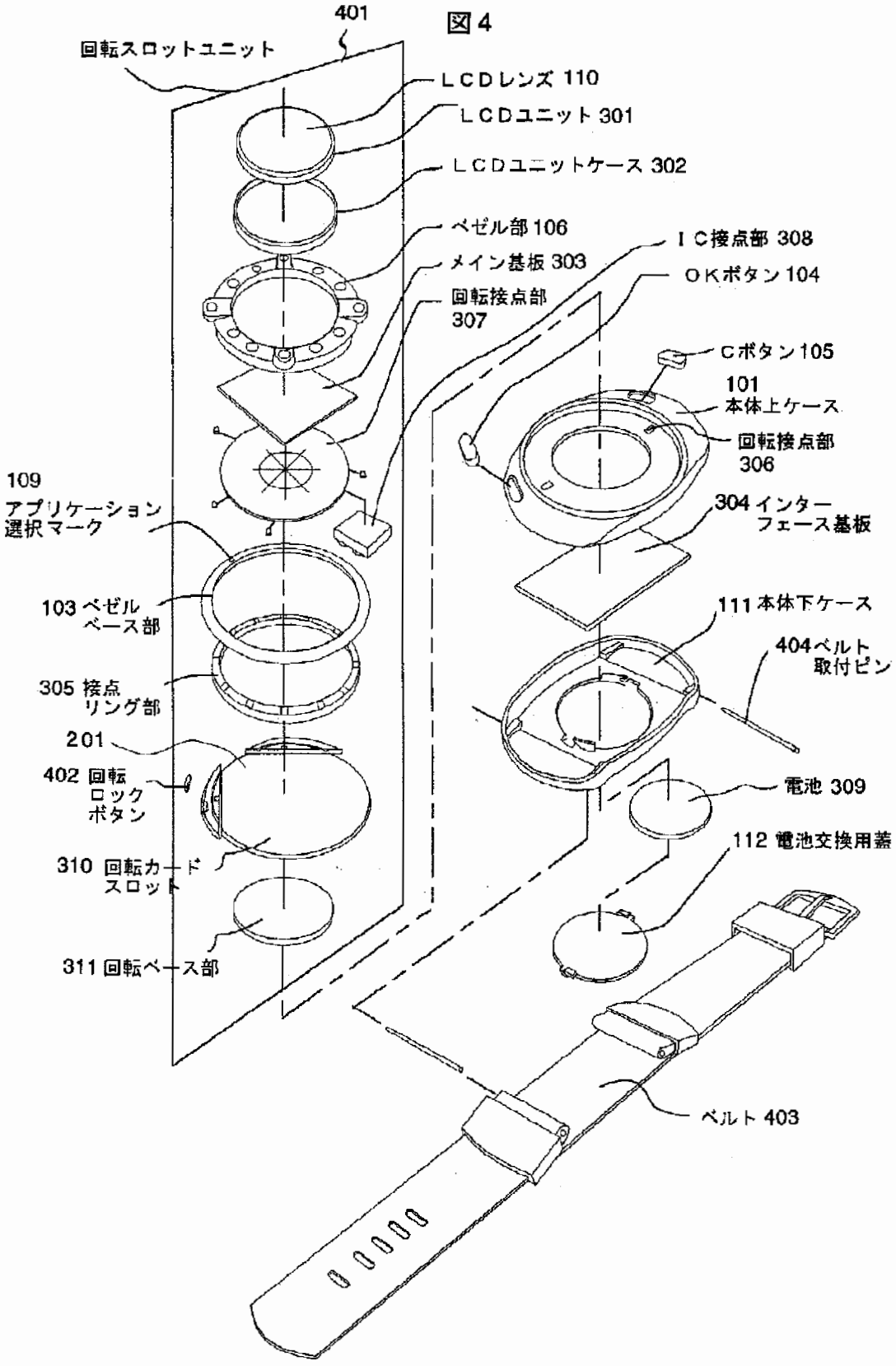


[Drawing 20]

図２０

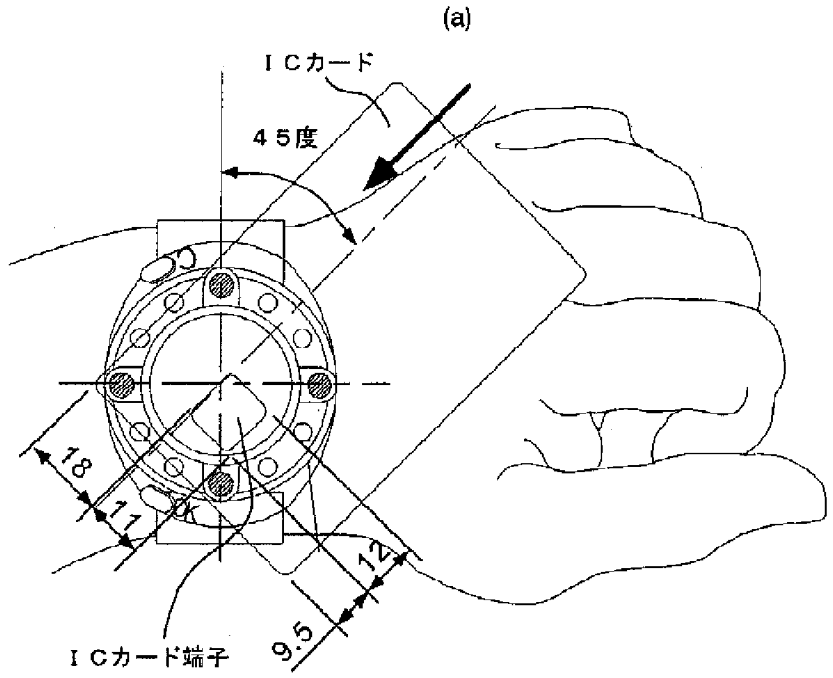


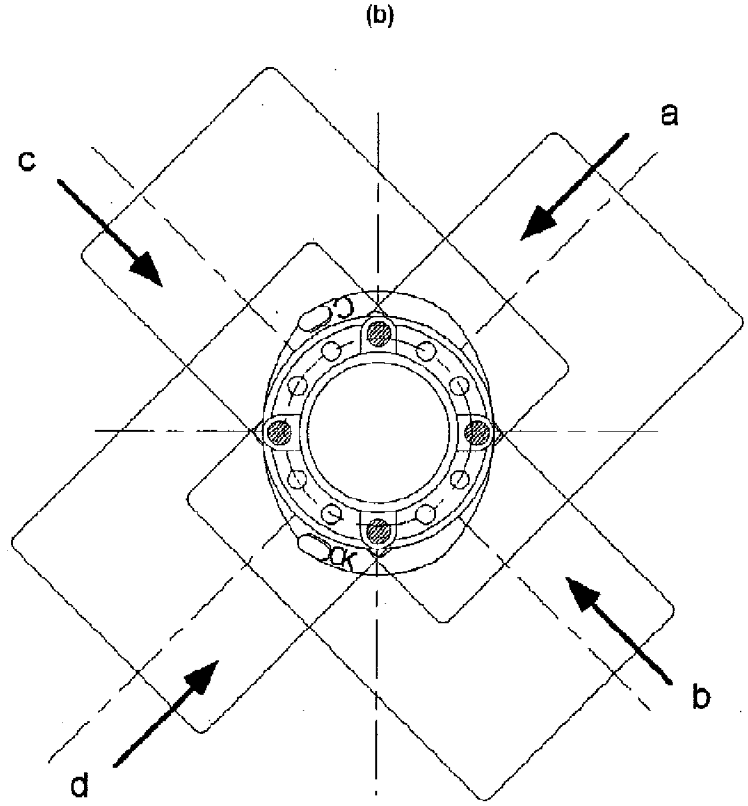
[Drawing 4]


401
図4
回転スロットユニット
ＬＣＤレンズ 110
ＬＣＤユニット 301
ＬＣＤユニットケース 302
ベゼル部 106
メイン基板 303
回転接点部 307
ＩＣ接点部 308
ＯＫボタン 104
Ｃボタン 105
101 本体上ケース
回転接点部 306
109 アプリケーション選択マーク
304 インターフェース基板
103 ベゼルベース部
111 本体下ケース
404 ベルト取付ピン
305 接点リング部
201
402 回転ロックボタン
電池 309
112 電池交換用蓋
310 回転カードスロット
311 回転ベース部
ベルト 403

[Drawing 6]

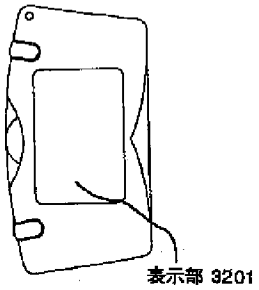
図６





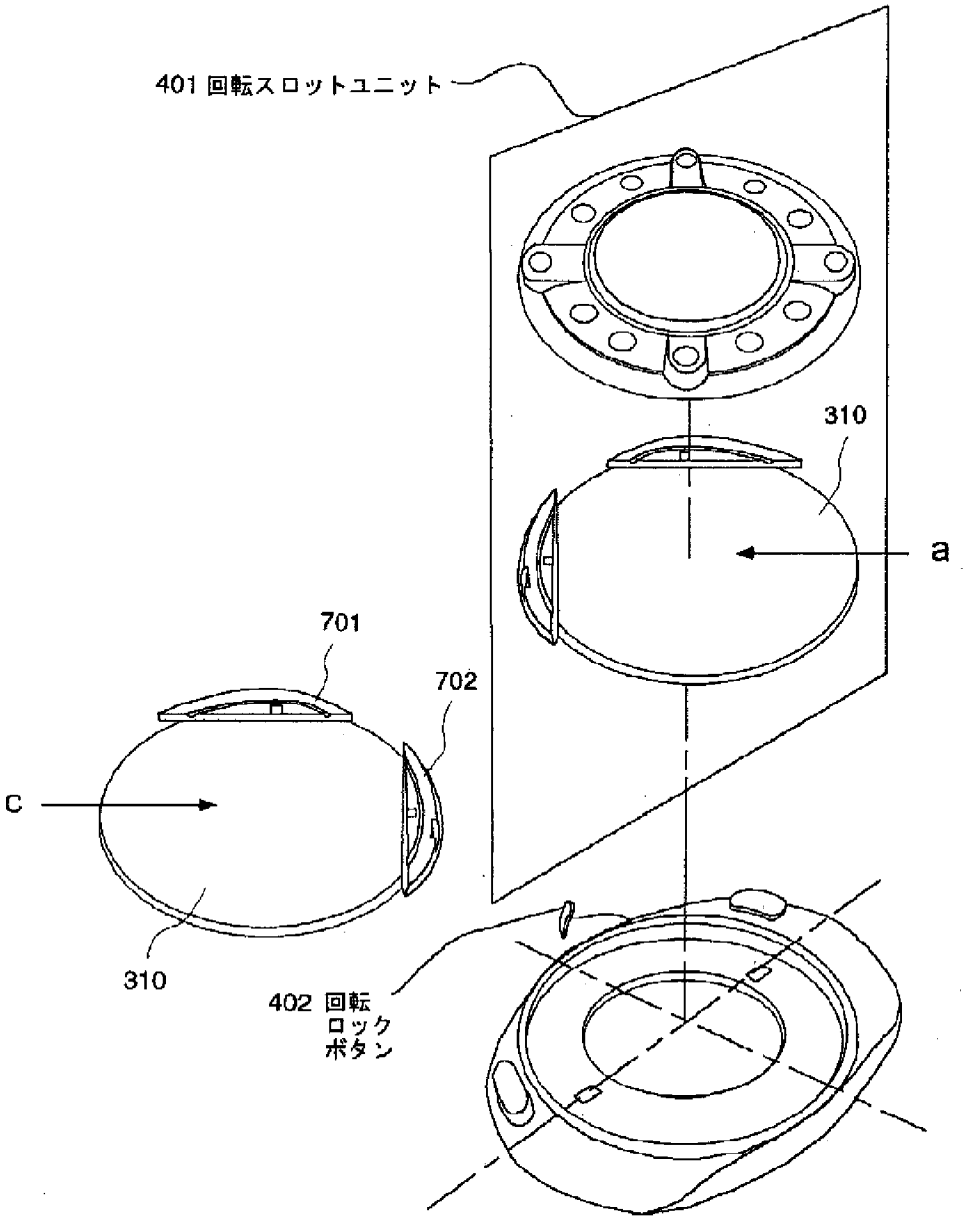
[Drawing 32]

図３２



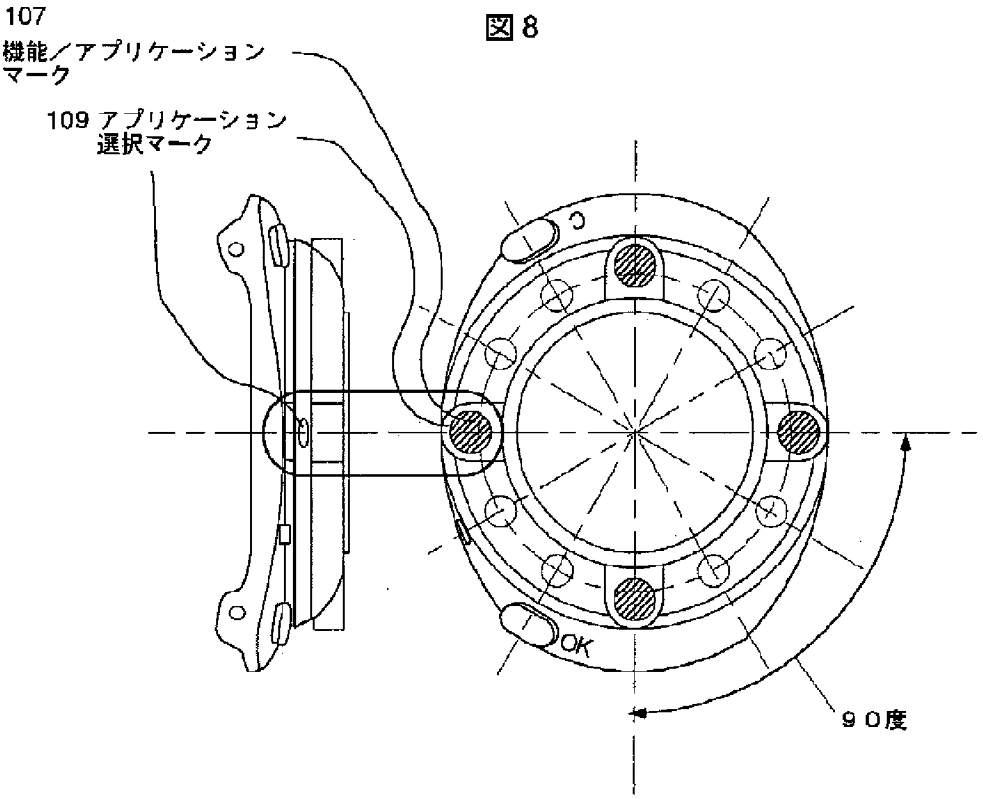
[Drawing 7]

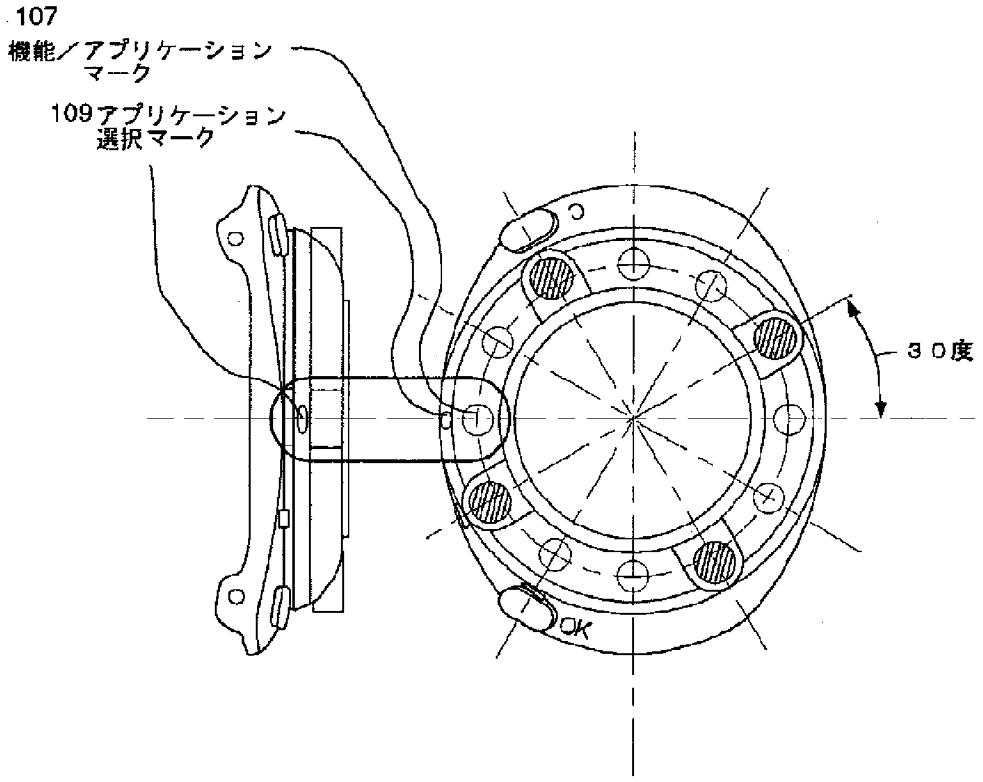
図7



[Drawing 8]

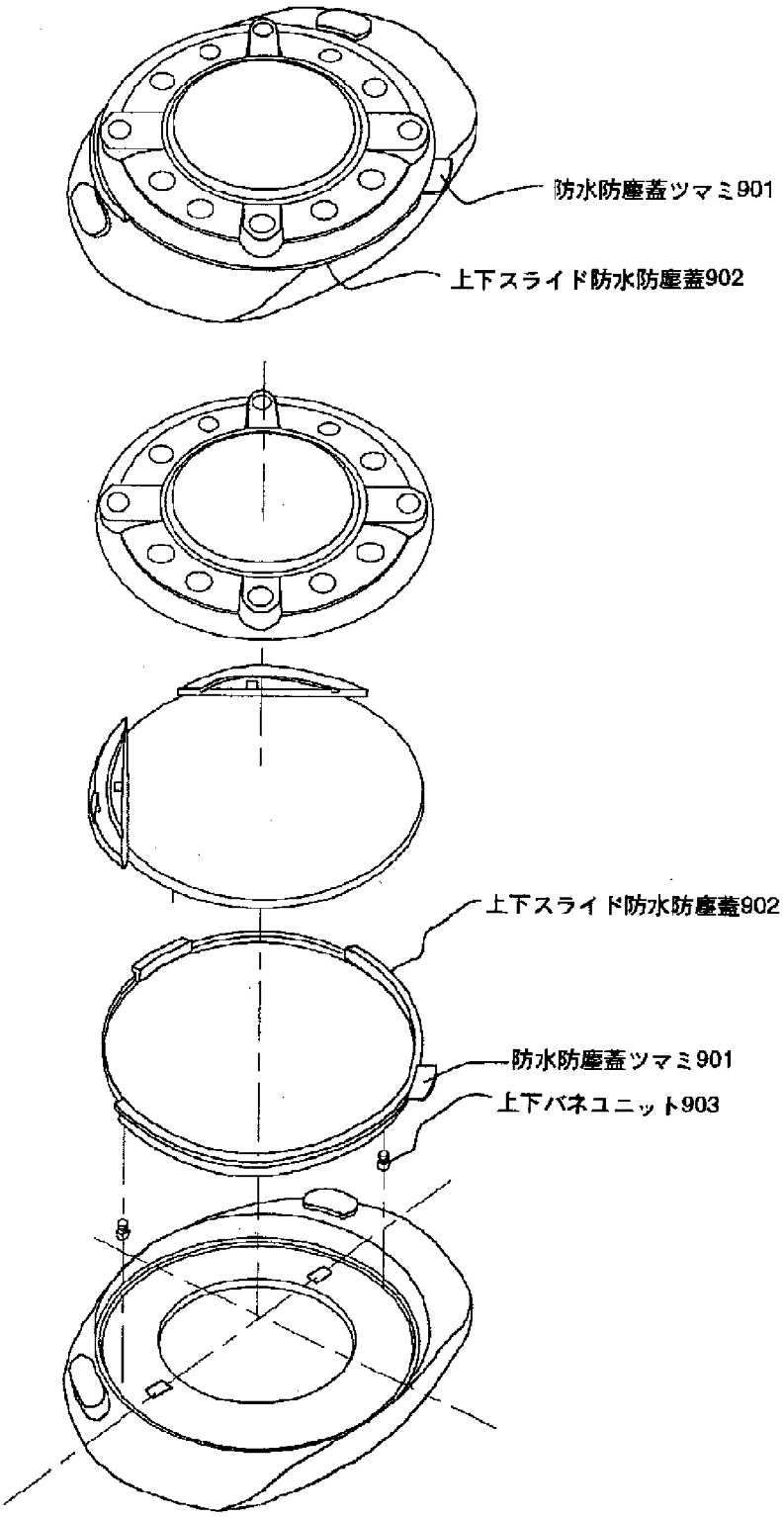
図８


107
機能／アプリケーション
マーク
109 アプリケーション
選択マーク
OK
９０度


107
機能／アプリケーション
マーク
109アプリケーション
選択マーク
OK
３０度

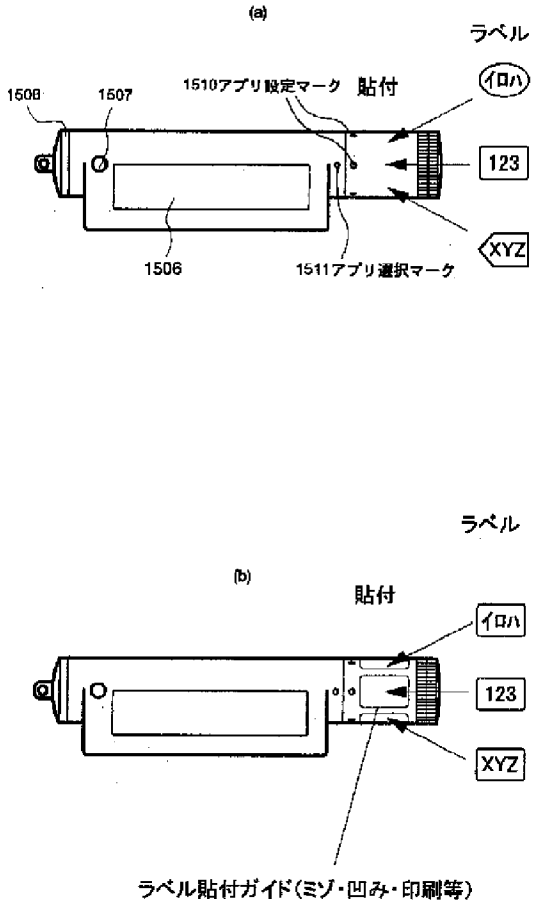
[Drawing 9]

図 9



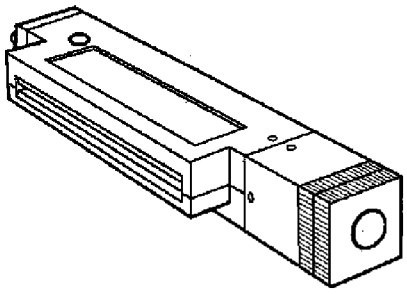
[Drawing 18]

図１８



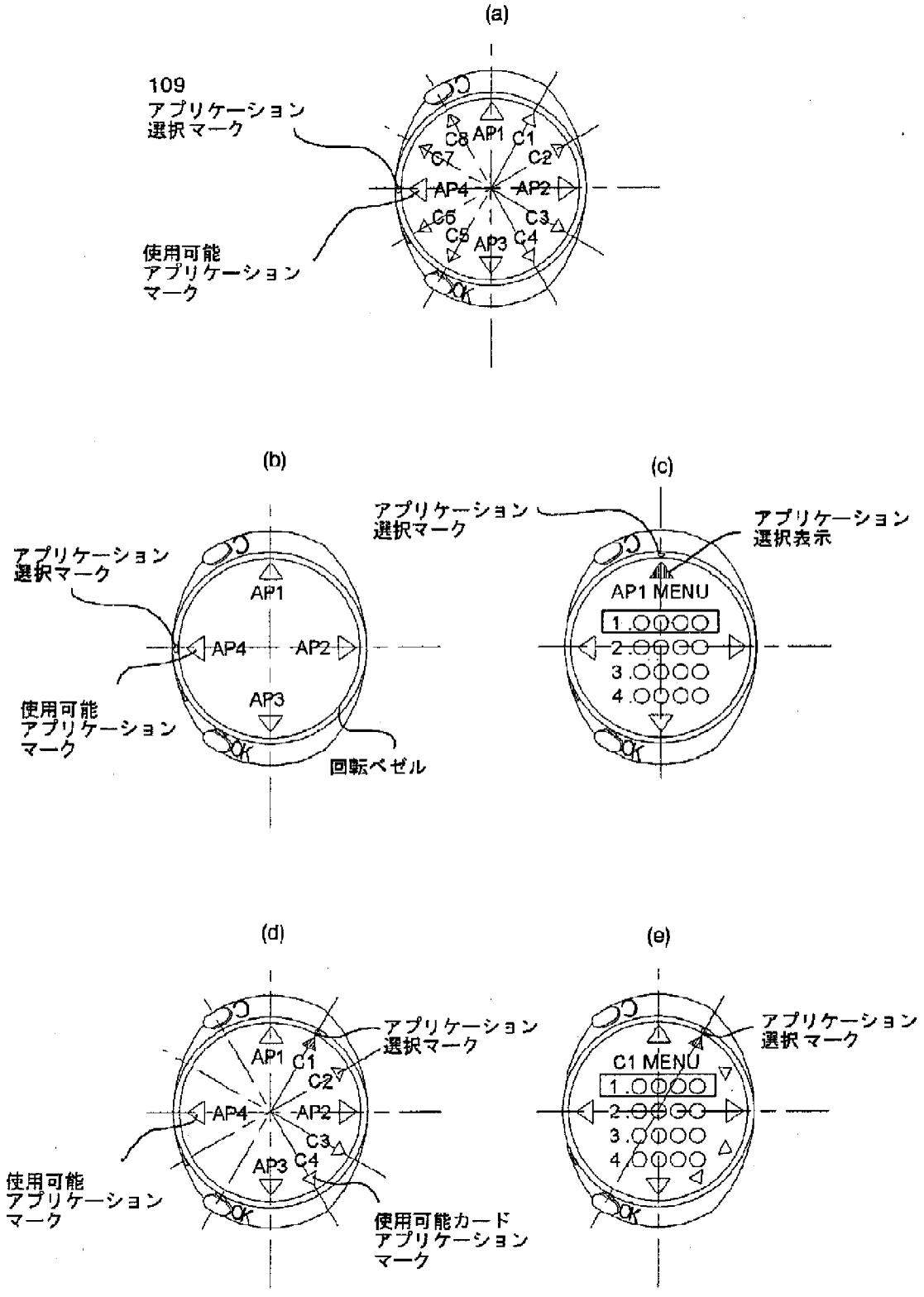
[Drawing 21]

図２１



[Drawing 11]

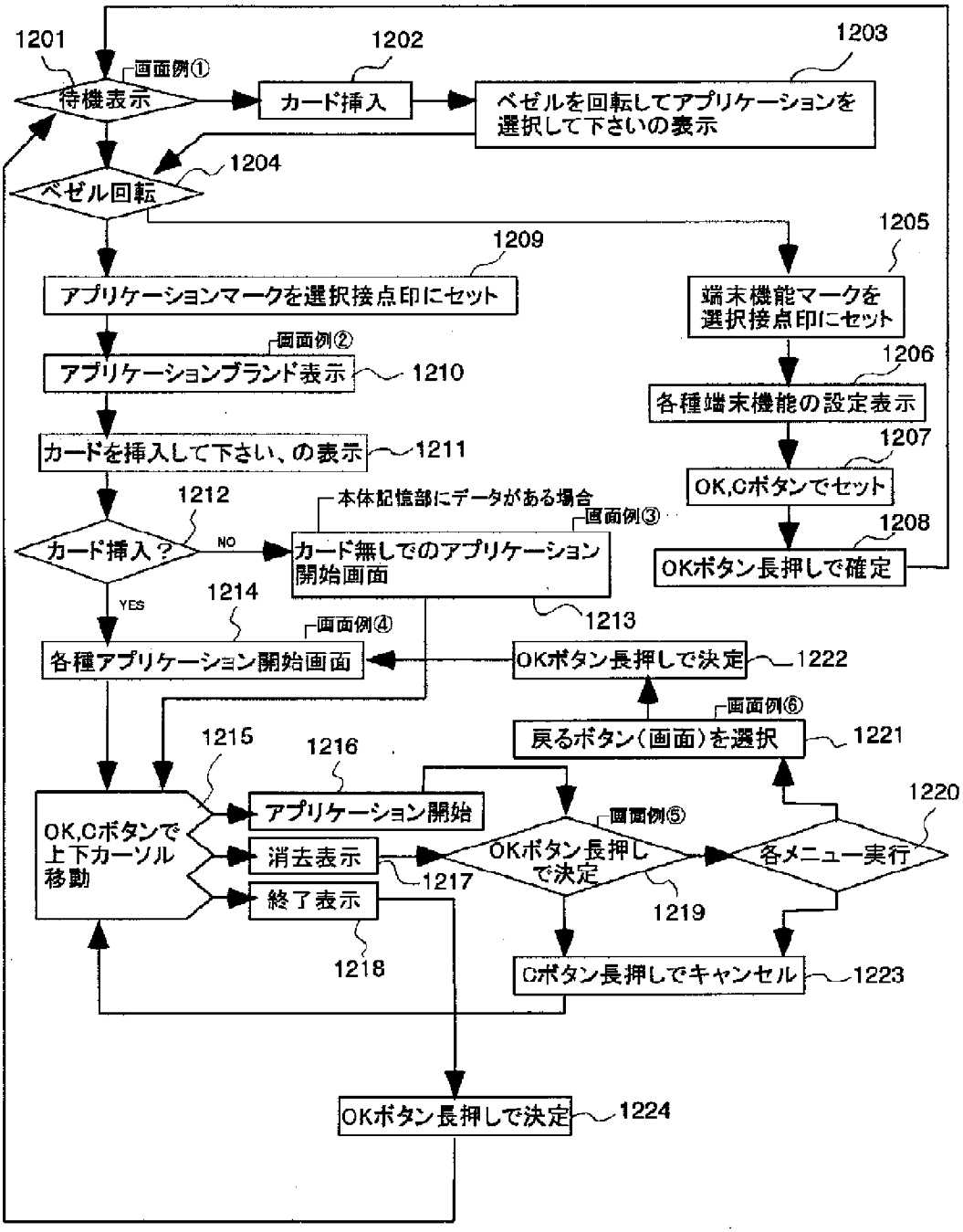
図１１



[Drawing 12]

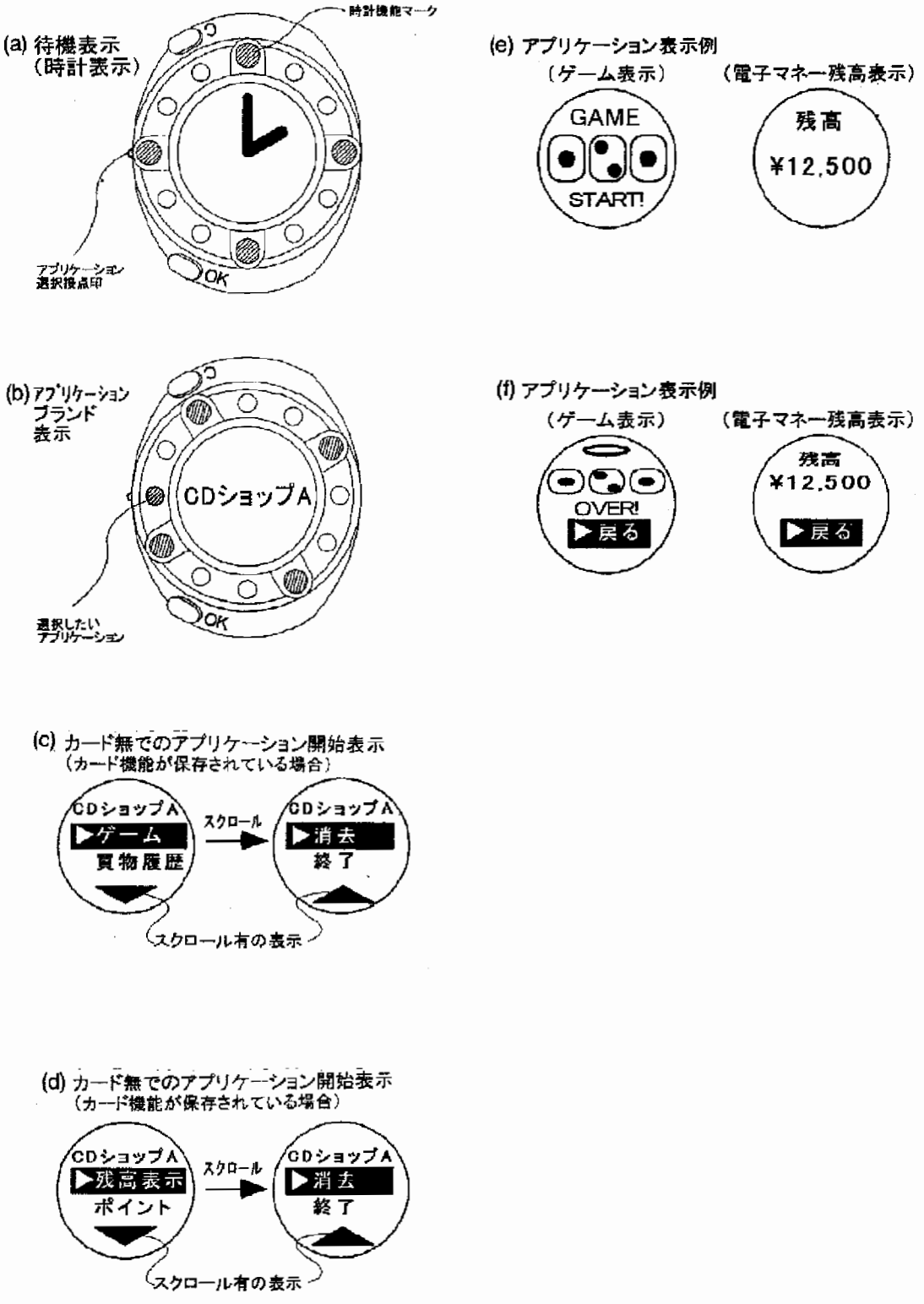
図１２

ベゼル部にアプリケーションマークを表示



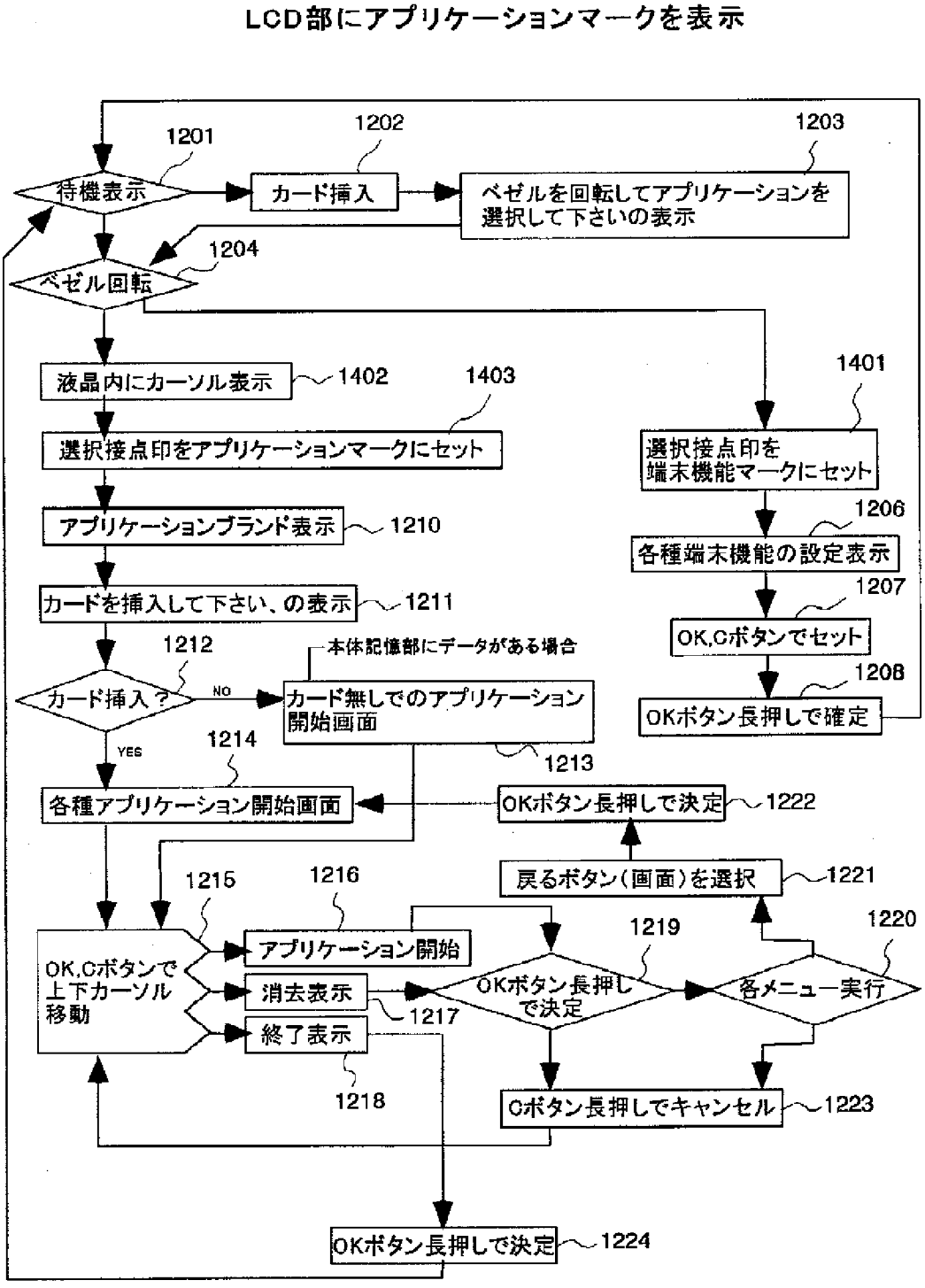
[Drawing 13]

図１３



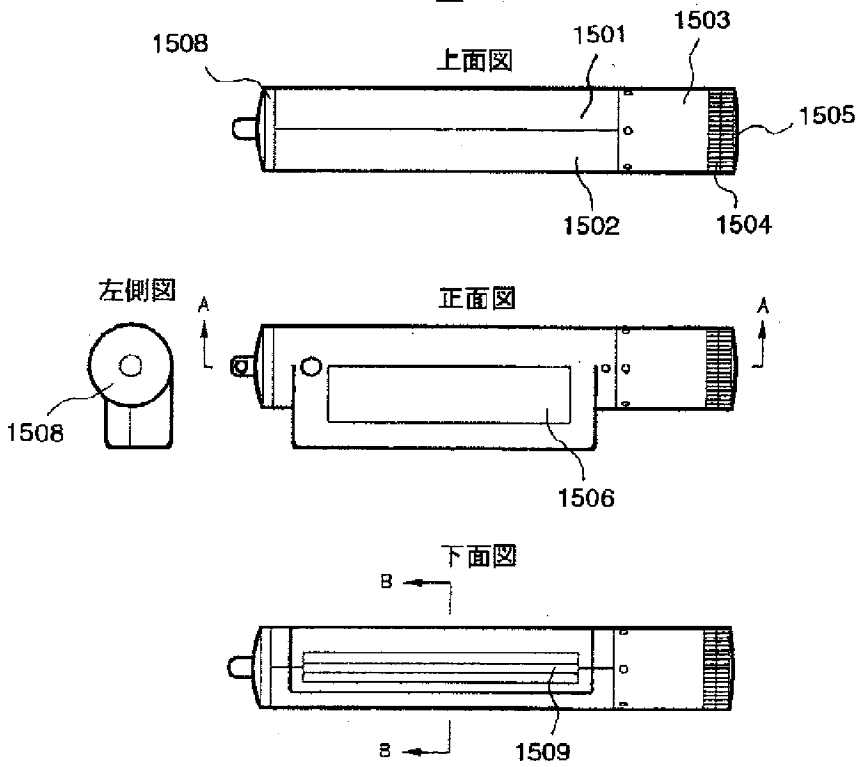
[Drawing 14]

図１４



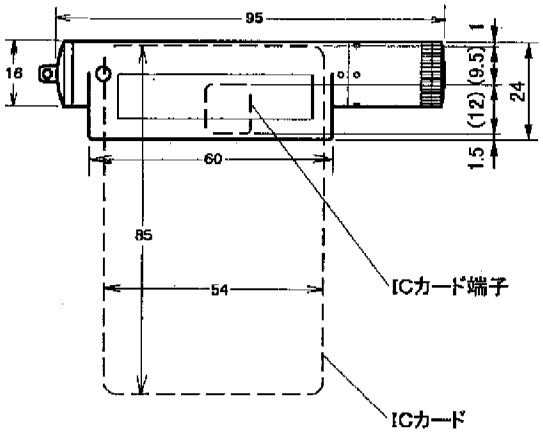
[Drawing 16]

図１６



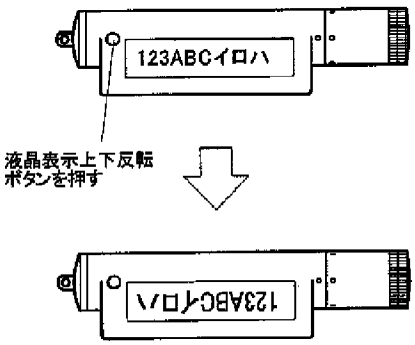
[Drawing 19]

図１９



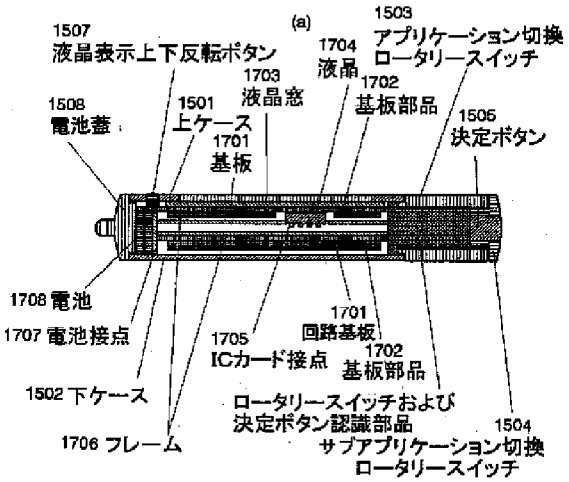
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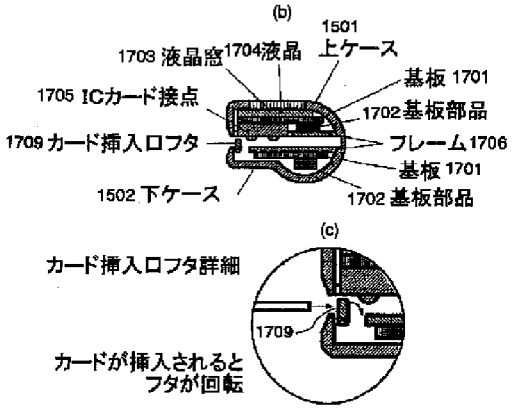
図２２



[Drawing 17]

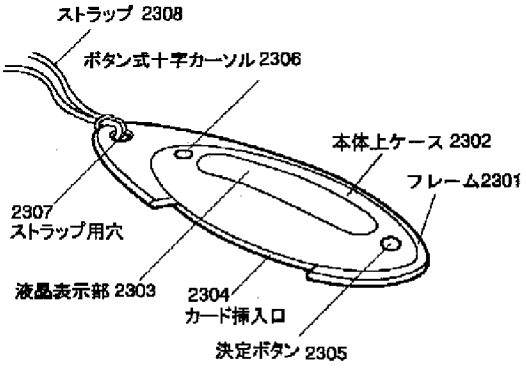
図１７





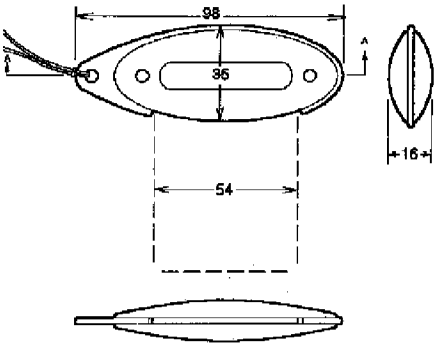
[Drawing 23]

図２３



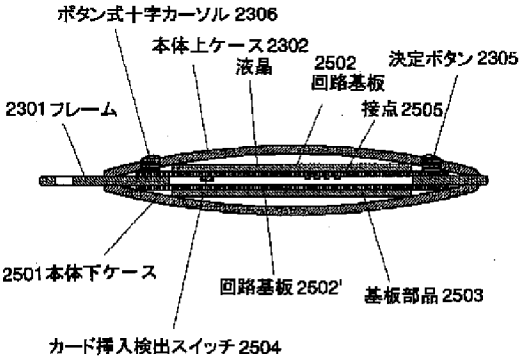
[Drawing 24]

図２４



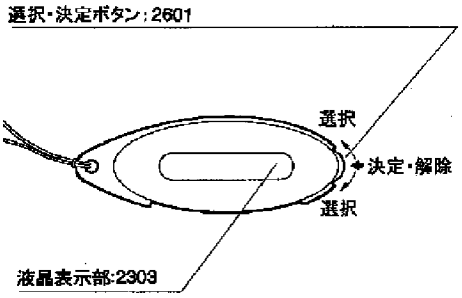
[Drawing 25]

図２５



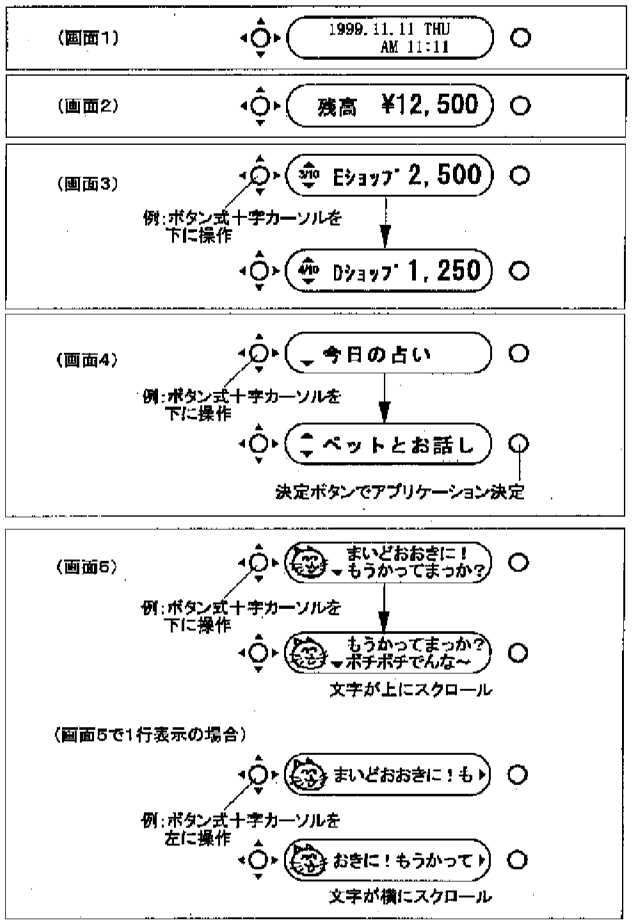
[Drawing 26]

図２６



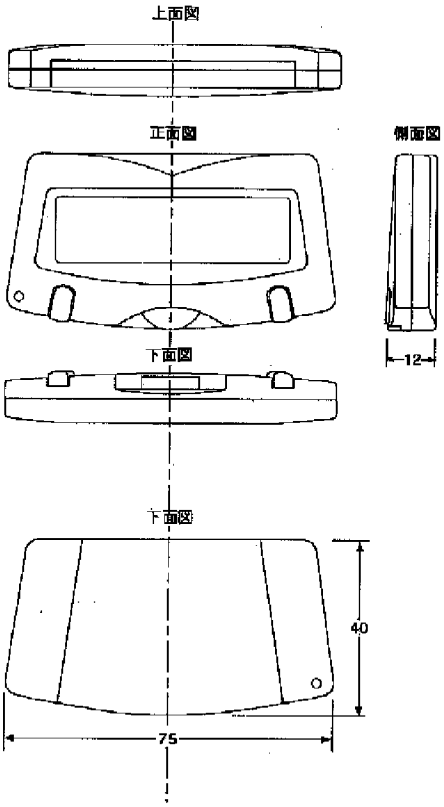
[Drawing 27]

図２７



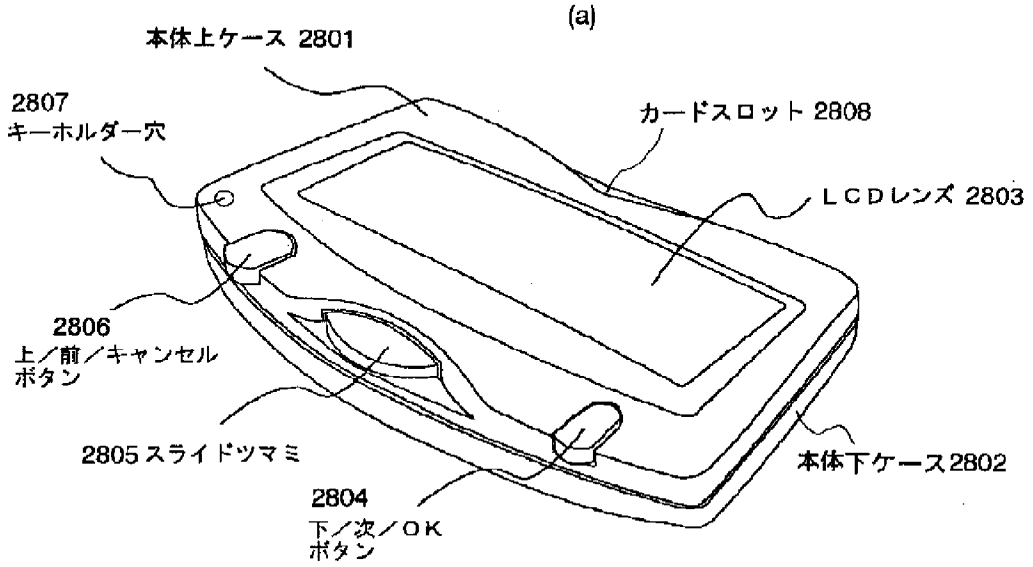
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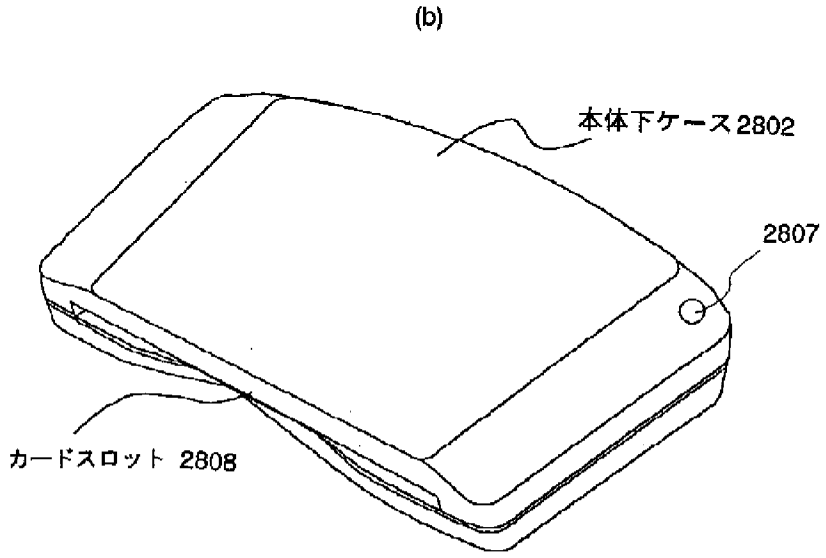
図２９



[Drawing 28]

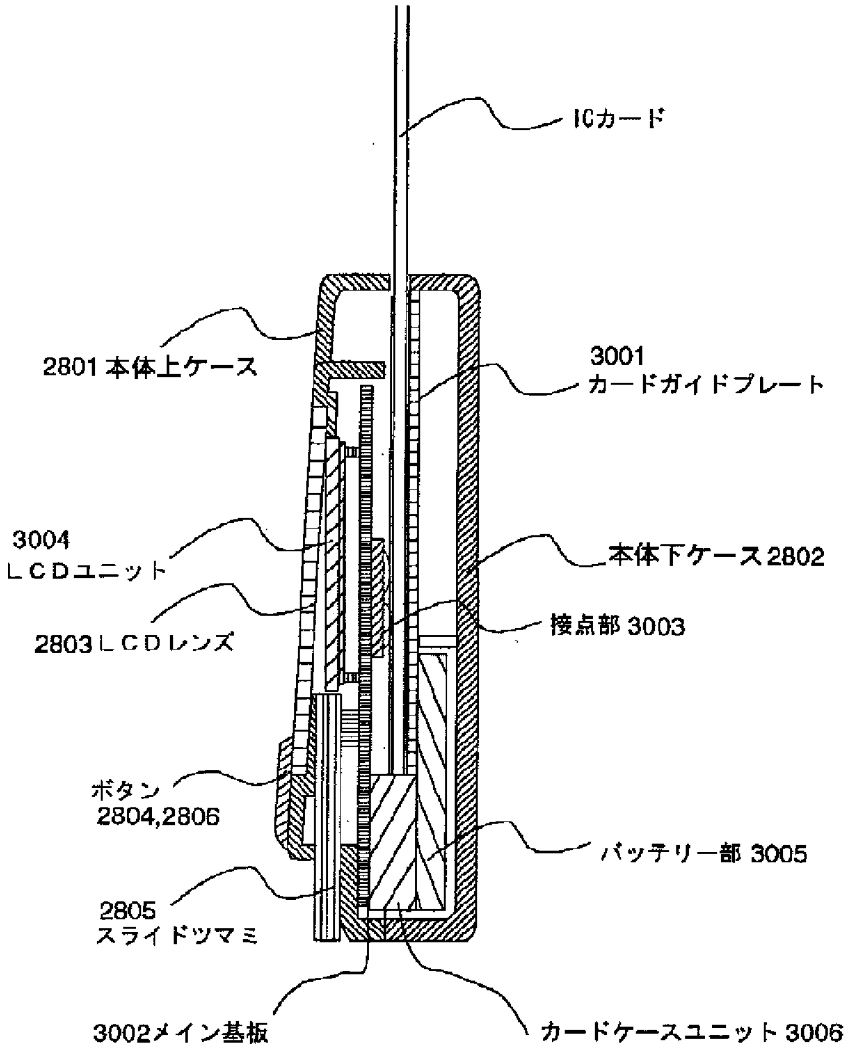
図２８





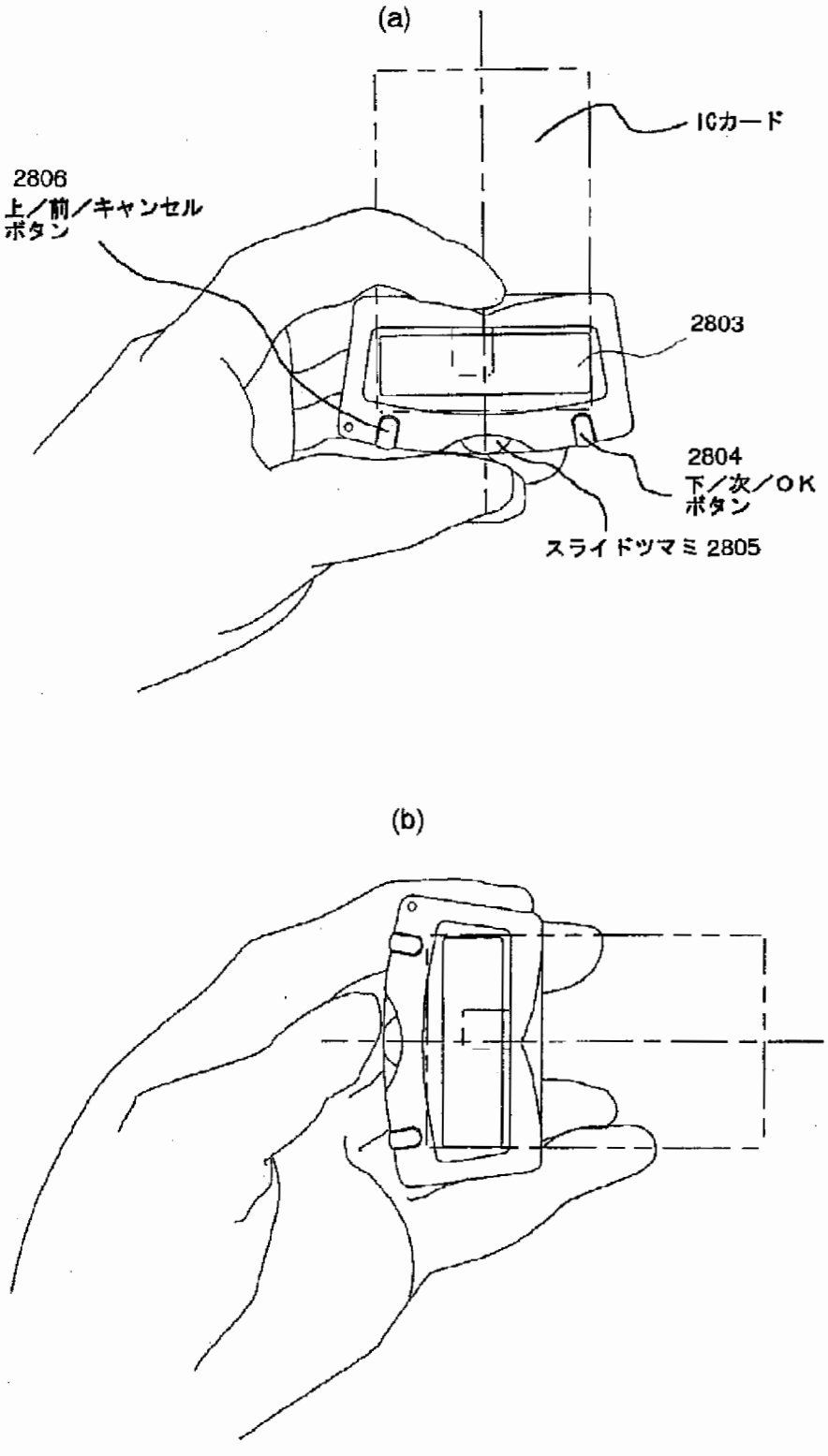
[Drawing 30]

図３０



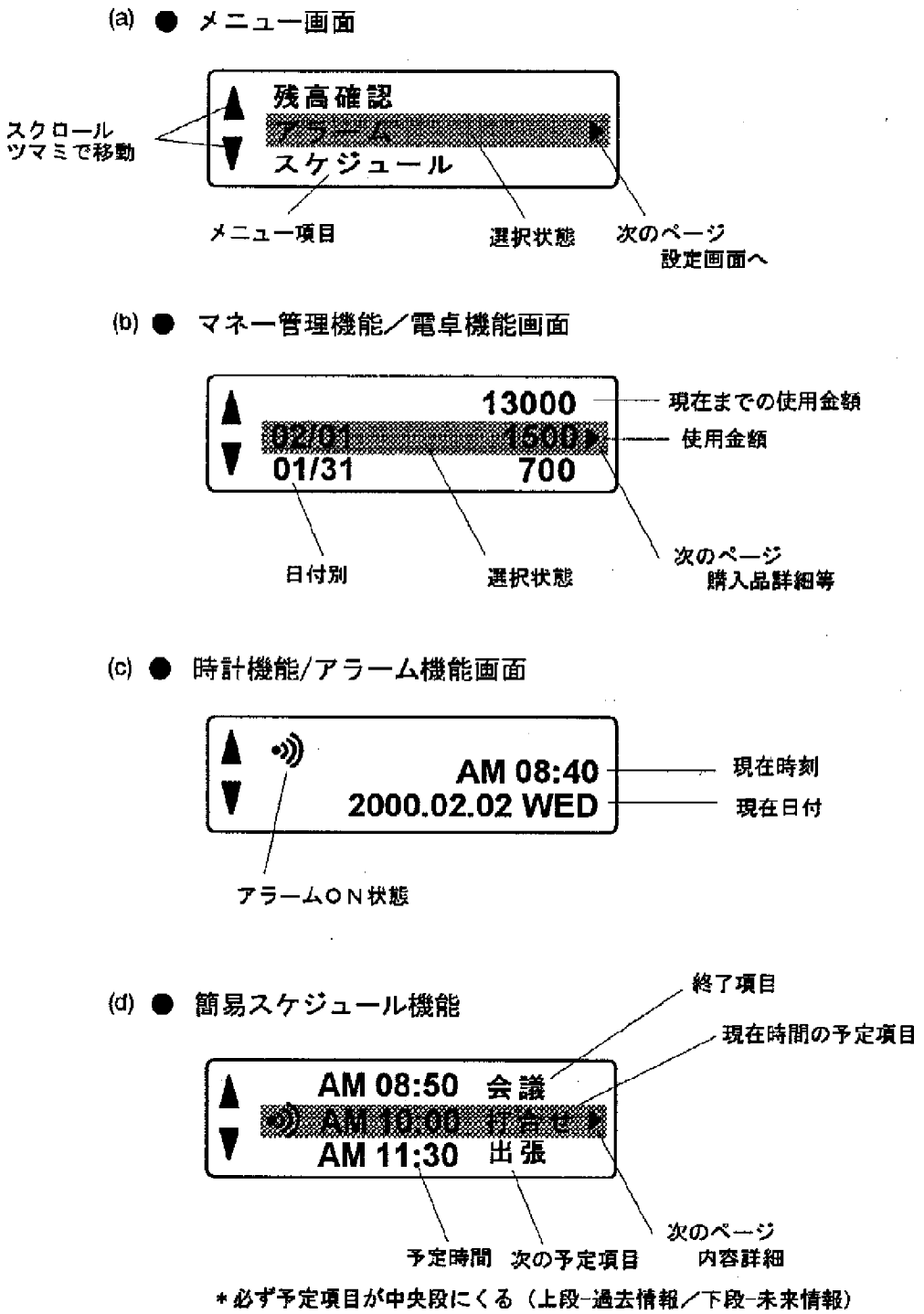
[Drawing 31]

図３１



[Drawing 33]

図３３



[Translation done.]

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2005-159741
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H04N	5/225	H04N	5/225	Z	5K023

審査請求 未請求　請求項の数 7　OL　（全 15 頁）

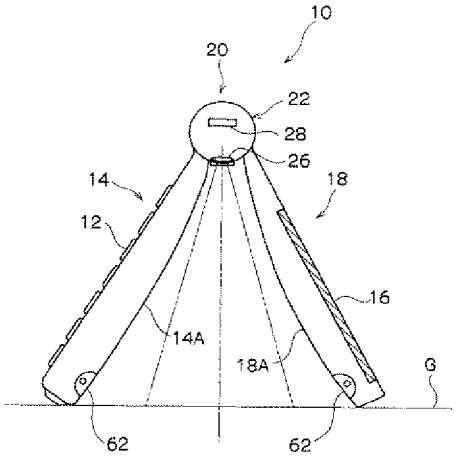
(21)出願番号　特願2003-395738 (P2003-395738)
(22)出願日　平成15年11月26日 (2003.11.26)

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Fターム(参考)　5C022 AA00　AC01　AC06　AC77
5K023 AA07　DD08　KK01　MM00

(54)【発明の名称】カメラ付携帯機器

(57)【要約】
【目的】　接写撮影が可能な開閉式のカメラ付携帯機器のヒンジ部の機構の複雑化を防止する。
【構成】　カメラ付携帯電話１０では、操作部１２が備えられた第１筐体１４とモニタ１６が備えられた第２筐体１８が１軸式のヒンジ部２０によって開閉可能に連結されている。ヒンジ部２０は、第１筐体１４と第２筐体１８を１８０度を越えて回転可能としているので、ヒンジ部２０を上向きにし、且つ、操作部１２とモニタ１６を外向きにして第１筐体１４と第２筐体１８を平面G上に倒立できる。
【選択図】　図９



Petitioners - Exhibit 1002, page 446

【特許請求の範囲】
【請求項1】
操作部を備えた第１筐体と、
モニタを備えた第２筐体と、
前記操作部と前記モニタを開閉可能に前記第１筐体と前記第２筐体を連結するヒンジ部と、
前記ヒンジ部に配設されたカメラと、
を備えるカメラ付携帯機器であって、
前記第１筐体と前記第２筐体が重ね合わされて前記操作部と前記モニタが内側を向いた形態と、前記第１筐体と前記第２筐体が開かれて前記操作部と前記モニタが外側を向いた形態の２つの形態に変更可能に構成されたことを特徴とするカメラ付携帯機器。
【請求項2】
前記ヒンジ部が、前記第１筐体と前記第２筐体とが重ね合わされた状態から前記第２筐体を１８０度以上回転してロックでき、
前記カメラが、前記ヒンジ部回りに回動可能とされていることを特徴とする請求項１に記載のカメラ付携帯機器。
【請求項3】
前記ヒンジ部が、前記第１筐体と前記第２筐体とが重ね合わされた状態から前記第２筐体を１８０度以上回転してロックでき、
前記カメラが、前記第２筐体が１８０度以上回転されると前記第１筐体と前記第２筐体との内側の被写体に面することを特徴とする請求項１に記載のカメラ付携帯機器。
【請求項4】
前記第２筐体が１８０度より大きく開かれたことを検出する検出手段と、
前記検出手段から検出信号を受信すると前記カメラの撮影モードを、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写モードに切換える制御手段と、
を有することを特徴とする請求項２又は３に記載のカメラ付携帯機器。
【請求項5】
１８０度より大きく開かれた前記第２筐体と前記第１筐体との内側に位置する前記カメラの撮像レンズを、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写状態に切換える切換え手段を有することを特徴とする請求項２又は３に記載のカメラ付携帯機器。
【請求項6】
前記切換え手段は、
１８０度より大きく開かれた前記第２筐体と前記第１筐体との内側に位置する前記カメラの前記撮像レンズの前面に配置され、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写用レンズを有することを特徴とする請求項５に記載のカメラ付携帯機器。
【請求項7】
前記切換え手段は、
１８０度より大きく開かれた前記第２筐体と前記第１筐体との内側に位置する前記カメラの前記撮像レンズを、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写位置まで移動させる移動手段を有することを特徴とする請求項５に記載のカメラ付携帯機器。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は、開閉式の携帯機器であって、ヒンジ部にカメラが配設されたカメラ付携帯機器に関する。
【背景技術】
【0002】

従来からカメラ付携帯電話によって机上に置かれた被写体を接写するための構成が考案されている（例えば、特許文献１、又は２参照）。

【0003】

特許文献１では、折り曲げ可能とされたアンテナを机上に当接させてカメラと被写体との距離を合わせるという構成が開示されている。この構成ではカメラがモニタの裏面に設けられ、キーボードを備えた第１筐体とモニタを備えた第２筐体が約１８０度開かれた状態で被写体を接写するので、モニタが上向きになる。このため、モニタで被写体を確認しながら接写できるという利点を有するが、携帯電話は撮影者が保持していなければならず、携帯電話が被写体に対して傾いてしまうとカメラと被写体との距離が狂ってしまう。従って、接写撮影時の安定性に問題があった。

【0004】

また、特許文献２では、上記第１、第２筐体が１８０度未満開かれた状態で、ヒンジ部を上向きにして第１、第２筐体を机上に倒立させることによって、ヒンジ部に配設されたカメラと被写体との距離を合わせるという接写撮影時の安定性が高い構成が開示されている。この構成では、第１、第２筐体を机上に倒立させた状態でモニタが外を向いており、モニタで被写体を確認しながら接写撮影を行うことができるようになっている。

【0005】

しかし、第１筐体と第２筐体を連結するヒンジ部は、第１、第２筐体を１８０度以上開くことができなかった。このため、ヒンジ部を、第１、第２筐体を開閉するための開閉軸と、モニタを裏返すための回転軸との２軸構成にしなければならず、機構が複雑になるという問題があった。

【特許文献1】特開２０００－３５８２２５号公報

【特許文献2】特開２００３－１６３８２４号公報

【発明の開示】

【発明が解決しようとする課題】

【0006】

本発明は上記事実を考慮してなされたものであり、接写をする形態に変化する開閉式のカメラ付携帯機器において、接写撮影時の安定性を高めると共に、ヒンジ部の機構の複雑化を防止することを目的とする。

【課題を解決するための手段】

【0007】

請求項１に記載のカメラ付携帯機器は、操作部を備えた第１筐体と、モニタを備えた第２筐体と、前記操作部と前記モニタを開閉可能に前記第１筐体と前記第２筐体を連結するヒンジ部と、前記ヒンジ部に配設されたカメラと、を備えるカメラ付携帯機器であって、前記第１筐体と前記第２筐体が重ね合わされて前記操作部と前記モニタが内側を向いた形態と、前記第１筐体と前記第２筐体が開かれて前記操作部と前記モニタが外側を向いた形態の２つの形態に変更可能に構成されたことを特徴とする。

【0008】

請求項１に記載のカメラ付携帯機器では、操作部が第１筐体に備えられ、モニタが第２筐体に備えられている。この第１筐体と第２筐体は、ヒンジ部によって操作部とモニタを開閉可能に連結されている。

【0009】

このカメラ付携帯電話は、第１筐体と第２筐体が重ね合わされて操作部とモニタが内側を向いた形態と、第１筐体と第２筐体が開かれて操作部とモニタが外側を向いた形態の２つの形態に変更可能に構成されている。

【0010】

このため、第１筐体と第２筐体との内側に存在する被写体をモニタで確認し、操作部を操作しながら撮影できる。

【0011】

請求項２に記載のカメラ付携帯機器は、請求項１に記載のカメラ付携帯機器であって、

前記ヒンジ部が、前記第１筐体と前記第２筐体とが重ね合わされた状態から前記第２筐体を１８０度以上回転してロックでき、前記カメラが、前記ヒンジ部回りに回動可能とされていることを特徴とする。

【0012】

請求項２に記載のカメラ付携帯機器では、操作部が第１筐体に備えられ、モニタが第２筐体に備えられている。この第１筐体と第２筐体は、ヒンジ部によって操作部とモニタを開閉可能に連結されている。

【0013】

第２筐体は、ヒンジ部によって第１筐体と重ね合わされた状態から１８０度以上回転してロックできる。このため、ヒンジ部を上向きにして第１筐体と第２筐体を平面に倒立させることができる。また、この状態で、モニタは外側を向き、カメラはヒンジ部回りを回動可能とされている。これによって、カメラを第１筐体と第２筐体との内側に存在する被写体に合わせ、被写体をモニタで確認しながら撮影できる。

【0014】

このように、１軸式のヒンジ部の回転の自由度を高くすることによって、モニタを裏返すための回転軸が不要となり、ヒンジ部の機構の複雑化が防止されている。

【0015】

請求項３に記載のカメラ付携帯機器は、請求項１に記載のカメラ付携帯機器であって、前記ヒンジ部が、前記第１筐体と前記第２筐体とが重ね合わされた状態から前記第２筐体を１８０度以上回転してロックでき、前記カメラが、前記第２筐体が１８０度以上回転されると前記第１筐体と前記第２筐体との内側の被写体に面することを特徴とする。

【0016】

請求項３に記載のカメラ付携帯機器では、請求項２と同様、第２筐体を、ヒンジ部によって第１筐体と重ね合わされた状態から１８０度以上回転してロックできる。そして、カメラは、第２筐体が１８０度以上回転されると第１筐体と第２筐体との内側に存在する被写体に面する。

【0017】

このため、第２筐体を１８０度以上回転した後にカメラの位置を調整する必要がないので、即座に第１筐体と第２筐体の内側の被写体を撮影できる。

【0018】

請求項４に記載のカメラ付携帯機器は、請求項２又は３に記載のカメラ付携帯機器であって、前記第２筐体が１８０度より大きく開かれたことを検出する検出手段と、前記検出手段から検出信号を受信すると前記カメラの撮影モードを、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写モードに切換える制御手段と、を有することを特徴とする。

【0019】

請求項４に記載のカメラ付携帯機器では、第２筐体が１８０度より大きく開かれると検出手段によって検出され、制御手段が、検出手段からの検出信号を受信するとカメラの撮影モードを接写モードに切換える。これによって、第２筐体を開くだけで自動的に被写体を接写できるようになる。

【0020】

請求項５に記載のカメラ付携帯機器は、請求項２又は３に記載のカメラ付携帯機器であって、１８０度より大きく開かれた前記第２筐体と前記第１筐体との内側に位置する前記カメラの撮像レンズを、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写状態に切換える切換え手段を有することを特徴とする請求項２又は３に記載のカメラ付携帯機器。

【0021】

請求項５に記載のカメラ付携帯機器では、第２筐体が１８０度より大きく開かれると、切換え手段が、第２筐体と第１筐体との間に位置するカメラの撮影レンズを、第２筐体と第１筐体との内側の被写体を接写可能とする接写状態に切換える。これによって、第２筐

体と第１筐体との間の被写体が接写可能となる。
【0022】
請求項６に記載のカメラ付携帯機器は、請求項５に記載のカメラ付携帯機器であって、前記切換え手段は、１８０度より大きく開かれた前記第２筐体と前記第１筐体との内側に位置する前記前記カメラの前記撮像レンズの前面に配置され、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写用レンズを有することを特徴とする。
【0023】
請求項６に記載のカメラ付携帯機器では、第２筐体を１８０度より大きく開き、接写用レンズをカメラの撮像レンズの前面に配置することによって、第２筐体と第１筐体との内側の被写体が接写可能となる。
【0024】
請求項７に記載のカメラ付携帯機器は、請求項５に記載のカメラ付携帯機器であって、１８０度より大きく開かれた前記第２筐体と前記第１筐体との内側に位置する前記カメラの前記撮像レンズを、前記第２筐体と前記第１筐体との内側の被写体を接写可能とする接写位置まで移動させる移動手段を有することを特徴とする。
【0025】
請求項７に記載のカメラ付携帯機器では、第２筐体が１８０度より大きく開かれると、カメラの撮像レンズが移動手段によって接写位置まで移動される。これによって、第２筐体を１８０度以上開くだけで自動的に第１筐体と第２筐体との内側の被写体を接写できるようになる。
【発明の効果】
【0026】
本発明は上記構成にしたので、接写撮影をする形態に変化する開閉式のカメラ付携帯機器において、接写撮影時の安定性を高めると共に、ヒンジ部の機構の複雑化を防止できる。
【発明を実施するための最良の形態】
【0027】
以下に図面を参照しながら本実施形態について説明する。
【0028】
図１に示すように、カメラ付携帯電話１０は、操作部１２が備えられた第１筐体１４と、モニタ１６が備えられた第２筐体１８が、ヒンジ部２０によって開閉可能に連結されて構成されている。第１筐体１４と第２筐体１８を閉じた状態でモニタ１６と操作部１２は内側に収まる。
【0029】
ヒンジ部２０の中央部には回転可能とされたカメラユニット２２が配設されている。図２に示すように、カメラユニット２２は、円筒形状のケーシング２４の表面に撮像レンズ２６が配設され、ケーシング２４内にＣＣＤ２８が配設されている。ＣＣＤ２８は、撮像面の中央部を撮像レンズ２６の光軸に合わされている。
【0030】
ケーシング２４の両端部は径が細くなった回転軸２４Ａとされており、この回転軸２４Ａを回転可能に支持する軸受３０が第１筐体１４の端面に形成されている。回転軸２４Ａの円周面には、ラッチ３２が設けられている。ラッチ３２は、回転軸２４Ａの軸方向に延出する板バネで、三角形状に折り曲げられた先端部３２Ａを回転軸２４Ａの円周面から突出させている。
【0031】
また、軸受３０の内周面にはラッチ３２を係止する係止溝３０Ａ、３０Ｂ、３０Ｃが形成されている。係止溝３０Ａは、第１筐体１４の操作部１２側に形成されており、図３（Ａ）に示すように、ラッチ３２が係止溝３０Ａに係止されると撮像レンズ２６はユーザーの方向を向く。これによって、自分を撮影する自分撮りが可能となる。
【0032】

また、図３（Ｂ）に示すように、カメラユニット２２を時計周り方向（図中矢印Ａ方向に回転させると、ラッチ３２は軸受３０の内周面によって回転軸２４Ａの円周面内に押し込まれる。

【0033】

また、図３（Ｃ）に示すように、係止溝３０Ｂは、係止溝３０Ａと約１８０度の間隔で形成されている。ラッチ３２は、この係止溝３０Ｂの位置まで回転軸２４Ａが回転されると弾性力で回転軸２４Ａの円周面から突出し、係止溝３０Ｂに係止される。この状態で、撮像レンズ２６は撮影者の反対側、即ち通常の被写体側を向く。これによって、撮影者の前に存在する被写体を撮影可能となる。

【0034】

さらに、図３（Ｄ）に示すように、係止溝３０Ｃは、係止溝３０Ａと係止溝３０Ｂと約９０度の間隔（係止溝３０Ａと係止溝３０Ａとの中間）で形成されている。この係止溝３０Ｃにラッチ３２が係止されると撮像レンズ２６は後述する接写撮影対象の被写体側を向く。これによって、接写撮影が可能となる。

【0035】

そして、図４、図５に示すように、軸受３０を挟み込む２個の第１円筒体３４が第２筐体１８の端面に形成され、第１円筒体３４を挟み込む２個の第２円筒体３６が第１筐体１４の端面に形成されている。第１円筒体３４は軸方向の一端部（軸受３０側）が底面３４Ｂとされた底付円筒体であり、第２円筒体３６は、軸方向の両端部が開口された円筒体である。

【0036】

このような第１円筒体３４と第２円筒体３６には、ヒンジ３８、３９が挿入され、第１筐体１４と第２筐体１８が開閉可能となる。図中左側に配設されるヒンジ３８は、第１ヒンジ４０と、第２ヒンジ４２と、回転軸４４と、圧縮コイルバネ４６とで構成されている。また、図中右側に配設されるヒンジ３９は、第１ヒンジ４０と、第２ヒンジ４１と、回転軸４４と、圧縮コイルバネ４４とで構成されている。なお、符号が同一である第１ヒンジ４０、回転軸４２、圧縮コイルバネ４４は共通の部品である。

【0037】

第１ヒンジ４０は、円筒形状をしており、第１円筒体３４に挿入される。第１ヒンジ４０の円周面には軸方向に延出する２本のキー溝４０Ａが１８０度の間隔で形成され、第１円筒体３４の内周面には２本のキー３４Ａが１８０度間隔で形成されている。これによって、第１ヒンジ４０は、第１円筒体３４内で回転不能となる。

【0038】

また、第２ヒンジ４２は、第１ヒンジ４０と同径の円筒形状をしており、図中左側の第２円筒体３６に挿入される。第２ヒンジ４２の円周面には軸方向に延出する２本のキー溝４２Ａが１８０度の間隔で形成され、第２円筒体３６の内周面には、２本のキー溝４２Ａが係合する２本のキー３６Ａが１８０度の間隔で形成されている。これによって、第２ヒンジ４２は、左側の第２円筒体３６内で回転不能となっている。

【0039】

そして、ヒンジ３９の第２ヒンジ４１は、第１ヒンジ４０と同径の円筒形状をしており、図中右側の第２円筒体３６に挿入される。第２ヒンジ４１の円周面には軸方向に延出する２本のキー溝４１Ａが１８０度の間隔で形成され、第２円筒体３６の内周面に１８０度の間隔で形成された２本のキー３６Ａに係合している。これによって、第２ヒンジ４１は、右側の第２円筒体３６内で回転不能となっている。

【0040】

また、回転軸４４は、軸方向の一端部にネジ部４４Ａが形成され、軸方向の他端部に笠部４４Ｂが形成されている。この回転軸４４は、ヒンジ３８の第１ヒンジ４０と第２ヒンジ４２、及びヒンジ３９の第１ヒンジ４０と第２ヒンジ４１をそれぞれ貫通し、ネジ部４４Ａを第１円筒体３４の底面３４Ｂに螺合している。

【0041】

また、圧縮コイルバネ４６は、第２ヒンジ４２と笠部４４Ｂとの間、及び第２ヒンジ４１と笠部４４Ｂとの間にそれぞれ配設され、第２ヒンジ４１、４２をそれぞれ第１ヒンジ４０へ付勢している。

【0042】

また、第１ヒンジ４０と第２ヒンジ４２との当接面４０Ｂ、４２Ｂにはそれぞれ、カム４３とカム４５が形成されている。カム４３は、断面形状がテーパー状の突起で、カム４５は、カム４３と係合する断面形状がテーパー状の溝である。

【0043】

図６に示すように、カム４３は、当接面４０Ｂの端面から孔４０Ｃを通って反対側の端面まで延出している。そして、２個のキー３４Ａは、第２筐体１８の厚み方向に沿って配設され、カム４３は、２個のキー溝４０Ａの配列方向と約９０の角度を持つ径方向へ延出している。即ち、第１ヒンジ４０が第１円筒体３４内に挿入された状態で、カム４３は、第２筐体の厚み方向と略直交する方向に延出している。

【0044】

また、図７に示すように、カム４５は、当接面４２Ｂの端面から孔４２Ｃを通って反対側の端面まで延出する３本の第１カム４５Ａ、第２カム４５Ｂ、及び第３カム４５Ｃとで構成されている。２個のキー３６Ａは、第１筐体１４の厚み方向に沿って配列され、第１カム４５Ａは、２個のキー溝４２Ａの配列方向と約９０度の角度を持って径方向へ延出している。即ち、第２ヒンジ４２が図中左側の第２円筒体３６内に挿入された状態で、第１カム４５Ａは、第１筐体１４の厚み方向と略直交する方向に延出している。

【0045】

そして、第２カム４５Ｂは、第１カム４５Ａに対して半時計回り方向に約３０度の角度を持って延出し、第３カム４５Ｃは、第２カム４５Ｂに対して半時計周り方向に約３０度の角度を持って延出している。

【0046】

また、図４、図５に示すように、ヒンジ３９の第１ヒンジ４０と第２ヒンジ４１との当接面４０Ｂ、４１Ｂにはそれぞれ、カム４３とカム４７が形成されている。カム４３は上述した通りである。

【0047】

カム４７は、カム４３と係合する断面形状がテーパー状の溝で、図７に示すように、当接面４１Ｂの端面から孔４１Ｃを通って反対側の端面まで延出する３本の第１カム４７Ａ、第２カム４７Ｂ、及び第３カム４７Ｃとで構成されている。第１カム４７Ａは、２個のキー溝４１Ａの配列方向と約９０度の角度を持って径方向へ延出している。即ち、第２ヒンジ４１が図中右側の第２円筒体３６内に挿入された状態で、第１カム４５Ａは、第１筐体１４の厚み方向と略直交する方向に延出している。

【0048】

そして、第２カム４７Ｂは、第１カム４７Ａに対して時計回り方向に約３０度の角度を持って延出し、第３カム４７Ｃは、第２カム４７Ｂに対して時計周り方向に約３０度の角度を持って延出している。

【0049】

第１筐体１４と第２筐体１８を閉じた状態で、ヒンジ３８の第１ヒンジ４０のカム４３は第２ヒンジ４２の第１カム４５Ａに係合する。また、ヒンジ３９の第１ヒンジ４０のカム４３は第２ヒンジ４１の第１カム４７Ａに係合する。この状態で、第２ヒンジ４２が圧縮コイルバネ４６によって第１ヒンジ４０に付勢されているので、ヒンジ３８、３９にはロックがかかり、第１筐体１４と第２筐体１８とのガタツキが無くなる。

【0050】

そして、閉じた状態から第２筐体１８を開くと、ヒンジ３８のカム４５の傾斜面がカム４３の傾斜面に押され、また、ヒンジ３９のカム４７の傾斜面がカム４３の傾斜面に押される。これによって、ヒンジ３８のカム４３とカム４５、及びヒンジ３９のカム４３とカム４７の係合が解除され、ヒンジ３８、及びヒンジ３９は回転可能となる。

【0051】
そして、閉じた状態から第２筐体１８を１２０度開くと、ヒンジ３８の第１ヒンジ４０のカム４３は第２ヒンジ４２の第３カム４５Ｃに係合する。また、ヒンジ３９の第１ヒンジ４０のカム４３は第２ヒンジ４１の第３カム４７Ｃに係合する。
【0052】
そして、さらに第２筐体１８を３０度開き、１５０度（第２回転位置）まで開いた状態にすると、ヒンジ３８の第１ヒンジ４０のカム４３は第２ヒンジ４２の第２カム４５Ｂに係合する。また、ヒンジ３９の第１ヒンジ４０のカム４３は第２ヒンジ４１の第２カム４７Ｂに係合する。図１に示すように第２筐体１８を１５０度（第２回転位置）まで開いた状態、若しくは更に第２筐体１８を３０度開き、１８０度（第２回転位置）まで開いた状態で、カメラ付携帯電話１０は、通話や通常の撮影を行う形態となる。この形態で、第１筐体１４と第２筐体１８は、ヒンジ３８、３９によってロックされているので、通話や通常の撮影を支障無く行うことができる。
【0053】
そして、第２筐体１８を３００度（第１回転位置）まで開くと、ヒンジ３８の第１ヒンジ４０のカム４３は第２ヒンジ４２の第３カム４５Ｃに係合し、ヒンジ３９の第１ヒンジ４０のカム４３は第２ヒンジ４１の第３カム４７Ｃに係合する。これによって、図８、図９に示すように、第１筐体１４と第２筐体１８は、閉じた状態から３００度開かれた状態でロックされるので、第１筐体１４と第２筐体をヒンジ部２０を上向きにして平面Ｇ上に倒立させることが可能となる。
【0054】
この状態で、操作部１２とモニタ１６は外側を向いており、さらに、カメラユニット２２は、上述したように第１筐体１４と第２筐体１８との内側の中心でロックされるようになっている。このため、平面Ｇ上の被写体をモニタ１６を確認しながら操作部１２を操作して撮影可能である。
【0055】
このように、ヒンジ部２０の回転の自由度を高めることによって、モニタ１６を裏返すための回転軸が不要となり、ヒンジ部２０を１軸式にすることができる。これによって、ヒンジ部２０の機構の複雑化を防止できる。
【0056】
図１０には、本実施形態のカメラ付携帯電話１０のカメラユニット２２を操作するための回路構成を示すブロック図が示されている。
【0057】
カメラ付携帯電話１０には、撮像レンズ２６、ＣＣＤ２８、映像信号処理手段４８、メモリコントローラ５０、及びメモリ５２が備えられている。撮像レンズ２６を経由してＣＣＤ２８上に結像された被写体像は、ＣＣＤ２８によってアナログ画像信号に変換される。そして、ＣＣＤ２８から出力されたアナログ画像信号は、映像信号処理手段４８でアナログ信号処理、Ａ／Ｄ変換、及びデジタル信号処理される。デジタル信号処理されたデジタル画像データは、メモリコントローラ５０によって圧縮されてメモリ５２に記録される。尚、撮影モードによっては、圧縮の過程を省いてメモリ５２に直接記録しても良い。そして、メモリ５２に格納されたデジタル画像データはモニタ１６に読み出され、モニタ１６に被写体像が映し出される。
【0058】
また、カメラ付携帯電話１０には、カメラ付携帯電話１０全体の制御を司るシステムコントローラ５４が備えられている。操作部１２を操作して所望の撮影状態に設定し、シャッタボタン５６（図１、図８参照）を押下することによって、写真撮影が行われる。
【0059】
また、カメラ付携帯電話１０には、撮像レンズ２６をズーム駆動するズームモータ５８、第２筐体１８が３００度（第１回転位置）まで開かれたことを検出する検出手段６０、及びライト６２が設けられている。

【0060】
図１１に示すように、検出手段６０は、第２筐体１８側の第１円筒体３４の外周面に形成された検出用突起６４と、第１筐体１４の裏面１４Ａに設けられ、検出用突起６４によって押圧されて導通される検出用接点６６とで構成されている。
【0061】
図１１（Ａ）に示すように、第２筐体１８が第１回転位置まで回転されると、図１１（Ｂ）に示すように、検出用突起６４が検出用接点６６を押圧し、それまで離れていた検出用接点６６を接続させる。そして、検出用接点６６が接続されるとシステムコントローラ５４へ検出信号が送信される。システムコントローラ５４は、検出信号を受信するとズームモータ５８を駆動させ、撮像レンズ２６のサーチ範囲をマクロ領域に変更し、撮影モードをマクロ（接写）撮影モードに切換える。そして、第１筐体１４の裏面１４Ａ、及び第２筐体１８の裏面１８Ａに設けられたライト６２を点灯させる。
【0062】
これによって、第１筐体１４と第２筐体１８が倒立された平面Ｇ上で、第１筐体１４と第２筐体１８の間に位置する被写体を接写可能となる。また、第１筐体１４と第２筐体１８をヒンジ部２０を上向きにして平面Ｇ上に倒立させて接写を行うので、被写体とカメラとの距離が一定となり、安定した接写撮影を行うことができる。さらに、ライト６２の照明によって明るい接写画像が得られる。
【0063】
次に、第２実施形態について説明する。なお、第１実施形態と同様の構成には同一の符号を付し、説明は省略する。
【0064】
図１２に示すように、カメラ付携帯電話１００では、第１筐体１４の操作部１２が設けられた面の裏面１４Ａには接写用レンズ１０２が設けられている。この接写用レンズ１０２は、ヒンジ１０４によって第１筐体１４の裏面１４Ａの収納部１４Ｂに出し入れができるようになっている。
【0065】
図１３に示すように、第２筐体１８を第１回転位置まで回転させ、カメラユニット２２を第１筐体１４と第２筐体１８との内側の中心まで回転させる。そして、接写用レンズ１０２を収納部１４Ｂから展開し、カメラユニット２２の撮像レンズ２６に前面に配置する。これによって、平面Ｇ上で第１筐体１４と第２筐体１８との内側に位置する被写体のピントが合い、接写可能となる。
【0066】
次に、第３実施形態について説明する。なお、第１、第２実施形態と同様の構成には同一の符号を付し、説明は省略する。
【0067】
図１４に示すように、カメラ付携帯電話２００では、カメラユニット２０２の撮像レンズ２６がレンズ鏡筒２０４に収納されている。また、円筒体２０６がケーシング２４に一体で形成されており、レンズ鏡筒２０４は、円筒体２０６によって撮像レンズ２６の光軸方向に移動可能に支持されている。また、レンズ鏡筒２０４は、引張コイルバネ２０８によって軸方向のＣＣＤ２８側の端部を支持されている。
【0068】
そして、第１、第２実施形態と同様の構成によって回転可能とされたカメラユニット２０２を、撮像レンズ２６が第１筐体１４に接近する方向（図中矢印Ａ方向）へ回転させると、図１５に示すように、第１筐体１４の裏面１４Ａに形成されたカム２１０が、レンズ鏡筒２０４の先端部に形成された笠部２０４Ａに当接する。これによって、レンズ鏡筒２０４が押し出されて、撮像レンズ２６が平面Ｇ上の被写体にピントが合う接写位置まで移動される。
【0069】
なお、第１乃至第３実施形態では、カメラユニット２２をヒンジ部２０回りに回動可能

としたが、図９に示すように、第２筐体１８が閉じた状態から約３００度開かれると撮像撮像レンズ２６が第１筐体１４と第２筐体１８との内側の被写体に面するように、カメラユニット２２をヒンジ部２０に固定しても良い。また、カメラユニット２２が第２筐体１８の回転と連動して回転し、第２筐体１８が閉じた状態から約３００度開かれると撮像レンズ２６が第１筐体１４と第２筐体１８との内側の被写体に面する位置まで回転されるようにしても良い。

【0070】

また、第１乃至第３実施形態では、第２筐体１８がヒンジ部２０によってロックされる角度を１２０度、１５０度、１８０度、３００度としたが、この角度は適宜選択可能である。

【0071】

また、第１乃至第３実施形態では、ＣＣＤ２８をヒンジ部２０に配設したが、ＣＣＤ２８を配設した位置に反射ミラーを配置して撮像レンズ２６を通過した光の進路を屈折させ、第１筐体１４若しくは第２筐体１８に配設されたＣＣＤ２８に入射させるようにしても良い。

【0072】

さらに、第１乃至第３実施形態では、本発明をカメラ付携帯電話を例に取って説明したが、ヒンジ部にカメラを備える開閉式（折り畳み式）の他のカメラ付携帯機器、例えば、ノートパソコンやＰＤＡ等にも適用可能である。

【図面の簡単な説明】

【0073】

【図1】第１実施形態のカメラ付携帯電話を示す斜視図である。

【図2】第１実施形態のカメラ付携帯電話のヒンジ部とカメラユニットを示す分解斜視図である

【図3】（Ａ）、（Ｂ）、（Ｃ）、（Ｄ）は、第１実施形態のカメラ付携帯電話のカメラユニットが回転する状態を示す断面図である。

【図4】第１実施形態のカメラ付携帯電話のヒンジ部を示す分解斜視図である。

【図5】第１実施形態のカメラ付携帯電話のヒンジ部を示す断面図である。

【図6】（Ａ）、（Ｂ）は第１実施形態のカメラ付携帯電話のヒンジ部を示す断面図である。

【図7】（Ａ）、（Ｂ）は第１実施形態のカメラ付携帯電話のヒンジ部を示す断面図である。

【図8】第１実施形態のカメラ付携帯電話の接写撮影の形態を示す斜視図である。

【図9】第１実施形態のカメラ付携帯電話の接写撮影の形態を示す側面図である。

【図10】第１実施形態のカメラ付携帯電話のカメラユニットを操作するための回路構成を示すブロック図である。

【図11】（Ａ）、（Ｂ）は、第１実施形態のカメラ付携帯電話の第２筐体の回転位置を検出する検出手段を示す断面図である。

【図12】第２実施形態のカメラ付携帯電話を示す側断面図である。

【図13】第２実施形態のカメラ付携帯電話を示す側断面図である。

【図14】第３実施形態のカメラ付携帯電話を示す側断面図である。

【図15】第３実施形態のカメラ付携帯電話を示す側断面図である。

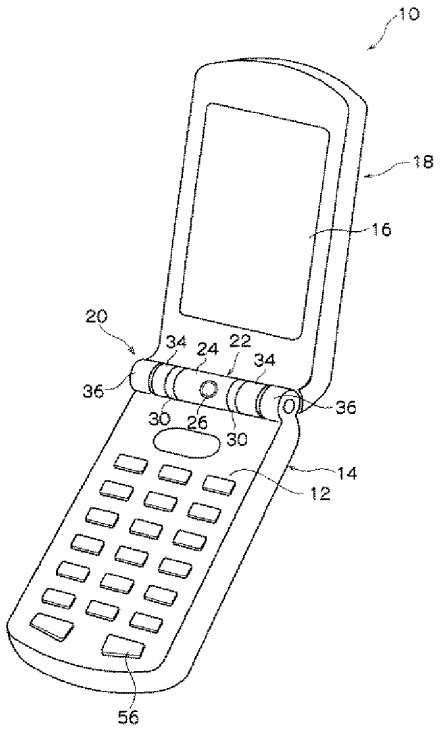
【符号の説明】

【0074】

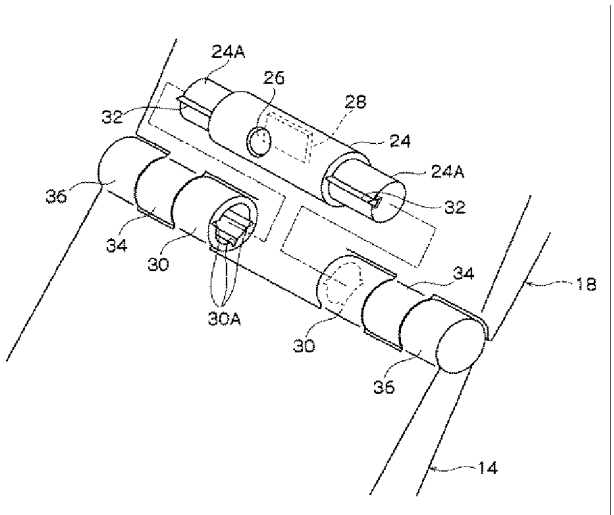
１０　カメラ付携帯電話（カメラ付携帯機器）
１２　操作部
１４　第１筐体
１６　モニタ
１８　第２筐体
２０　ヒンジ部

２２　カメラユニット（カメラ）
２６　撮像レンズ
５４　システムコントローラ（制御手段）
６０　検出手段
６４　検出用突起（検出手段）
６６　検出用接点（検出手段）
１００　カメラ付携帯電話（カメラ付携帯機器）
１０２　接写用レンズ
２００　カメラ付携帯電話（カメラ付携帯機器）
２０２　カメラユニット（カメラ）
２０４　レンズ鏡筒（移動手段）
２０６　円筒体（移動手段）
２０８　引張コイルバネ（移動手段）
２１０　カム（移動手段）

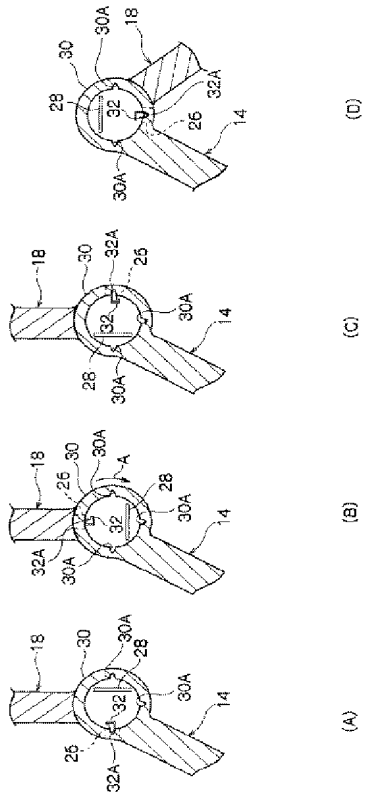
【図1】



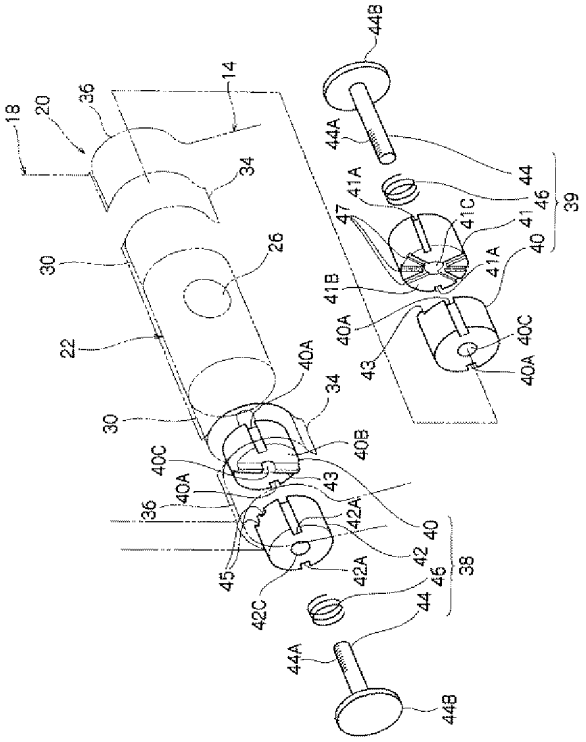
【図2】



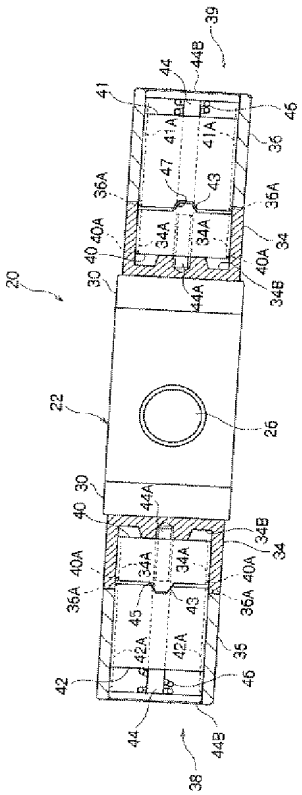
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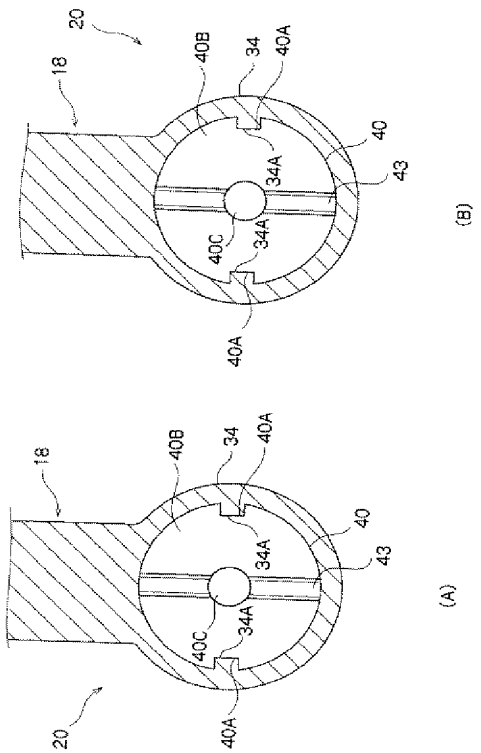
【図4】



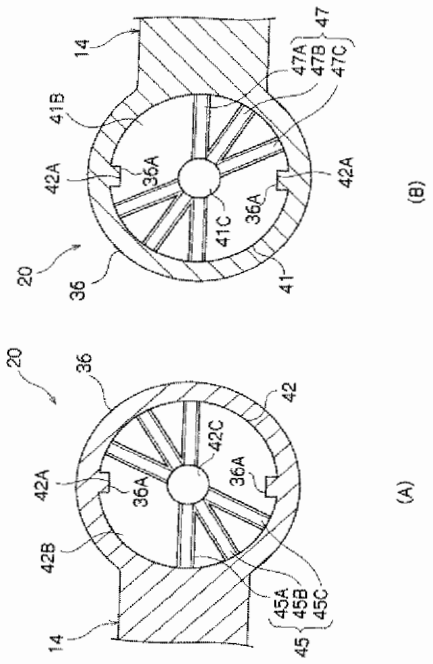
【図5】



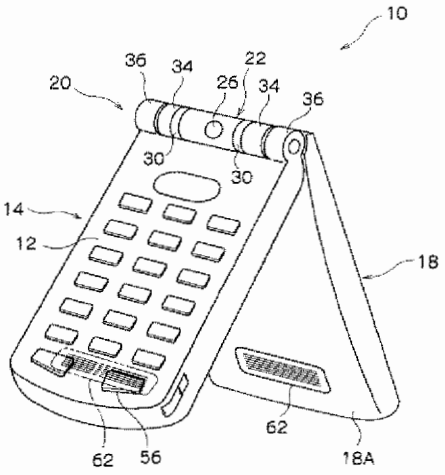
【図6】



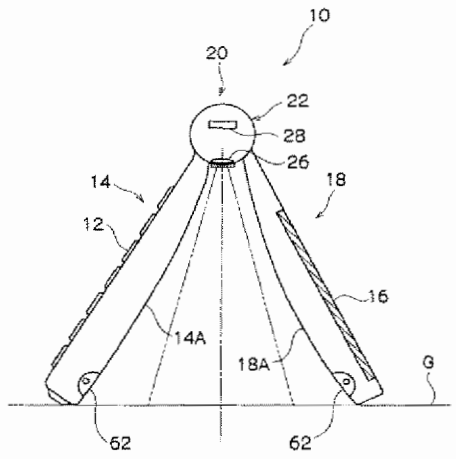
【図7】


14
47
47A
47B
47C
41B
42A
36A
41C
42A
36A
20
36
41
(B)
20
36
42
42C
42A
36A
36A
42B
45A
45B
45C
14
45
(A)

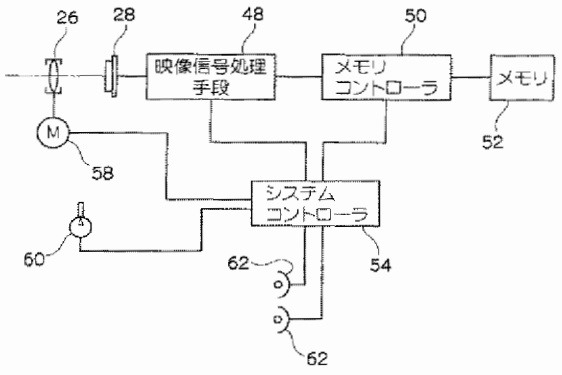
【図8】


10
20
36
34
22
26
34
36
30
30
14
12
18
62
56
62
18A

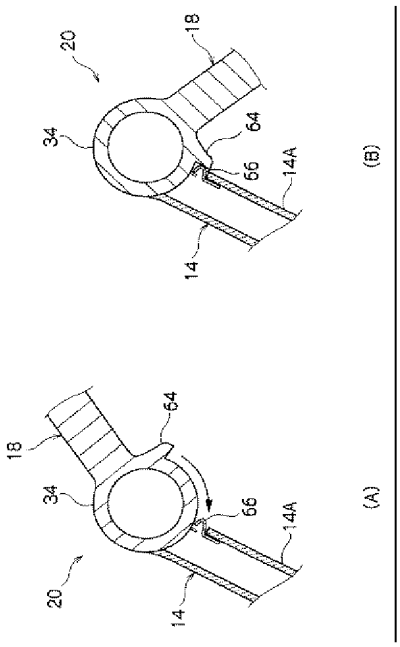
【図9】


10
20
22
28
26
14
12
18
16
14A
18A
G
62
62

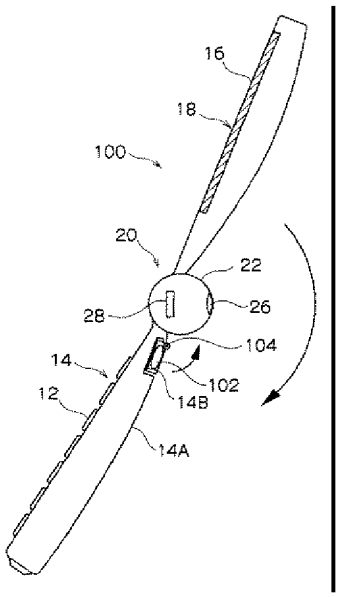
【図10】


26
28
48
50
映像信号処理手段
メモリコントローラ
メモリ
52
M
58
システムコントローラ
60
62
54
62
62

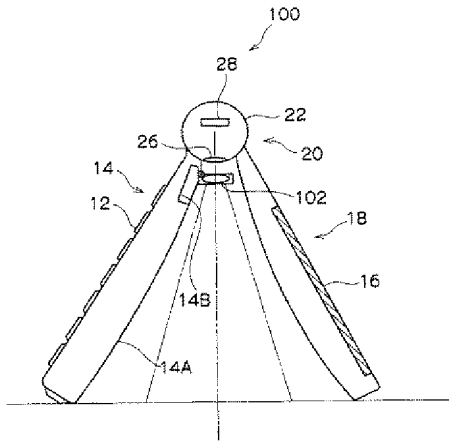
【図11】



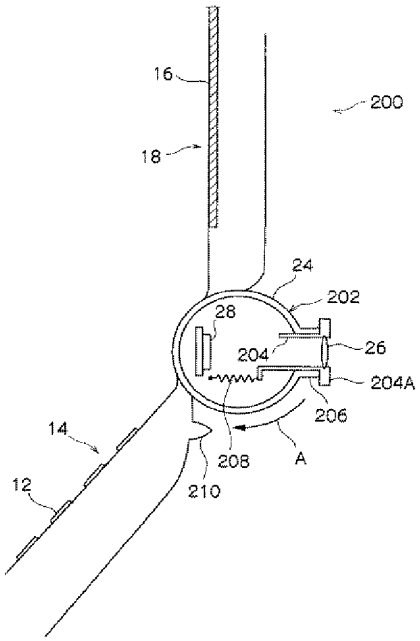
【図12】



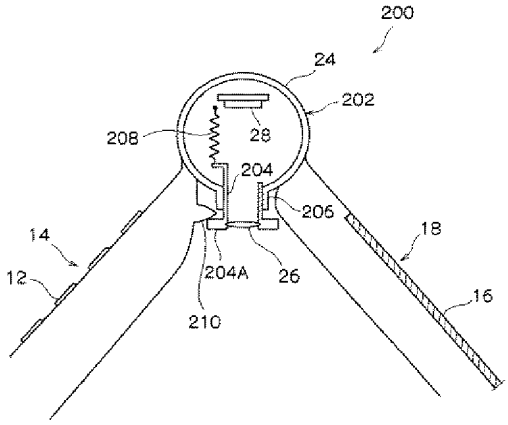
【図13】



【図14】



【図15】



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(54) **PORTABLE DEVICE WITH CAMERA**

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(73) Assignee: **Fuji Photo Film Co., Ltd.**, Minami-Ashigara-shi (JP)

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Publication Classification

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(52) **U.S. Cl.** **348/333.06**

(57) **ABSTRACT**

A portable telephone with a camera which is capable of close-up photography. A first casing body is equipped with a control portion and a second casing body is equipped with a monitor. The first and second casing bodies are openably/closeably joined by a uni-axial hinge portion. The hinge portion enables rotation of the first casing body and second casing body by more than 180°. The first casing body and second casing body can be invertedly stood on a flat surface with the hinge portion oriented upward and the control portion and the monitor facing outward.

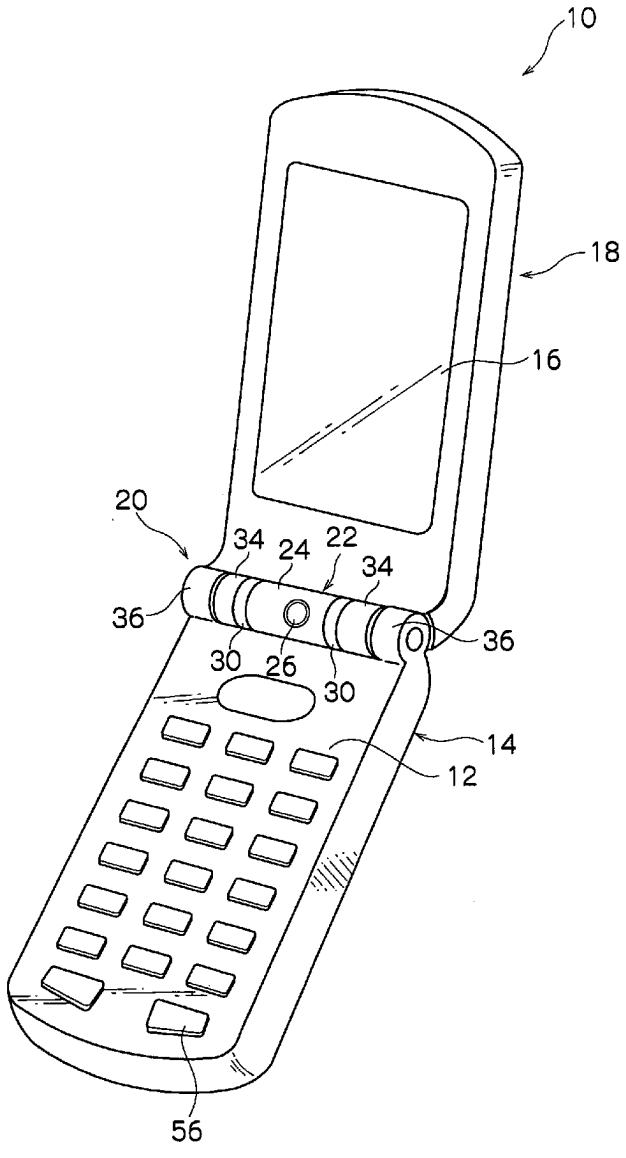


FIG.1

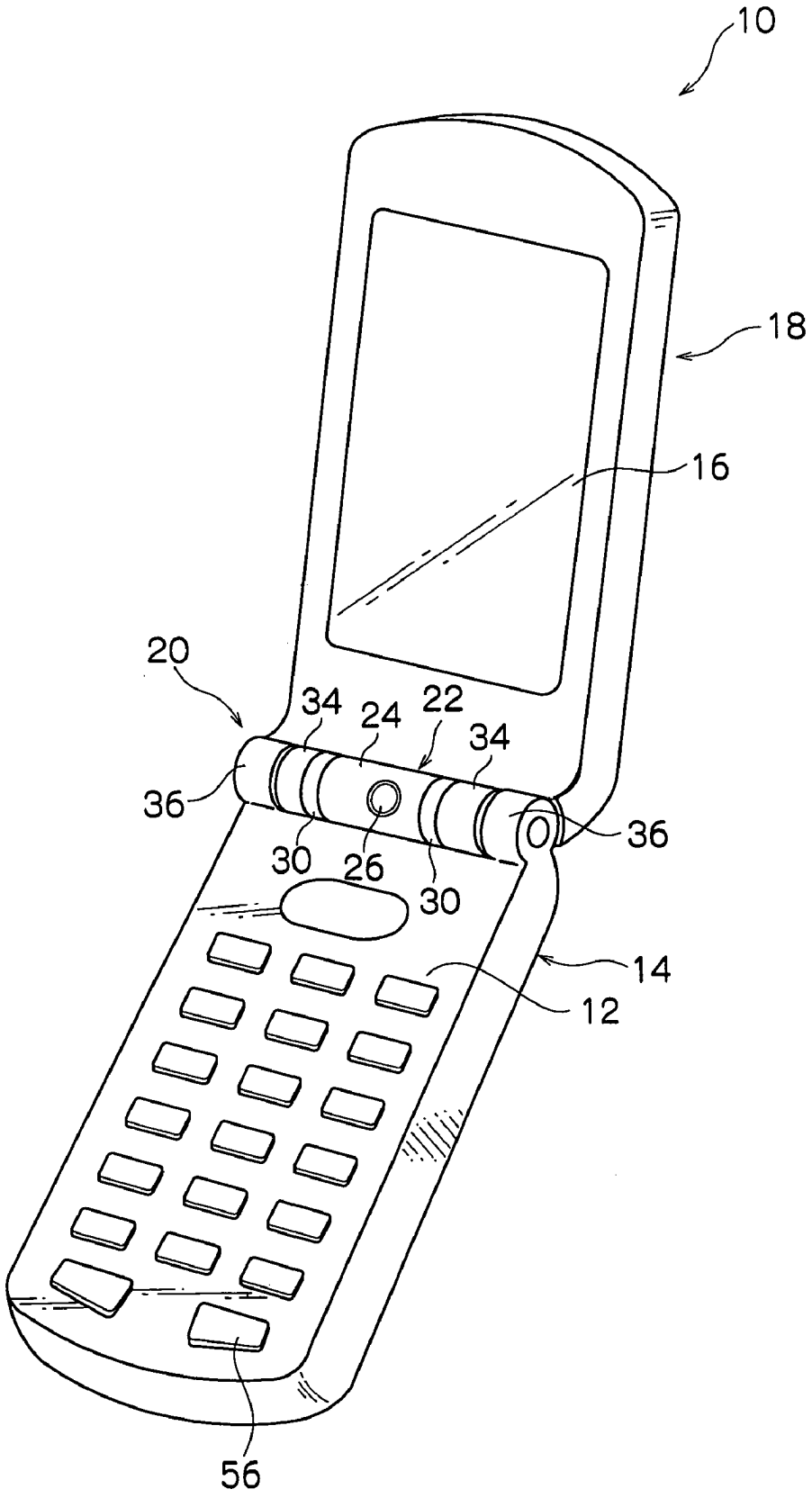


FIG.2

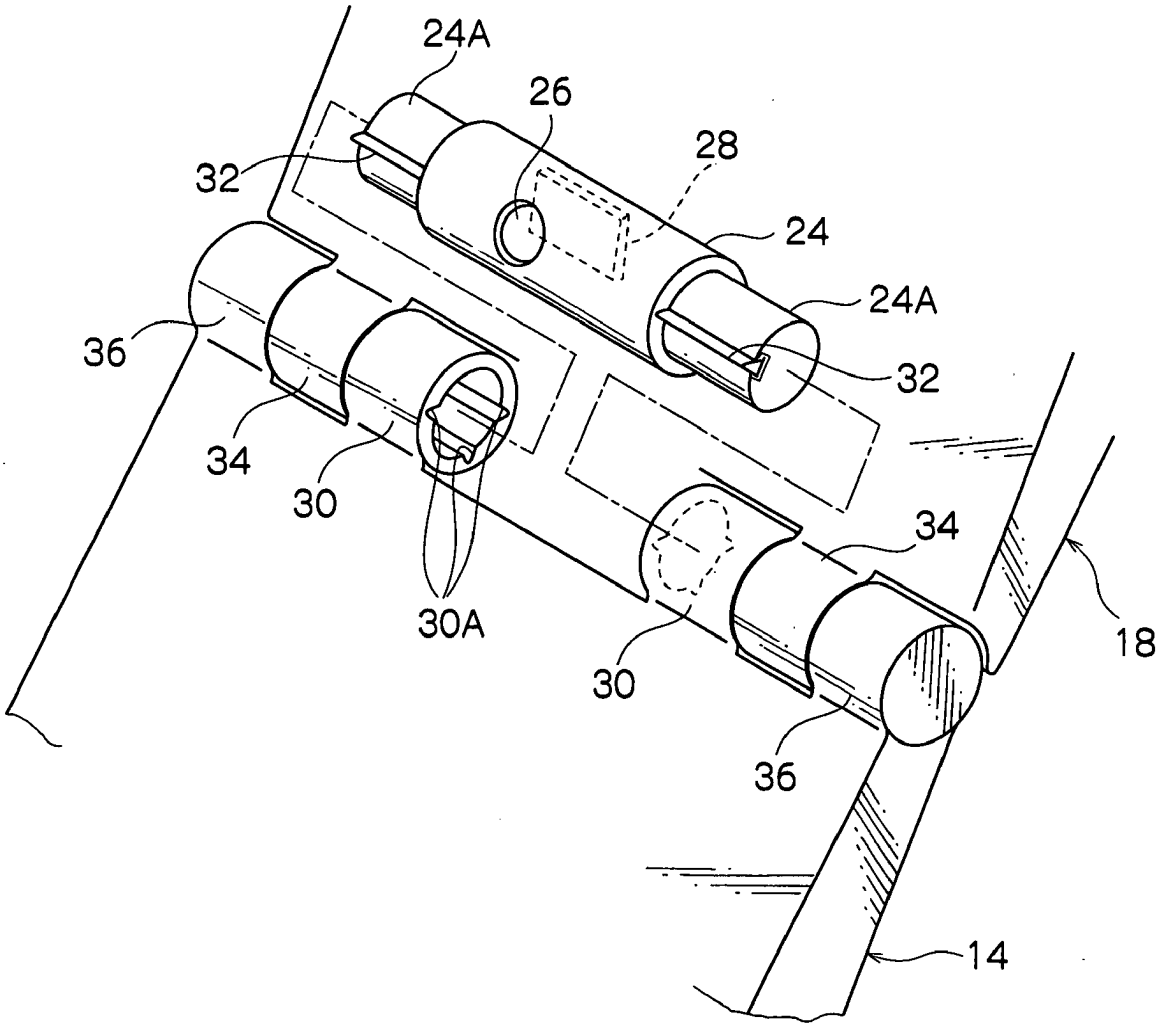


FIG.3D

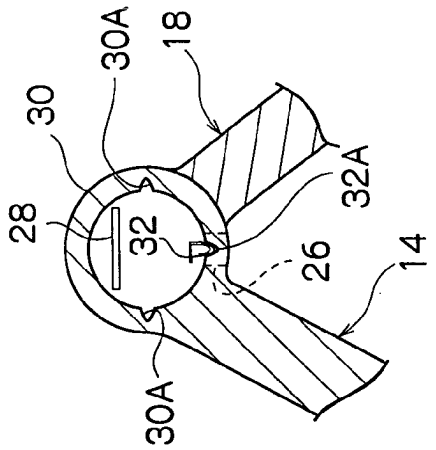


FIG.3C

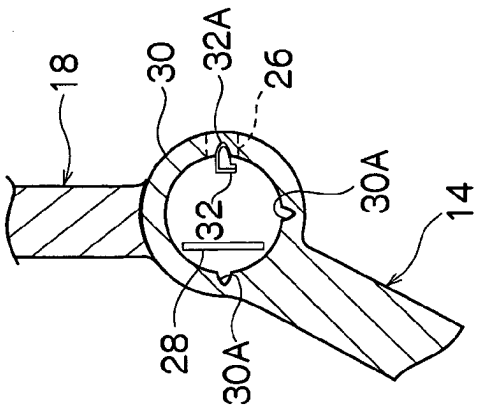


FIG.3B

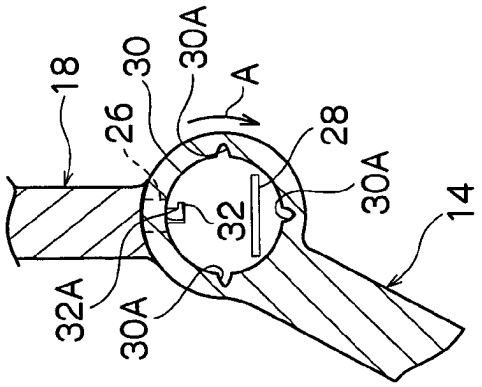
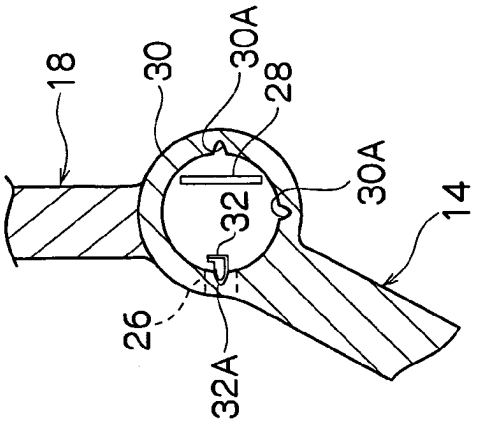


FIG.3A



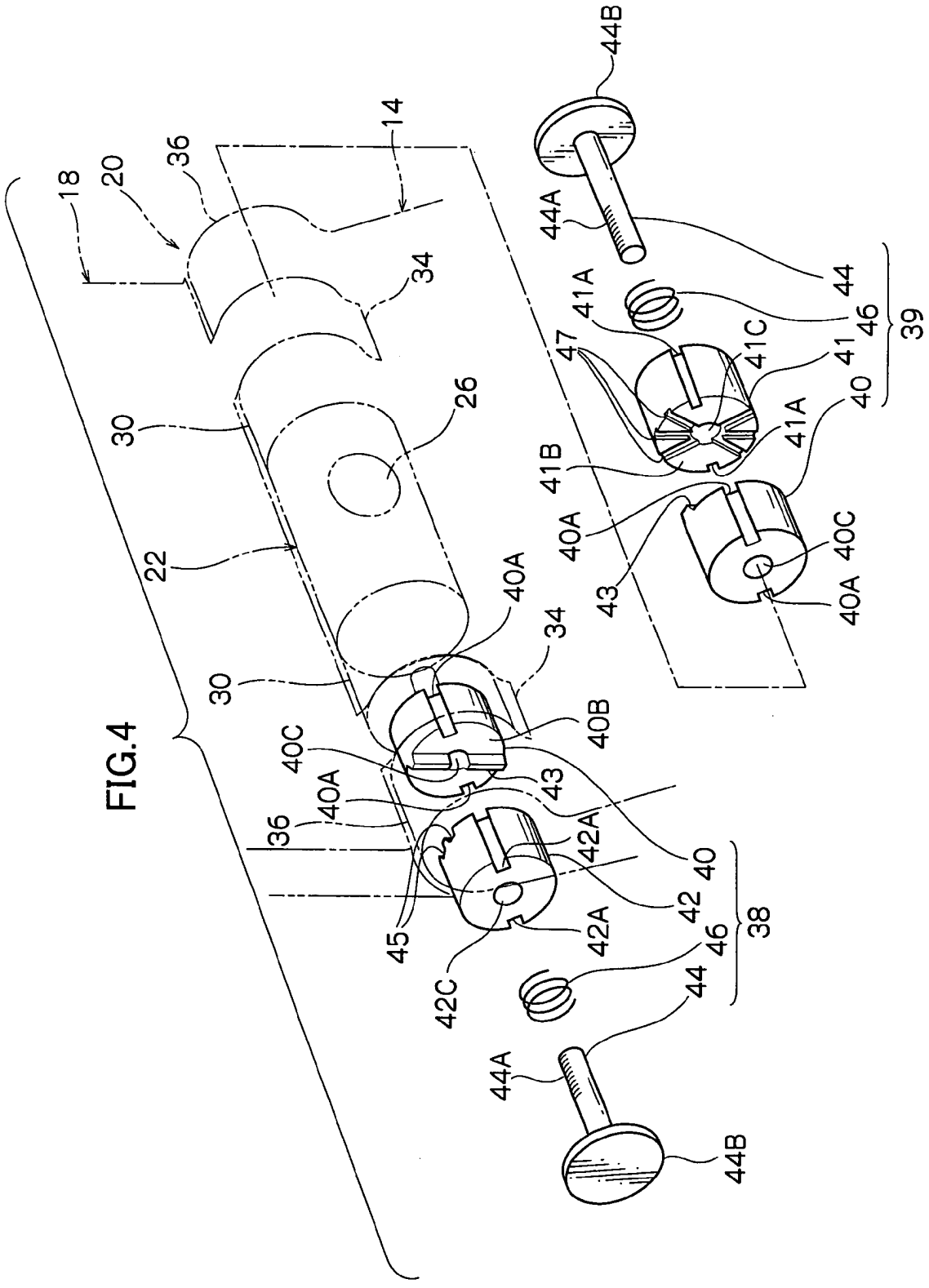

18
20
36
14
34
30
26
22
40A
34
30
40B
40C
43
40A
36
42A
40
42
38
45
42A
42C
46
44
44A
44B
44
44A
41A
47
41C
41
46
39
40
41A
41B
40A
43
40C
40A

FIG.4

FIG.5

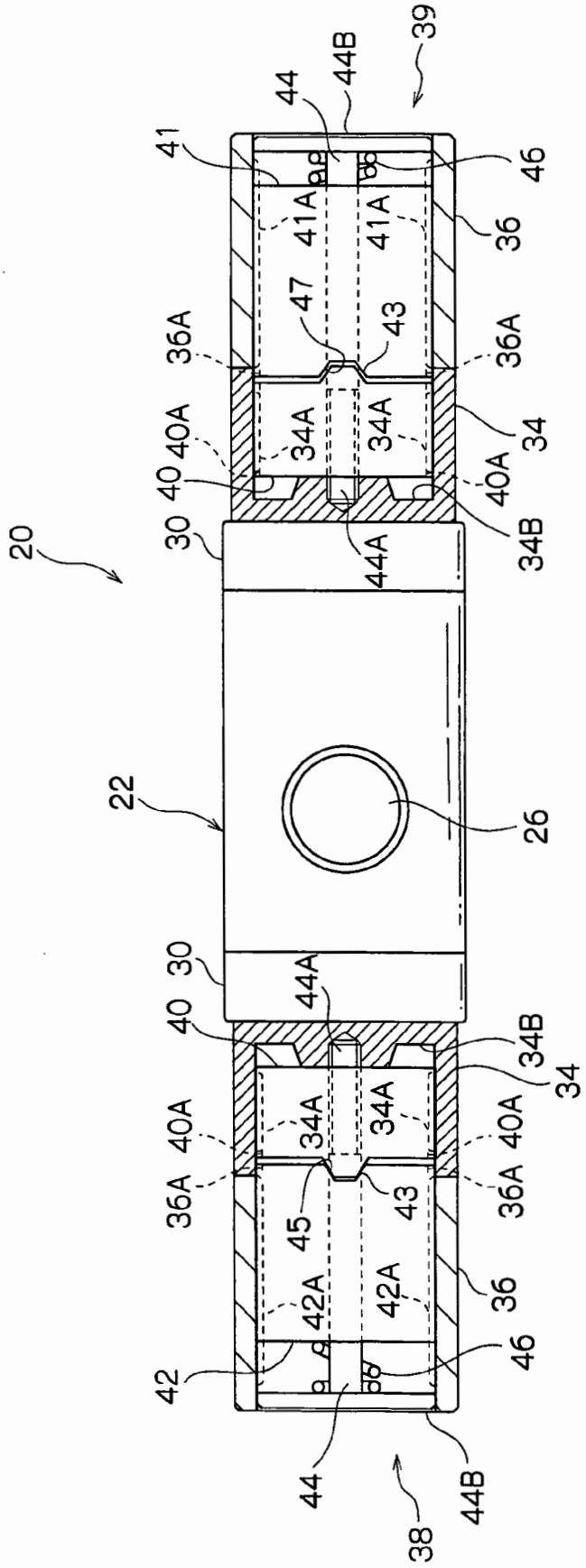

39
44B
44
41
46
41A
41A
36
47
43
36A
36A
34A
34A
34
40A
40
40A
34B
30
20
44A
22
26
30
44A
40
34B
34
40A
34A
34A
40A
36A
36A
45
43
42A
42A
36
42
46
44
44B
38

FIG.6B

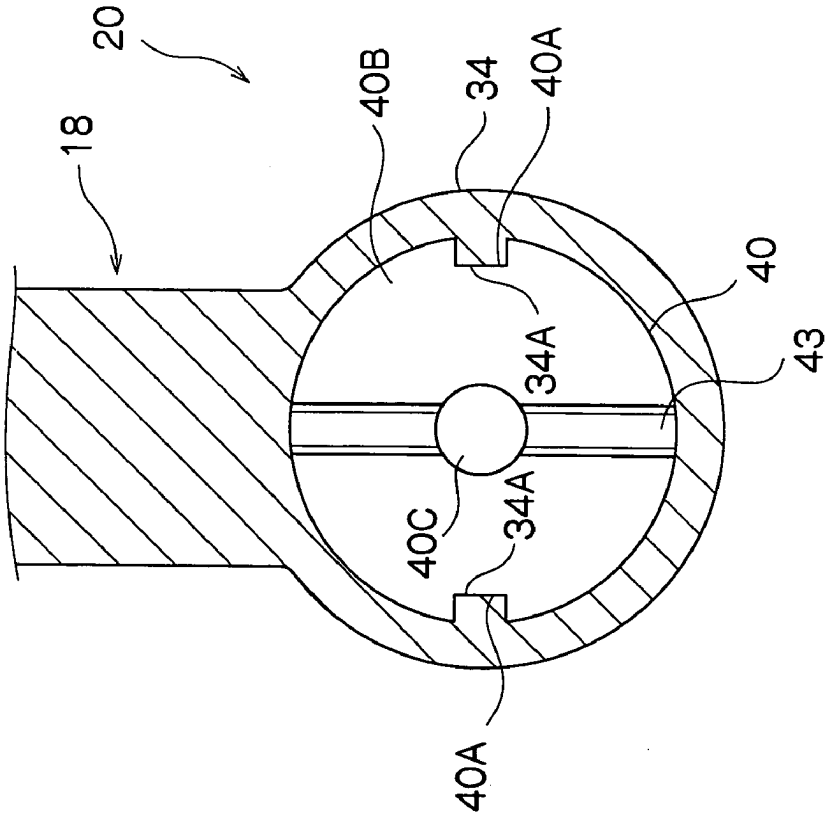

20
18
40B
34
40A
40
43
34A
40C
34A
40A

FIG.6A

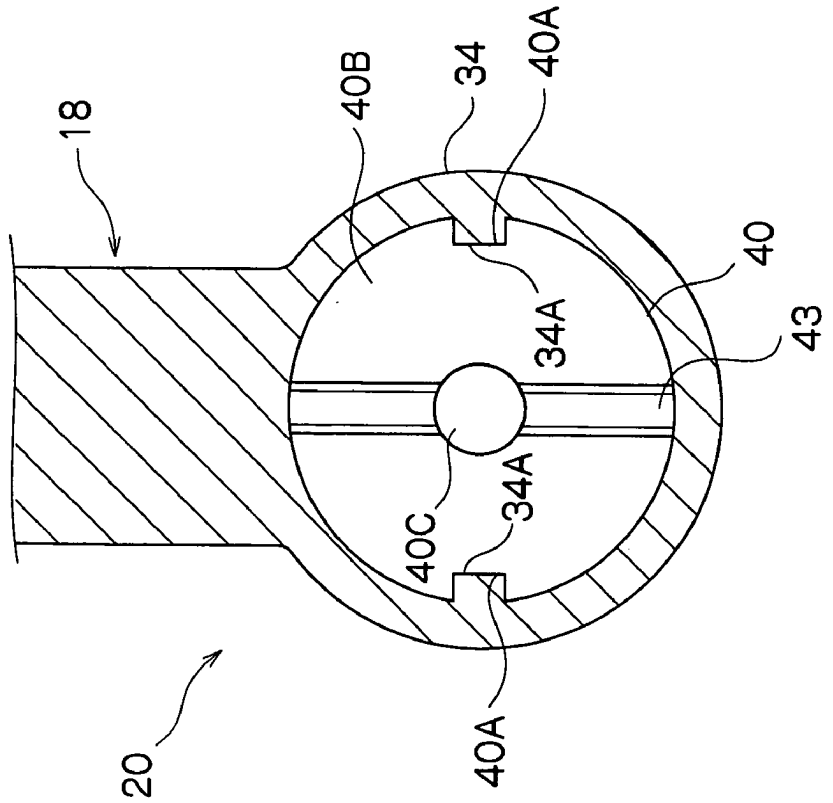

18
40B
34
40A
40
43
34A
40C
34A
40A
20

FIG.7B

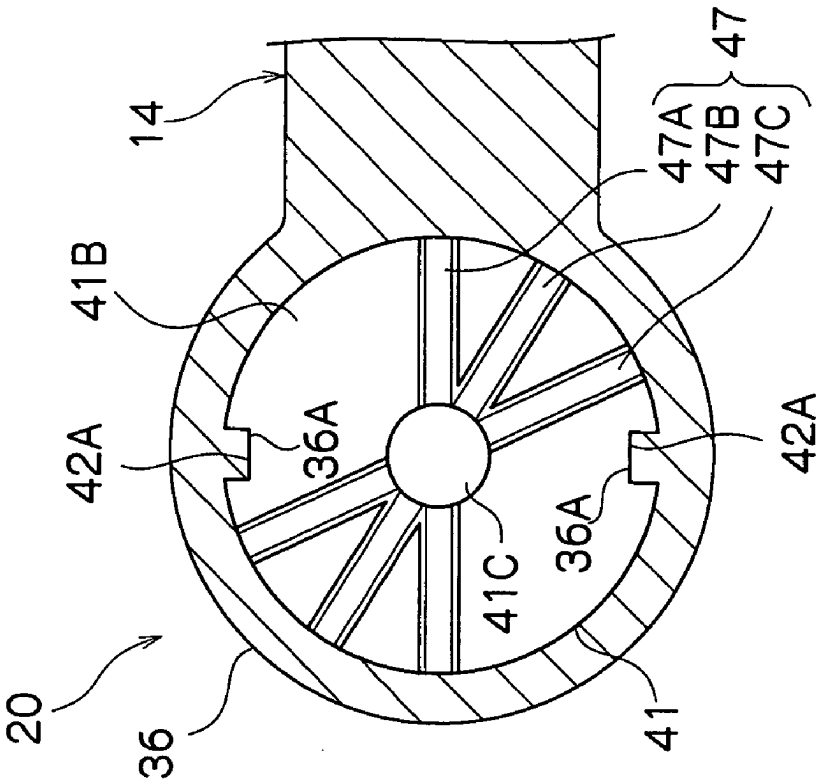

14
47
47A
47B
47C
41B
42A
36A
41C
36A
42A
20
36
41

FIG.7A

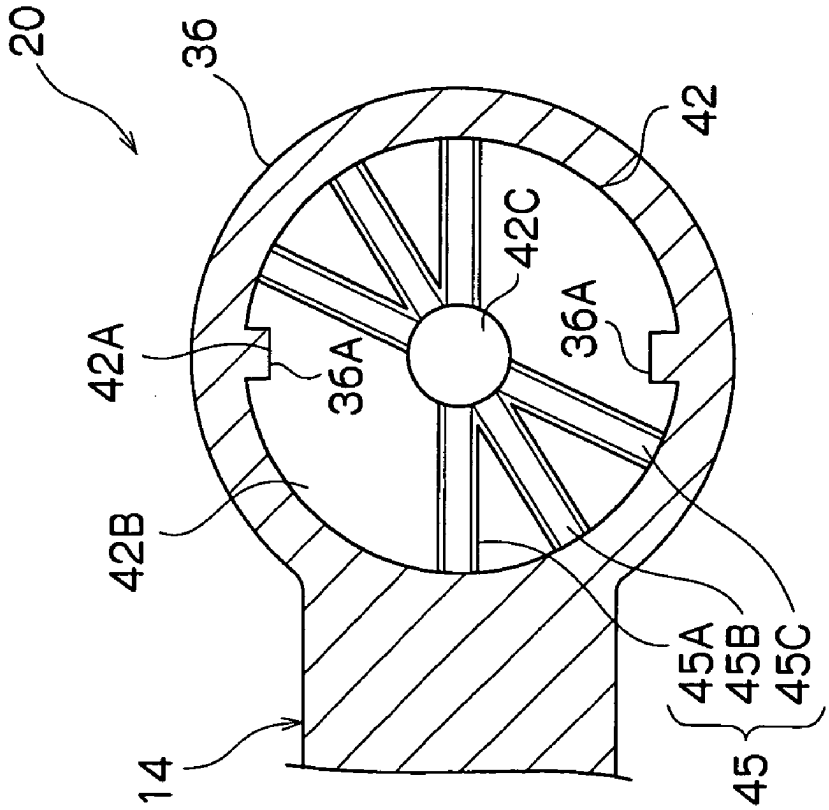

20
36
42
42C
42A
36A
36A
42B
45A
45B
45C
14
45

FIG.8

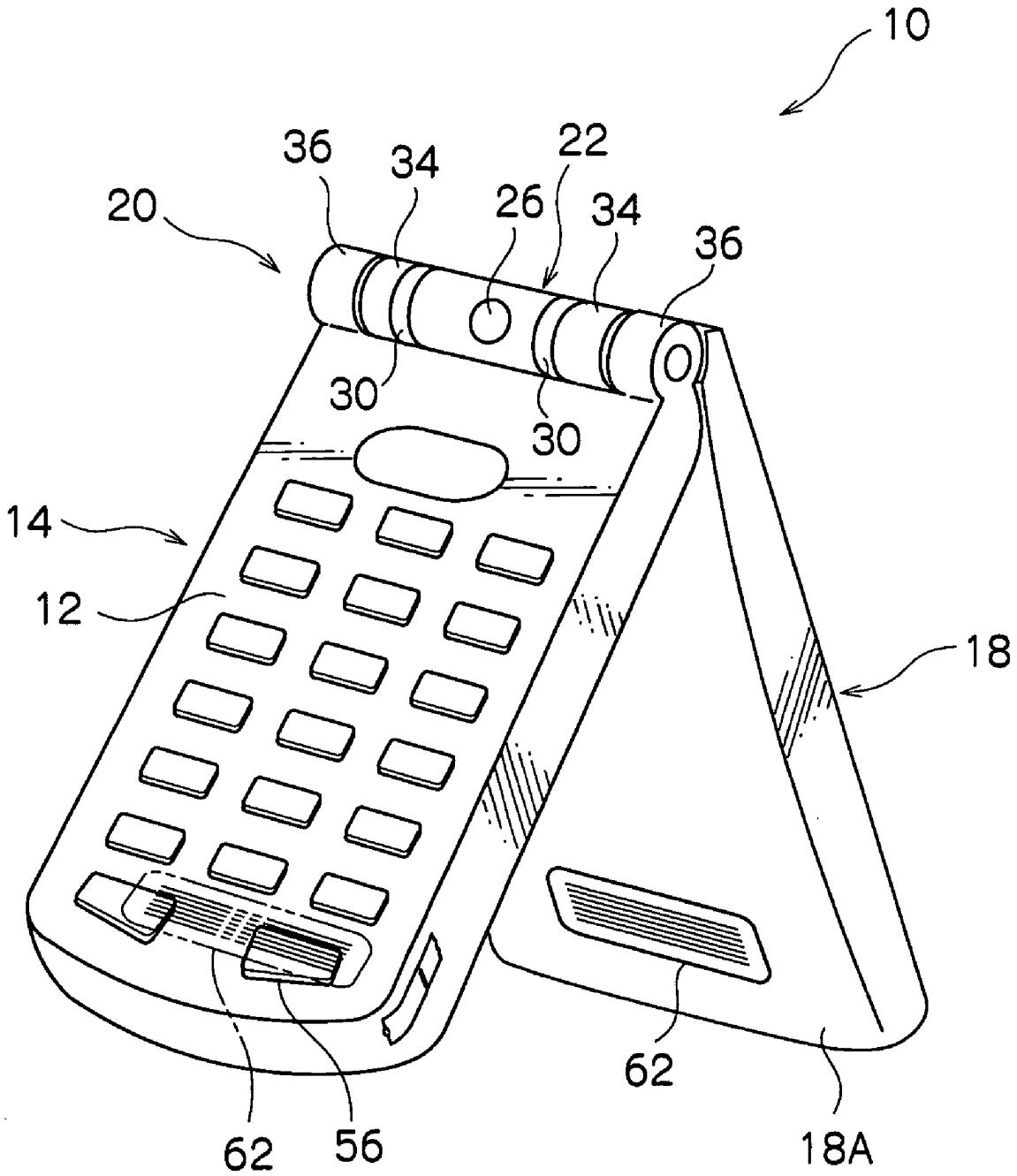


FIG.9

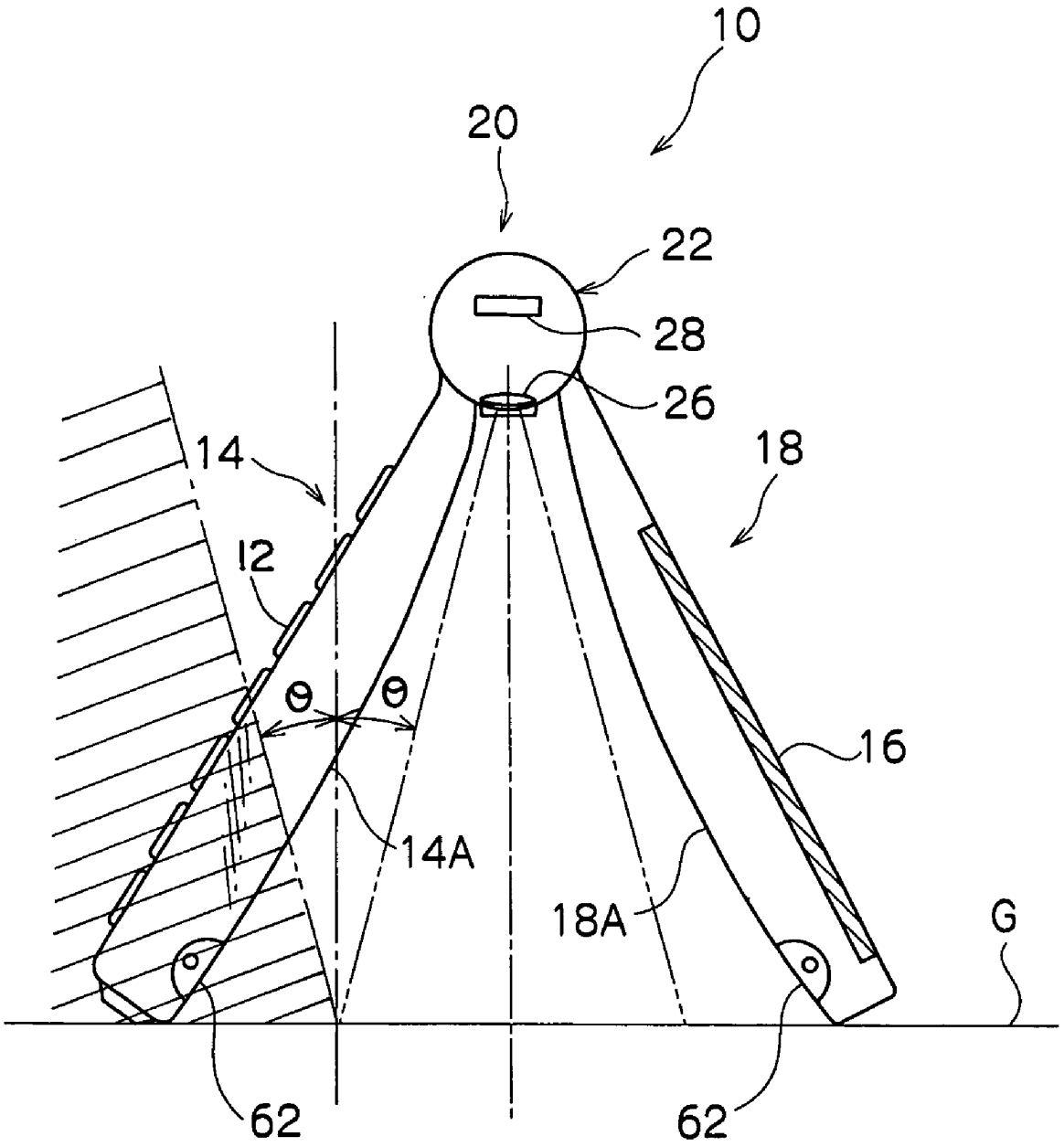


FIG.10

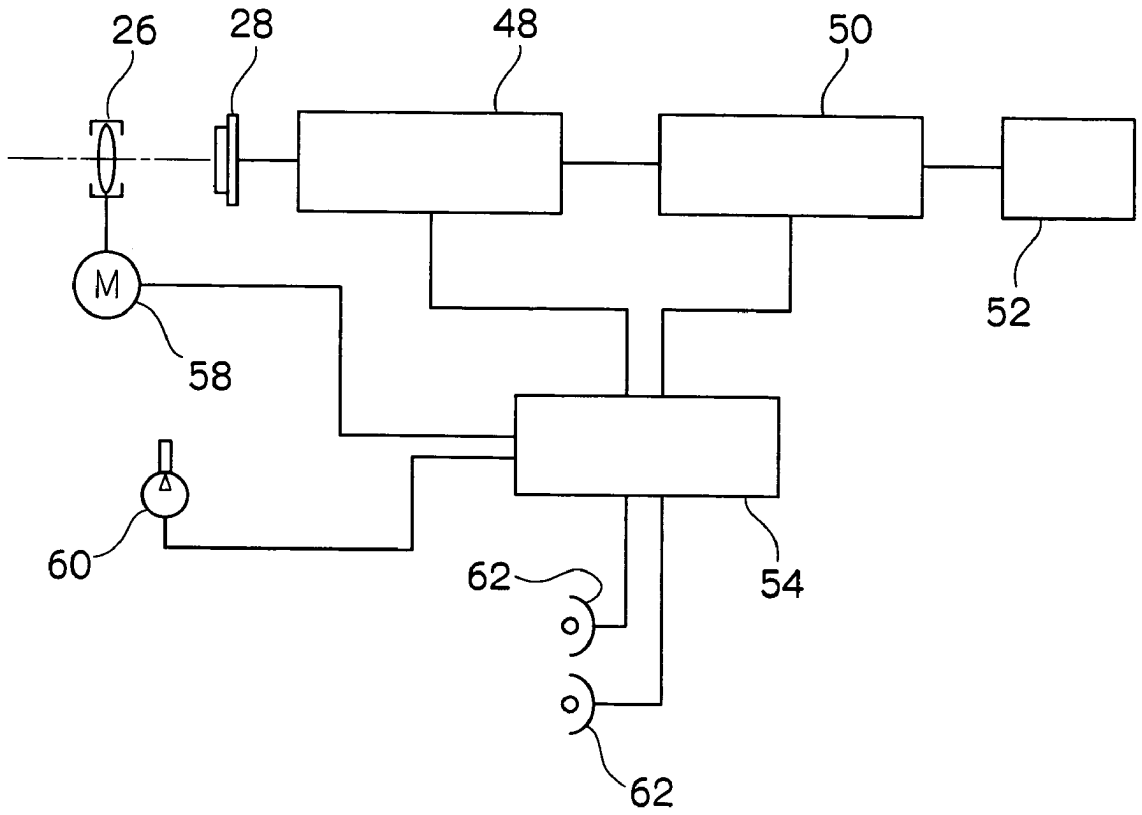


FIG.11B

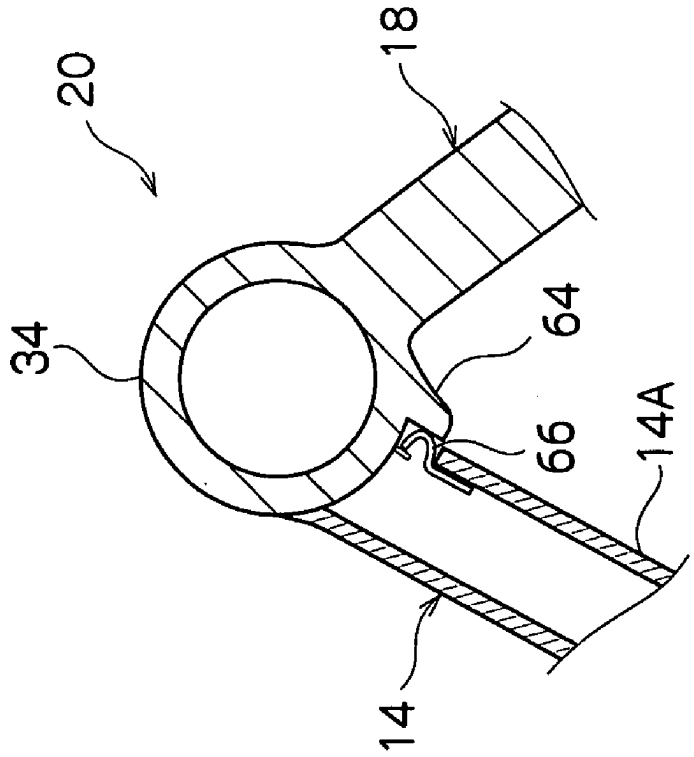


FIG.11A

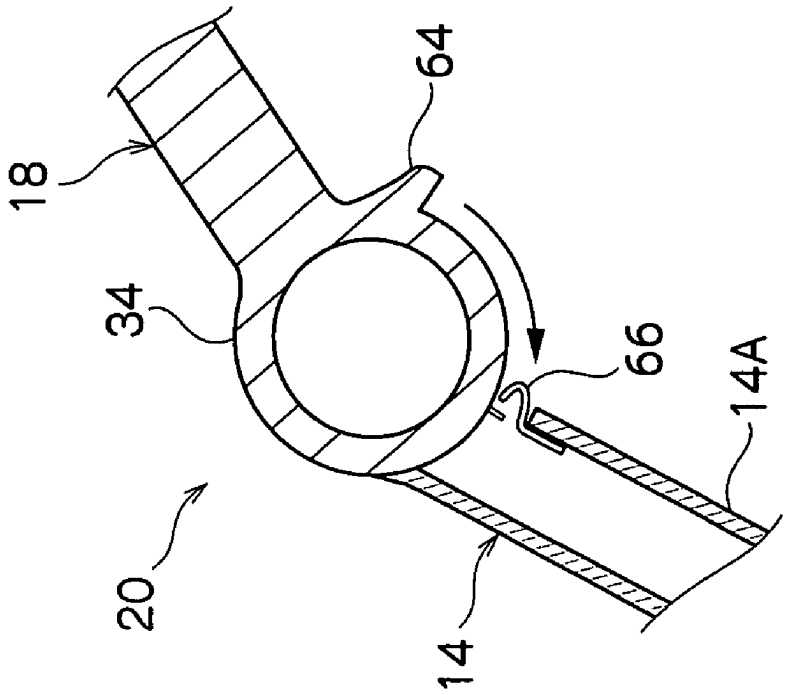


FIG.12

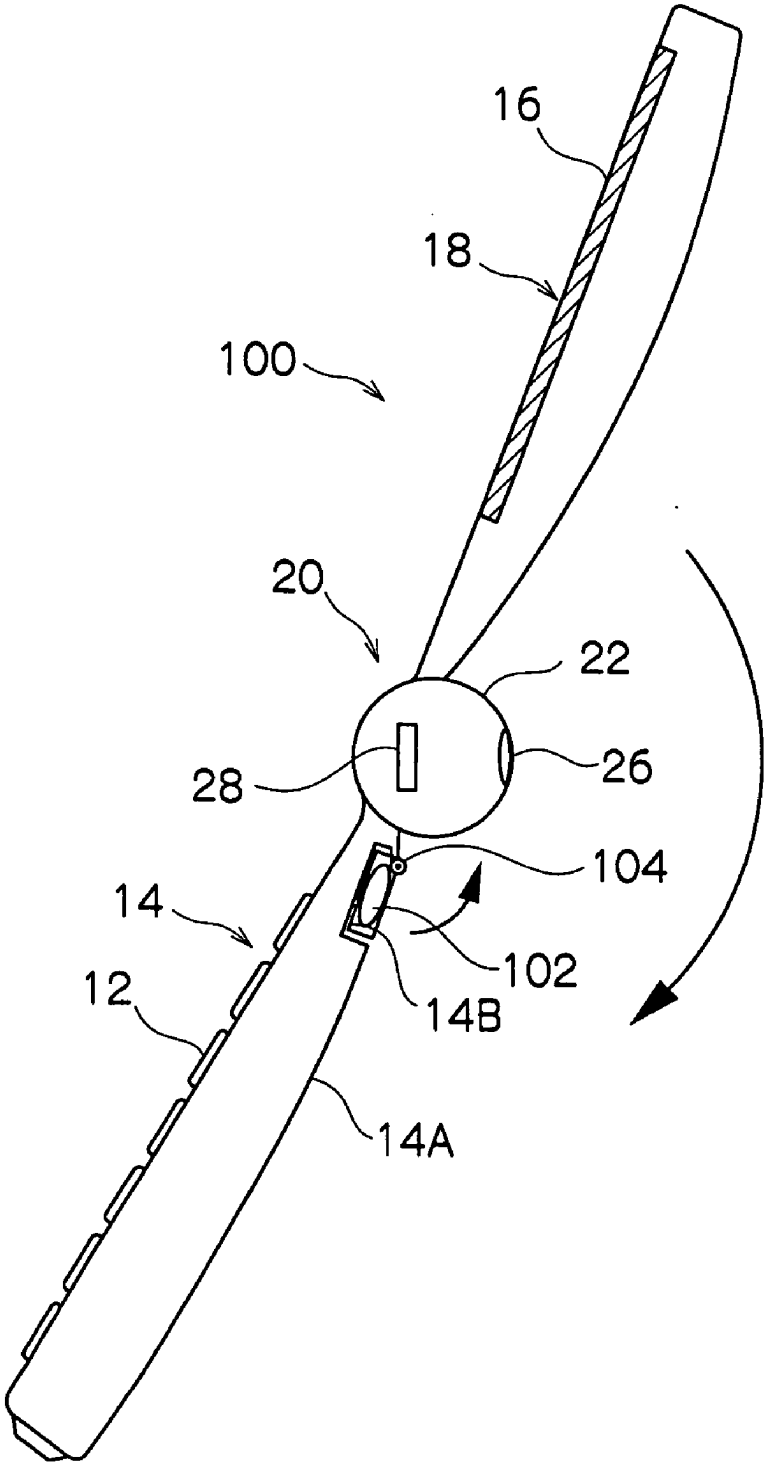


FIG.13

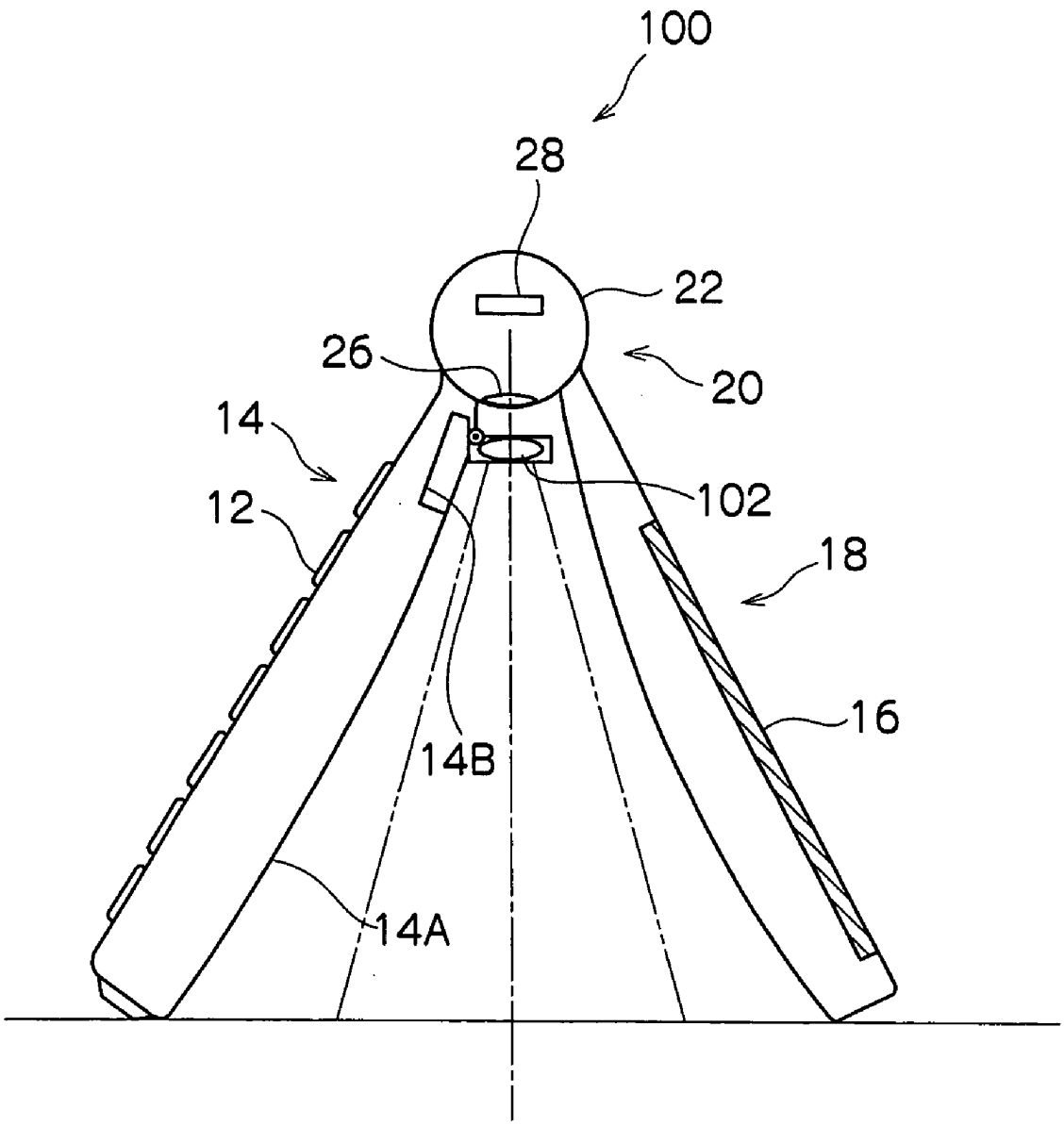


FIG.14

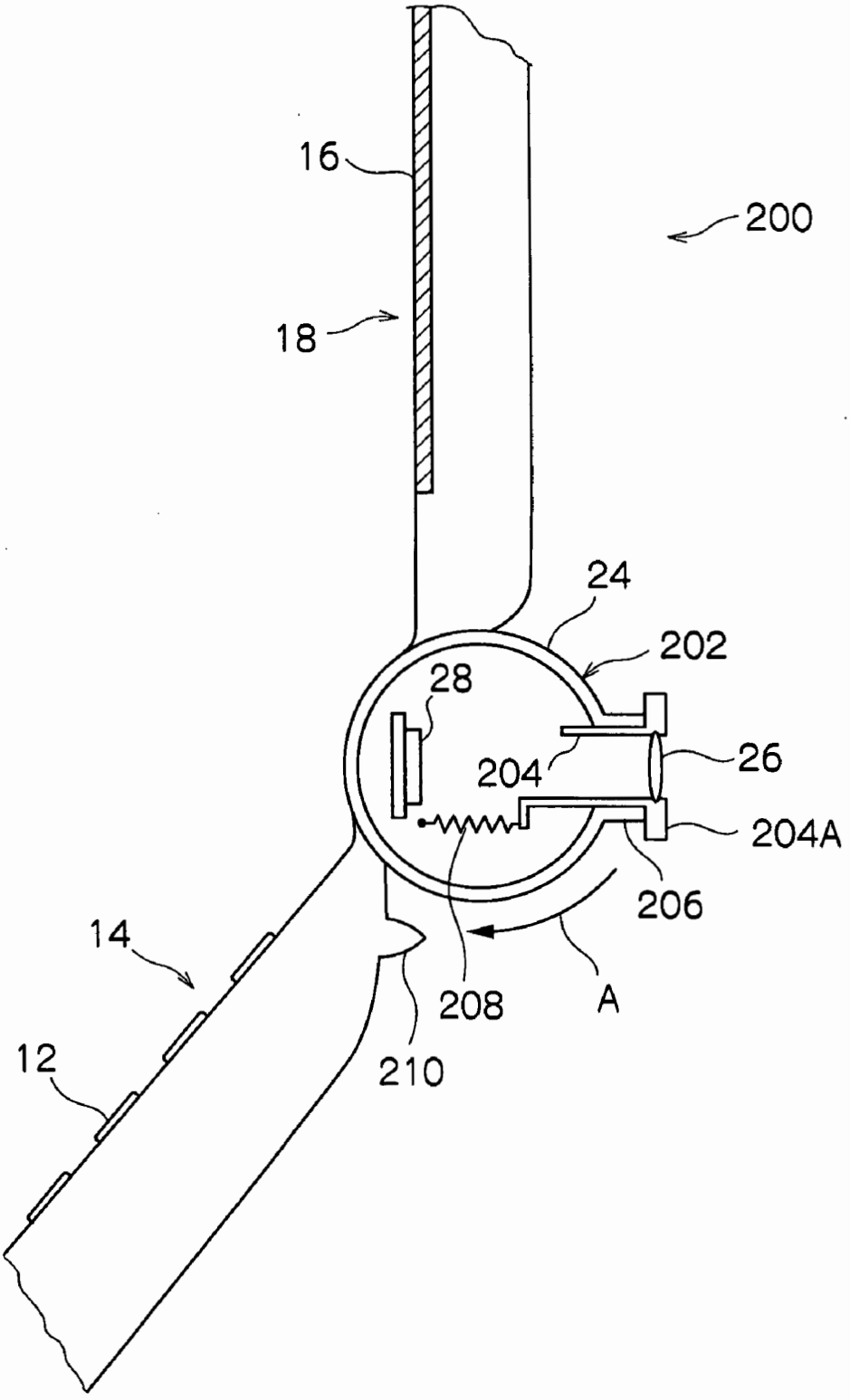
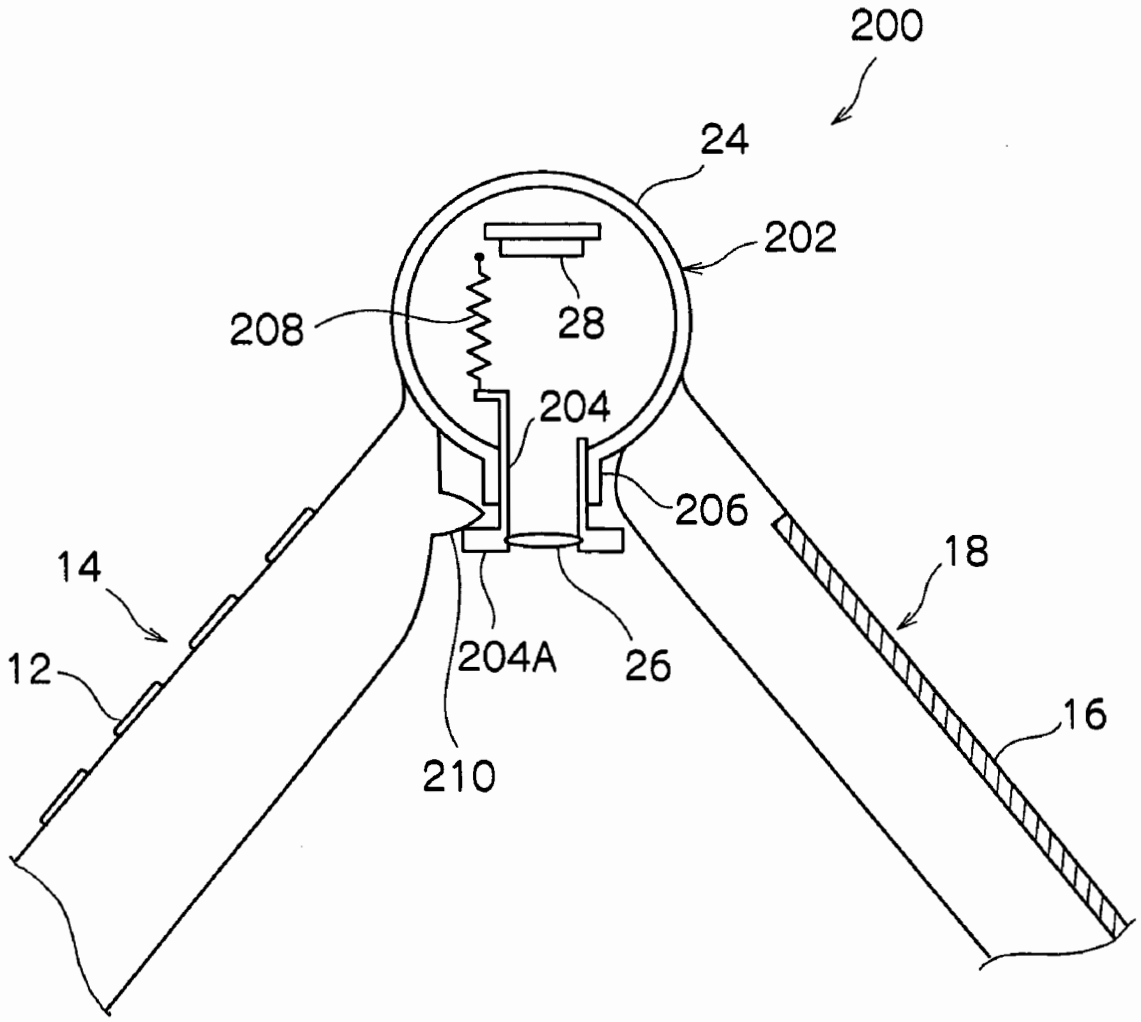


FIG.15



PORTABLE DEVICE WITH CAMERA

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under 35 USC 119 from Japanese Patent Application No. 2003-395738, the disclosure of which is incorporated by reference herein.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a portable device incorporating a camera.

[0004] 2. Description of the Related Art

[0005] Heretofore, portable telephones incorporating cameras, for close-up photography of subjects placed on tabletops, have been proposed.

[0006] For example, Japanese Patent Application Laid-Open (JP-A) No. 2000-358225 has disclosed a structure in which an antenna, which can be folded up, is abutted against a tabletop and sets a distance between a camera and a subject. In this structure, the camera is provided at a rear face of a monitor, a first casing is equipped with a keyboard, and a second casing is equipped with the monitor. The first casing and second casing are opened out to approximately 180° and a subject is photographed in this opened state. The monitor is oriented upward, so it is possible to take a close-up photograph while checking the subject with the monitor.

[0007] However, it is necessary for a camera operator to hold the portable telephone firmly, and the distance between the camera and the subject will vary greatly if the portable telephone is inclined even slightly relative to the subject. That is, there are concerns about steadiness at times of close-up photography.

[0008] Further, JP-A No. 2003-163824 has disclosed a structure in which two casings joined by a hinge are opened out to a certain angle of less than 180°. In this state, a hinge portion is oriented upward and the structure is invertedly stood on a tabletop, which sets a distance between a camera provided at the hinge portion and a subject. With this structure, steadiness at times of close-up photography is high. Moreover, a monitor faces outward in the state in which the casings are invertedly stood on the tabletop, and it is possible to perform close-up photography while checking the subject with the monitor.

[0009] However, the hinge portion cannot open the two casings beyond 180°. Therefore, it is necessary for the hinge portion to have a bi-axial structure, with an opening/closing axis for opening out and closing up the two casings and a rotation axis for turning the monitor around. Thus, a mechanism of the hinge portion is likely to be complicated.

SUMMARY OF THE INVENTION

[0010] The present invention has been devised in consideration of the circumstances described above, and an object of the present invention is to provide an opening/closing-type portable device with a camera, which portable device alters to a shape for close-up photography, raises steadiness at times of close-up photography, and avoids complication of a mechanism of a hinge portion.

[0011] In order to achieve the object described above, according to a first aspect of the present invention, a portable device with a camera is provided, the device including: (a) a first casing body including one surface, at which a control portion is provided, and an opposite surface; (b) a second casing body including one surface, at which a monitor is provided, and an opposite surface; (c) a hinge portion joining the first casing body and the second casing body such that the first casing body and the second casing body are rotatable relative to one another about the hinge; and (d) the camera, which is provided at the hinge portion, (e) the portable device can be put into a first state, in which the first casing body and the second casing body are superposed such that the one face of the first casing body and the one face of the second casing body oppose one another, and a second state, in which the first casing body and the second casing body are relatively rotated from the first state by a predetermined angle about an axis of the hinge portion such that the opposite surface of the first casing body and the opposite surface of the second casing body nearly oppose one another.

[0012] The foregoing, and other objects, features and advantages of the present invention will be apparent to one skilled in the art from the following descriptions of preferred embodiments of the present invention, as illustrated in the accompanying drawings, and the attached claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] **FIG. 1** is a perspective view showing a portable telephone incorporating a camera of a first embodiment of the present invention.

[0014] **FIG. 2** is an exploded perspective view of a hinge portion and a camera unit of the portable telephone with camera of the first embodiment.

[0015] **FIGS. 3A, 3B**, 3C and 3D are sectional views showing states of an operation in which the camera unit of the portable telephone with camera of the first embodiment rotates.

[0016] **FIG. 4** is an exploded perspective view showing the hinge portion of the portable telephone with camera of the first embodiment.

[0017] **FIG. 5** is a sectional view showing the hinge portion of the portable telephone with camera of the first embodiment.

[0018] **FIGS. 6A and 6B** are sectional views showing the hinge portion of the portable telephone with camera of the first embodiment.

[0019] **FIGS. 7A and 7B** are sectional views showing the hinge portion of the portable telephone with camera of the first embodiment.

[0020] **FIG. 8** is a perspective view showing a state of close-up photography of the portable telephone with camera of the first embodiment.

[0021] **FIG. 9** is a side view showing the state of close-up photography of the portable telephone with camera of the first embodiment.

[0022] **FIG. 10** is a block diagram showing structure of a circuit for controlling the camera unit of the portable telephone with camera of the first embodiment.

[0023] **FIGS. 11A and 11B** are sectional diagrams showing sensing means for detecting a position of rotation of a second casing body of the portable telephone with camera of the first embodiment.

[0024] **FIG. 12** is a sectional side view of principal components showing a state in which a portable telephone incorporating a camera of a second embodiment is opened out.

[0025] **FIG. 13** is a sectional side view of principal components showing a state in which the portable telephone with camera of the second embodiment is folded over backward.

[0026] **FIG. 14** is a sectional side view of principal components of a portable telephone incorporating a camera of a third embodiment.

[0027] **FIG. 15** is a sectional side view of principal components showing a state in which the portable telephone with camera of the third embodiment is folded over backward.

DETAILED DESCRIPTION OF THE INVENTION

[0028] Below, a plurality of embodiments of a portable device incorporating a camera relating to the present invention will be described in detail with reference to the drawings.

[0029] Referring to **FIG. 1**, at a portable telephone with a camera **10** of a first embodiment, a first casing body **14** and a second casing body **18** are openably/closeably joined by a hinge portion **20**. The first casing body **14** is provided with a control portion **12**, and the second casing body **18** is provided with a monitor **16**. In a state in which the first casing body **14** and second casing body **18** are closed up, the monitor **16** and the control portion **12** are accommodated at inner sides of the first casing body **14** and second casing body **18**, and are close to and facing one another.

[0030] A camera unit **22** is rotatably provided at a central portion of the hinge portion **20**. As shown in **FIG. 2**, at the camera unit **22**, an imaging lens **26** is provided at a front face of a circular tube-form casing **24**, and a CCD **28** is provided inside the casing **24**. A central portion of an image pickup surface of the CCD **28** is aligned with an optical axis of the imaging lens **26**.

[0031] Portions at two end portions of the casing **24** are formed with narrower diameters to serve as rotation shafts **24**A. Bearings **30**, which are formed at an end face of the first casing body **14**, rotatably support these rotation shafts **24**A. Latches **32** are provided at circumferential faces of the rotation shafts **24**A. At the latches **32**, distal end portions **32**A thereof, which are folded over in triangular forms, are caused to protrude from the circumferential faces of the rotation shafts **24**A by plate springs, which extend in the axial direction of the rotation shafts **24**A.

[0032] Anchoring grooves **30**A, **30**B and **30**C, which engage with the latches **32**, are formed at inner circumferential faces of the bearings **30**. The anchoring grooves **30**A are formed at the control portion **12** side of the first casing body **14**. As is shown in **FIG. 3A**, when the latches **32** are engaged with the anchoring grooves **30**A, the imaging lens **26** is oriented toward a user. Thus, a "self-portrait", in which a camera user photographs him/herself, is possible.

[0033] As shown in **FIG. 3B**, when the camera unit **22** is rotated in a clockwise direction (the direction of arrow A in the drawing), the latches **32** are pushed into the circumferential faces of the rotation shafts **24**A by the inner circumferential faces of the bearings **30**.

[0034] As shown in **FIG. 3C**, the anchoring grooves **30**B are formed at an interval of approximately 180° from the anchoring grooves **30**A. When the rotation shafts **24**A are rotated to the positions of these anchoring grooves **30**B, the latches **32** are protruded from the circumferential faces of the rotation shafts **24**A by resilient force and are engaged with the anchoring grooves **30**B. In this state, the imaging lens **26** is oriented to the opposite side from the operator, that is, toward usual photographic subjects. Hence, it is possible to photograph subjects which are located in front of the camera user.

[0035] As shown in **FIG. 3D**, the anchoring grooves **30**C are formed at intervals of approximately 90° from the anchoring grooves **30**A and the anchoring grooves **30**B (intermediate to the anchoring grooves **30**A and **30**B). When the latches **32** are engaged with these anchoring grooves **30**C, the imaging lens **26** is oriented toward subjects which are the targets of close-up photography, as described later. Hence, close-up photography is possible.

[0036] As shown in **FIGS. 4 and 5**, two first tubular bodies **34** are formed at an end face of the second casing body **18**, and the bearings **30** are disposed between the two first tubular bodies **34**. Two second tubular bodies **36** are formed at end faces of the first casing body **14**, and the first tubular bodies **34** are disposed between the two second tubular bodies **36**. The first tubular bodies **34** are tubular bodies with bases, with axial direction one end portions thereof (at the respective bearing 30 sides) serving as base faces **34**B. The second tubular bodies **36** are tubular bodies of which both end portions in the axial direction are open.

[0037] Hinges **38** and **39** are inserted into the first tubular bodies **34** and second tubular bodies **36**, enabling opening/closing of the first casing body **14** and second casing body **18**. The hinge **38**, which is disposed at the left side in the drawings, is structured by a first hinge **40**, a second hinge **42**, a rotation shaft **44** and a compression coil spring **46**. The hinge **39**, which is disposed at the right side in the drawings, is structured by another first hinge **40**, a second hinge **41**, another rotation shaft **44** and another compression coil spring **46**. Note that the components assigned the same reference numerals, i.e., the first hinges **40**, the rotation shafts **44** and the compression coil springs **46**, are common components.

[0038] Each first hinge **40** has a circular tube form and is inserted into the first tubular body **34**. Two key grooves **40**A, which extend in the axial direction at a circumferential face of the first hinge **40**, are formed with a spacing of 180°. Two keys **34**A, which are formed at an inner circumferential face of the first tubular body **34**, are formed with a spacing of 180° and engage with the key grooves **40**A. Accordingly, the first hinges **40** are non-rotatable in the first tubular bodies **34**.

[0039] The second hinge **42** has a circular tube form with the same diameter as the first hinge **40**, and is inserted into the second tubular body **36** at the left side of the drawings. Two key grooves **42**A, which extend in the axial direction at a circumferential face of the second hinge **42**, are formed with a spacing of 180°. Two keys **36**A, which engage with the two key grooves **42**A, are formed with a spacing of 180° at an inner circumferential face of the second tubular body **36**. Accordingly, the second hinge **42** is non-rotatable in the second tubular body **36**.

[0040] The second hinge **41** of the hinge **39** has a circular tube form with the same diameter as the first hinge **40**, and is inserted into the second tubular body **36** at the right side of the drawings. Two key grooves **41**A, which extend in the axial direction at a circumferential face of the second hinge **41**, are formed with a spacing of 180°, and engage with two more keys **36**A, which are formed with a spacing of 180° at the inner circumferential face of the second tubular body **36**. Accordingly, the second hinge **41** is non-rotatable in the right-side second tubular body **36**.

[0041] At each rotation shaft **44**, a screw portion **44**A is formed at one axial direction end portion and a head portion **44**B is formed at the other axial direction end portion. The rotation shafts **44** pass through the first hinge **40** and second hinge **42** of the hinge **38**, and the first hinge **40** and second hinge **41** of the hinge **39**, respectively, and the rotation shafts **44** screw into the base faces **34**B of the first tubular bodies **34**.

[0042] The compression coil springs **46** are disposed between the second hinge **42** and the corresponding head portion **44**B and between the second hinge **41** and the corresponding head portion **44**B, respectively, and urge the second hinge **41** and the second hinge **42**, respectively, towards the first hinges **40**.

[0043] A cam **43** and cams **45** are formed at, respectively, an abutting face **40**B of the first hinge **40** and an abutting face **42**B of the second hinge **42**. The cam **43** is a protrusion with a taper form in cross-section, and the cams **45** are grooves with taper forms in cross-section, which engage with the cam **43**.

[0044] As shown in **FIGS. 6A and 6B**, the cam **43** extends from an end face of the abutting face **40**B to an end face at an opposite side of the abutting face **40**B, transiting across a hole **40**C. The two keys **34**A are arranged along a direction of thickness of the second casing body **18**, and the cam **43** extends in a radial direction with an angle of approximately 90° to a direction of arrangement of the two key grooves **40**A. That is, in the state in which the first hinge **40** is inserted into the first tubular body **34**, the cam **43** extends in a direction substantially intersecting the thickness direction of the second casing body **18**.

[0045] As shown in **FIG. 7A**, the cams **45** are structured by three cams, a first cam **45**A, a second cam **45**B and a third cam **45**C, which extend from an end face of the abutting face **42**B to an end face at an opposite side of the abutting face **42**B, transiting across a hole **42**C. The two keys **36**A are arranged along a direction of thickness of the first casing body **14**, and the first cam **45**A extends in a radial direction with an angle of approximately 90° to a direction of arrangement of the two key grooves **42**A. That is, in the state in which the second hinge **42** is inserted into the second tubular body **36** at the left side of **FIGS. 4 and 5**, the first cam **45**A extends in a direction substantially intersecting the thickness direction of the first casing body **14**.

[0046] The second cam **45**B extends at an angle approximately 30° in an anti-clockwise direction of the drawing relative to the first cam **45**A, and the third cam **45**C extends at an angle approximately 30° in the anti-clockwise direction relative to the second cam **45**B.

[0047] As shown in **FIGS. 4 and 5**, another cam **43** and cams **47** are formed at, respectively, another abutting face **40**B of the first hinge **40** of the hinge **39** and an abutting face **41**B of the second hinge **41**. This cam **43** is as described above.

[0048] The cams **47** are grooves with taper forms in cross-section, which engage with the cam **43**. As shown in **FIG. 7A**, the cam **47** is structured by three cams, a first cam **47**A, a second cam **47**B and a third cam **47**C, which extend from an end face of the abutting face **41**B to an end face at an opposite side of the abutting face **41**B, transiting across a hole **41**C. The first cam **47**A extends in a radial direction with an angle of approximately 90° to a direction of arrangement of the two key grooves **41**A. That is, in the state in which the second hinge **41** is inserted into the second tubular body **36** at the right side of **FIGS. 4 and 5**, the first cam **47**A extends in a direction substantially intersecting the thickness direction of the first casing body **14**.

[0049] The second cam **47**B extends at an angle approximately 30° in a clockwise direction of the drawing relative to the first cam **47**A, and the third cam **47**C extends at an angle approximately 30° in the clockwise direction relative to the second cam **47**B.

[0050] In the state in which the first casing body **14** and second casing body **18** are closed up, the cam **43** of the first hinge **40** of the hinge **38** engages with the first cam **45**A of the second hinge **42**, and the cam **43** of the first hinge **40** of the hinge **39** engages with the first cam **47**A of the second hinge **41**. In this state, the second hinges **41** and **42** are urged against the first hinges **40** by the compression coil springs **46**, the hinges **38** and **39** are locked, and there is no looseness between the first casing body **14** and the second casing body **18**.

[0051] When the second casing body **18** is opened out from the closed state, an angled surface of the first cam **45**A of the hinge **38** pushes against an angled surface of the corresponding cam **43**, and an angled surface of the first cam **47**A of the hinge **39** pushes against an angled surface of the corresponding cam **43**. As a result, engagements of the first cam **45**A with the cam **43** of the hinge **38** and of the first cam **47**A with the cam **43** of the hinge **39** are released, and the hinge **38** and hinge **39** become rotatable.

[0052] When the second casing body **18** has opened to 120° from the closed state, the cam **43** of the first hinge **40** of the hinge **38** engages with the third cam **45**C of the second hinge **42**, and the cam **43** of the first hinge **40** of the hinge **39** engages with the third cam **47**C of the second hinge **41**.

[0053] When the second casing body **18** opens a further 30° and reaches a state of having been opened to 150° (another rotation position), the cam **43** of the first hinge **40** of the hinge **38** engages with the second cam **45**B of the second hinge **42**, and the cam **43** of the first hinge **40** of the

hinge **39** engages with the second cam **47**B of the second hinge **41**. In the state in which the second casing body **18** has been opened to 150° (another rotation position) as shown in **FIG. 1**, or a state in which the second casing body **18** has opened a further 30° to 180° (another rotation position), the portable telephone with camera **10** is in a condition for performing telephone calls, usual photography and the like. In this state, the first casing body **14** and the second casing body **18** are locked by the hinges **38** and **39**. Thus, telephone calls, usual photography, etc. can be performed without difficulty.

[**0054**] When the second casing body **18** is opened to 300° (a first rotation position), the cam **43** of the first hinge **40** of the hinge **38** engages with the third cam **45**C of the second hinge **42**, and the cam **43** of the first hinge **40** of the hinge **39** engages with the third cam **47**C of the second hinge **41**. As a result, as shown in **FIGS. 8 and 9**, the first casing body **14** and the second casing body **18** are locked in a state which is opened by 300° from the closed state. Hence, the first casing body **14** and second casing body **18** can be invertedly stood on a flat surface G with the hinge portion **20** oriented upward.

[**0055**] In this state, the control portion **12** and the monitor **16** face to outer sides. Further, the camera unit **22** is locked centrally to inner sides of the first casing body **14** and the second casing body **18**, as described earlier. Consequently, it is possible to operate the control portion **12** and photograph a subject on the flat surface G while checking the subject with the monitor **16**.

[**0056**] Thus, because a degree of freedom of rotation of the hinge portion **20** is raised, a rotation axis for turning the monitor **16** around is not necessary, and it is possible for the hinge portion **20** to have a uni-axial form. Consequently, complication of the structure of the hinge portion **20** can be avoided.

[**0057**] **FIG. 10** shows a block diagram representing structure of a circuit for controlling the camera unit **22** of the portable telephone with camera **10** of the present embodiment.

[**0058**] The portable telephone with camera **10** is equipped with the imaging lens **26**, the CCD **28**, image signal processing means **48**, a memory controller **50** and memory **52**. A subject which is focused through the imaging lens **26** onto the CCD **28** is converted to analog image signals by the CCD **28**. Then, the analog image signals, which are outputted from the CCD **28**, are subjected to analog signal processing, A/D conversion and digital signal processing by the image signal processing means **48**. The digital image data that has been subjected to the digital signal processing is compressed by the memory controller **50** and recorded at the memory **52**. Depending on a photography mode, the compression process may be omitted and the data recorded directly to the memory **52**. Hence, the digital image data stored at the memory **52** is read out to the monitor **16**, and an image of the subject is displayed at the monitor **16**.

[**0059**] The portable telephone with camera **10** is equipped with a system controller **54** which oversees control of the portable telephone with camera **10** as a whole. Taking of a photograph is implemented by operating the control portion **12** to set desired photography conditions and pressing a shutter button **56** (see **FIGS. 1 and 8**).

[**0060**] A zoom motor **58**, sensing means **60** and lights **62** are provided at the portable telephone with camera **10**. The zoom motor **58** drives the imaging lens **26** for zooming, and the sensing means **60** detects when the second casing body **18** has been opened to 300° (the first rotation position).

[**0061**] As shown in **FIGS. 11A and 11B**, the sensing means **60** is structured by a detection protrusion **64** and a detection contact **66**. The detection protrusion **64** is formed at an outer peripheral surface of the first tubular body **34** of the second casing body **18**, and the detection contact **66** is provided at a rear face **14**A of the first casing body **14** and conducts electricity when pressed by the detection protrusion **64**.

[**0062**] When the second casing body **18** is rotated as shown in **FIG. 11A** to the first rotation position, the detection protrusion **64** pushes against the detection contact **66**, as shown in **FIG. 11B**, and the detection contact **66**, which has been open hitherto, is closed. Hence, a detection signal that the detection contact **66** has closed is sent to the system controller **54**. When the system controller **54** receives the detection signal, the system controller **54** drives the zoom motor **58**, alters a searching range of the imaging lens **26** to a macro region, and switches the photography mode to a macro (close-up) photography mode. Further, the lights **62**, which are provided at the rear face **14**A of the first casing body **14** and a rear face **18**A of the second casing body **18**, are lit up.

[**0063**] In consequence, close-up photography of a subject which is located between the first casing body **14** and the second casing body **18** on the flat surface G on which the first casing body **14** and second casing body **18** are invertedly standing is possible. Moreover, because the first casing body **14** and second casing body **18** are inverted on the flat surface G with the hinge portion **20** oriented upward for performing close-up photography, a distance between subjects and the camera is constant, and it is possible to perform stable close-up photography. Furthermore, because of the illumination of the lights **62**, bright close-up images can be obtained.

[**0064**] The first casing body **14** and the second casing body **18** are equipped at their respective tips with the lights **62** such that, when the first casing body **14** and the second casing body **18** are inverted on the flat surface G with the hinge portion **20** oriented upward, the lights **62** are located within a hatched (or shaded) area as shown in **FIG. 9**.

[**0065**] In a case in which a light is located within such a hatched area, alight beam, which has been discharged from the light and subsequently reflected from the surface G, does not enter the CCD **28**. Namely, the possibility of reflectance (or flashing) of the light beam (on a photograph, a display or the like) can be prevented.

[**0066**] Next, a second embodiment of the present invention will be described. Note that portions and components that are the same as in the first embodiment are assigned the same reference numerals, and descriptions thereof are omitted as appropriate.

[**0067**] As shown in **FIG. 12**, a portable telephone with a camera **100** is provided with a close-up photography lens **102** at the rear face **14**A, which is a face of the first casing body **14** opposite to a face of the first casing body **14** at which the control portion **12** is provided. This close-up

photography lens **102** can be moved, by a hinge **104**, into and out of an accommodation portion **14**B of the rear face **14**A of the first casing body **14**.

[**0068**] As shown in **FIG. 13**, the second casing body **18** is rotated to the first rotation position and the camera unit **22** is rotated to the center at the inner sides of the first casing body **14** and the second casing body **18**. Further, the close-up photography lens **102** folds out from the accommodation portion **14**B and is disposed at a front face side of the imaging lens **26** of the camera unit **22**. In consequence, a subject disposed on the flat surface G at the inner sides of the first casing body **14** and second casing body **18** will be in focus, and close-up photography is possible.

[**0069**] Next, a third embodiment of the present invention will be described. Note that portions and components that are the same as in the first or second embodiment are assigned the same reference numerals, and descriptions thereof are omitted as appropriate.

[**0070**] As shown in **FIG. 14**, at a portable telephone with a camera **200**, the imaging lens **26** of a camera unit **202** is accommodated in a lens barrel **204**. A cylindrical body **206** is formed integrally with the casing **24**. The lens barrel **204** is supported by the cylindrical body **206** to be movable in an optical axis direction of the imaging lens **26**. An end portion of the lens barrel **204** at the CCD **28** side thereof in the optical axis direction is supported by an extension coil spring **208**.

[**0071**] The camera unit **202** is formed to be rotatable by a structure similar to that of the first and second embodiments. A cam **210** is formed at the rear face **14**A of the first casing body **14**, and a brim portion **204**A is formed at a distal end portion of the lens barrel **204**. When the camera unit **202** is rotated in a direction such that the imaging lens **26** approaches the first casing body **14** (the direction of arrow A in the drawing), the cam **210** abuts against the brim portion **204**A, as shown in **FIG. 15**. As a result, the lens barrel **204** is pushed outward and the imaging lens **26** is moved to a close-up position at which a subject on the flat surface G will be in focus.

[**0072**] In the first to third embodiments, the camera unit **22** (or **202**) is formed to be rotatable by turning at the hinge portion **20**. However, the camera unit **22** (or **202**) may be fixed at the hinge portion **20** such that, when the second casing body **18** is opened approximately 300° from the closed state as shown in **FIG. 9**, the imaging lens **26** faces a subject at the inner sides of the first casing body **14** and the second casing body **18**. Alternatively, the camera unit **22** (or **202**) may rotate in conjunction with rotation of the second casing body **18** such that, when the second casing body **18** is opened approximately 300° from the closed state, the imaging lens **26** is rotated to a position that faces a subject at the inner sides of the first casing body **14** and the second casing body **18**.

[**0073**] Further, although the angles at which the second casing body **18** is locked by the hinge portion **20** in the first to third embodiments are 120°, 150°, 180° and 300°, such angles can be selected as is appropriate.

[**0074**] Further again, in the first to third embodiments, the CCD **28** is disposed at the hinge portion **20**. However, a reflection mirror may be disposed at the position at which the CCD **28** is disposed in the above embodiments, with the CCD **28** being disposed at the first casing body **14** or the second casing body **18**. The reflection mirror deflects the path of light that has passed through the imaging lens **26** to make the light incident on the CCD **28**.

[**0075**] Further yet, in the first to third embodiments, the present invention has been described taking a portable telephone incorporating a camera as an example. However, the present invention is also applicable to other opening/closing-type (folding-type) portable devices incorporating cameras in which the cameras are provided at hinge portions, such as, for example, notebook computers, PDAs (personal digital assistants) and so forth.

[**0076**] With the structures described above, the present invention is capable, in an opening/closing-type portable device incorporating a camera, which portable device alters to a shape for performing close-up photography, of raising stability at times of close-up photography, while avoiding complication of structure of a hinge portion.

What is claimed is:

1. A portable device with a camera, the device comprising:

(a) a first casing body including one surface, at which a control portion is provided, and an opposite surface;

(b) a second casing body including one surface, at which a monitor is provided, and an opposite surface;

(c) a hinge portion joining the first casing body and the second casing body such that the first casing body and the second casing body are rotatable relative to one another about the hinge; and

(d) the camera, which is provided at the hinge portion,

(e) the portable device can be put into a first state, in which the first casing body and the second casing body are superposed such that the one face of the first casing body and the one face of the second casing body oppose one another, and a second state, in which the first casing body and the second casing body are relatively rotated from the first state by a predetermined angle about an axis of the hinge portion such that the opposite surface of the first casing body and the opposite surface of the second casing body nearly oppose one another.

2. The portable device of claim 1, wherein the camera is rotatable about the axis of the hinge portion.

3. The portable device of claim 1, wherein the predetermined angle is at least 180°.

4. The portable device of claim 1, wherein the hinge portion is capable of temporarily fixing the first casing body and the second casing body relative to one another in the second state.

5. The portable device of claim 1 wherein, in the second state, the camera is capable of capturing a subject disposed between the opposite surfaces of the first casing body and the second casing body.

6. The portable device of claim 1, further comprising a detection portion capable of detecting when the first casing body and the second casing body are in the second state.

7. The portable device of claim 6, further comprising a control section which, in response to a detection signal from the detection portion, switches a photography mode of the camera to a close-up photography mode.

8. The portable device of claim 7, wherein the camera comprises an imaging lens.

9. The portable device of claim 8, wherein the control section comprises a zoom motor for altering a searching range of the imaging lens to a macro region.

10. The portable device of claim 8, wherein the camera comprises a close-up photography lens which can be disposed at a front face side of the imaging lens.

11. The portable device of claim 10, wherein the close-up photography lens is provided in a protruding condition and can be accommodated at the opposite surface of one of the casing bodies.

12. The portable device of claim 8, further comprising a movement apparatus capable of moving the imaging lens to a predetermined close-up photography position.

13. The portable device of claim 1, wherein the hinge portion is capable of temporarily fixing the first casing body and the second casing body at a plurality of angular positions relative to one another.

14. The portable device of claim 1, wherein the camera comprises a CCD.

15. The portable device of claim 14, wherein the CCD is disposed inside one of the first casing body and the second casing body.

* * * * *

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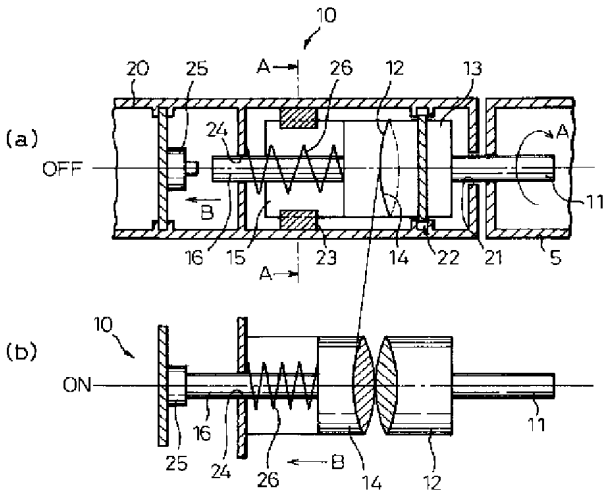
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(54)【発明の名称】　小型携帯用情報処理装置

(57)【要約】
【課題】　小型携帯用情報処理装置に関し、ペン操作等を全くする必要がなく、機器本体に対して液晶表示部を回転させてその装置の使用形態を変更する際に自動的に液晶表示部の画面の向きを変更するようにする。
【解決手段】　機器本体と、該機器本体に対して回転可能に取付けられた表示部と、前記機器本体に対する該表示部の回転を検出する手段と、該検出手段の検出結果により前記表示部の画面の向きを切り換える手段とを含んで成る。



3…液晶表示部
5…ヒンジ部材
10…スイッチ機構
11…軸
12…カム
13…フランジ
14…カム受け
15…ガイド板
16…軸
20…スイッチ本体
21…軸受部
22…環状ガイド溝
23…軸方向ガイド溝
24…軸受部
25…スイッチ素子
26…スプリング

Petitioners - Exhibit 1002, page 484

【特許請求の範囲】
【請求項１】　機器本体と、該機器本体に対して回転可能に取付けられた表示部と、前記機器本体に対する該表示部の回転を検出する手段と、該検出手段の検出結果により前記表示部の画面の向きを切り換える手段とを含んで成ることを特徴とする小型携帯用情報処理装置。
【請求項２】　前記表示部は前記機器本体との間に設けた少なくとも１つのピボット軸を中心に３６０°回転可能で、該ピボット軸を中心とする前記表示部と前記機器本体との間の相対的な回転によりＯＮ／ＯＦＦするスイッチを設けたことを特徴とする請求項１に記載の装置。
【請求項３】　前記スイッチは、表示部が機器本体に対して閉じられた状態から３６０°に近い角度回転した時点でスイッチＯＮ／ＯＦＦの動作をするように構成されていることを特徴とする請求項２に記載の装置。
【請求項４】　前記スイッチは、前記ピボット軸を中心として相対回転する一方の部材にカムを設け、他方の部材に該カムに常時接触し且つ該カムの回転に応じて軸方向に移動するカム受けを設け、該カム受けの軸方向の移動によりスイッチＯＮ／ＯＦＦ動作をするように構成されていることを特徴とする請求項２又は３に記載の装置。
【請求項５】　前記スイッチは、前記ピボット軸を中心として相対回転する一方の部材にカムを設け、他方の部材に該カムに常時接触し且つ該カムの回転に応じて軸方向に移動するカム受けを設け、前記カムと前記カム受けの一方の側に凹部、他方の側に凸部を設け、カム受けが軸方向に移動してスイッチ素子に接触した後、前記凹部と凸部とが嵌合してカム受けがスイッチ素子から離れるように構成したことを特徴とする請求項２又は３に記載の装置。
【請求項６】　前記スイッチは、前記ピボット軸を中心として相対回転する一方の部材に突起部を設け、他方の部材に該突起の回転方向の移動により動作するセンサスイッチを設けたことを特徴とする請求項２又は３に記載の装置。
【請求項７】　前記スイッチは、前記機器本体に対する表示部の回転位置を磁気的又は光学的に検出するスイッチであることを特徴とする請求項２又は３に記載の装置。
【請求項８】　前記表示部は、文字又は図形等の表示機能と接触による情報入力機能とを有する液晶タッチパネルを具備することを特徴とする請求項１～７のいずれか１項に記載の装置。
【請求項９】　前記機器本体部はキーボード部を有し、該機器本体に対する前記表示部の相対回転により、前記キーボード部をロック又は機能停止状態とすることを特徴とする請求項１～８のいずれか１項に記載の装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は小型携帯用情報処理装置に関する。特に本発明は、携帯用の卓上電子計算機（電卓）、コンピュータ、ワードプロセッサ、電子手帳等の小型携帯用装置であって、液晶等からなる画面表示部を有する小型携帯用の情報処理装置に関する。
【０００２】
【従来の技術】この種の携帯用装置において、小型化・軽量化・携帯性に加えてペン等で操作する際に操作し易い装置が要求されている。このため、機器本体の側にキーボード部を設け、タッチパネル式の入力部を兼ねる液晶表示部が機器本体にヒンジにより枢動可能に連結され、この液晶表示部を機器本体に対し３６０°回転可能としたものがある。この装置では、液晶表示部を見ながらキーボード部で操作することもでき、或いは液晶表示部を機器本体に対し３６０°回転させて液晶表示部を直接ペン等で入力操作することもできるようになっている。
【０００３】図１６（ａ）、（ｂ）に従来のこの種の携帯用装置を斜視図で示し、（ａ）はキーボード部で操作するべく液晶表示部を開放した状態、（ｂ）は液晶表示部を３６０°回転させて液晶表示面を上側にしてペン入力を可能にした状態をそれぞれ示す。図において、１は機器本体、２は機器本体の上面に設けられたキーボード部、３は表示面がタッチパネルで構成されたカバー兼用の液晶表示部、４はペン、５はヒンジ部材で２つのピボット軸５ａ及び５ｂを有する。
【０００４】図示のように、液晶表示部３は２つのピボット軸５ａ、５ｂを有するヒンジ部材５により機器本体１に連結されている。詳しくは、液晶表示部３の後縁にヒンジ部材５はその一方の側のピボット軸５ａが連結され、このヒンジ部材５の他方のピボット軸５ｂが機器本体１の後縁に連結されている。そして、図１６（ａ）に示すように、液晶表示部３をキーボード部２に対して所定の角度（鈍角）となる位置では、液晶表示部３を見ながらキーボード部２で入力操作をすることができる。また、図１６（ｂ）に示すように、液晶表示部３を機器本体１に対し閉じた状態から３６０°回転させて液晶表示部３の裏面を機器本体１の裏面に接触する状態とし、タッチパネルの液晶表示部３をペン４で入力できる位置とすることもできる。
【０００５】液晶表示部３は略長方形の形態であるが、図１６（ａ）の状態では図示のように装置を横長の形態として液晶表示部３を見ながらキーボード部２により指で操作するのが好適であり、また図１６（ｂ）の状態では装置を縦長の形態として液晶表示部３をペン等で操作するのが好適である。そこで、従来、図１７（ａ）及び（ｂ）に示すように、液晶表示部３に画面切り換え部７を設け、ペン４の先端でこの画面切り換え部７を軽く押圧することで、液晶表示部３の画面を約９０°回転させて向きを切り換える。もう一度画面切り換え部７を押圧

すると、元の状態の戻るようになっている。また、キーボード部２をロックする場合も、同様にロック用のマーク（図示せず）を押圧することにより、キーボード部をロック又は機能停止の状態とされ、もう一度押圧することによりキーボード部のロック又は機能停止が解除されるようになっていた。

【０００６】また、他の従来例として特開昭６２－６２９８号公報、特開昭６２－１７７８６号公報には、マトリックスパネル（液晶表示部）を機器本体に対して３６０°回転可能とし、マトリックスパネルに当たる光量により透過光反射型と透過直視型のいずれかに切り換えるようにした小型画像表示装置が開示されている。

【０００７】

【発明が解決しようとする課題】図１６及び図１７に示した従来の情報処理装置によると、液晶表示部３の画面を切り換えるのにその都度ペン４の先端で画面上の切り換え部７を押圧しなければならず、また元の画面の状態に戻す際もその都度ペン４の先端で画面上の切り換え部７を押圧しなければならず、操作が煩わしく面倒であった。

【０００８】また、特開昭６２－６２９８号公報、特開昭６２－１７７８６号公報に記載された従来例では、マトリックスパネル（液晶表示部）に当たる光量により透過光反射型と透過直視型のいずれかに自動的に変わるようになっているが、小型画像表示装置の使用形態によって画面の向きが変更するものではない。したがって、本発明は、ペン操作等を全くする必要がなく、機器本体に対して液晶表示部を回転させてその装置の使用形態を変更する際に自動的に液晶表示部の画面の向きを変更することのできる小型携帯用情報処理装置を提供することを課題とする。

【０００９】更に、本発明は、機器本体に対して液晶表示部を回転させてその装置の使用形態を変更する際に自動的に、機器本体側のキーボード等の所定部分をロック又は機能停止することのできる小型携帯用情報処理装置を提供することを課題とする。

【００１０】

【課題を解決するための手段】上記の課題を達成するために、本発明によれば、機器本体と、該機器本体に対して回転可能に取付けられた表示部と、前記機器本体に対する該表示部の回転を検出する手段と、該検出手段の検出結果により前記表示部の画面の向きを切り換える手段とを含んで成ることを特徴とする小型携帯用情報処理装置が提供される。これによれば、表示部を機器本体に対して回転させ、その使用形態を変更した際は自動的に表示部の画面を切り換えることができ、操作が簡便化される。

【００１１】前記表示部は前記機器本体との間に設けた少なくとも１つのピボット軸を中心に３６０°回転可能で、該ピボット軸を中心とする前記表示部と前記機器本体との間の相対的な回転によりＯＮ／ＯＦＦするスイッチを設けたことを特徴とする。これによれば、スイッチのＯＮ／ＯＦＦにより自動的に表示部の画面の切り換えが行われる。

【００１２】前記スイッチは、表示部が機器本体に対して閉じられた状態から３６０°に近い角度回転した時点でスイッチＯＮ／ＯＦＦの動作をするように構成されていることを特徴とする。これによれば、例えば、表示部の画面でのみ入力操作する状態となれば、自動的に表示部の画面の切り換えが行われる。前記スイッチは、前記ピボット軸を中心として相対回転を生ずる一方の部材にカムを設け、他方の部材に該カムに常時接触し且つ該カムの回転に応じて軸方向に移動するカム受けを設け、該カム受けの軸方向の移動によりスイッチＯＮ／ＯＦＦの動作をするように構成されていることを特徴とする。

【００１３】この場合において、前記カムと前記カム受けの一方の側に凹部、他方の側に凸部を設け、カム受けが軸方向に移動してスイッチ素子に接触した後、前記凹部と凸部とが嵌合してカム受けがスイッチ素子から離れるように構成することもできる。これによれば、カム受けが一旦スイッチ素子に接触した後、スイッチ素子から離れるので、カム受けとスイッチ素子との接触の都度ＯＮ／ＯＦＦが切り換わるようにされる。

【００１４】前記スイッチは、前記ピボット軸を中心として相対回転を生ずる一方の部材に突起部を設け、他方の部材に該突起の回転方向の移動により動作するセンサスイッチを設けたことを特徴とする。前記スイッチは、前記機器本体に対する表示部の回転位置を磁気的又は光学的に検出するスイッチであることを特徴とする。これによれば、機械的なスイッチ機構を用いないので、機構部分や可動部分の少ないスイッチを得られる。

【００１５】前記表示部は、文字又は図形等の表示機能と接触による情報入力機能とを有する液晶タッチパネルを具備することを特徴とする。機器本体側にキーボード等の入力手段がある場合は、タッチパネルとキーボードの両方からの入力操作が可能となる。前記機器本体部はキーボード部を有し、該機器本体に対する前記表示部の相対回転により、前記キーボード部をロック又は機能停止状態とすることを特徴とする。これによれば、表示部を機器本体に対して回転させ、その使用形態を変更した際は自動的に所定部分の機能が停止されるので、例えばキーボード等に不用意に触れた場合に生ずるような誤操作等を未然に防止するすることができる。

【００１６】

【発明の実施の形態】以下、図１～図７を参照して本発明の小型携帯用情報処理装置の第１実施形態について詳細に説明する。まず、図１及び図２は装置全体の斜視図で、図１はキーボード部で操作するべく液晶表示部を開放した状態、図２は液晶表示部を３６０°回転させて液晶表示面に対するペン入力を可能にした状態をそれぞれ

示す。これらの図において、１は機器本体、２は機器本体の上面に設けられたキーボード部、３は表示面がタッチパネルで構成されたカバー兼用の液晶表示部、４はペン、５はヒンジ部材で２つのヒンジ軸５ａ及び５ｂを有する。

【００１７】液晶表示部３は、図１６に示した従来例と同様、２つのピボット軸５ａ、５ｂを有するヒンジ部材５により機器本体１に連結されている。詳しくは、液晶表示部３の後縁にヒンジ部材５はその一方の側のピボット軸５ａが連結され、このヒンジ部材５の他方のピボット軸５ｂが機器本体１の後縁に連結されている。そして、図１に示すように、液晶表示部３をキーボード部２に対して所定の角度（鈍角）となる位置では、液晶表示部３を見ながらキーボード部２で入力操作をすることができる。また、図２に示すように、液晶表示部３を機器本体１に対し閉じた状態から３６０°回転させて液晶表示部３の裏面を機器本体１の裏面に接触する状態とし、液晶表示部３をタッチパネルとして機能させペン４で直接液晶表示部３に対して入力できる位置とすることもできる（図２では液晶表示部３のタッチパネル画面は裏面にある）。

【００１８】液晶表示部３は略長方形の形態であるが、図１の状態では装置を横長の形態として液晶表示部３を見ながらキーボード部２により指で操作するのが好適であり、また図２の状態では装置を縦長の形態として液晶表示部３をペン等で操作するのが好適である。図３（ａ）、（ｂ）は、液晶表示部３を機器本体１に対して閉じている不使用の状態（ａ）から、２つのピボット軸５ａ、５ｂを有するヒンジ部材５により機器本体１に対して矢印Ａ方向に３６０°回転させて液晶表示部をペン入力が可能な状態とする（ｂ）過程を示す。これらの図から理解されるように、液晶表示部３が機器本体１に対して３６０°回転される間に、ヒンジ部材５の各ピボット軸５ａ、５ｂはヒンジ部材５に対してそれぞれ１８０°づつ回転する。

【００１９】図４は本発明の第１実施形態に係る液晶表示部の画面の向きを変えるためのスイッチ機構を示す断面図であり、（ａ）はスイッチＯＦＦの状態、（ｂ）はスイッチＯＮの状態を示す。このスイッチ機構１０は例えば液晶表示部３とヒンジ部材５との間のヒンジ軸５ａの部分に形成することができる。スイッチ機構１０は液晶表示部３の側に固定されている本体部２０、ヒンジ部材５の側に固定されている回転部、この回転部の回転に応じて軸方向に移動するスライド部から成る。回転部は、ヒンジ部材５に固定して設けられる軸１１、この軸１１の先端に固定して設けられるカム１２、このカム１２の回転を許容し軸方向の移動を阻止するためのフランジ１３からなる。スライド部は、カム１２に接触するカム受け１４、このカム受け１４に固定され且つこのこのカム受け１４の軸方向の移動を許容し回転を阻止するガイド板１５、カム受け１４に固定された軸１６から成る。なお、ガイド板１５は、図５に示すように、軸１６との干渉を避けるために軸心からオフセットした位置に設けられている。

【００２０】また、本体部２０は、軸１１を回転可能に支承する軸受部２１、フランジ１３を回転可能に案内し且つ軸方向の移動を阻止する環状のガイド溝２２、ガイド板１５を軸方向に移動可能に案内し且つ回転を阻止する軸方向ガイド溝２３、軸１６の軸方向の移動を許容するように支承する軸受部２４、軸１６の軸方向の移動によりこの軸１６に接触してスイッチ機能を果たすスイッチ素子２５を具備する。また、カム受け１４を常時カム１２に接触して状態の保つためのスプリング２６が軸受部２４の壁部とカム受け１４との間に軸１６に沿って設けられている。

【００２１】前述のように、液晶表示部３を機器本体１に対し閉じた状態から３６０°回転させると、ヒンジ部材５の各ピボット軸５ａ、５ｂはそれぞれ１８０°づつ回転する。また、カム１２とカム受け１４の当接面は互いに傾斜した面又は螺旋状の面を有する。したがって、この動作の間にカム１２はカム受け１４に関し、１８０°回転する。カム受け１４はその回転が阻止されているので、カム１２により軸方向に押されて図の矢印Ｂ方向に軸方向に移動し、１８０°に近い所定角度回転すると、軸１６の先端がスイッチ素子２５と接触し、図４（ｂ）に示すようにスイッチＯＮとなる。液晶表示部３を機器本体１に対し元の状態、例えば図１の状態に戻す際はこのスイッチはＯＦＦとなる。

【００２２】なお、このスイッチ機構１０は、ヒンジ部材５の液晶表示部３側のピボット軸５ａではなく、機器本体１側ののピボット軸５ｂに適用することも可能である。また、スイッチ機構の本体部２０と、回転部（カム１２）とを逆に配置する、例えば、本体部２０をヒンジ部材５の側とし、回転部（カム１２）を液晶表示部３又は機器本体１の側とすること可能である。

【００２３】なお、液晶表示部３を機器本体１に対し３６０°回転させる際に、ヒンジ部材５の２つのピボット軸５ａ、５ｂの一方が先に１８０°回転し、他方（このスイッチ機構１０を組み込む側）がその後１８０°回転し、逆方向に回転させる時はこの他方が先に、前記一方が後に回転するように各ピボット軸５ａ、５ｂの回転トルクを調整しておくことも可能である。

【００２４】図６は、図４に示したカム１２とカム受け１４の変形例を示すものである。カム１２とカム受け１４の当接面は互いに傾斜した面又は螺旋状の面を有する点は同じであるが、この変形例では、カム１２とカム受け１４の一方に凹部１２ａ、他方に凸部１４ａを対応して設け、軸１６の先端が一旦スイッチ素子２５に接触した後は凹部１２ａと凸部１４ａとが互いに係合して軸１６の先端がスイッチ素子２５から離れる構造とした。こ

の場合のカム１２のスイッチ本体１０に対する回転角と軸１６のストロークとの関係を図６（ｂ）に示す。ただし、軸１６の先端が一旦スイッチ素子２５に接触した後に同スイッチ素子２５から離れても、スイッチはＯＮの状態を持続する。逆の動作をする場合は、カム１２の凹部１２ａとカム受け１４の凸部１４ａとは互いに乗り越えて、軸１６の先端が一旦スイッチ素子２５に接触してスイッチをＯＦＦとし、その後は同スイッチ素子２５から離れる。この場合も、軸１６が一旦スイッチ素子２５に接触した後のそこから離れてもＯＦＦの状態を持続する。

【００２５】スイッチ機構１０がＯＦＦの状態では、液晶表示部３の画面は図１に示すように横長の形態となる。したがって、図の状態のように、液晶表示部３を見ながらキーボード部２により指で操作するのが好適である。一方、スイッチ機構１０がＯＮの状態では、液晶表示部３の画面は図２に示すように縦長の形態となる。したがって、タッチパネルの液晶表示部３をペン等で操作するのが好適な状態となる（なお、図２では液晶表示部３は裏面にある）。

【００２６】図７は上述した実施形態の動作を示すフローチャートである。まず、この装置の主電源（図示せず）をＯＮ（ステップ101 ）として、画面切り換え用スイッチ１０の状態を見る（ステップ102 ）。スイッチが接触している時（ステップ103）は画面切り換え信号を送り（ステップ104 ）、液晶表示部３の画面が９０°回転し（ステップ105 ）、その他の必要な処理を行って（ステップ106 ）、ステップ102 を戻る。スイッチが接触していない時は画面の状態を最初に見た状態のままとし（ステップ107 ）、他の必要な処理を行い（ステップ106 ）、ステップ102 に戻る。

【００２７】次に、図８～図１５を参照して本発明の小型携帯用情報処理装置の第２実施形態について詳細に説明する。図８は液晶表示部３を機器本体１に対して３６０°回転させて液晶表示面を上側にしてペン入力を可能にした状態、図９及び図１０は液晶表示部３を閉じた状態を示す。図９（ｂ）は図９（ａ）のＣの部分の拡大斜視図である。

【００２８】図９（ａ）及び（ｂ）に示すように、液晶表示部３の裏面（表示画面とは反対側）にはヒンジ部材５の近傍位置にセンサスイッチ３０が設けられている。一方、回転側であるヒンジ部材５にはセンサスイッチ３０の接触部３１に干渉する軌跡の位置に突起部３２を形成する。図９及び図１０に示すように、液晶表示部３を機器本体１に対して閉じた状態では、センサスイッチ３０の接触部３１とヒンジ部材５の突起部３２との間は１８０°近く離れた角度の関係にあって、突起部３２は接触部３１と干渉せず、したがってスイッチはＯＦＦの状態である。

【００２９】図１１及び図１２は、それぞれ図９及び図１０に対応する図であるが、液晶表示部３を機器本体１に対して図９及び図１０の閉位置から、３４６°回転させた状態（機器本体１と液晶表示部３との間は１４°の状態）を示す。この状態では、センサスイッチ３０の接触部３１とヒンジ部材５の突起部３２との間は図９及び図１０の閉位置から１８０°近くまで回転した状態であり、突起部３２はセンサスイッチ３０の接触部３１を押圧し、スイッチをＯＮとした状態である。

【００３０】センサスイッチ３０がＯＮ、ＯＦＦの切り換えを行う時の機器板１に対する液晶表示部３の角度は、突起部３２の位置を変えることで適宜選定することができる。例えば、図１３は、図１１及び図１２の状態から液晶表示部３を機器本体１に対して更に回転させ角度を３５５°回転させた状態（機器本体１と液晶表示部３との間を５°とした状態）でスイッチが切り換えが行われるようにした。また、図１４は、図１１及び図１２の状態から液晶表示部３と機器本体１との間が３５°となった時に、突起部３２がセンサスイッチ３０の接触部３１に接触し、スイッチが切り換えが行われるようにした。

【００３１】なお、前述の第１実施形態と同様に、センサスイッチ３０及び突起部３２をそれぞれ機器本体１側、ヒンジ部材５側に設けることも可能である。また、センサスイッチ３０をヒンジ部材５側に、突起部３２を液晶表示部３又は機器本体１の側に設けることも可能である。センサスイッチ３０がＯＮの状態では例えばキーボードロックが実行され、センサスイッチ３０がＯＦＦの状態ではキーボードロックが解除される。なお、キーボードロックをかける際は、機器本体１のキーボード部２（図２）のすべてのキーを一斉に機能停止となるようにしても良いが、一部のキーのみが機能停止となるようにしても良い。

【００３２】或いはまた、キーボードロックを実行する代わりに、装置に対するある種の行動、例えば、ペン入力、キーボードによる信号入力の全部又は一部を無視したり、或いは画面表示の全部又は一部を機能停止する、その他種々の状態にすることができる。図１５は上述した第２実施形態の動作を示すフローチャートである。まず、この装置の主電源（図示せず）をＯＮ（ステップ201 ）として、キーボード入力ロックスイッチ１０の状態を見る（ステップ202 ）。スイッチが接触している時（ステップ203 ）はキーボード入力ロック信号を送り（ステップ204 ）、キーボード入力ロックを実行し、（ステップ205 ）、画面での操作のみが可能な状態となり（ステップ206 ）、その他の処理を実行して（ステップ207 ）、ステップ202を戻る。スイッチが接触していない時はキーボード入力ロックを実行せず、したがってキーボード及び画面の両者で入力が可能な状態とし（ステップ208 ）、他の必要な処理を行い（ステップ207 ）、ステップ202 に戻る。

【００３３】以上、添付図面を参照して本発明の実施形態について詳細に説明したが、本発明は上記の実施形態に限定されるものではなく、本発明の精神ないし範囲内において種々の形態、変形、修正等が可能であることに留意すべきである。例えば、スイッチ機構は、前述のように、機械的なスイッチではなく、例えば機器本体に対する液晶表示部の相対的な回転位置を磁気的又は光学的に検出するスイッチであっても良い。この場合は、機械的なスイッチ機構を用いないので、機構部分や可動部分の少ないスイッチとなる。

【００３４】

【発明の効果】以上に説明したような、本発明によれば、機器本体に対して液晶表示部を回転させてその装置の使用形態を変更する際は、ペン操作等の特別の煩わしい操作をすることなく、自動的に液晶表示部の画面の向きを変更する。したがって、掌の上に装置をもって液晶表示部を回転させて縦長の状態とすると、そのまま画面による操作が開始でき、極めて簡単で迅速に操作を行うことができる。

【００３５】また、機器本体に対して液晶表示部を回転させてその装置の使用形態を変更する際に自動的に、機器本体側のキーボード等の所定部分の機能を停止できる。したがって、画面による操作中に何かがキーボードに触れて誤操作を生ずる等の不具合を解消することができる。

【図面の簡単な説明】

【図１】本発明の第１実施形態の装置で液晶表示部を開放した状態の斜視図である。

【図２】図１の装置で液晶表示部を３６０°回転させた状態の斜視図である。

【図３】液晶表示部を機器本体１に対して閉じている不使用の状態（ａ）及び３６０°回転させてペン入力の可能な状態（ｂ）を示す。

【図４】本発明の第１実施形態の画面切り換えスイッチ機構を示す断面図であり、（ａ）はスイッチＯＦＦの状態、（ｂ）はスイッチＯＮの状態を示す。

【図５】図４のＡ－Ａ断面図である。

【図６】図４に示したカムとカム受けの変形例（ａ）及びその動作（ｂ）を示す。

【図７】第１実施形態の動作を示すフローチャートである。

【図８】本発明の第２実施形態で液晶表示部を機器本体に対して３６０°回転させた状態の斜視図である。

【図９】第２実施形態で液晶表示部を閉じた状態の斜視図（ａ）、及びＣの部分の拡大斜視図（ｂ）である。

【図１０】第２実施形態で液晶表示部を閉じた状態の側面図である。

【図１１】図９（ａ）及び（ｂ）に対応する図であるが、液晶表示部と機器本体との間の角度を変えた状態を示す。

【図１２】図１１の状態の側面図である。

【図１３】図１２の状態から更に角度を変えた場合の側面図である。

【図１４】図１３の状態から更に角度を変えた場合の側面図である。

【図１５】本発明の第２実施形態の動作を示すフローチャートである。

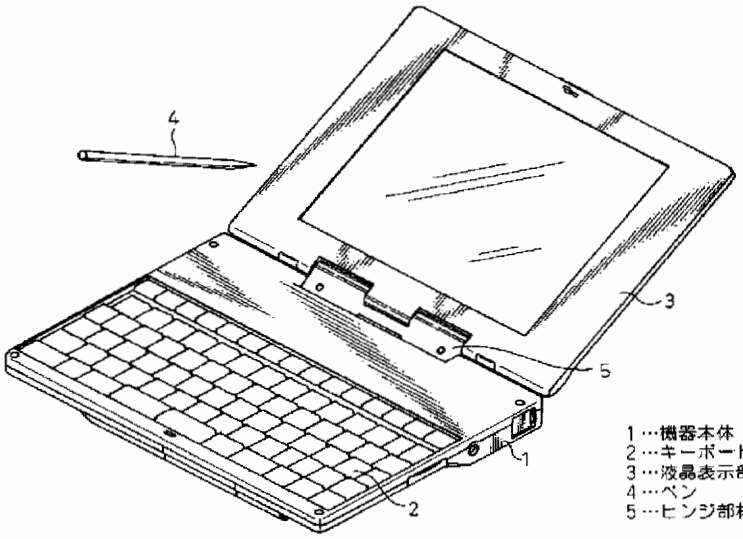
【図１６】従来の携帯用装置を斜視図で、液晶表示部を開放した状態（ａ）及び液晶表示部を３６０°回転させた状態（ｂ）を示す。

【図１７】液晶表示部の画面を９０°回転させる前（ａ）及び後（ｂ）の状態を示す。

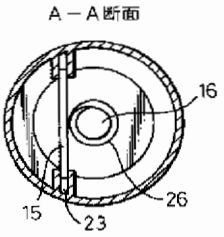
【符号の説明】

１…機器本体
２…キーボード部
３…液晶表示部
４…ペン
５…ヒンジ部材
１０…スイッチ機構
１１…軸
１２…カム
１３…フランジ
１４…カム受け
１５…ガイド板
１６…軸
２０…スイッチ本体
２１…軸受部
２２…環状ガイド溝
２３…軸方向ガイド溝
２４…軸受部
２５…スイッチ素子
２６…スプリング
３０…センサスイッチ
３１…接触部
３２…突起部

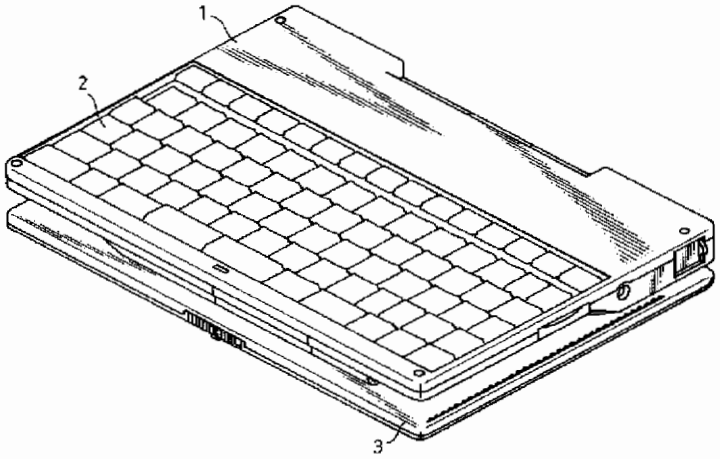
【図１】



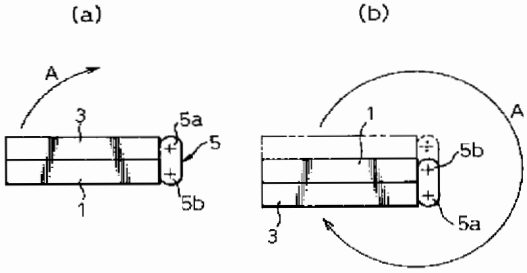
【図５】



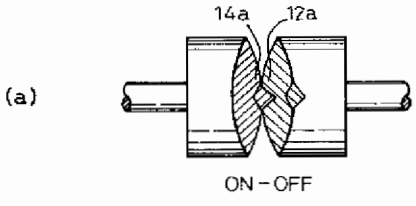
【図２】



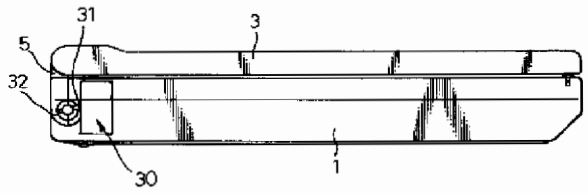
【図３】



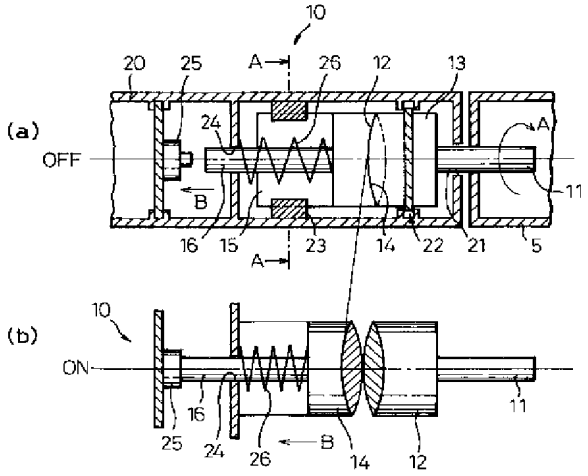
【図６】



【図１０】

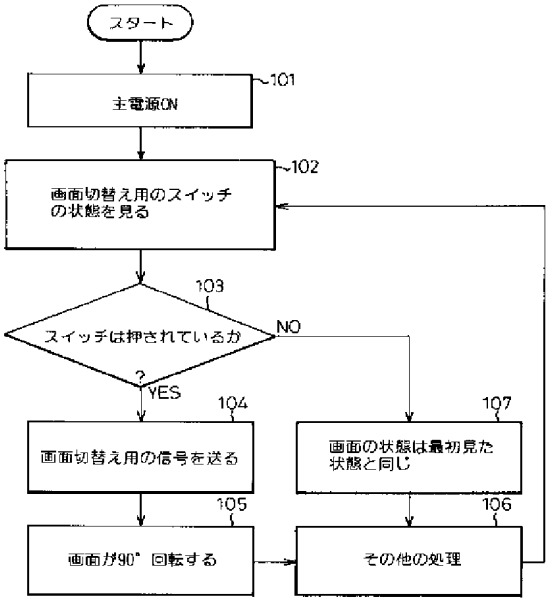


【図４】



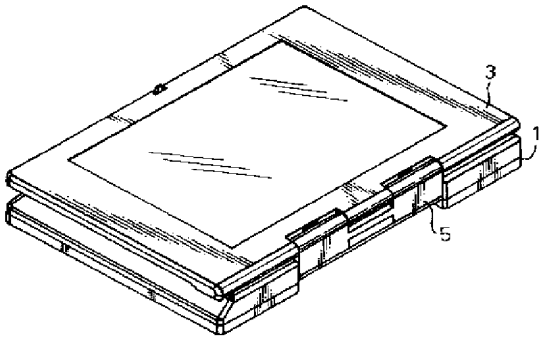
3…液晶表示部　16…軸
5…ヒンジ部材　20…スイッチ本体
10…スイッチ機構　21…軸受部
11…軸　22…環状ガイド溝
12…カム　23…軸方向ガイド溝
13…フランジ　24…軸受部
14…カム受け　25…スイッチ素子
15…ガイド板　26…スプリング

【図７】



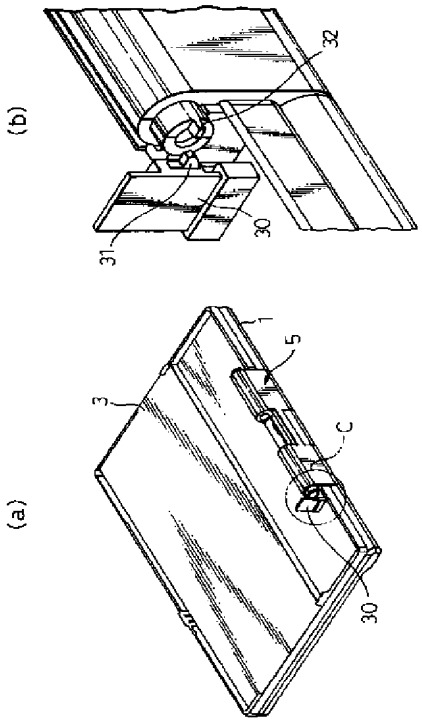
【図８】

液晶部を360°回転させた状態の使用例



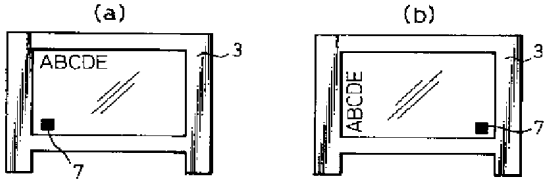
【図９】

液晶部を閉じた状態での突起物とセンサーの位置関係



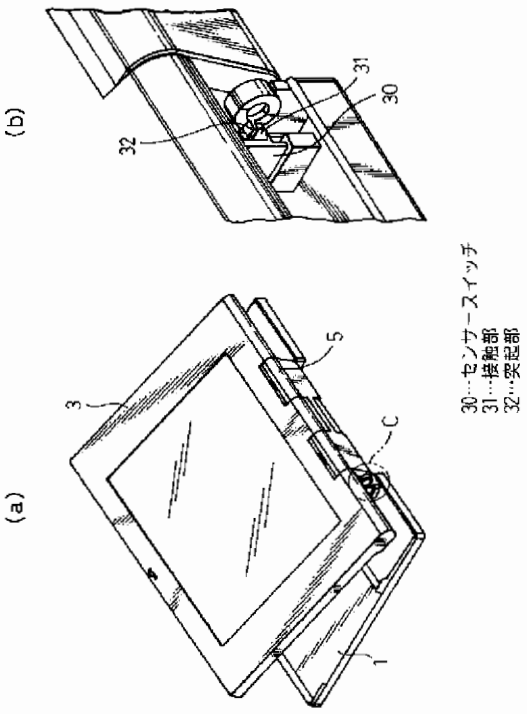
30…センサースイッチ
31…接触部
32…突起部

【図１７】

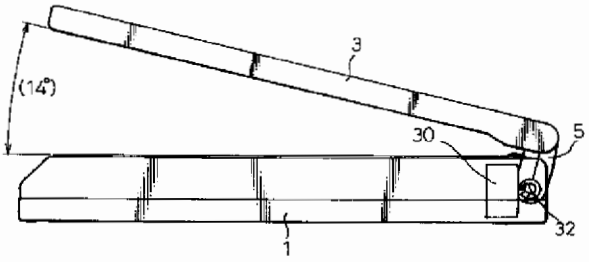


【図１１】

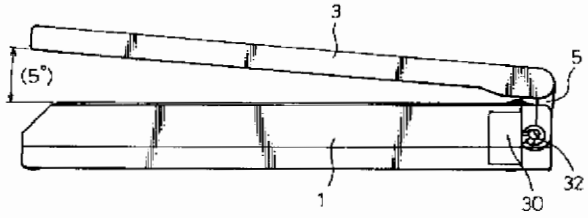
液晶部が回転してセンサーと接触した状態



【図１２】

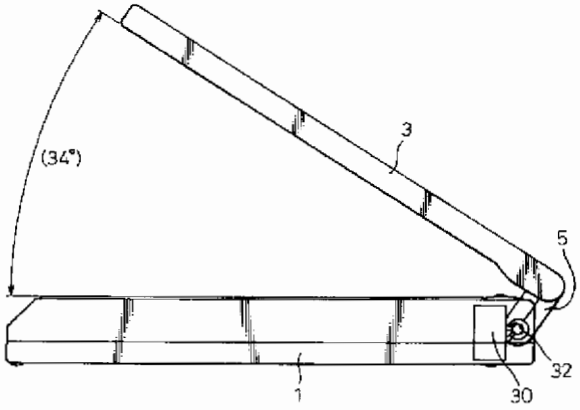


【図１３】

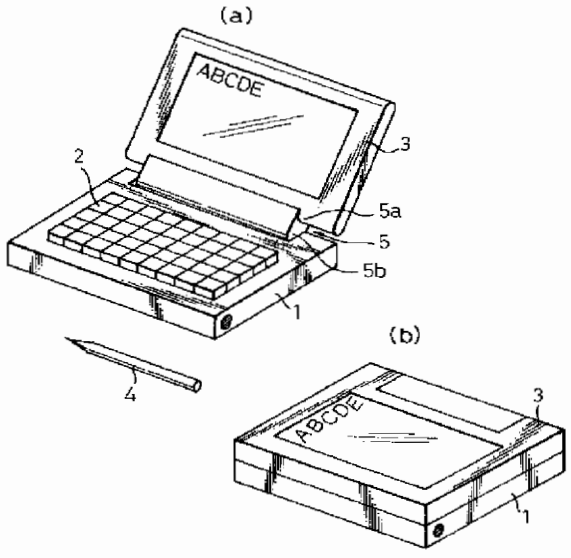


【図１４】

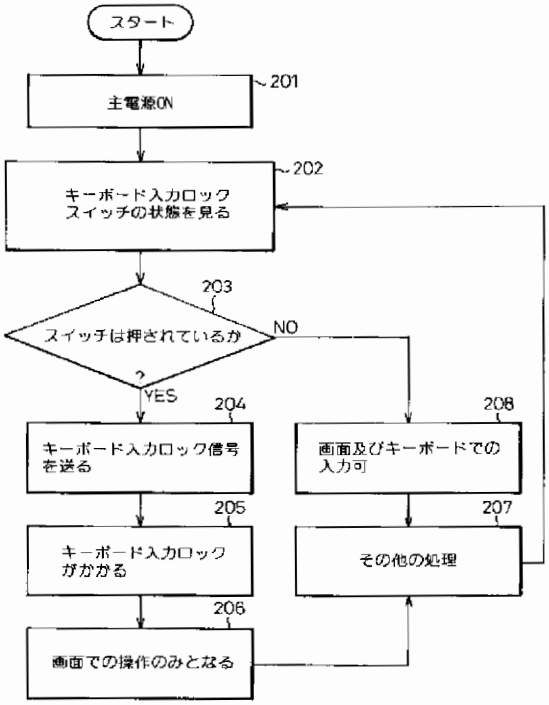
図13の状態から突起物の位置を変えた状態



【図１６】



【図１５】


スタート
主電源ON
201
キーボード入力ロック
スイッチの状態を見る
202
203
スイッチは押されているか
NO
YES
204
キーボード入力ロック信号
を送る
205
キーボード入力ロック
がかかる
206
画面での操作のみとなる
208
画面及びキーボードでの
入力可
207
その他の処理

No documents available for this priority number.

Espacenet

Bibliographic data: JP10111658 (A) — 1998-04-28

SMALL-SIZED PORTABLE INFORMATION PROCESSOR

Inventor(s): NOBUCHI ATSUNOBU; KAMIARI HIDEAKI; GOTO KATSUICHI ± (NOBUCHI ATSUNOBU, ; KAMIARI HIDEAKI, ; GOTO KATSUICHI)

Applicant(s): FUJITSU LTD ± (FUJITSU LTD)

Classification: - international: ***G06F1/16; G09F9/00;*** *H01H3/16;* (IPC1-7): G09F9/00
- cooperative: **G06F1/1618; G06F1/1677; G06F1/1681;** G06F2200/1614; H01H3/162

Application number: JP19960267235 19961008

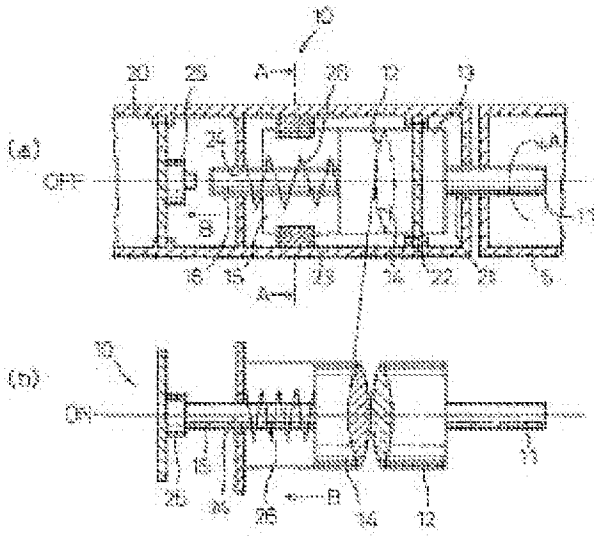
Priority number (s): JP19960267235 19961008

Also published as: JP3676891 (B2) GB2318195 (A) US6492974 (B1)

Abstract of JP10111658 (A)

PROBLEM TO BE SOLVED: To automatically switch a picture of a display part when the use mode of the display part is revised without a need for pen operation, etc., and to simplify the operation by rotatably attaching the display part to an equipment main body, detecting the rotation of the display part for the equipment main body and switching the direction of the picture of the display part. SOLUTION: When the liquid crystal display part is 360 deg. rotated from the state closed for the equipment main body, respective pivot axes of a hinge member 5 are rotated by 180 deg. each respectively, and a cam 12 of a switch mechanism 10 formed on a hinge shaft part between the liquid crystal display part and the hinge member is 180 deg. rotated for a cam reception 14.; Then, the cam reception 14 is moved in the axial direction by the cam 12, and the tip of the shaft 16 is in contact with a switch element 25, and the switch is turned on. Further, when the liquid crystal display part is turned to an original state for the equipment main body, the switch is turned off. In the state that the switch mechanism 10 is turned off, the picture of the liquid crystal display part becomes a long sideways mode, and in the state that the switch mechanism 10 is turned on, the picture of the liquid crystal display part becomes a vertically long mode.

Last updated: 19.12.2012 Worldwide Database 5.8.4; 92p



No documents available for this priority number.

Espacenet

Bibliographic data: JP6090200 (A) — 1994-03-29

PORTABLE RADIO TELEPHONE SET

Inventor(s): NISHIYAMA TAKANORI; YANAGISAWA KAZUNORI; ITAKURA SAKAE ± (NISHIYAMA TAKANORI, ; YANAGISAWA KAZUNORI, ; ITAKURA SAKAE)

Applicant(s): HITACHI LTD ± (HITACHI LTD)

Classification: - international: ***G06F3/023; G06F3/033; H04M1/00; H04M1/02; H04M1/03; H04M1/247; H04M1/2745; H04M1/725; H04Q7/32;*** *H01H25/00; H01H3/16;* (IPC1-7): H04B7/26; H04M1/03

- cooperative: **G06F3/0236**; **G06F3/0362**; **H04M1/0214**; **H04M1/0218**; **H04M1/0247**; **H04M1/233**; **H04M1/274525**; **H04M1/274558**; **H04M1/72519**; **H04M1/72583**; H01H2019/146; H01H2223/05; H01H25/008; H01H3/162; H04M1/725; H04M2250/70

Application number: JP19920239735 19920908

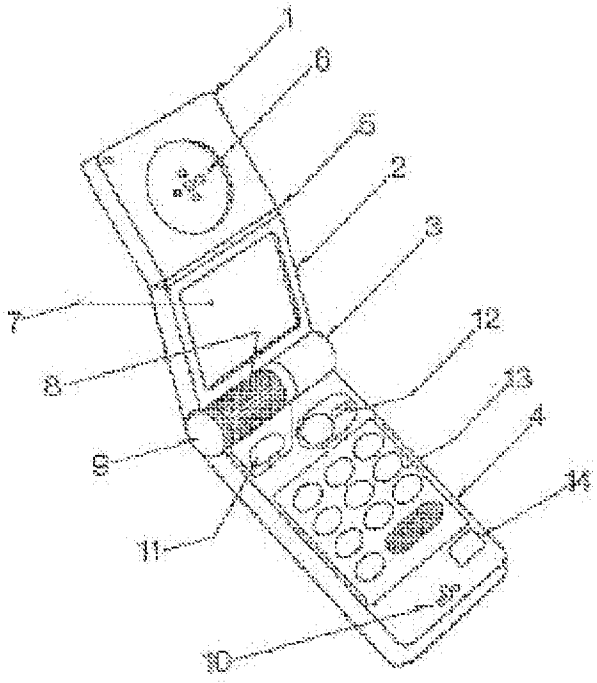
Priority number(s): JP19920239735 19920908

Also published as: JP3268467 (B2) EP0588210 (A1) EP0588210 (B1) US2002025830 (A1) US6628970 (B2) more

Abstract of JP6090200 (A)

PURPOSE:To facilitate various operations especially required for radio call with the finger of a single hand whit holding a telephone set itself with the single hand. CONSTITUTION:A functional selection dial 8 which functions as the one for reception voice sound volume adjustment in a radio call state and functions as the one to select every kind of set in a non-radio call state is provided in such a way that it can freely be turned in a vertical direction at a joint part 3 for housing/folding so as to easily enable access with the finger of the single hand in a state where it is hold with the single hand. Also, when the telephone set is provided so as to be operated from internal and external sides, the reception voice sound volume adjustment in the radio call state can be performed.

Last updated: 19.12.2012 Worldwide
Database 5.8.4; 93p



No documents available for this priority number.

Espacenet

Bibliographic data: JP6090200 (A) — 1994-03-29

PORTABLE RADIO TELEPHONE SET

Inventor(s): NISHIYAMA TAKANORI; YANAGISAWA KAZUNORI; ITAKURA SAKAE ± (NISHIYAMA TAKANORI, ; YANAGISAWA KAZUNORI, ; ITAKURA SAKAE)

Applicant(s): HITACHI LTD ± (HITACHI LTD)

Classification: - international: ***G06F3/023; G06F3/033; H04M1/00; H04M1/02; H04M1/03; H04M1/247; H04M1/2745; H04M1/725; H04Q7/32;*** *H01H25/00; H01H3/16;* (IPC1-7): H04B7/26; H04M1/03

- cooperative: **G06F3/0236**; **G06F3/0362**; **H04M1/0214**; **H04M1/0218**; **H04M1/0247**; **H04M1/233**; **H04M1/274525**; **H04M1/274558**; **H04M1/72519**; **H04M1/72583**; H01H2019/146; H01H2223/05; H01H25/008; H01H3/162; H04M1/725; H04M2250/70

Application number: JP19920239735 19920908

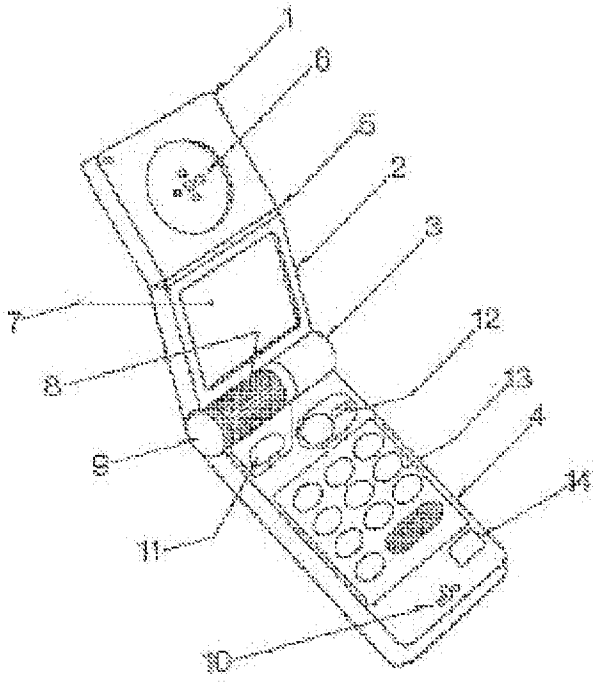
Priority number(s): JP19920239735 19920908

Also published as: JP3268467 (B2) EP0588210 (A1) EP0588210 (B1) US2002025830 (A1) US6628970 (B2) more

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PURPOSE:To facilitate various operations especially required for radio call with the finger of a single hand whit holding a telephone set itself with the single hand. CONSTITUTION:A functional selection dial 8 which functions as the one for reception voice sound volume adjustment in a radio call state and functions as the one to select every kind of set in a non-radio call state is provided in such a way that it can freely be turned in a vertical direction at a joint part 3 for housing/folding so as to easily enable access with the finger of the single hand in a state where it is hold with the single hand. Also, when the telephone set is provided so as to be operated from internal and external sides, the reception voice sound volume adjustment in the radio call state can be performed.

Last updated: 19.12.2012 Worldwide
Database 5.8.4; 93p



No documents available for this priority number.

Espacenet

Bibliographic data: JP2004302179 (A) — 2004-10-28

PORTABLE INFORMATION EQUIPMENT AND PICTURE DISPLAY METHOD

Inventor(s): OSHIMA TETSUYA; HIROTA SHOICHI; KANEKO HIRONORI; EDO SUSUMU; SEKIGUCHI YOSHIFUMI; SUGITA TATSUYA; KOMURA SHINICHI; KAWASAKI MASAHIRO ± (OSHIMA TETSUYA, ; HIROTA SHOICHI, ; KANEKO HIRONORI, ; EDO SUSUMU, ; SEKIGUCHI YOSHIFUMI, ; SUGITA TATSUYA, ; KOMURA SHINICHI, ; KAWASAKI MASAHIRO)

Applicant(s): HITACHI LTD ± (HITACHI LTD)

Classification: **- international:** ***G06F1/16; G06F3/023; G09F9/00; G09F9/40; G09G3/20; G09G3/34; G09G3/36; G09G5/00;*** *G06F3/14; G06F3/147;* (IPC1-7): G06F3/023; G09F9/00; G09F9/40; G09G3/20; G09G3/34; G09G3/36; G09G5/00

- cooperative: **G06F1/162; G06F1/1626; G06F1/1635; G06F1/1637; G06F1/1647; G06F1/165; G06F1/1677; G06F1/1684;** G06F2200/1632; G06F2200/1634; G06F3/1423; G06F3/147; G09G2340/14

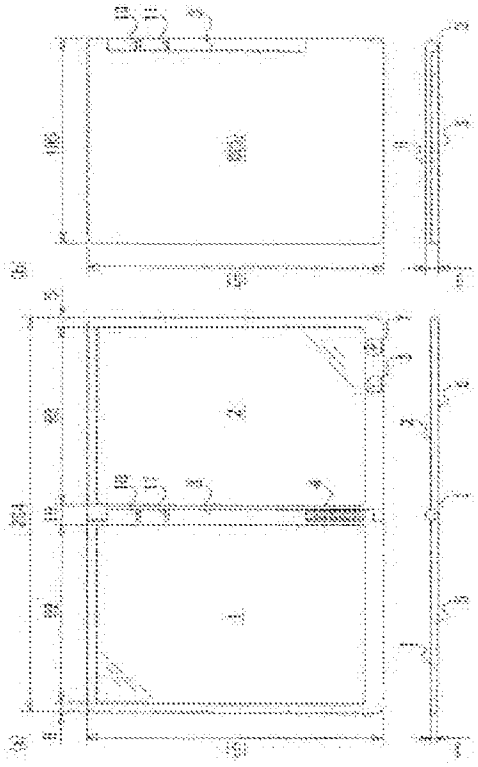
Application number: JP20030095476 20030331

Priority number(s): JP20030095476 20030331

Also published as: US2004207568 (A1)

Abstract of JP2004302179 (A)

PROBLEM TO BE SOLVED: To provide portable information equipment and a picture display method with which operability is improved and handleability enhanced by using a display device performing high definition display of type quality and performing a component arrangement conscious of human engineering. ; SOLUTION: In the portable information equipment, frames 5, 6 on which the display device having main displays 1, 2 performing the high definition display of type quality is mounted are supported freely openably and closably on a connection part 3. The connection part 3 is constituted with a hinge mechanism, the main displays 1, 2 are set in the spread space state and are used by making the connection part 3 a fulcrum and the main displays 1, 2 are overlapped, closed, and folded in two by making the connection part 3 the fulcrum, and can be carried. By rotating a jog dial 4, pictures displayed on the main displays 1, 2 can be changed. A power source switch 7 and a function switch 8 as the necessary switches are mounted on the end part of the frame 6. ; COPYRIGHT: (C)2005,JPO&NCIPI



Last updated: 19.12.2012 Worldwide Database 5.8.4; 93p

No documents available for this priority number.

Espacenet

Bibliographic data: JP2004302179 (A) — 2004-10-28

PORTABLE INFORMATION EQUIPMENT AND PICTURE DISPLAY METHOD

Inventor(s): OSHIMA TETSUYA; HIROTA SHOICHI; KANEKO HIRONORI; EDO SUSUMU; SEKIGUCHI YOSHIFUMI; SUGITA TATSUYA; KOMURA SHINICHI; KAWASAKI MASAHIRO ± (OSHIMA TETSUYA, ; HIROTA SHOICHI, ; KANEKO HIRONORI, ; EDO SUSUMU, ; SEKIGUCHI YOSHIFUMI, ; SUGITA TATSUYA, ; KOMURA SHINICHI, ; KAWASAKI MASAHIRO)

Applicant(s): HITACHI LTD ± (HITACHI LTD)

Classification: **- international:** ***G06F1/16; G06F3/023; G09F9/00; G09F9/40; G09G3/20; G09G3/34; G09G3/36; G09G5/00;*** *G06F3/14; G06F3/147;* (IPC1-7): G06F3/023; G09F9/00; G09F9/40; G09G3/20; G09G3/34; G09G3/36; G09G5/00

- cooperative: **G06F1/162; G06F1/1626; G06F1/1635; G06F1/1637; G06F1/1647; G06F1/165; G06F1/1677; G06F1/1684;** G06F2200/1632; G06F2200/1634; G06F3/1423; G06F3/147; G09G2340/14

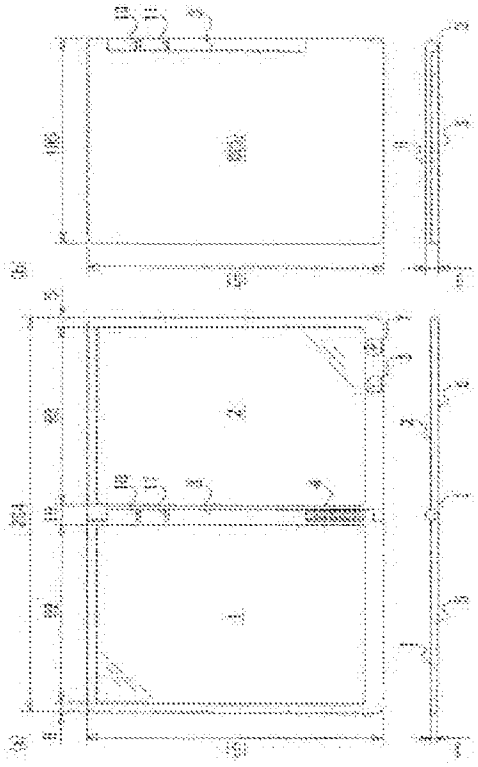
Application number: JP20030095476 20030331

Priority number(s): JP20030095476 20030331

Also published as: US2004207568 (A1)

Abstract of JP2004302179 (A)

PROBLEM TO BE SOLVED: To provide portable information equipment and a picture display method with which operability is improved and handleability enhanced by using a display device performing high definition display of type quality and performing a component arrangement conscious of human engineering. ; SOLUTION: In the portable information equipment, frames 5, 6 on which the display device having main displays 1, 2 performing the high definition display of type quality is mounted are supported freely openably and closably on a connection part 3. The connection part 3 is constituted with a hinge mechanism, the main displays 1, 2 are set in the spread space state and are used by making the connection part 3 a fulcrum and the main displays 1, 2 are overlapped, closed, and folded in two by making the connection part 3 the fulcrum, and can be carried. By rotating a jog dial 4, pictures displayed on the main displays 1, 2 can be changed. A power source switch 7 and a function switch 8 as the necessary switches are mounted on the end part of the frame 6. ; COPYRIGHT: (C)2005,JPO&NCIPI



Last updated: 19.12.2012 Worldwide Database 5.8.4; 93p

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

GRADY MATTHEW H

LOWRIE, LANDO & ANASTASI, LLP ONE MAIN STREET, ELEVENTH FLOOR CAMBRIDGE MA 02142 USA

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)* 28 SEPTEMBER 2009 (28.09.2009)	
Applicant's or agent's file reference A2029-7004WO	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. **PCT/US2009/039117**	International filing date *(day/month/year)* **01 APRIL 2009 (01.04.2009)**
Applicant **AQUENT, LLC et al**	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:

   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea	Authorized officer COMMISSIONER
Facsimile No. 82-42-472-7140	Telephone No. 82-42-481-5207

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article", "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that ammendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, paragraph 296).

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.
Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively .in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.
The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below,under "Statement under Article 19(1)").
The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

Petitioners - Exhibit 1002, page 505

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

(i) the claim is unchanged;
(ii) the claim is cancelled;
(iii) the claim is new;
(iv) the claim replaces one or more claims as filed;
(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
   "Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
   "Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
   "Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
   "Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
   "Claims 1 - 10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be indentified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the proceduer before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1*bis*(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43*bis*.1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to , the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, National Chapters.

Petitioners - Exhibit 1002, page 506

* Attention

Copies of the documents cited in the international search report can be searched in the following Korean Intellectual Property Office English website for three months from the date of mailing of the international search report.

http://www.kipo.go.kr/en/ => Patent Search => PCT-Service

ID : PCT international application number
PW : **83TTEPYF**

Inquiries related to PCT International Search Report or Written Opinion prepared by KIPO as an International Searching Authority can be answered not only by KIPO but also through IPKC (Intellectual Property Korea Center), located in Vienna, VA, which functions as a PCT Help Desk for PCT applicants.

Homepage: http://www.ipkcenter.com
Email: ipkc@ipkcenter.com
Phone: +1 703 388 1066
Fax: +1 703 388 1064

Petitioners - Exhibit 1002, page 507

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
GRADY MATTHEW H

LOWRIE, LANDO & ANASTASI, LLP ONE MAIN STREET, ELEVENTH FLOOR CAMBRIDGE MA 02142 USA

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)*	**28 SEPTEMBER 2009 (28.09.2009)**
Applicant's or agent's file reference A2029-7004WO	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2009/039117	**01 APRIL 2009 (01.04.2009)**	01 APRIL 2008 (01.04.2008)

International Patent Classification (IPC) or both national classification and IPC

G06F 3/048(2006.01)i, G06F 3/14(2006.01)i

Applicant

AQUENT, LLC et al

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [x] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [x] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR	Date of completion of this opinion	Authorized officer
Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302 -701, Republic of Korea Facsimile No. 82-42-472-7140	28 SEPTEMBER 2009 (28.09.2009)	JEONG, Jae Woo Telephone No.82-42-481-5718

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2009/039117

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of :

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____ , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:

   a. type of material
   - ☐ a sequence listing
   - ☐ table(s) related to the sequence listing

   b. format of material
   - ☐ on paper
   - ☐ in electronic form

   c. time of filing/furnishing
   - ☐ contained in the international application as filed.
   - ☐ filed together with the international application in electronic form.
   - ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additioanl copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Petitioners - Exhibit 1002, page 509

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2009/039117

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 99

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international search *(specify)*:

☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 99 are so unclear that no meaningful opinion could be formed *(specify)*:

In claim 99, what the description of "as described above" points is so unclear that the technical feature of claim 99 is not clarified.

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed *(specify)*:

☒ no international search report has been established for said claims Nos. 99

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Istructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Istructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-bis of the Administrative Instructions, and such tables were not available to the International Searching Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

Petitioners - Exhibit 1002, page 510

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2009/039117

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 98, 100 - 123	YES
	Claims	None	NO
Inventive step (IS)	Claims	1 - 98, 100 - 123	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1 - 98, 100 - 123	YES
	Claims	None	NO

2. Citations and explanations :

Reference is made to the following documents cited in the ISR.

D1 : US 2005-210399 A1 22.09.2005

D1 discloses, in a computing device, a method which comprises dividing content into regions, displaying a plurality of the regions together in a reduced size, detecting a request to display a selected one of the regions, and displaying the selected region in a size that is expanded relative to the reduced size.

1. Novelty and Inventive step

Claim 1

Claim 1 of the present invention relates to a graphical user interface (GUI) displayed on a computer system responsive to computer focus and execution, which comprises a first visual representation configured to display digital content, a focus visual representation configured to display the first visual representation in a focused state, an execution component configured to execute a first transformation from the first visual representation into the focus visual representation responsive to computer focus on the first visual representation, a mapping from at least one of the first visual representation and the focus visual representation to a first view including the digital content, and the execution component further configured to execute the mapping in response to execution of at least one of the first and focus visual representation.

Claim 1 of the present invention and document D1 that is the closest prior art to the present invention, relate to the same subject matter of the GUI for focusing visual representation of selected image on display screen. However, D1 does not disclose the mapping in response to execution of at least one of the first and focus visual representation. which is the key technical feature of claim 1. Therefore, the invention of claim 1 is considered to be novel under PCT Article 33(2).

Moreover, the technical feature of claim 1, mapping from at least one of the first visual representation and the focus visual representation to a first view including the digital content, is not obvious to a person skilled in the art and is not suggested in any of the prior arts. Therefore, the invention of claim 1 is considered to fulfill the requirement of inventive step under PCT Article 33(3).

(Continued on Supplemental Sheet)

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

In claim 99, what the description of "as described above" points is so unclear that the technical feature of claim 99 is not clarified.

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of :

Box No. V

Claims 40, 41, and 42

Claims 40, 41, and 42 of the present invention relate a method for presenting a graphical user interface on a computer system display, a computer system for presenting streamlined interaction with digital content, and a customized user interface for a computer system, respectively, which adopt the same subject matter as the invention of claim 1. Therefore, the inventions of claims 40, 41, and 42 are also considered to fulfill the requirements of novelty and inventive step under PCT Article 33(2),(3).

Claims 68, 69, and 70

Claims 68, 69, and 70 of the present invention relate a method for presenting a customized user interface for a computer interface, a system for presenting a customized user interface for a system, and a computer implemented method for interpreting on-line executable operations into streamlined operations, respectively, which adopt the same subject matter as the invention of claim 1. Therefore, the inventions of claims 68, 69, and 70 are also considered to fulfill the requirements of novelty and inventive step under PCT Article 33(2),(3).

Claims 88 and 89

Claims 88 and 89 of the present invention relate a streamlined computer device and a method for pre-configuring a streamlined computer device, respectively, which adopt the same subject matter as the invention of claim 1. Therefore, the inventions of claims 88 and 89 are also considered to fulfill the requirements of novelty and inventive step under PCT Article 33(2),(3).

Claims 2-39, 43-67, 71-87, 90-98, and 100-123

Claims 2-39, 43-67, 71-87, 90-98, and 100-123, which are dependent directly or indirectly on claims 1, 42, 70, 89, and 41, respectively, are also considered to fulfill the requirements of novelty and inventive step under PCT Article 33(2), (3).

2. Industrial Applicability

The present invention is industrially applicable under PCT Article 33(4).

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
A2029-7004WO		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2009/039117	**01 APRIL 2009 (01.04.2009)**	01 APRIL 2008 (01.04.2008)
Applicant		
AQUENT, LLC et al		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language**, the international search was carried out on the basis of :
      ☒ the international application in the language in which it was filed
      ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☒ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title,**
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. With regard to the drawings,
   a. the figure of the **drawings** to be published with the abstract is Figure No. 2
      ☒ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☐ none of the figure is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/039117

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 99
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

In claim 99, what the description of "as described above" points is so unclear that the technical feature of claim 99 is not clarified.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required addtional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/039117

A. CLASSIFICATION OF SUBJECT MATTER

G06F 3/048(2006.01)i, G06F 3/14(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC8 G06F, G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility Models since 1975
Japanese Utility models and applications for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) "graphical user interface (GUI), contents, size, focus, mapping, and similar terms"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005-0210399 A1 (AARON S. FILNER et al.) 22 Sep. 2005 See Summary of the invention, Figure 3, Paragraphs [0033], [0050]-[0051]	1 - 98, 100 - 123
A	US 6661426 B1 (ZEENAT JETHA et al.) 09 Dec. 2003 See Summary of the invention, Figures 2,3, Column 4 Line 52 - Column 4 Line 63	1 - 98, 100 - 123
A	KR 10-2000-0036647 A (ITCEN COMMUNICATION CO.) 05 Jul. 2000 See Summary of the invention, Figure 1, Claims 1,2	1 - 98, 100 - 123
A	US 2005-0257400 A1 (RALPH SOMMERER) 24 Nov. 2005 See Summary of the invention, Figures 1,3,10, Paragraphs [0052]-[0053]	1 - 98, 100 - 123

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 SEPTEMBER 2009 (28.09.2009)	**28 SEPTEMBER 2009 (28.09.2009)**

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea	JEONG, Jae Woo
Facsimile No. 82-42-472-7140	Telephone No. 82-42-481-5718

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/US2009/039117

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-210399 A1	22.09.2005	US 07441207 B2	21.10.2008
US 06661426 B1	09.12.2003	EP 1133869 A1	19.09.2001
		JP 2003-510979 A	18.03.2003
		KR 10-0768679 B1	23.10.2007
		WO 2001-024518 A1	05.04.2001
KR 10-2000-0036647 A	05.07.2000	None	
US 2005-0257400 A1	24.11.2005	None	

Electronic Acknowledgement Receipt

EFS ID:	15464205
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	08-APR-2013
Filing Date:	15-OCT-2012
Time Stamp:	19:08:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	1579528_1-Information_Disclosure_Statement_1.pdf	31423 02d97b3202041cd0cb8222721d733a69809b25b9	no	4

Warnings:	
Information:	

2	Non Patent Literature	L2039-700120-JP-OA-12-4-2012_2.PDF	191452 faaa358d3772a08df1f23960d043a46b6c22f595	no	4
Warnings:					
Information:					
3	Non Patent Literature	L2039-700120-Engl-Ltr-OA-12-4-12_3.PDF	107715 95b2df19330e0f9ce02813a11bd50d19fe9523f0	no	2
Warnings:					
Information:					
4	Information Disclosure Statement (IDS) Form (SB08)	1579514_1-Information_Disclosure_Statement_Fillable_PDF_4.PDF	616759 7418bbd161f003a431038b339c0986d50dcbc976	no	19
Warnings:					
Information:					
5	Foreign Reference	JP6242853A_5.PDF	267857 b1b1868854b324031ebb688b86e3e4a7b3f652e9	no	5
Warnings:					
Information:					
6	Foreign Reference	JP6-242853_machine_translation_6.PDF	127282 bc980dea04fed66b88cac72ce026ade2880bdb53	no	15
Warnings:					
Information:					
7	Foreign Reference	JP6259166A_7.PDF	344427 c9627a94c58453cff50b0dff68bfdcb080ffbd12e	no	8
Warnings:					
Information:					
8	Foreign Reference	JP06-259166_machine_translation_8.PDF	203829 906a139f18dabdb68c7af2348c7f579c9146ac54	no	19
Warnings:					
Information:					
9	Foreign Reference	JP8179851A_9.PDF	146254 c33a8a9c6fc02c90811aed4c5dec11340aa14e7f	no	4
Warnings:					
Information:					
10	Foreign Reference	JP08-179851_machine_translation_10.PDF	108295 f40451bbc1dc23288cd1c1acf4b64dacbe06388b	no	12
Warnings:					
Information:					

11	Foreign Reference	JP5197507A_11.PDF	518569 5ec3a5a2b35515129b91d44a7fb23a11290a00b0	no	12
Warnings:					
Information:					
12	Foreign Reference	JP05-197507_machine_translation_12.PDF	259159 1821e065d76f3487b77f82937fd2dee0d43b3f2c	no	31
Warnings:					
Information:					
13	Foreign Reference	CN1292112A_13.PDF	1779308 eb1db21da48a1df51055fe0f6ad37db3e5aa0f14	no	55
Warnings:					
Information:					
14	Foreign Reference	CN1292112A_machine_translate_14.PDF	83176 89f6f36099668cb1641bf0a7cfa21b5fd9541879	no	49
Warnings:					
Information:					
15	Foreign Reference	JP2005242436A_15.PDF	312348 48cf2a8226278209c38d207c2666afc3bb25c9b4	no	9
Warnings:					
Information:					
16	Foreign Reference	JP2005-242436_machine_translation_16.PDF	141054 87af2b1d204ae623b9c06becd5f4d4d676e412ec	no	19
Warnings:					
Information:					
17	Foreign Reference	JP2001167211A_17.PDF	1095914 34d40ec0d5524b6d1fe088432e04c834392cdaeb	no	32
Warnings:					
Information:					
18	Foreign Reference	JP2001-167211_machine_translation_18.PDF	481248 afada32802fffa1bc163443aa498961ea1fd452c	no	60
Warnings:					
Information:					
19	Foreign Reference	JP2005159741A_19.PDF	556080 751d2d568a5ec0a38f2e74a6966d810dc3e5fa22	no	16
Warnings:					
Information:					

20	Foreign Reference	Translation_of_jp-2005-159741_20.PDF	242783 4606dcb5d42d99682b505af4dbcaf0370b8f5a27	no	22
Warnings:					
Information:					
21	Foreign Reference	JP10111658A_21.PDF	491255 0435c0181194861c9146a7d5005a027433d90a0f	no	10
Warnings:					
Information:					
22	Foreign Reference	JP10111658_English_Abstract_22.PDF	74868 8eb1116f409490998dfcb1db0feee8812851b12a	no	2
Warnings:					
Information:					
23	Foreign Reference	JP6090200A-abstract_23.PDF	73408 559066b0b4ba8dd09721aad367e5bfc94df52f42	no	2
Warnings:					
Information:					
24	Foreign Reference	1534226_1-JP6090200A-abstract_24.PDF	73408 559066b0b4ba8dd09721aad367e5bfc94df52f42	no	2
Warnings:					
Information:					
25	Foreign Reference	JP2004302179A_25.PDF	70192 9d7e9c335b80e9ebed2af0c288e1bb9ebdb28a6c	no	2
Warnings:					
Information:					
26	Foreign Reference	1534234_1-JP2004302179A_26.PDF	70192 9d7e9c335b80e9ebed2af0c288e1bb9ebdb28a6c	no	2
Warnings:					
Information:					
27	Non Patent Literature	12416479.pdf	619511 a43156a49bb266574c46155fffb12194f899332a	no	14
Warnings:					
Information:					
			Total Files Size (in bytes):	9087766	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: April 8, 2013
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2115

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: Not Yet Assigned

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed before the mailing date of a first Office Action on the merits as far as is known to the undersigned (37 C.F.R. § 1.97(b)(3)).

The applicant would like to bring to the Examiner's attention the following co-pending applications that may contain subject matter related to this application:

Serial No.	Filing Date	Inventor(s)	Publication No.
12/170,939	**July 10, 2008**	**Yves Behar**	**US 2009/0244832 A1**
12/170,951	**July 10, 2008**	**Yves Behar**	**US 2009/0244012 A1**
12/416,479	**April 1, 2009**	**Yves Behar**	**US 2009/0322790 A1**
12/416,496	**April 1, 2009**	**Yves Behar**	**US 2009/0303676 A1**
12/416,503	**April 1, 2009**	**Yves Behar**	**US 2009-0300511 A1**
12/611,282	**November 3, 2009**	**Robert Pennington**	**US 2010-0174993 A1**

The following documents cited in the attached form PTO/SB/08:

Doc Number	Ctry	Non-Patent Literature Documents
19952486	DE	
0588210	EP	
1020000036647	KR	
		http://laptop.org/en/laptop/start/ebook.shtml accessed on September 29, 2008
		Japanese Office Action mailed 12-4-2012 from national phase entry of the corresponding PCT application. (L2039-7001JP).
		Miller, M., "Creating a Digital Home Entertainment System with Windows Media Center" , Apr 2006, Que.
		Office Action L2039-700111 dated April 4, 2011, Serial No. 12/170,951
		Search Report from corresponding International Application PCT/US2009/038599 dated March 6, 2009

are not supplied because they were previously cited by or submitted to the Office in prior

application numbers 12/170,939 filed July 10, 2008, 12/170,951 filed July 10, 2008 and relied upon in this application for an earlier filing date under 35 U.S.C. § 120.

Explanation of Non-English Language References and Remarks Concerning Other Information Cited

The following is a concise explanation of the relevance of each non-English language reference listed on the concurrently filed form PTO/SB/08a.

For the relevance of the listed non-English language reference KR 10-2000-0036647 A published July 05, 2000, the reference was cited in the International Search Report from a commonly owned PCT application PCT/US09/39117, wherein this document was placed in category "A," meaning that, in the opinion of the International Searching Authority, it relates to the general state of the art disclosed in PCT/US09/39117 and is not considered to be of particular relevance. An English language version of the Abstract has been provided with KR 10-2000-0036647 A.

For the relevance of the listed non-English language reference DE 19952486 A1 published March 05, 2001, the reference was cited in the International Search Report from a corresponding PCT application PCT/US2009/038599, wherein this document was placed in category "X," meaning that, in the opinion of the International Searching Authority, the reference is a document of particular relevance. An English language version of the Abstract is attached, a machine based translation provided through the European Patent Office of the description and claims is provided herewith, and a translation from Thomson Innovation (http://www.thomsoninnovation.com), has been provided in conjunction with Application No. 12/170,951.

The remaining non-English references (submitted herewith) were cited during respective national stage examination of PCT/US09/38599 which corresponds to US Patent Application Nos.

12/170,939 and 12/170,951 from which this Application claims priority. Partial and/or full translations have been provided for additional relevance.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50/2762, under Order No. L2039-700120.

Dated: April 8, 2013

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
Matthew H. Grady
Registration No.: 52,957
LANDO & ANASTASI LLP
Riverfront Office Park
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Suite 1100
Cambridge, Massachusetts 02142
(617) 395-7000
Attorney for Applicant

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/651,636	10/15/2012	Yves Behar	L2039-700120

CONFIRMATION NO. 6472

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

PUBLICATION NOTICE

OC000000061738685

Title:PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

Publication No.US-2013-0141854-A1
Publication Date:06/06/2013

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Docket No.: L2039-700120

Applicant: Yves Behar, et al.
Serial No: 13/651,636
Confirmation No.: 6472
Filed: October 15, 2012
For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

POWER OF ATTORNEY

The undersigned hereby appoints the following attorney(s) and/or agent(s) to prosecute United States Patent Application Serial No. 13/651,636, entitled "PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS," bearing Attorney Docket No. L2039-700120 filed on October 15, 2012 and to transact all business in the Patent and Trademark Office connected therewith:

☒ *Practitioners of Lando & Anastasi, LLP associated with Customer Number:* 37462

OR

☐ *Practitioner(s) named below:*

Name	Registration Number

Please change the correspondence address for the above-identified application to:

☐ *The above-mentioned Customer Number*

OR

☒ *Practitioner(s) at Customer Number* **37462**

OR

☐

ATTORNEY'S NAME					
FIRM NAME					
ADDRESS					
CITY		*STATE*		*ZIP*	
COUNTRY		*TELEPHONE*		*FAX*	

I/we am/are the:

☐ Applicant/Inventor

☒ *Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).*

SIGNATURE(s) of Applicant/Inventor or Assignee of Record:

Name John H. Chuang, President
LITL LLC
33 Exeter Street
Boston, MA 02116

5/3/13
Date

1445460.1

Supplemental Application Data Sheet

Inventor Information

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State or Province of mailing address::	CA
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State or Province of mailing address::	CA
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State or Province of mailing address::	CA
Postal or Zip Code of mailing address::	94107

Correspondence Information

Correspondence Customer Number::	37462
E-Mail address::	MGrady@LALaw.com

Application Information

Application Number::	13/651,636
Filing Date::	10/15/12
Application Type::	Regular
Subject Matter::	Utility
CD-ROM or CD-R?::	None
Sequence submission?::	None
Computer Readable Form (CRF)?::	No
Title::	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Attorney Docket Number::	L2039-700120
Request for Early Publication?::	No
Request for Non-Publication?::	No

Total Drawing Sheets::	25
Small Entity?::	No
Petition included?::	No
Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2::	No
Authorization to Permit Access to the Instant Application by the Participating Offices::	No

Representative Information

Representative Customer Number:: 37462

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	Continuation of	12/170939	07/10/08
12/170939	An application claiming the benefit under 35 USC 119(e)	61/041365	04/01/08
This Application	Continuation of	12/170951	07/10/08
12/170951	An application claiming the benefit under 35 USC 119(e)	61/041365	04/01/08

Foreign Priority Information

Applicant Information

Applicant Number:: 1

Applicant Type:: Assignee

Organization Name:: LITL LLC

Street of mailing address:: 33 Exeter Street

City of mailing address:: Boston

State or Province of mailing address:: MA

Postal or Zip Code of mailing address:: 02116

Non-Applicant Assignee Information

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.			
Signature	/Matthew H. Grady/	Date	August 15, 2013
Name (Print/Type)	Matthew H. Grady	Registration No. (Attorney/Agent)	52,957

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Yves Behar et al.

Application No./Patent No.: 13/651,636 Filed/Issue Date: October 15, 2012

Titled: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

LITL LLC , a Limited Liability Company
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. [X] The assignee of the entire right, title, and interest.

2. [ ] An assignee of less than the entire right, title, and interest (check applicable box):

   [ ] (The extent (by percentage) of its ownership interest is _____ %). Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   [ ] There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. [ ] The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. [ ] The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2, or 3 above (not option 4) is evidence by either (choose **one** of options A or B below):

A. [ ] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____ , Frame _____ , or for which a copy thereof is attached.

B. [X] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: Yves Behar et al. To: Aquent, LLC
      The document was recorded in the United States Patent and Trademark Office at
      Reel 021804 , Frame 0011 , or for which a copy thereof is attached.

   2. From: Aquent, LLC To: LITL LLC
      The document was recorded in the United States Patent and Trademark Office at
      Reel 023871 , Frame 0867 , or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____
   The document was recorded in the United States Patent and Trademark Office at
   Reel _____ , Frame _____ , or for which a copy thereof is attached.
4. From: _____ To: _____
   The document was recorded in the United States Patent and Trademark Office at
   Reel _____ , Frame _____ , or for which a copy thereof is attached.
5. From: _____ To: _____
   The document was recorded in the United States Patent and Trademark Office at
   Reel _____ , Frame _____ , or for which a copy thereof is attached.
6. From: _____ To: _____
   The document was recorded in the United States Patent and Trademark Office at
   Reel _____ , Frame _____ , or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Matthew H. Grady/	August 15, 2013
Signature	Date
Matthew H. Grady	52,957
Printed or Typed Name	Title or Registration Number

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: August 15, 2013 Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Electronic Acknowledgement Receipt

EFS ID:	16595549
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	15-AUG-2013
Filing Date:	15-OCT-2012
Time Stamp:	09:24:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	-_Executed_POA_1.PDF	82131 c04691531b043dbd8a7872b8f3cbe90cb2c2da32	no	1

Warnings:	
Information:	

2	Application Data Sheet	Application_Data_Sheet_2.pdf	20917 cae94dec034c478f917df4eaf3d112e963583456	no	5
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3	Assignee showing of ownership per 37 CFR 3.73.	Statement_By_Assignee_to_Establish_Ownership_37_CFR_373c_3.pdf	24560 9cad288e45cab340c9da4133ac75a52dd68b1755	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	127608		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/651,636	10/15/2012	Yves Behar	L2039-700120

CONFIRMATION NO. 6472

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

POA ACCEPTANCE LETTER

OC00000063400707

Date Mailed: 08/26/2013

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/15/2013.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/afessehaye/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/651,636	10/15/2012	2835	1390	L2039-700120	19	3

CONFIRMATION NO. 6472

CORRECTED FILING RECEIPT

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142



Date Mailed: 08/26/2013

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Applicant(s)

LITL LLC, BOSTON, MA

Assignment For Published Patent Application

LITL LLC, BOSTON, MA

Power of Attorney: The patent practitioners associated with Customer Number 37462

Domestic Priority data as claimed by applicant

This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 11/02/2012
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/651,636**
Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

Preliminary Class

361

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOT GRANTED

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PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2115
Examiner Name	Not Yet Assigned
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6097389		2000-08-01	Morris et al.	
	2	7366994		2008-04-29	Loui	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050091596		2005-04-28	Anthony et al.	
	2	20080174570		2008-07-24	Jobs et al.	
	3	20090019383		2009-01-15	Riley et al.	

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	1	11-296259	JP		1999-10-29	CANON INC.		☒
	2	2006-227409	JP		2006-08-31	NIKON CORP.		☒

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Final Rejection CN-OA -dated July 18, 2013 - Appl No.. 200980117859.8 - filed March 27, 2009	☒

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew H. Grady/	Date (YYYY-MM-DD)	2013-12-06
Name/Print	Matthew H. Grady	Registration Number	52957

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G06F	3/048	(2006.01)	G09G	5/00	530A	5E501
G06F	1/16	(2006.01)	G06F	3/00	656A	
			G06F	1/00	312G	
			G06F	1/00	312F	

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東京都千代田区丸の内３丁目２番３号　株式会社ニコン内

Ｆターム(参考)　5C082 AA01 AA25 BA02 BA12 BA26 BD02 CA11 CA33 CA81 CA82 CB03 DA86 MM08
5E501 AA04 BA03 FB03

(54)【発明の名称】表示装置

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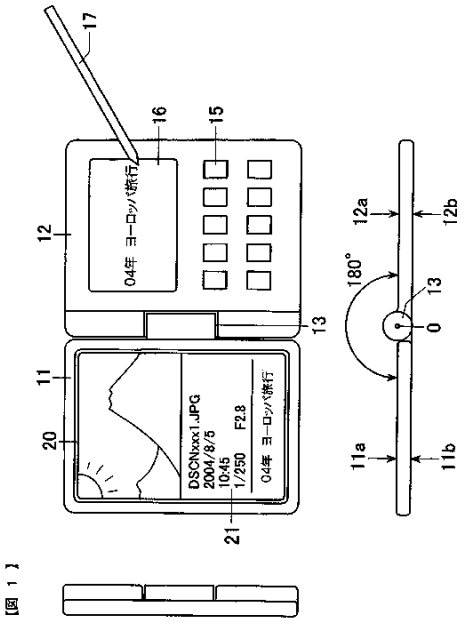


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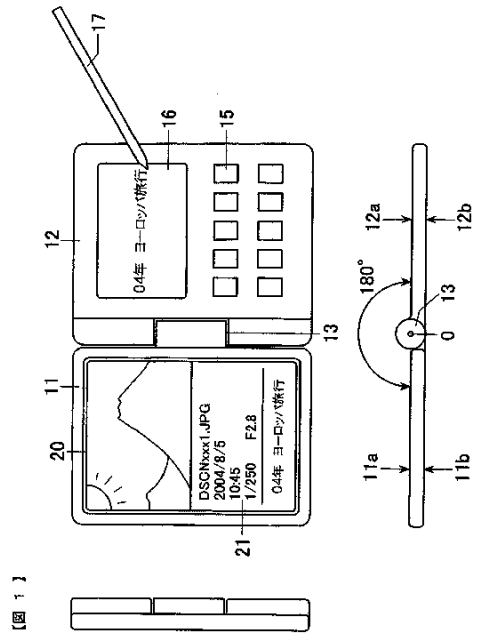
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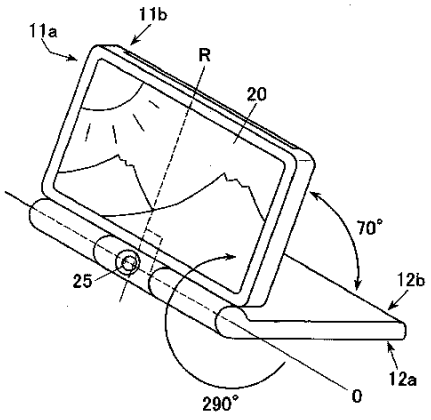
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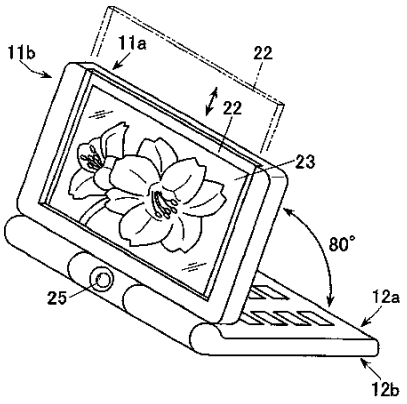
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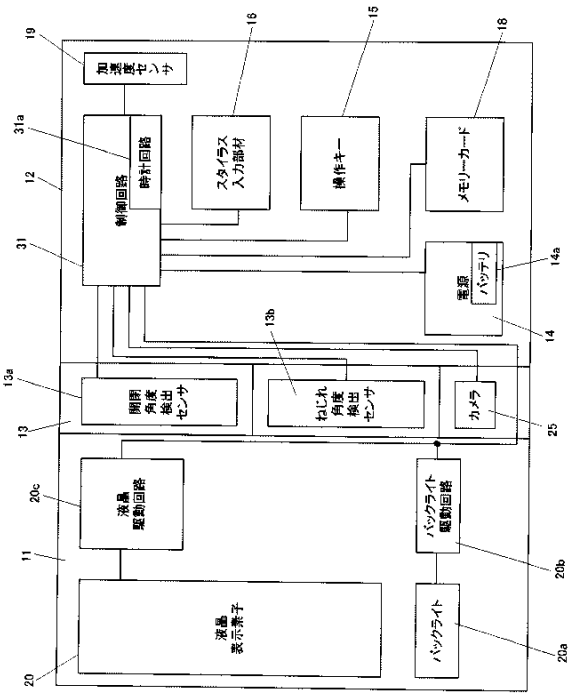

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21
12a
12b
180°
13
0
11a
11b

【図２】


11b
11a
R
20
70°
25
12b
12a
290°
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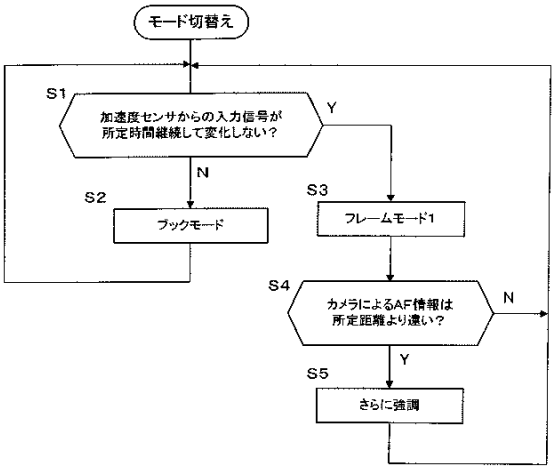
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11b
11a
22
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80°
25
12a
12b

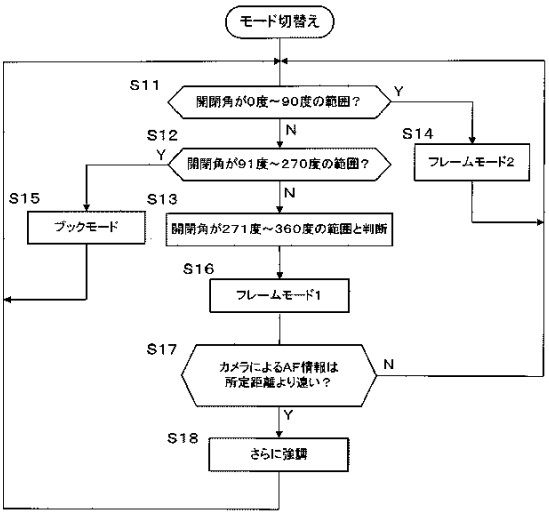

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31a
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31
14a
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13b
13a
13
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20c
11
20b
20a
20
制御回路
時計回路
スタイラス入力部材
操作キー
メモリーカード
電源
バッテリ
開閉角度検出センサ
ねじれ角度検出センサ
カメラ
液晶駆動回路
バックライト駆動回路
液晶表示素子
バックライト

【図4】

【図5】


モード切替え
S1
加速度センサからの入力信号が所定時間継続して変化しない？
Y
N
S2
ブックモード
S3
フレームモード1
S4
カメラによるAF情報は所定距離より遠い？
N
Y
S5
さらに強調

【図6】


モード切替え
S11
開閉角が0度～90度の範囲？
Y
N
S12
Y
開閉角が91度～270度の範囲？
S14
フレームモード2
N
S15
ブックモード
S13
開閉角が271度～360度の範囲と判断
S16
フレームモード1
S17
カメラによるAF情報は所定距離より遠い？
N
Y
S18
さらに強調

PATENT ABSTRACTS OF JAPAN

(11)

(11)Publication number : 11-296259
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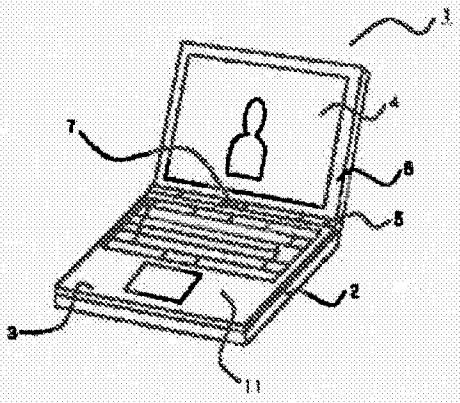
(51)Int.Cl. G06F 1/16
G06F 1/26
G09F 9/00

(21)Application number : 10-114380
(22)Date of filing : 10.04.1998

(71)Applicant : CANON INC
(72)Inventor : UEHARA MAKOTO

(54) PORTABLE PERSONAL COMPUTER

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a portable personal computer constituted so that a keyboard and a display panel can be optionally arranged in accordance with an operating condition.
SOLUTION: The portable personal computer is provided with a display panel 4 for displaying characters, graphics, etc., a body 2 connected to the panel 4 through hinges and including electronic parts and electronic circuits necessary for data processing, image processing and communication processing, and a data inputting keyboard 3 separable from the body 2, wherein the panel 4 can be turned back and forth around the body 2 more than 180° and an inverted V shape is formed between the panel 4 and the body 2. A connection part 5 formed on the hinge part is provided with a sensor 6 for detecting whether the panel 4 is in a normal state or upside-down. The up and down of the contents of a screen on the panel 4 are inverted in accordance with the detection state of the sensor 6 so that the contents of the screen are always properly observed from the operator side.



Petitioners Exhibit 1002, page 558

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(43)公開日　平成11年(1999)10月29日

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	1/26		Ｇ０９Ｆ	9/00	３１２
Ｇ０９Ｆ	9/00	３１２	Ｇ０６Ｆ	1/00	３１２Ｊ
					３３０Ｆ

審査請求　未請求　請求項の数７　ＦＤ　（全 6 頁）

(21)出願番号　特願平10－114380

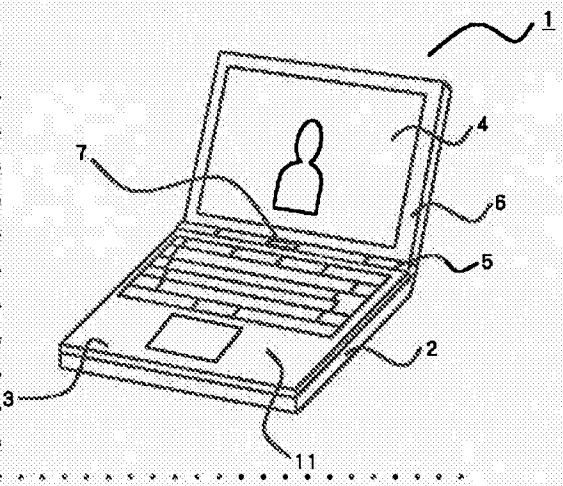
(22)出願日　平成10年(1998)４月10日

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(74)代理人　弁理士　田北　嵩晴

(54)【発明の名称】　携帯型パーソナルコンピュータ



Petitioners - Exhibit 1002, page 559

1.This document has been translated by computer and provided by JPO and INPIT. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1]A display panel in which a character, graphics, etc. are displayed, and a main part in which this display panel was hinged and electronic parts and an electronic circuit required for data processing, an image processing, and communications processing were built, In a portable personal computer which comprises this main part by having a disengageable keyboard for data input,

A portable personal computer comprising:

A connecting part by which an attachment-by-hinges part of the aforementioned display panel provides, and the aforementioned display panel enables rotation of 180 degree or more, and order is equipped with it to the aforementioned main part.

A detection means by which an installation condition of the aforementioned display panel detects a normal use state or a position state which carried out the top-and-bottom inversion.

A control means which carries out the up-and-down inversion of the display information displayed on the aforementioned display panel according to a detecting state of this detection means.

[Claim 2]The portable personal computer according to claim 1 when it separates [the aforementioned keyboard] from the aforementioned main part, wherein it uses infrared light communication for a means of communication with the aforementioned main part.

[Claim 3]The portable personal computer according to claim 2, wherein the aforementioned keyboard incorporates a cell.

[Claim 4]The portable personal computer according to claim 1 when the aforementioned keyboard is [a cell to incorporate] a rechargeable battery, wherein it charges the aforementioned cell in response to current supply from the aforementioned main device.

[Claim 5]The portable personal computer according to claim 1, wherein a code is used for the aforementioned keyboard as a connecting means accompanying communication with the aforementioned main part.

[Claim 6]The portable personal computer according to claim 1, wherein the aforementioned cable is stored by storage space provided by the aforementioned main part at the time of non-use.

[Claim 7]The portable personal computer according to claim 1 with which the aforementioned display panel is characterized by equipping a back face with at least one plane loudspeaker.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention relates a keyboard to the portable personal computer of disengageable composition from the main frame in detail about a portable personal computer.

[0002]

[Description of the Prior Art]In recent years, the weight saving and the miniaturization are proceeding the portable personal computer called a notebook type personal computer (henceforth a "personal computer"), a subnotebook computer, a palmtop type personal computer, etc. by technical innovation. As a result, to whose using form fixed at the office or the home having been in use, it walks around with a personal computer easily, and can be conventionally used now in a movement destination.

[0003]

[Problem to be solved by the invention]However, in this kind of portable personal computer, since the keyboard device was united with the personal computer body, there was a case where free arrangement doubled with the operating environment of the operator could not be performed, but the keyboard and display device like a common desktop PC were hard to be used.

[0004]For example, when it installs before the desk 25 so that the operator 22 which sat on the chair 21 may tend to operate the keyboard 24 of the portable personal computer 23 as shown in Fig.5, the head of the operator 22 which looks at the display panel 26 will come to incline forward, and where a burden is placed on a head, it will be operated. In order to have seen the display panel 26 in the natural state, as shown in Fig.6, the portable personal computer 23 needed

to be installed in the position which is separated from the operator 22, therefore there was a problem of becoming difficult to operate the keyboard 24.

[0005]An object of the present invention is to provide a keyboard and the portable personal computer which can arrange a main part freely in accordance with the operating environment of an operator in view of an above-mentioned problem.

[0006]

[Means for solving problem]The composition which realizes the purpose of invention concerning this application like the description to Claim 1, The display panel in which a character, graphics, etc. are displayed, and the main part in which this display panel was hinged and electronic parts and an electronic circuit required for data processing, an image processing, and communications processing were built, In the portable personal computer which comprises this main part by having a disengageable keyboard for data input, the attachment-by-hinges part of the aforementioned display panel provides, and. The connecting part by which the aforementioned display panel enables rotation of 180 degree or more, and order is equipped with it to the aforementioned main part, The installation condition of the aforementioned display panel is in a portable personal computer provided with a detection means to detect a normal use state or the position state which carried out the top-and-bottom inversion, and the control means which carries out the up-and-down inversion of the display information displayed on the aforementioned display panel according to the detecting state of this detection means.

[0007]When it becomes the arrangement in which the posture condition of a main part and a display panel, i.e., a display panel, carries out an up-and-down inversion to a normal use state when a keyboard is separated from a main part according to this composition, according to the inversion of the upper and lower sides of a display panel, a screen content is automatically reversed. Therefore, even if it changes the combination state of a portable personal computer so that it may be easy to operate it, since a picture state is always set up properly, its operativity improves. The free way (arrangement) of placing of a main part and a keyboard becomes possible, and operativity can be improved similarly. By making rotating extent of a display panel into 180 degree or more, and installing in a desk etc. in the shape of a reverse V character especially, an angle, distance, etc. of a display panel and a keyboard can be united with the operating environment of an operator, and can be arranged freely, and it can be operated now with the feeling using a desktop PC.

[0008]Like the description to Claim 2 in the specific composition which realizes the purpose of invention concerning this application, the aforementioned keyboard is in the portable personal computer using infrared light communication for a means of communication with the aforementioned main part, when it separates from the aforementioned main part.

[0009]Since the signal accompanying the alter operation of a keyboard is transmitted to a main part at wireless according to this composition, even if it separates a keyboard from a main part, connection work becomes unnecessary, and usability improves.

[0010]Like the description to Claim 3 in the specific composition which realizes the purpose of invention concerning this application, the aforementioned keyboard is in the portable personal computer incorporating a cell.

[0011]Although the keyboard separated from the main part needs to supply a power supply to the circuit for transmitting data to a main part, it becomes unnecessary according to this composition, to receive current supply from a main part and to connect the cable for power supplies by making a cell build in in a keyboard. Therefore, also in combination like a portable personal computer throat, connection work is unnecessary and its operativity improves.

[0012]Like the description to Claim 4 in the specific composition which realizes the purpose of invention concerning this application, the aforementioned keyboard is in the portable personal computer charging the aforementioned cell in response to current supply from the aforementioned main device, when the cell to incorporate is a rechargeable battery.

[0013]If it is used where a keyboard is separated from a main part according to this composition, consumption of the cell in a keyboard will advance and it will become use impossible after predetermined time. Then, when the cell in a keyboard is a rechargeable battery, it enables it to charge, and a dead battery is prevented.

[0014]The aforementioned keyboard has the specific composition which realizes the purpose of invention concerning this application like the description to Claim 5 in the portable personal computer using a code as a connecting means accompanying communication with the aforementioned main part.

[0015]It becomes unnecessary to incorporate a cell in the keyboard side by performing the data communications from a keyboard to a main part via a cable according to this composition. The weight saving of a keyboard becomes possible.

[0016]Like the description to Claim 6 in the specific composition which realizes the purpose of invention concerning this application, the aforementioned cable is in the portable personal computer being stored by the storage space provided by the aforementioned main part at the time of non-use.

[0017]According to this composition, can store the cable which is easy to lose on a main part, and it becomes unnecessary to convey with a cable simple substance or to keep it, and it becomes possible to prevent loss of a cable.

[0018]Like the description to Claim 7 in the specific composition which realizes the purpose of invention concerning this application, the aforementioned display panel is in a portable personal computer, wherein the back face is equipped with at least one plane loudspeaker.

[0019]According to this composition, the plane loudspeaker with which the back face of the display panel was equipped, Since a plane loudspeaker is faced and the back face of a main part is arranged with a predetermined angle when the main part and the display panel have been arranged to reverse V type, the back face of a main part functions as a sound reflecting board, it becomes easy to reflect a reproduced sound in the operator side, and sound performance improves.

[0020]

[Mode for carrying out the invention]Hereafter, an embodiment of the invention is described based on Drawings.

[0021](First embodiment) Fig.1 is an outline view of the portable personal computer in which the first embodiment of the present invention is shown. the keyboard 3 with which the main part 2 and the upper surface of this main part 2 were equipped with the portable personal computer 1 as shown in Fig.1 -- The rear side part of the main part 2 is equipped with the sensor (or switch) 6 which distinguishes the installation condition (direction of top and bottom) of the display panel 4 rotatable 180 degree or more and the display panel 4 forward and backward via the connecting part 5 (the transfer optical window 7 for infrared communication is provided), and it is constituted. The sensor 6 is built in the display panel 4.

[0022]The using forms of the portable personal computer 1 which carried out the angle between the keyboard 3 and the display panel 4 just over or below 100 degree as shown in Fig.1 are the general directions for use common to other portable personal computers. When a rechargeable battery is used for the cell 11 incorporated in the keyboard 3, a power supply is supplied from the main part 2, and charge may make it possible.

[0023]Next, the directions for use in the state where the keyboard which is the characteristics of the present invention was separated are described below.

[0024]Fig.2 shows the first example of use at the time of separating a keyboard from the main part of the portable personal computer of Fig.1, and the perspective view showing the state where (a) removed the keyboard from the main part, and (b) are the perspective views showing the state where the main part and the keyboard were bent in the shape of a reverse V character.First, the keyboard 3 is made to separate from the main part 2 completely, as shown in (a) of Fig.2. Then, if the display panel 4 is rotated back, and the display panel 4 and the main part 2 are installed in the shape of a reverse V character as shown in (b) of Fig.2, The sensor 6 in the display panel 4 detects this posture change, and screen control (CPU in the main part 2, a chip set, and a video accelerator are performed by the control means made into the subject) is

performed so that the top and bottom of the contents of a screen display may be reversed. Signal transduction of the keyboard 3 and the main part 2 is performed by infrared light communication by the transfer optical window 7 and the transfer optical window 8 arranged in the end face of a keyboard. Therefore, since the main part 2, the display panel 4, and both the keyboard 3 construct, **** is united with the operating environment of an operator and it can carry out freely, usability improves like a desktop PC.

[0025]As shown in (a) of Fig.2, the portable personal computer 1 is usable also where the keyboard 3 is separated from the main part 2, and signal transduction of the keyboard 3 and the main part 2 is performed by infrared light communication by Hazama of the transfer optical window 7 and the transfer optical window 8 also in this case.

[0026]Fig.3 is in the portable personal computer of the present invention, and the 2nd example of the communication configuration at the time of separating the main part 2 and the keyboard 3 is shown. (a) shows among a figure the state where the keyboard 3 was removed from the main part 2 of the state of Fig.1, and (b) shows the state where the main part 2 and the keyboard 3 were bent in the shape of a reverse V character. This example is made to perform communication of Hazama of the main part 2 and the keyboard 3 using the flexible cable 9. In order that this cable 9 may prevent loss, it secures storage space in the main part 2, and it is stored at the time of non-use and kept to storage space. In the installation method according to an anticipated-use form, (a) makes the cable 9 the composition linked to the connector 2a provided by the side surface of the main part 2. (b) shows the composition which uses the cable 9 and connects the main part 2 with the keyboard 3, when it is used where the main part 2 and the keyboard 3 are bent in the shape of a reverse V character. Since the lead for power supplies is included in the cable 9, neither of the cases needs to incorporate the cell 11 in the keyboard 3.

[0027]It describes about (a second embodiment), next the second embodiment of the present invention.

[0028]Fig.4 is an outline view showing the second embodiment of the portable personal computer of the present invention. (a) is the figure seen from the transverse plane among a figure, and (b) is the figure seen from the back face. In a second embodiment, about the same thing as a first embodiment, identical codes are attached and the description is omitted.

[0029]As shown in (a) of Fig.4, the portable personal computer 1, Via the keyboard 3 and the connecting part 5 in which it was equipped on the main part 2 and this main part 2, and the cell 11 was built. the main part 2 -- being rotatable (before or after 180 degree or more) -- it has the sensor (or switch) 6 which is provided in the connected display panel 4 and the display panel 4, and distinguishes the installation condition (direction of top and bottom) of the display panel 4, and is constituted. The transfer optical window 7 for infrared communication is provided by the connecting part 5. The setting position of this transfer optical window 7 is not limited to the

connecting part 5, and if it is near the display panel 4, it is good anywhere. As shown in (b) of Fig.4, the plane loudspeaker (flat speaker) 10 is built in the back face of the display panel 4.

[0030]The same usage as a common portable personal computer is possible for the portable personal computer 1 made into the posture condition of Fig.4. When the storage battery 11 which can charge the keyboard 3 is built in at this time, a power supply is supplied from the main part 2, and charge may make it possible.

[0031]In the portable personal computer of the composition of Fig.4, the method in the case of using it from the main part 2, separating the keyboard 3 is as having described by Fig.2 and Fig.3.Therefore, the description which overlaps here is omitted. In this embodiment, when the display panel 4 and the main part 2 are installed in the shape of a reverse V character like Fig.3, there is an advantage that the sound from the plane loudspeaker 10 built in the back face of the display panel 4 reflects in the main part 2, and OPERETAHE-****-comes to be easy. The plane loudspeaker 10 can build in the thing of size equivalent to the display panel 4, and since it becomes possible to incorporate the bigger plane loudspeaker 10 than any places other than the back face of the display panel 4, it can obtain a high-quality sound reproduced sound easily with a portable personal computer.

[0032][Correspondence of invention and an embodiment] In an above embodiment, the sensor 6 is equivalent to a detection means, and CPU in the main part 2, a chip set, a video accelerator, etc. are equivalent to a control means.

[0033]

[Effect of the Invention]As described above, according to the invention according to claim 1 concerning this application, the attachment-by-hinges part of a display panel provides, and. The connecting part by which the aforementioned display panel enables rotation of 180 degree or more, and order is equipped with it to a main part, Since the installation condition of the aforementioned display panel had composition provided with a detection means to detect a normal use state or the position state which carried out the top-and-bottom inversion, and the control means which carries out the up-and-down inversion of the display information displayed on the aforementioned display panel according to the detecting state of this detection means, If a display panel becomes arrangement of an up-and-down inversion, the screen content of a display panel will be automatically reversed, and since a picture state is always set up properly, its operativity improves. An angle, distance, etc. of a display panel and a keyboard can be united with the operating environment of an operator, and can be arranged freely.

[0034]According to the invention according to claim 2 concerning this application, when a keyboard is separated from a main part, by using infrared light communication for the communication to a main part from a keyboard, even if it separates a keyboard from a main part, connection work becomes unnecessary, and usability improves.

[0035]Since the cell was made to build in a keyboard according to the invention according to claim 3 concerning this application, it is not necessary to receive current supply from the main part side, the necessity of connecting the cable for power supplies becomes, and operativity improves.

[0036]According to the invention according to claim 4 concerning this application, since the keyboard was made to charge the aforementioned cell in response to current supply from the main device when the cell to incorporate was a rechargeable battery, it can charge the rechargeable battery in a keyboard and prevents a dead battery.

[0037]Since the code was used for the connecting means in the case of communication between a keyboard and a main part according to the invention according to claim 5 concerning this application, the data communications from a keyboard to a main part are performed via a cable, and it becomes unnecessary to incorporate a cell in the keyboard side. The weight saving of a keyboard becomes possible.

[0038]According to the invention according to claim 6 concerning this application, since the cable was stored to the storage space provided by the main part at the time of the non-use of a cable, it becomes unnecessary to convey with a cable simple substance or to keep it, and it becomes possible to prevent loss.

[0039]Like the description to Claim 7, since the specific composition which realizes the purpose of invention concerning this application equipped the back face with at least one plane loudspeaker at the display panel, it can operate the back face of a main part as a sound reflecting board, and its sound performance (reproducing characteristics) improves.

TECHNICAL FIELD

[Field of the Invention] The present invention relates a keyboard to the portable personal computer of disengageable composition from the main frame in detail about a portable personal computer.

PRIOR ART

[Description of the Prior Art]In recent years, the weight saving and the miniaturization are proceeding the portable personal computer called a notebook type personal computer (henceforth a "personal computer"), a subnotebook computer, a palmtop type personal computer, etc. by

technical innovation. As a result, to whose using form fixed at the office or the home having been in use, it walks around with a personal computer easily, and can be conventionally used now in a movement destination.

[0003]

EFFECT OF THE INVENTION

[Effect of the Invention]As described above, according to the invention according to claim 1 concerning this application, the attachment-by-hinges part of a display panel provides, and. The connecting part by which the aforementioned display panel enables rotation of 180 degree or more, and order is equipped with it to a main part, Since the installation condition of the aforementioned display panel had composition provided with a detection means to detect a normal use state or the position state which carried out the top-and-bottom inversion, and the control means which carries out the up-and-down inversion of the display information displayed on the aforementioned display panel according to the detecting state of this detection means, If a display panel becomes arrangement of an up-and-down inversion, the screen content of a display panel will be automatically reversed, and since a picture state is always set up properly, its operativity improves. An angle, distance, etc. of a display panel and a keyboard can be united with the operating environment of an operator, and can be arranged freely.

[0034]According to the invention according to claim 2 concerning this application, when a keyboard is separated from a main part, by using infrared light communication for the communication to a main part from a keyboard, even if it separates a keyboard from a main part, connection work becomes unnecessary, and usability improves.

[0035]Since the cell was made to build in a keyboard according to the invention according to claim 3 concerning this application, it is not necessary to receive current supply from the main part side, the necessity of connecting the cable for power supplies becomes, and operativity improves.

[0036]According to the invention according to claim 4 concerning this application, since the keyboard was made to charge the aforementioned cell in response to current supply from the main device when the cell to incorporate was a rechargeable battery, it can charge the rechargeable battery in a keyboard and prevents a dead battery.

[0037]Since the code was used for the connecting means in the case of communication between a keyboard and a main part according to the invention according to claim 5 concerning this application, the data communications from a keyboard to a main part are performed via a cable,

and it becomes unnecessary to incorporate a cell in the keyboard side. The weight saving of a keyboard becomes possible.

[0038]According to the invention according to claim 6 concerning this application, since the cable was stored to the storage space provided by the main part at the time of the non-use of a cable, it becomes unnecessary to convey with a cable simple substance or to keep it, and it becomes possible to prevent loss.

[0039]Like the description to Claim 7, since the specific composition which realizes the purpose of invention concerning this application equipped the back face with at least one plane loudspeaker at the display panel, it can operate the back face of a main part as a sound reflecting board, and its sound performance (reproducing characteristics) improves.

TECHNICAL PROBLEM

[Problem to be solved by the invention]However, in this kind of portable personal computer, since the keyboard device was united with the personal computer body, there was a case where free arrangement doubled with the operating environment of the operator could not be performed, but the keyboard and display device like a common desktop PC were hard to be used.

[0004]For example, when it installs before the desk 25 so that the operator 22 which sat on the chair 21 may tend to operate the keyboard 24 of the portable personal computer 23 as shown in Fig.5, the head of the operator 22 which looks at the display panel 26 will come to incline forward, and where a burden is placed on a head, it will be operated. In order to have seen the display panel 26 in the natural state, as shown in Fig.6, the portable personal computer 23 needed to be installed in the position which is separated from the operator 22, therefore there was a problem of becoming difficult to operate the keyboard 24.

[0005]An object of the present invention is to provide a keyboard and the portable personal computer which can arrange a main part freely in accordance with the operating environment of an operator in view of an above-mentioned problem.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is an outline view showing the first embodiment of the portable personal computer concerning the present invention.

[Drawing 2]The first example of use at the time of separating a keyboard from the main part of the portable personal computer of Fig.1 is shown, and the perspective view showing the state where (a) removed the keyboard from the main part, and (b) are the perspective views showing the state where the main part and the keyboard were bent in the shape of a reverse V character.

[Drawing 3]The second example of use at the time of separating a keyboard from the main part of the portable personal computer of Fig.1 is shown, and the perspective view showing the state where (a) removed the keyboard from the main part, and (b) are the perspective views showing the state where the main part and the keyboard were bent in the shape of a reverse V character.

[Drawing 4]It is an outline view showing the second embodiment of the portable personal computer of the present invention, and (a) is the perspective view seen from the transverse plane, and the perspective view which looked at (b) from the back face.

[Drawing 5]It is an explanatory view showing the using form of the conventional portable personal computer.

[Drawing 6]In Fig.5, when a display panel is made legible, it is an explanatory view showing that the operativity of a keyboard worsens.

[Explanations of letters or numerals]

1 Portable personal computer

2 Main part

3 Keyboard

4 Display panel

5 Connecting part

6 Sensor

7 and 8 Transfer optical window

9 Flexible cable

10 Plane loudspeaker

11 Cell

Espacenet

Bibliographic data: **JP2006227409 (A) — 2006-08-31**

DISPLAY DEVICE

No documents available for this priority number.

Inventor(s): FUJINAWA NOBUHIRO ± (FUJINAWA NOBUHIRO)

Applicant(s): NIPPON KOGAKU KK ± (NIKON CORP)

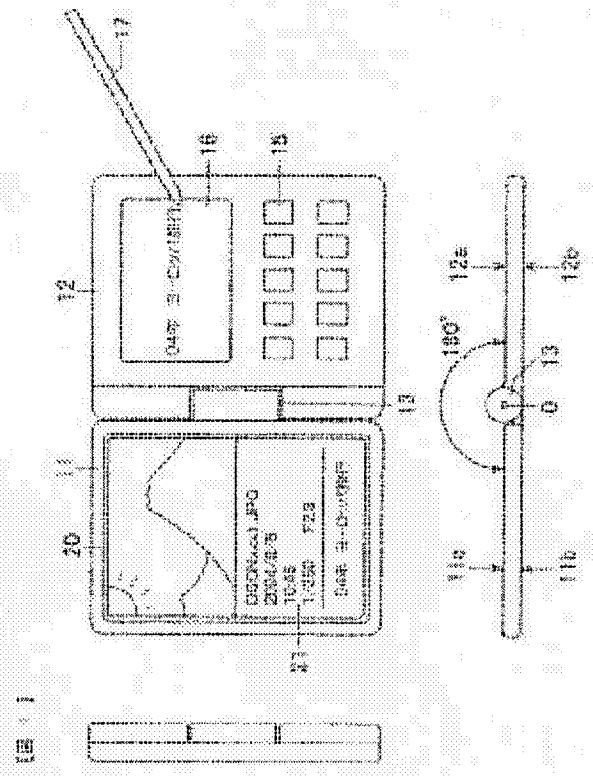
Classification: **- international:** ***G06F1/16; G06F3/048; G09G5/00***
- cooperative:

Application number: JP20050042626 20050218

Priority number(s): JP20050042626 20050218

Abstract of JP2006227409 (A)

PROBLEM TO BE SOLVED: To obtain display forms appropriate for the case an observer operates a display device while viewing display contents and a case the observer places the display device and observes the display contents, respectively. ; SOLUTION: The image display device automatically switches the display mode to a book mode when it is regarded to be in a standby state or in an operation state by the decision based on the detection signal from an acceleration sensor 19 and automatically switches the mode to a frame mode 1 when it is regarded to be in a placed state. In the book mode, a reproduced image is displayed on a liquid crystal display element 20 as a vertically long screen and Exif information incidental to the image data is displayed in a margin region 21. In the frame mode 1, the display of the Exif information is omitted and the reproduced image is highlighted on a large scale at a full size as the screen of the liquid crystal display element 20 as a horizontally long screen. ; COPYRIGHT: (C)2006,JPO&NCIPI



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			G06F	1/00	312G	
			G06F	1/00	312F	

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Fターム(参考)　5C082 AA01 AA25 BA02 BA12 BA26 BD02 CA11 CA33 CA81 CA82 CB03 DA86 MM08
5E501 AA04 BA03 FB03

(54)【発明の名称】表示装置

(57)【要約】
【課題】観察者が表示内容を見ながら表示装置を操作する場合、および観察者が表示装置を載置して表示内容を観察する場合のそれぞれに、適切な表示態様を得る。
【解決手段】画像表示装置は、加速度センサ１９からの検出信号に基づいた判定によって手持ち状態もしくは操作中であるとみなした場合、自動的にブックモードへ切替え、載置状態であるとみなした場合には自動的にフレームモード１に切替える。ブックモードでは、縦長画面としての液晶表示素子２０に再生画像を表示するとともに、余白領域２１に当該画像データに付随するExif情報を表示する。フレームモード１では、Exif情報の表示を省略し、横長画面としての液晶表示素子２０の画面いっぱいに、再生画像を大きくフルサイズで強調表示する。
【選択図】図１

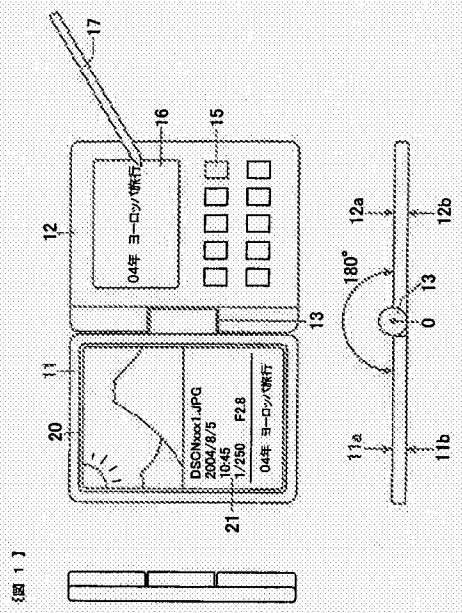


図１１

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【特許請求の範囲】
【請求項１】
画像を表示する表示モニタと、
前記表示モニタに画像データによる再生画像を表示させる表示制御手段と、
表示装置の筐体が載置状態か否かを判定するとともに、その判定結果に応じて前記再生画像を表示する際の表示態様を変えるように前記表示制御手段へ指示する表示態様指示手段とを備えることを特徴とする表示装置。
【請求項２】
請求項１に記載の表示装置において、
前記表示モニタが配設される表示部および前記載置状態において載置面と接触するベース部を回動自在に支持するヒンジ部材と、
前記ヒンジ部材の回動によって変化する前記表示部および前記操作部間の相対角度を検出する角度検出手段とをさらに備え、
前記表示態様指示手段は、前記角度検出手段から出力される検出信号に基づいて前記載置状態を判定することを特徴とする表示装置。
【請求項３】
請求項１に記載の表示装置において、
表示装置の揺動を検出する揺動検出手段をさらに備え、
前記表示態様指示手段は、前記揺動検出手段から出力される検出信号に基づいて前記載置状態を判定することを特徴とする表示装置。
【請求項４】
請求項２または３に記載の表示装置において、
前記表示態様指示手段は、前記載置状態を判定した場合、前記載置状態を否定判定する場合に比べて、(1)表示輝度を高める、(2)前記再生画像を派手に表示するように階調特性の設定値を変更する、(3)前記再生画像をあざやかに表示するように彩度特性の設定値を変更する、(4)前記再生画像の輪郭強調特性を強める、(5)前記再生画像の表示の大きさを大きくする、の少なくとも１つを前記表示制御手段へ指示し、前記載置状態を否定判定した場合、前記画像データに付随する情報を前記再生画像とともに表示するように前記表示制御手段へ指示することを特徴とする表示装置。
【請求項５】
請求項４に記載の表示装置において、
測距手段をさらに備え、
前記表示態様指示手段は、前記測距手段によって算出された観察者との間の距離情報が所定距離以遠に対応する場合、(1)前記再生画像をさらに派手に表示するように階調特性の設定値を変更する、(2)前記再生画像をさらにあざやかに表示するように彩度特性の設定値を変更する、(3)前記再生画像の輪郭強調特性をさらに強める、の少なくとも１つを前記表示制御手段へ指示することを特徴とする表示装置。
【請求項６】
請求項５に記載の表示装置において、
前記測距手段は撮像手段を備え、
前記表示態様指示手段は、前記撮像手段による撮像信号を用いて演算される色温度情報に応じて色温度調整値を変更するように前記表示制御手段へ指示することを特徴とする表示装置。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、手持ち状態および載置状態の双方で用いられる表示装置に関する。
【背景技術】
【０００２】
液晶パネルなどの表示部材が配設される表示部と、操作キーなどの操作部材が配設され

る操作部とがヒンジを介して折り畳み自在に構成されるハンドホールド可能な電子機器において、表示態様を切替えるための操作を行うことなく、表示態様を自動的に変更する技術が知られている（特許文献１参照）。特許文献１には、観察者の顔と表示部との距離に応じてイメージデータの表示サイズを変更する技術が開示されている。

【０００３】

【特許文献１】特開平１０－２６０６６６号公報

【発明の開示】

【発明が解決しようとする課題】

【０００４】

表示部と観察者との距離に応じて表示態様を切替える方式では、観察者の顔と電子機器の表示部との距離が同じである場合に、電子機器が観察者から手操作される状態と電子機器がテーブルなどに載置されている状態とを区別できず、それぞれの状態に適切な態様で表示させることができない。

【課題を解決するための手段】

【０００５】

本発明による表示装置は、画像を表示する表示モニタと、表示モニタに画像データによる再生画像を表示させる表示制御手段と、表示装置の筐体が載置状態か否かを判定するとともに、その判定結果に応じて再生画像を表示する際の表示態様を変えるように表示制御手段へ指示する表示態様指示手段とを備えることを特徴とする。

請求項１に記載の表示装置はさらに、表示モニタが配設される表示部および載置状態において載置面と接触するベース部を回動自在に支持するヒンジ部材と、ヒンジ部材の回動によって変化する表示部および操作部間の相対角度を検出する角度検出手段とを備えてもよく、この場合の表示態様指示手段は、角度検出手段から出力される検出信号に基づいて載置状態を判定することもできる。

請求項１に記載の表示装置はさらに、表示装置の揺動を検出する揺動検出手段を備えてもよく、この場合の表示態様指示手段は、揺動検出手段から出力される検出信号に基づいて載置状態を判定することもできる。

上記表示装置の表示態様指示手段は、載置状態を判定した場合、載置状態を否定判定する場合に比べて、(1)表示輝度を高める、(2)再生画像を派手に表示するように階調特性の設定値を変更する、(3)再生画像をあざやかに表示するように彩度特性の設定値を変更する、(4)再生画像の輪郭強調特性を強める、(5)再生画像の表示の大きさを大きくする、の少なくとも１つを表示制御手段へ指示し、載置状態を否定判定した場合、画像データに付随する情報を再生画像とともに表示するように表示制御手段へ指示することもできる。

請求項４に記載の表示装置はさらに、測距手段を備えてもよく、この場合の表示態様指示手段は、測距手段によって算出された観察者との間の距離情報が所定距離以遠に対応する場合、(1)再生画像をさらに派手に表示するように階調特性の設定値を変更する、(2)再生画像をさらにあざやかに表示するように彩度特性の設定値を変更する、(3)再生画像の輪郭強調特性をさらに強める、の少なくとも１つを表示制御手段へ指示することもできる。

請求項５に記載の表示装置の測距手段は撮像手段を備え、表示態様指示手段は、撮像手段による撮像信号を用いて演算される色温度情報に応じて色温度調整値を変更するように表示制御手段へ指示することもできる。

【発明の効果】

【０００６】

本発明による表示装置では、載置状態か否かの判定結果に応じて再生画像の表示態様を変えるようにしたので、たとえば、観察者が表示内容を見ながら表示装置を操作する場合と、表示装置を載置して表示内容を観察する場合とのそれぞれに適切な態様で表示することができる。

【発明を実施するための最良の形態】

【０００７】

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以下、図面を参照して本発明を実施するための最良の形態について説明する。
（第一の実施形態）
図１は、本発明の第一の実施形態による画像表示装置を説明する三面図である。図１において、画像表示装置は、液晶表示素子２０を有する表示部１１と、操作キー１５およびスタイラス入力部材１６を有する操作部（ベース部）１２とがヒンジ１３によって一体化される。ヒンジ１３は、回動軸Ｏを中心軸として回動自在に構成され、表示部１１および操作部１２間の相対角を任意の角度で支持する。操作部（ベース部）１２の重量は、表示部１１の重量より重いように構成されていることが望ましい。
【０００８】
画像表示装置の使用形態について説明する。
（ブックモード）
図１の画像表示装置は、ブックモードにおける使用形態を例示したものである。ブックモードにおける画像表示装置は、たとえば、表示部１１の液晶表示素子２０側の面（以下表示面と呼ぶ）１１ａと、操作部１２の操作キー１５やスタイラス入力部材１６側の面（以下操作面と呼ぶ）１２ａとが使用者（とくに目）の方向を向くように、ヒンジ１３が折り畳み状態（開閉角０とする）から約１８０度開かれた状態で、使用者によって手持ちされる。
【０００９】
使用者は、表示部１１の液晶表示素子２０に表示される画像や当該画像に関する情報を見ながら、操作キー１５を押下操作したり、スタイラスペン１７を用いてスタイラス入力部材１６へ書き込み入力したりする。液晶表示素子２０に表示させる画像は、操作キー１５やスタイラス入力部材１６からの操作信号によって画像表示装置に指示される。
【００１０】
ブックモードでは、液晶表示素子２０が縦長画面として観察される。画像表示装置は、縦長画面としての液晶表示素子２０に通常の横長画像を再生表示させる。この場合、再生表示画像の長辺（水平方向）を液晶表示素子２０の短辺に対応させて表示し、再生表示画像の短辺方向（垂直方向）の余白領域（図１において符号２１）に、当該再生画像データに付加されている情報（Exif情報）をテキスト表示する。図１の例では、Exif情報として、画像データファイル名「DSCNxxx1.JPG」、撮影日「2004/8/5」、撮影時刻「10:45」、撮影条件としてのシャッタースピード、絞り値「1/250 F2.8」が、再生画像の下部領域２１に表示されている。Exif情報として表示する項目は、操作キー１５からの操作によって適宜変更可能に構成されている。
【００１１】
スタイラスペン１７によってスタイラス入力部材１６から書き込み入力された情報「04年 ヨーロッパ旅行」は、Exif情報とともに画像データファイル内に記録可能に構成されている。したがって、画像データファイル内に付加記録された書き込み入力情報は、次回の再生表示時に他のExif情報とともに自動的に領域２１内に表示させることができる。
【００１２】
（フレームモード１）
図２は、画像表示装置のフレームモード１における使用形態を例示する図である。ヒンジ１３が折り畳み状態から約２９０度開かれ、操作部１２の操作面１２ａを下側にして、机上などの平面に載置されている。表示部１１と操作部１２との挟角は約７０度である。使用者は、表示部１１の液晶表示素子２０に表示される画像を鑑賞する。
【００１３】
液晶表示素子２０に表示される画像は、たとえば、後述するメモリカード１８（図４）に記憶されている複数の画像ファイルに対応する画像データによる再生画像であり、これらを順次スライドショー表示したものである。また、複数の再生画像を順次スライドショー表示する代わりに、メモリカード１８に記憶されている所定の画像（たとえば、操作キー１５からの操作信号によってあらかじめ指定されている画像）を再生表示するように構成してもよい。

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【００１４】
画像表示装置は、横長画面としての液晶表示素子２０に通常の横長画像を再生表示させる。この場合、再生表示画像の長辺（水平方向）を液晶表示素子２０の長辺に対応させて表示する。Exif情報のテキスト表示を省略し、再生表示画像の表示サイズをブックモードにおいて液晶表示素子２０に表示される再生表示画像の表示サイズより大きくする。
【００１５】
（フレームモード２）
図３は、画像表示装置のフレームモード２（フォトフレーム）における使用形態を例示する図である。ヒンジ１３が折り畳み状態から約８０度開かれ、操作部１２の裏面１２ｂを下側にして、机上などの平面に載置されている。表示部１１と操作部１２との挟角は約８０度である。表示部１１の裏面１１ｂには着脱可能な透明カバー２２が設けられており、表示部１１および透明カバー２２間に写真プリント２３が挟持される。使用者は、挟持されている写真プリントを鑑賞する。挟持されている写真プリントは、開閉角０度の折り畳み状態でも鑑賞可能であり、外観の装飾部としての機能も有する。
【００１６】
図４は、画像表示装置の構成を説明するブロック図である。図４において、表示部１１側には液晶表示素子２０と、液晶駆動回路２０ｃと、バックライト２０ａと、バックライト駆動回路２０ｂとが含まれる。液晶駆動回路２０ｃは、後述する制御回路３１から出力される表示データに応じて液晶パネル駆動信号を生成し、生成した駆動信号で液晶表示素子２０を駆動する。具体的には、液晶表示素子２０の液晶層（不図示）に対して表示データに応じた電圧を画素ごとに印加する。電圧が印加された液晶層は液晶分子の配列が変わり、当該液晶層の光の透過率が変化する。
【００１７】
バックライト駆動回路２０ｂは、制御回路３１から出力される点灯指示に応じてバックライト２０ａを指示された輝度で点灯させる。点灯したバックライト２０ａは、液晶表示素子２０を照明する。バックライト２０ａによる照明光が液晶表示素子２０の液晶層を透過して変調されることにより、表示データによる再生像が表示される。
【００１８】
操作部１２側には、制御回路３１と、加速度センサ１９と、スタイラス入力部材１６と、操作キー１５と、バッテリ１４ａを有する電源１４と、カメラ２５とが含まれ、挿抜可能に構成されるメモリカード１８が装着されている。制御回路３１は、制御プログラムに基づいて、画像表示装置を構成する各部から入力される信号を用いて所定の演算を行うなどして、画像表示装置の各部に対する制御信号を送出することにより、カメラ動作、画像表示動作をそれぞれ制御する。なお、制御プログラムは制御回路３１内の不図示の不揮発性メモリに格納されている。
【００１９】
時計回路３１ａは制御回路３１に内蔵されており、クロック信号（不図示）を分周して時刻情報を生成する。加速度センサ１９は画像表示装置の揺動を検出し、検出信号を制御回路３１へ出力する。制御回路３１は、検出信号に変化があれば揺動状態にあると判断し、検出信号に変化がなければ載置状態にあると判断する。
【００２０】
スタイラス入力部材１６は、使用者による入力操作に応じた入力信号を制御回路３１へ出力する。操作キー１５は、使用者による操作に応じた操作信号を制御回路３１へ出力する。メモリカード１８はフラッシュメモリなどの不揮発性メモリによって構成され、制御回路３１の指令によりデータの書き込み、保存および読み出しが可能である。電源１４は、ＤＣ／ＤＣ変換回路などで構成され、バッテリ１４ａの電圧を画像表示装置内の各部で必要な直流電圧に変換し、変換後の電圧を各ブロックへ供給する。
【００２１】
カメラ２５はイメージセンサおよびイメージセンサ上に被写体像を結像する撮影レンズを含む。カメラ２５は、制御回路３１の撮影指示によって被写体像を撮像し、画像データ

に所定の信号処理を施した上で当該画像データを制御回路３１へ送出する。イメージセンサとしては、ＣＣＤやＣＭＯＳ撮像素子などが用いられる。カメラ２５は、フレームモード１の使用形態において、表示部１１の表示面１１ａと対向する主要被写体を撮影するように構成されている。

【００２２】

ヒンジ１３には開閉角度検出センサ１３ａおよびねじれ角度検出センサ１３ｂが内蔵されている。開閉角度検出センサ１３ａは、回動軸Ｏを中心に回動したヒンジ１３の開閉角の大きさに応じた検出信号を制御回路３１へ出力する。ねじれ角度検出センサ１３ｂについては後述する。

【００２３】

以上の画像表示装置において、表示部１１の液晶表示素子２０にメモリカード１８に記録されている画像データによる再生画像を表示させるには、制御回路３１がメモリカード１８から画像データを読み出し、読み出した画像データを用いて液晶表示素子２０の表示画素数に応じた表示データを生成し、生成した表示データを液晶駆動回路２０ｃへ送出するとともに、バックライト駆動回路２０ｂへ点灯指示を送る。

【００２４】

制御回路３１で行われるモード切替え処理について、図５に示すフローチャートを参照して説明する。制御回路３１は、画像表示装置の電源スイッチ（不図示）がオンされている状態において、図５による処理を繰り返す。なお、フレームモード２は、電源スイッチ（不図示）がオフされている状態において使用される。

【００２５】

図５のステップＳ１において、制御回路３１は、加速度センサ１９からの検出信号が所定時間（たとえば、５分間）継続して変化しないか否かを判定する。制御回路３１は、入力信号に変化がなかった場合にステップＳ１を肯定判定してステップＳ３へ進み、入力信号に変化があった場合にはステップＳ１を否定判定し、ステップＳ２へ進む。ステップＳ２へ進む場合は画像表示装置が手持ち状態もしくは使用者による操作中とみなす場合であり、ステップＳ３へ進む場合は画像表示装置が載置状態とみなす場合である。

【００２６】

ステップＳ２において、制御回路３１は、ブックモードへの切替えを行ってステップＳ１へ戻る。ブックモードへの切替え処理では、液晶表示素子２０の表示態様として下記ａ１～ｆ１の内容が液晶駆動回路２０ｃおよびバックライト駆動回路２０ｂに指示される。階調特性、彩度特性、および輪郭強調特性の変更に必要な画像処理は、制御回路３１によって行われる。

ａ１．縦長画面としての液晶表示素子２０に通常の横長画像を再生表示させる。

ｂ１．再生表示画像の短辺方向の余白領域２１（図１）に、当該再生画像データに付加されているExif情報をテキスト表示する。

ｃ１．表示輝度（明るさ）を標準設定値にする。

ｄ１．階調特性（コントラストおよびγ特性を含む）を標準設定値にする。

ｅ１．彩度特性を標準設定値にする。

ｆ１．輪郭強調特性を標準設定値にする。

【００２７】

ステップＳ３において、制御回路３１は、フレームモード１への切替えを行ってステップＳ４へ進む。フレームモード１への切替え処理では、液晶表示素子２０の表示態様として以下の内容が液晶駆動回路２０ｃおよびバックライト駆動回路２０ｂに指示される。

ａ２．横長画面としての液晶表示素子２０に通常の横長画像を再生表示させる。

ｂ２．Exif情報の表示を省略する。

ｃ２．表示輝度（明るさ）を標準設定値より高める（明るくする）。

ｄ２．階調特性の設定値を、画像を派手に表示するように標準設定値から変更する。

ｅ２．彩度特性の設定値を、画像をあざやかに表示するように標準設定値から変更する。

ｆ２．輪郭強調特性を標準設定値より強くする。

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【００２８】
ステップＳ４において、制御回路３１は、カメラ２５によって得られるＡＦ（オートフォーカス）情報が所定距離より遠方に対応するか否かを判定する。制御回路３１は、カメラ２５から送信された画像データを用いて周知のＡＦ演算処理（たとえば、山登りＡＦ）を行うことにより、最至近の被写体までの距離を算出する。即ち、カメラ２５、制御回路３１は測距手段（回路）として機能する。測距手段によって算出された情報に対応する距離が、たとえば、１ｍより遠い場合にステップＳ４を肯定判定してステップＳ５へ進む。制御回路３１は、算出した距離が１ｍ以下の場合にはステップＳ４を否定判定し、ステップＳ１へ戻る。なお、上記の測距手段は、三角測量の原理を用いた測距手段、レーザ、音波等を用いた測距手段、もしくは位相差方式の測距手段であってもよい。

【００２９】
ステップＳ５において、制御回路３１は、液晶駆動回路２０ｃへさらに強調を指示してステップＳ１へ戻る。さらなる強調の指示が既に行われている場合には、当該強調を維持してステップＳ１に戻ればよい。さらなる強調指示では、液晶表示素子２０の表示態様として以下の内容が液晶駆動回路２０ｃに指示される。
ｄ３．階調特性を通常のフレームモード１における設定値よりもさらに派手にする。
ｅ３．彩度特性を通常のフレームモード１における設定値よりもさらにあざやかにする。
ｆ３．輪郭強調特性を通常のフレームモード１における設定値よりもさらに強くする。

【００３０】
以上説明した第一の実施形態によれば、次の作用効果が得られる。
（１）加速度センサ１９からの検出信号に基づいた判定によって画像表示装置が手持ち状態もしくは操作中であるとみなした場合、自動的にブックモードへ切替え（ステップＳ２）、画像表示装置が載置状態であるとみなした場合には自動的にフレームモード１に切替える（ステップＳ３）ようにしたので、使用者による切替え操作を不要にできる。

【００３１】
（２）ブックモードでは、縦長画面としての液晶表示素子２０に再生画像を表示するとともに、余白領域２１に当該画像データに付随するExif情報を表示するようにしたので、使用者は、撮影日や撮影条件などの確認が容易に行える上に、スタイラス入力部材１６を用いてExif情報に情報を付加することも容易である。

【００３２】
（３）ブックモードでは、液晶表示素子２０の表示特性について上記ｃ１～ｆ１の内容にしたので、メモリカード１８に記憶されている画像データによる再生画像が、表示特性を変えないでそのまま表示される。これにより使用者は、画像データが有する細かいグラデーションや解像感を観察できる。

【００３３】
（４）フレームモード１では、画像データに付随するExif情報の表示を省略し、横長画面としての液晶表示素子２０の画面いっぱいに再生画像を大きくフルサイズ表示したので、使用者は、画像表示装置から離れた位置から表示画像を観察できる。

【００３４】
（５）フレームモード１では、液晶表示素子２０の画像表示についてのパラメータを変更し、表示特性について上記ｃ２～ｆ２の内容にしたので、メモリカード１８に記憶されている画像データによる再生画像が、表示特性を変えて強調表示される。これにより使用者は、離れた位置からでも再生画像を鑑賞できる。なお、強調する内容は、上記ｃ２～ｆ２のうち少なくとも１つでもよい。

【００３５】
（６）フレームモード１において、最至近の被写体までの距離を算出し、算出した距離が１ｍより遠い場合には再生画像の画像表示についてのパラメータを変更し、表示特性をさらに強調するようにしたので、使用者は、より離れた位置からでも再生画像を鑑賞できる。なお、強調する内容は、上記ｄ３～ｆ３のうち少なくとも１つでもよい。

【００３６】

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（第二の実施形態）
第二の実施形態では、制御回路３１が開閉角度検出センサ１３ｃからの検出信号に基づいて、ブックモード、フレームモード１およびフレームモード２への切替えを行う。なお、第一の実施形態と重複する部分については説明を省略する。制御回路３１で行われるモード切替え処理について、図６に示すフローチャートを参照して説明する。制御回路３１は、画像表示装置にバッテリ１４ａが装填されると図６による処理を繰り返す。

【００３７】
図６のステップＳ１１において、制御回路３１は、ヒンジ１３の開閉角が０～９０度の範囲内か否かを判定する。制御回路３１は、開閉角度検出センサ１３ｃからの検出信号が開閉角０～９０度の範囲に対応する場合にステップＳ１１を肯定判定してステップＳ１４へ進み、開閉角度検出センサ１３ｃからの検出信号が開閉角９０度を超える場合にはステップＳ１１を否定判定し、ステップＳ１２へ進む。

【００３８】
ステップＳ１２において、制御回路３１は、ヒンジ１３の開閉角が９１～２７０度の範囲内か否かを判定する。制御回路３１は、開閉角度検出センサ１３ｃからの検出信号が開閉角９１～２７０度の範囲に対応する場合にステップＳ１２を肯定判定してステップＳ１５へ進み、開閉角度検出センサ１３ｃからの検出信号が開閉角２７０度を超える場合にはステップＳ１２を否定判定し、ステップＳ１３へ進む。ステップＳ１５へ進む場合は画像表示装置が手持ち状態もしくは使用者による操作中とみなす場合である。

【００３９】
ステップＳ１３において、制御回路３１は、ヒンジ１３の開閉角が２７１～３６０度の範囲内であると判断する。ステップＳ１６へ進む場合は、画像表示装置が載置状態とみなす場合である。

【００４０】
ステップＳ１４において、制御回路３１は、フレームモード２（フォトフレーム）への切替えを行ってステップＳ１１へ戻る。フレームモード２への切替え処理では、液晶駆動回路２０ｃへ液晶表示素子２０の表示オフを指示し、バックライト駆動回路２０ｂへバックライト２０ａの消灯を指示し、カメラ２５に対する撮影停止を指示するとともに、表示部１１内の各ブロックに対する電力供給をオフするように電源１４へ指示する。なお、既にフレームモード２に切替えられている場合は、フレームモード２を維持してステップＳ１１へ戻る。

【００４１】
ステップＳ１５において、制御回路３１は、ブックモードへの切替えを行ってステップＳ１１へ戻る。ブックモードへの切替え処理では、カメラ２５に対する撮影停止を指示し、カメラ２５に対する電力供給をオフ、カメラ２５を除く表示部１１内の各ブロックに対する電力供給をオンするように電源１４へ指示し、図１に示されるような液晶表示素子２０の表示態様として上記ａ１～ｆ１の内容を液晶駆動回路２０ｃおよびバックライト駆動回路２０ｂに指示する。階調特性、彩度特性、および輪郭強調特性の変更に必要な画像処理は、制御回路３１によって行われる。なお、既にブックモードに切替えられている場合には、ブックモードを維持してステップＳ１１へ戻る。

【００４２】
ステップＳ１６において、制御回路３１は、フレームモード１への切替えを行ってステップＳ１７へ進む。フレームモード１への切替え処理では、表示部１１内の各ブロックに対する電力供給をオンするように電源１４へ指示し、カメラ２５に対する撮影開始を指示し、図２に示されるような液晶表示素子２０の表示態様として上記ａ２～ｆ２の内容を液晶駆動回路２０ｃおよびバックライト駆動回路２０ｂに指示する。なお、既にフレームモード１に切替えられている場合には、フレームモード１を維持してステップＳ１７へ進む。

【００４３】
ステップＳ１７は、ステップＳ４による処理と同様なので説明を省略する。ステップＳ

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１８は、ステップＳ５による処理と同様なので説明を省略する。

【００４４】

以上説明した第二の実施形態によれば、次の作用効果が得られる。

（１）開閉角度検出センサ１３ｃからの検出信号に基づいた判定によって画像表示装置が手持ち状態もしくは操作中であるとみなした場合、自動的にブックモードへ切替え（ステップＳ１５）、画像表示装置が載置状態であるとみなした場合は自動的にフレームモード１に切替え（ステップＳ１６）、画像表示装置がフォトフレームの状態であるとみなした場合には自動的にフレームモード２に切替える（ステップＳ１４）ようにしたので、使用者による切替え操作を不要にできる。

【００４５】

（２）ブックモードでは、第一の実施形態と同様に、撮影日や撮影条件などの確認、Exif情報への情報付加が容易である。また、画像データが有する細かいグラデーションや解像感を観察できる。

【００４６】

（３）フレームモード１では、第一の実施形態と同様に、画像表示装置から離れた位置からでも表示画像を鑑賞できる。

【００４７】

（４）フレームモード２では、液晶表示をオフ、バックライト２０ａを消灯、カメラ２５の撮影を停止させるとともに、表示部１１内の各ブロックへ供給する電力をオフさせるので、消費電力を低減することができる。

【００４８】

ヒンジ１３を回動軸Ｏと直交する軸Ｒ（図２）の回りにも回転可能なフリーアングルヒンジとして構成してもよい。この場合には、ねじれ角度検出センサ１３ｂが、回動軸Ｒを中心に回動する表示部１１の回動角の大きさに応じた検出信号を制御回路３１へ出力する。制御回路３１は、図２の状態（フレームモード１）から表示部１１が回動され、回動角が略１８０度（たとえば、１５０度～２１０度）になると、フレームモード１からフレームモード２へ切り替える。

【００４９】

反対に、制御回路３１は、図３の状態（フレームモード２）から表示部１１が回動され、回動角が略１８０度（たとえば、１５０度～２１０度）になると、フレームモード２からフレームモード１へ切り替える。このような構成とすれば、操作キー１５やスタイラス入力部材１６を載置面に接触させることなく載置することができる。スタイラス入力部材１６がない場合、操作キー１５は、たとえば表示部１１の側面に設けられていてもよい。即ち、ベース部１２には、必ずしも操作部材を備えている必要はなく、フレームモード１、フレームモード２の載置状態において、表示部１１を支持する支持機能を有していればよい。

【００５０】

フレームモード１において表示輝度（明るさ）を標準設定値より高める上記ｃ２の構成は、バッテリ１４ａの残量に応じて行うようにしてもよい。バッテリ１４ａの残量が低下した場合には表示輝度を明るくしないことにより、バックライト２０ａで消費される電力を抑えることができる。

【００５１】

液晶表示素子２０の表示特性について、フレームモード１においてホワイトバランス調整値を変更してもよい。この場合の制御回路３１は、カメラ２５から送信された画像データから得られる色温度情報が所定色温度より高いか否かを判定する。たとえば、所定色温度以下（画像表示装置が載置されている室内照明光の赤色比率が所定比率より高い）の場合、赤色表示輝度を青色および緑色表示輝度に比べて抑えるようにホワイトバランス調整値（色温度調整値）を変更する。所定色温度より高い場合には、ホワイトバランス調整値を標準設定値とする。これにより、画像表示装置が載置されている部屋の照明光の色温度の影響を抑えて再生画像を鑑賞することができる。

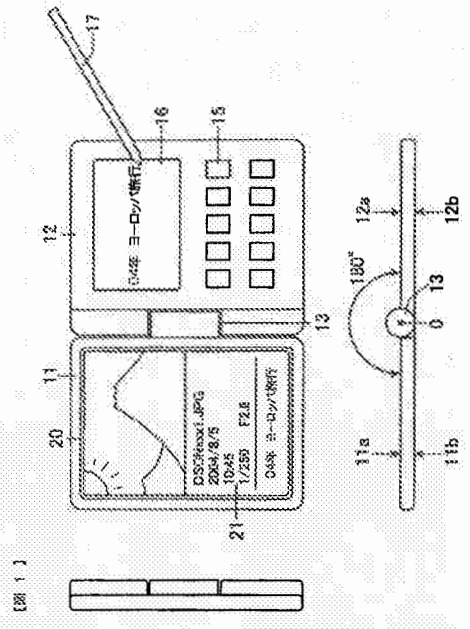
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【００５２】
以上の説明では、液晶表示素子として透過型の液晶パネルを例示したが、透過型液晶パネルの代わりに反射型液晶や半透過型液晶を用いて構成してもよい。また、有機ＥＬ素子などの他のタイプのディスプレイデバイスを用いて構成することもできる。
【００５３】
第一の実施形態、第二の実施形態では、各々加速度センサ１９、開閉角度検出センサ１３ａ等を用いて載置状態か否かを判定する例について説明したが、両者を併用する構成としても構わない。例えば、ステップＳ１２からステップＳ１５への移行過程でステップＳ１の判断を行い、肯定された場合にはステップＳ１６に移行し、否定された場合にはステップＳ１５に移行する。さらには、ステップＳ１３からステップＳ１６への移行過程でステップＳ１の判断を行い、肯定された場合にはステップＳ１６に移行し、否定された場合にはステップＳ１５に移行する。このような構成とすれば、載置状態の判定の精度をさらに向上させることができる。また、操作キー１５あるいはスタイラス入力部材１６による入力操作が行われてから所定の期間を、手持ち状態もしくは使用者による操作中とみなす構成としてもよい。
【００５４】
特許請求の範囲における各構成要素と、発明を実施するための最良の形態における各構成要素との対応について説明する。表示モニタは、たとえば、液晶表示素子２０およびバックライト２０ａによって構成される。表示制御手段は、たとえば、液晶駆動回路２０ｃ、バックライト駆動回路２０ｂおよび制御回路３１によって構成される。表示態様指示手段は、たとえば、制御回路３１によって構成される。角度検出手段は、たとえば、開閉角度検出センサ１３ａ（ねじれ角度検出センサ１３ｂ）によって構成される。揺動検出手段は、たとえば、加速度センサ１９によって構成される。測距手段、撮像手段は、たとえば、カメラ２５によって構成される。なお、以上の説明はあくまで一例であり、発明を解釈する上で、上記の実施形態の構成要素と本発明の構成要素との対応関係に何ら限定されるものではない。なお、特許請求の範囲における表示態様とは、表示モニタに電源を供給しない状態、観察者にとって意味のある情報が表示されていない非表示の状態を含むものではない。
【図面の簡単な説明】
【００５５】
【図１】本発明の第一の実施形態による画像表示装置を説明する三面図である。
【図２】画像表示装置のフレームモード１における使用形態を例示する図である。
【図３】画像表示装置のフレームモード２における使用形態を例示する図である。
【図４】画像表示装置の構成を説明するブロック図である。
【図５】モード切替え処理を説明するフローチャートである。
【図６】第二の実施形態によるモード切替え処理を説明するフローチャートである。
【符号の説明】
【００５６】
１１…表示部
１１ａ…表示面
１１ｂ…裏面
１２…操作部（ベース部）
１２ａ…操作面
１２ｂ…裏面
１３…ヒンジ
１３ａ…開閉角度検出センサ
１３ｂ…ねじれ角度検出センサ
１４…電源
１４ａ…バッテリ
１５…操作キー

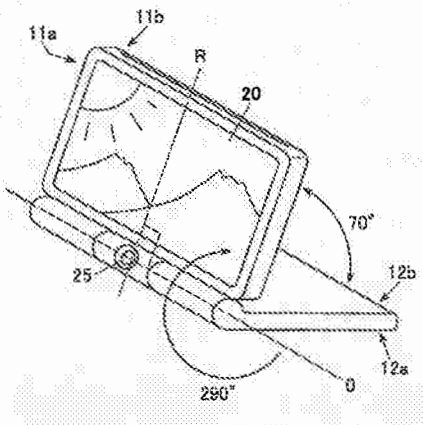
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１６…スタイラス入力部材
１８…メモリカード
１９…加速度センサ
２０…液晶表示素子
２０ａ…バックライト
２０ｂ…バックライト駆動回路
２０ｃ…液晶駆動回路
２１…余白領域
２５…カメラ
３１…制御回路
Ｏ，Ｒ…回動軸

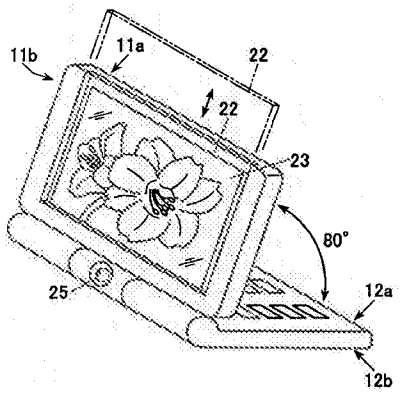
【図１】



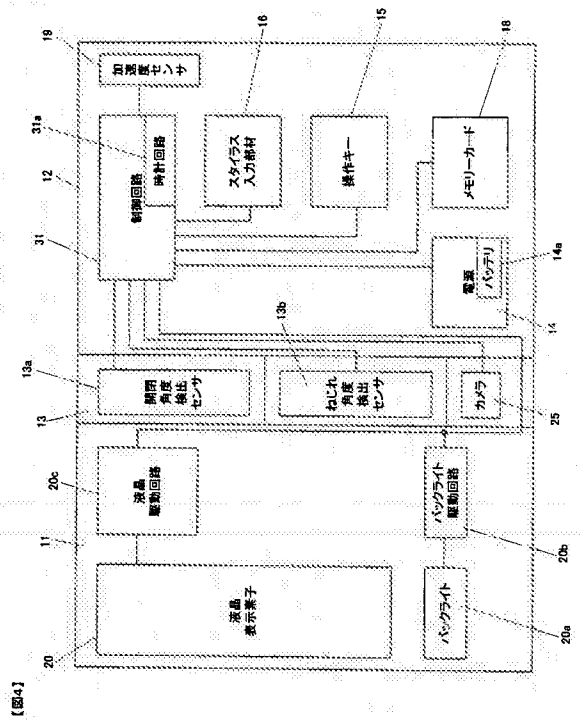
【図２】



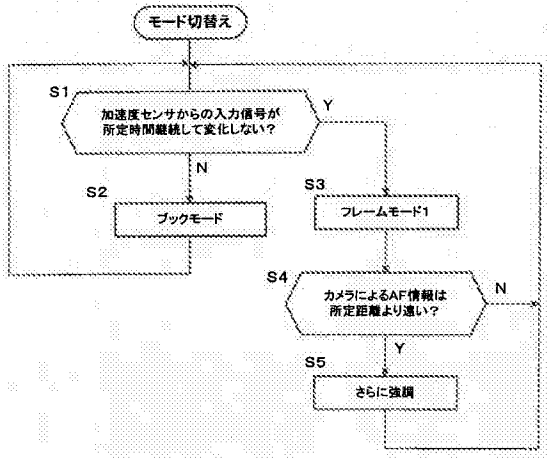
【図３】


【図３】
11b
11a
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22
23
80°
25
12a
12b

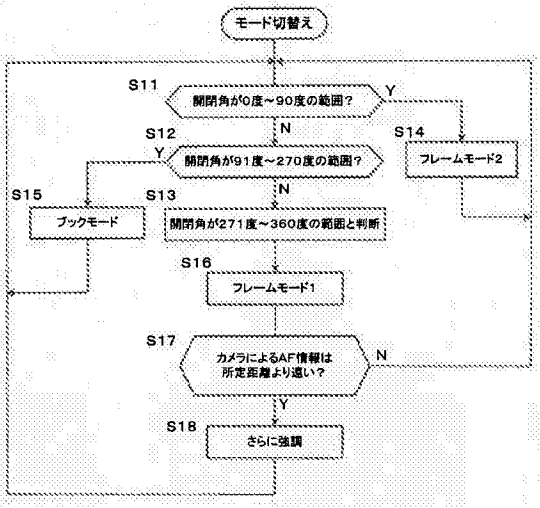
【図４】


19
16
15
18
音声認識ヤスナ
31a
12
制御回路
時計回路
スタイラス入力部材
操作キー
メモリーカード
31
電源
バッテリ
14a
14
13b
13a
開閉角度検出センサ
ねじれ角度検出センサ
カメラ
25
13
20c
液晶駆動回路
バックライト駆動回路
11
20b
液晶表示素子
バックライト
20a
20
【図4】

【図５】


【図5】
モード切替え
S1
加速度センサからの入力信号が所定時間継続して変化しない？
Y
N
S2
ブックモード
S3
フレームモード1
S4
カメラによるAF情報は所定距離より遠い？
N
Y
S5
さらに強調

【図６】


【図6】
モード切替え
S11
開閉角が0度～90度の範囲？
Y
N
S12
Y
開閉角が91度～270度の範囲？
S14
フレームモード2
N
S15
S13
ブックモード
開閉角が271度～360度の範囲と判断
S16
フレームモード1
S17
カメラによるAF情報は所定距離より遠い？
N
Y
S18
さらに強調

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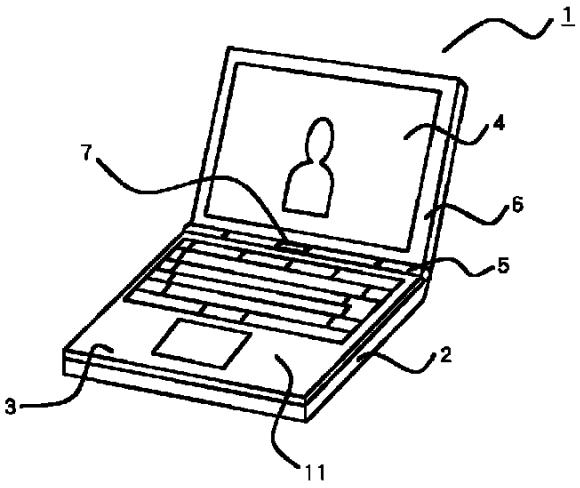
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(54)【発明の名称】　携帯型パーソナルコンピュータ

(57)



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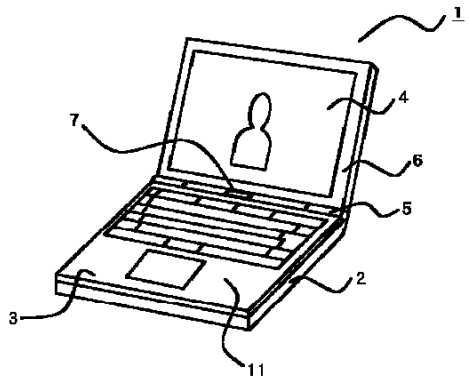
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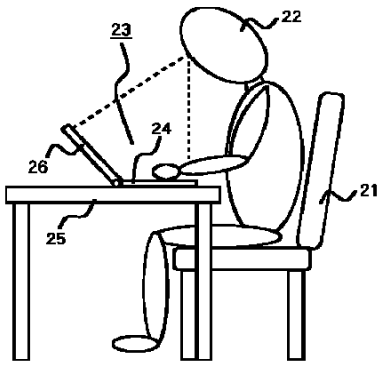
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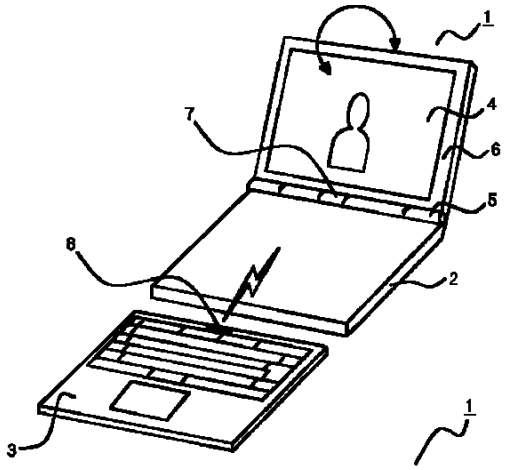
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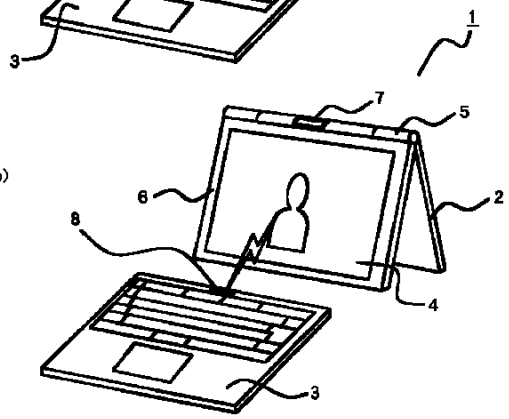


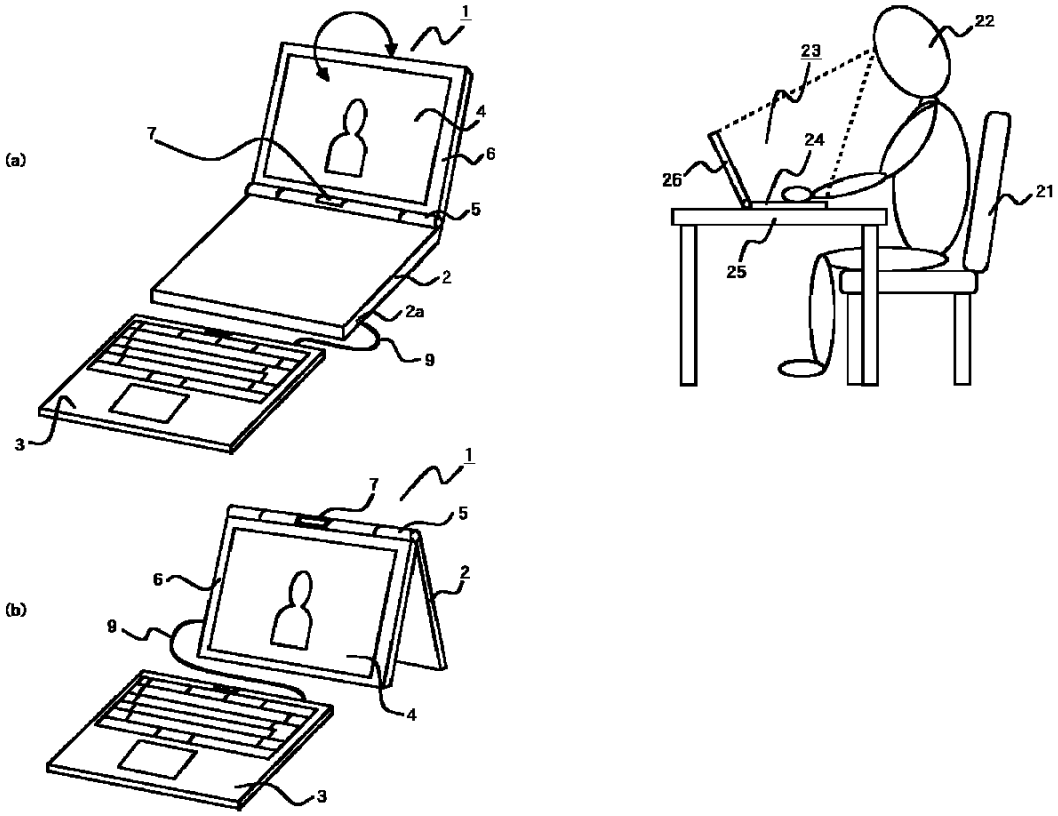


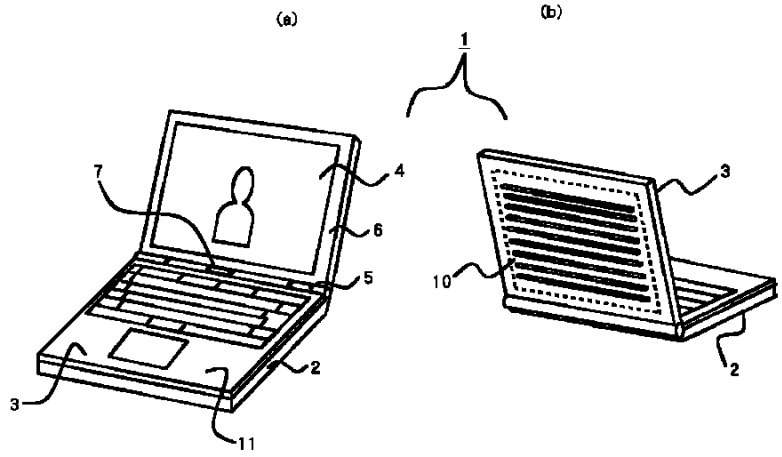
(a)



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(a)
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Electronic Acknowledgement Receipt

EFS ID:	17584460
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	06-DEC-2013
Filing Date:	15-OCT-2012
Time Stamp:	09:52:51
Application Type:	Utility under 35 USC 111(a)

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Information:					
6	Foreign Reference	JP11296259_.pdf	207910 9cec3813e29394edc1ef24373b7816b6f17557aa	no	6
Warnings:					
Information:					
7	Non Patent Literature	CN_OA1.pdf	230117 aa3793f764b8eb200de75d0cfa32a54cfc37194a	no	7
Warnings:					
Information:					
		Total Files Size (in bytes):	3300863		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: December 6, 2013
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2115

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: Not Yet Assigned

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner for Patents

Dear Madam:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed before the mailing date of a first Office Action on the merits as far as is known to the undersigned (37 C.F.R. § 1.97(b)(3)).

A summary/abstract translation of the non-English language references is attached.

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50/2762, under Order No. L2039-700120.

Dated: December 6, 2013

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
Matthew H. Grady
Registration No.: 52,957
LANDO & ANASTASI LLP
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PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2846
Examiner Name	Lee, J. J.
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7814425		2010-10-12	O'Shaugnessy et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050005241		2005-01-06	Hunleth et al.	
	2	20050010860		2005-01-13	Weiss et al.	
	3	20060277167		2006-12-07	Gross et al.	
	4	20070073833		2007-03-29	Roy et al.	
	5	20080059888		2008-03-06	Dunko	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2846
	Examiner Name	Lee, J. J.
	Attorney Docket Number	L2039-700120

	6	20080134093		2008-06-05	Dharmarajan et al.		

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2846
	Examiner Name	Lee, J. J.
	Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew H. Grady/	Date (YYYY-MM-DD)	2014-01-27
Name/Print	Matthew H. Grady	Registration Number	52957

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: January 27, 2014
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2846

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: Lee, J. J.

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner for Patents

Dear Madam:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed before the mailing date of a first Office Action on the merits as far as is known to the undersigned (37 C.F.R. § 1.97(b)(3)). In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists. In accordance with 37 C.F.R. § 1.97(h), the

filing of this Information Disclosure Statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50/2762, under Order No. L2039-700120.

Dated: January 27, 2014

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
Matthew H. Grady
Registration No.: 52,957
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Attorneys for Applicant

Electronic Acknowledgement Receipt

EFS ID:	18027841
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	27-JAN-2014
Filing Date:	15-OCT-2012
Time Stamp:	11:38:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	Information_Disclosure_Statement_Fillable_PDF_1.PDF	612299 c9099cbb6f07c5b8ea883774400eee0f54124dc1	no	4

Warnings:	
Information:	

2	Transmittal Letter	Information_Disclosure_Statement_2.pdf	21627 209f36355d71bc9ce2df750647eff1401676c35a	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	633926

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

37462 7590 09/19/2014

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2846	

NOTIFICATION DATE	DELIVERY MODE
09/19/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@LALaw.com
gengelson@LALaw.com

Office Action Summary	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2846	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/15/2012*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-19* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *10/15/2012* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

Claims 1-19 have been considered for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-10 and 12-18 are rejected under pre-AIA 35 U.S.C. 102b as being anticipated by Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013).

In re Claim 1, Misawa discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and an easel mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis

beyond approximately 180 degrees from the closed mode transitions the portable computer for viewing in the easel mode (Figure 8) having a content display orientation 180 degrees from a content display orientation of the laptop mode (i.e. Misawa discloses wherein the light sensed from the camera 26 is shown on the display 16 in the easel mode and thus must be 180 degrees from the image as shown in the laptop mode. Misawa, paragraph 0058.), and wherein during operation in the easel mode the display component is positioned toward the operator with the keyboard directed away from the operator.

In re Claim 4, Misawa disclose wherein the base and display are only rotatable at the interface 20.

In re Claim 5, Misawa discloses wherein the interface 20 is constructed so as to permit the base and display to rotate with respect to each other at the interface.

In re Claims 6 and 7, Misawa discloses wherein the interface defines and/or consists of a single longitudinal axis.

In re Claim 8, Misawa discloses wherein the interface 20 includes a hinge assembly (Figure 4), wherein the hinge assembly is at least partially housed within one of the base 14 and the display component 18.

In re Claim 9, Misawa discloses wherein the interface 20 comprises means for rotating the display component 18 along the longitudinal axis relative to the base 14 to transition the portable computer for viewing in the easel mode. Misawa, Figures 4 and 8.

In re Claim 10, Misawa discloses wherein the interface 20 comprises a plurality of axles 44.

In re Claim 12, Misawa discloses wherein the display component 16 is rotatable relative the base 14 such that the keyboard 12 may be placed face down on a surface so as to be in a frame mode.

In re Claim 13, Misawa discloses a portable computer configurable between a plurality of display modes, the portable computer comprising: a display component 16 including a single display screen for viewing content; a base 14; an interface 20 connecting the display component and the base, defining a single longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other only about the single longitudinal axis; wherein the interface is constructed and arranged so that rotating either the display component or the base about the single longitudinal axis configures the portable computer into an operating display mode, wherein in the operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the operating display mode (Figure 8).

In re Claim 14, Misawa discloses wherein at least a portion of the display component 18 and a portion of the base 14 define an inverted V configuration. See Misawa, Figure 8.

In re Claim 15, Misawa discloses wherein the interface 20 comprises means for rotating (See Figure 4) the display component 18 relative the base 14.

In re Claim 16, Misawa discloses wherein the interface 20 is constructed and arranged to enable rotation of the base 14 and the display component 18 from a first position where the base and display component are disposed against each other and a second position where at least a portion of the base and at least a portion of the display component are in the inverted v configuration (Figure 8).

In re Claim 17, Misawa discloses a method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component 18 including a display screen 16, a base 14, and an interface 20 connecting the display component and the base defining a single longitudinal axis, the method comprising: rotating at least one of the display component and the base of the portable computer about the single longitudinal axis to configure the portable computer in one of the plurality of display modes (i.e. Figure 1), wherein the single longitudinal axis is configured to run along the connection between the display component and the base of the portable computer; and positioning at least a portion of the portable computer in an inverted v configuration for operation by a user (Figure 8), responsive to the act of rotating, wherein the act of positioning includes acts of: positioning the display component in an orientation directed towards the user; and positioning the base on an opposite side of the display component to support the portable computer in the inverted v configuration (Figure 8).

In re Claim 18, Misawa discloses wherein the base 14 includes a keyboard 12, and the act of positioning the base on the opposite side of the display component 18 includes positioning the keyboard such that the keyboard faces away from the user of the portable computer. See Misawa, Figure 8.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) taken alone.

In re Claim 2, Misawa discloses wherein the angles of rotation of the display component in relation to the base are between 0 and 300 degrees (300 degrees being the easel mode). Misawa, pargraph 0073. Misawa does not explicitly disclose wherein the angle is 320 degrees. However, providing such would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention since it has been held that discovering an optimum value (i.e. 320 degrees) of a result effective variable involves only routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Misawa also teaches that the angle may be varied as required. Misawa, paragraph 0073.

Claims 3 and 19 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) in view of Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013).

In re Claims 3 and 19, Misawa discloses the limitations as noted above, but does not explicitly disclose wherein the apparatus comprises a mode sensor and/or a sensor that automatically rotates a display content. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058.

Claims 11 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) in view of Nishiyama et al. (US Publication 2005/0221865).

In re Claim 11, Misawa discloses the limitations as noted above, but does not explicitly disclose all the limitations of Claim 11. However, Nishiyama discloses a

portable electronic device comprising: a display component 2 rotatably connected to a base 4 via a hinge interface 3, wherein the interface further comprises at least one integrated navigation hardware control 8, 9, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and easel modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user. It would have been obvious to a person having ordinary skill in the art of portable electronics to have incorporated a navigation control like that disclosed in Nishiyama so as to improve the ergonomics of the device. Nishiyama, paragraphs 0007-0015.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADRIAN S. WILSON whose telephone number is (571)270-3907. The examiner can normally be reached on Mon.-Thu. 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on (571) 272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2846

asw

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2115
Examiner Name	Not Yet Assigned
Attorney Docket Number	L2039-700120

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6097389		2000-08-01	Morris et al.	
	2	7366994		2008-04-29	Loui	

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	1	20050091596		2005-04-28	Anthony et al.	
	2	20080174570		2008-07-24	Jobs et al.	
	3	20090019383		2009-01-15	Riley et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

	1	11-296259	JP		1999-10-29	CANON INC.		☒
	2	2006-227409	JP		2006-08-31	NIKON CORP.		☒

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	1	Final Rejection CN-OA -dated July 18, 2013 - Appl No.. 200980117859.8 - filed March 27, 2009	☒

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	**Art Unit**
	ADRIAN S WILSON	2846

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/15/2014								
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First Named Inventor	Yves Behar
Art Unit	2846
Examiner Name	Lee, J. J.
Attorney Docket Number	L2039-700120

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7814425		2010-10-12	O'Shaugnessy et al.	

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	3	20060277167		2006-12-07	Gross et al.	
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Receipt date: 01/27/2014	Application Number	13651636	13651636 - GAU: 2846
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2012-10-15	
	First Named Inventor	Yves Behar	
	Art Unit	2846	
	Examiner Name	Lee, J. J.	
	Attorney Docket Number	L2039-700120	

	6	20080134093		2008-06-05	Dharmarajan et al.	

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	115	behar-yves.in.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 14:56
L3	725	"hardware control".clm.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 14:57
L4	2	l2 and l3	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 14:57
L5	8	litl.as.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 14:58
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CONFIRMATION NO. 6472

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/651,636	10/15/2012	361	2846	L2039-700120

APPLICANTS

LITL LLC, BOSTON, MA, Assignee (with 37 CFR 1.172 Interest);

INVENTORS

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

**** CONTINUING DATA ***************************

This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008

**** FOREIGN APPLICATIONS ***************************

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11/02/2012

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /ADRIAN S WILSON/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	25	19	3

ADDRESS

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142
UNITED STATES

TITLE

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

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	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Receipt date: 04/08/2013	Application Number	13651636 13651636 - GAU: 2846
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2012-10-15
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	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

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Receipt date: 04/08/2013	Application Number	13651636	13651636 - GAU: 2846
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Filing Date	2012-10-15	
	First Named Inventor	Yves Behar	
	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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Receipt date: 04/08/2013	Application Number	13651636	13651636 - GAU: 2846
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2012-10-15	
	First Named Inventor	Yves Behar	
	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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	First Named Inventor	Yves Behar	
	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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Receipt date: 04/08/2013	Application Number	13651636	13651636 - GAU: 2846
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	First Named Inventor	Yves Behar	
	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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Receipt date: 04/08/2013	Application Number	13651636	13651636 - GAU: 2846
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	2012-10-15	
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	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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	First Named Inventor	Yves Behar	
	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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Receipt date: 04/08/2013	Application Number	13651636	13651636 - GAU: 2846
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	Art Unit	2115	
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	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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Receipt date: 04/08/2013	Application Number	13651636	13651636 - GAU: 2846
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	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
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	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	L2039-700120	

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	First Named Inventor	Yves Behar
	Art Unit	2115
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	L2039-700120

EXAMINER SIGNATURE			
Examiner Signature	/Adrian Wilson/	Date Considered	09/15/2014

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2846

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
	361/679.21,679.26,679.27,679.55,679.56.ccls.	09/15/2014	asw
	455/575.1-575.4.ccls.	09/15/2014	asw
	345/168.ccls.	09/15/2014	asw

SEARCH NOTES		
Search Notes	Date	Examiner
East Search (including inventor search)	09/15/2014	asw

INTERFERENCE SEARCH			
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Dated: March 18, 2015
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Docket No.: L2039-700120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2846

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: A. S. Wilson

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. 1.111

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

INTRODUCTORY COMMENTS

In response to the Office Action dated September 19, 2014, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A portable computer configurable between a plurality of display modes including at least a laptop mode and a frame ~~an easel~~ mode, the portable computer comprising:

a display component;

a base;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator; ~~and~~

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 ~~180~~ degrees from the closed mode transitions the portable computer for viewing in the frame ~~easel~~ mode ~~having a content display orientation 180 degrees from a content display orientation of the laptop mode~~, and wherein during operation in the frame ~~easel~~ mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and ~~with~~ the keyboard is directed towards the substantially horizontal surface ~~away from the operator~~; and

wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode.

2. (original) The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. (original) The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which detects a current display mode of the portable computer; and

wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. (original) The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. (currently amended) The portable computer of claim 1, wherein the interface ~~is constructed and arranged to permit rotation of the base and the display component with respect to each other at the interface~~ further comprises a multiple axis hinge.

6. (currently amended) The portable computer of claim 5 [[~~1~~]], wherein the interface further comprises multiple hinges ~~defines a single longitudinal axis~~.

7. (currently amended) The portable computer of claim 1 [[~~6~~]], wherein the interface defines a single longitudinal axis ~~consists of a single longitudinal axis~~.

8. (original) The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. (currently amended) The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the frame ~~easel~~ mode.

10. (original) The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. (currently amended) The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and frame ~~easel~~ modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. (currently amended) The portable computer of claim 1, wherein the plurality of modes includes a easel ~~frame~~ mode in which the display component is oriented towards the operator[[,]] ~~the base contacts a substantially horizontal surface,~~ and the keyboard is directed away from the operator ~~towards the substantially horizontal surface~~.

13. (currently amended) A portable computer configurable between a plurality of operating display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an interface connecting the display component and the base, defining a ~~single~~ longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other ~~only~~ about the ~~single~~ longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the ~~single~~ longitudinal axis from a closed mode configures the portable computer into a first operating display mode of the plurality of ~~an~~ operating display modes ~~mode~~, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode;

wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into a second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, and a display orientation of content is automatically changed when transitioning between the first and second operating display modes.

14. (currently amended) The portable computer of claim 13, wherein the first operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration and wherein the second operating display mode is configured so that at least a portion of the display component and at least a portion of the base define a sideways v configuration.

15. (currently amended) The portable computer of claim 13 ~~14~~, wherein the interface comprises means for rotating the display component relative to the base.

16. (currently amended) The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a first position where the base and display component are disposed against each other, ~~and~~ a second position where at least a portion of the base and the at least a portion of the display component are in the inverted v configuration, and a third position where at least a portion of the base and at least a portion of the display component are in the sideways v configuration.

17. (currently amended) A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base, and [[a]] an interface connecting the display component and the base defining a ~~single~~ longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the ~~single~~ longitudinal axis to configure the portable computer in one of the plurality of display modes, wherein the ~~single~~ longitudinal axis is configured to run along the connection between the display component and the base of the portable computer; ~~and~~

positioning at least a portion of the portable computer in a sideways ~~an inverted~~ v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base ~~on an opposite side of the display component~~ to lie flat on a surface and support the portable computer in the sideways ~~inverted~~ v configuration;

determining a content display orientation responsive to a current one of the plurality of display modes; and

displaying content according to the determined display orientation.

18. (currently amended) The method of claim 17, wherein the base includes a keyboard and ~~, an~~ the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard faces ~~away from the user of the portable computer~~ towards the surface.

19. (canceled)

20. (new) The portable computer of claim 3, wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode.

21. (new) The portable computer of claim 3, wherein the display orientation module further disables the keyboard in response to the mode sensor detecting an orientation of the portable computer.

22. (new) The portable computer of claim 1, wherein the portable computer is further configured to connect to a docking station in the plurality of display modes, including the laptop mode and the frame mode.

23. (new) The portable computer of claim 1, further comprising a cushioning strip configured to stabilize the portable computer in a plurality of modes.

24. (new) The portable computer of claim 13, wherein the hardware controls include a clickable scroll wheel configured to scroll along the longitudinal axis to select an item displayed by the display screen.

25. (new) The portable computer of claim 1, wherein the display component is further configured to display a segmented user interface comprising a plurality of modes of content.

26. (new) The portable computer of claim 1, wherein the display component and base include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration.

REMARKS

Claims 1-19 were previously pending for examination. By this amendment, Applicants are canceling claim 19 without prejudice or disclaimer. Claims 1, 5-7, 9, and 11-18 have been amended. New claims 20-26 have been added. As a result claims 1-18 and 20-26 are pending for examination with claims 1, 13, and 17 being independent claims. No new matter has been added.

Rejections Under 35 U.S.C. §102

Claims 1, 4-10 and 12-18 are rejected under pre-AIA 35 U.S.C. 102b as being anticipated by US Publication 2005/0134717 to Misawa et al. (hereinafter "Misawa"). In response Applicant has amended the independent claims to further define Applicant's contribution to the art, and presents the following remarks in support of patentability.

Claim 1, as amended, recites "A portable computer configurable between a plurality of display modes including at least a laptop mode and a frame mode, the portable computer comprising: a display component; a base; an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode, and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface; and wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode."

Misawa discloses a "portable telephone with a camera which is capable of close-up photography." (Abstract). The portable telephone includes a first casing body and a second

casing body that "can be invertedly stood on a flat surface G with the hinge portion 20 oriented upward." (Paragraph [0054]).

In contrast, claim 1 recites a "frame mode" wherein "the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface" and "wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode." Misawa does not anticipate claim 1, as amended, nor does Misawa teach or suggest claim 1. Misawa discloses "taking of a photograph is implemented by operating the control portion 12 to set desired photography conditions and pressing a shutter button 56." (Para. 0059). Because the shutter button 56 is part of the keyboard, Misawa does not teach frame mode because the shutter button 56 cannot be selected by a user if the base of the phone contacts a substantially horizontal surface and the keyboard is directed towards the substantially horizontal surface. Further, Misawa discloses that a system controller receives a detection signal and "switches the photography mode to a macro (close-up) photography mode." (Para. 0062). Misawa does not disclose "wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode," as recited in amended claim 1, as Misawa does not determine a display orientation of content responsive to a transition to frame mode. As a result, Misawa does not disclose all of the elements in claim 1, as amended, and claim 1 is allowable.

As amended, independent claim 13 recites a "A portable computer configurable between a plurality of operating display modes, the portable computer comprising: a display component including a single display screen for viewing content; a base; an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other ~~only~~ about the longitudinal axis; wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis from a closed mode configures the portable computer into a first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite

side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode; wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into a second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, and a display orientation of content is automatically changed when transitioning between the first and second operating display modes." As discussed above with respect to independent claim 1, Misawa cannot teach the frame mode as recited and does not determine an orientation of content responsive to a transition between display modes. It follows that Misawa does not teach a system "wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, and a display orientation of content is automatically changed when transitioning between the first and second operating display modes," as recited in claim 13, as amended. Misawa discloses that a system controller receives a detection signal and "switches the photography mode to a macro (close-up) photography mode." (Para. 0062). However, Misawa does not teach a display orientation of content that is automatically changed when transitioning from a first display mode wherein "in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode" and a second display mode wherein "the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode," as recited in amended claim 13. As a result, Misawa does not disclose all of the elements in claim 13, as amended, and claim 13 is allowable.

As amended, independent claim 17 recites, "A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base, and an interface connecting the display component and the base defining a longitudinal axis, the method comprising: positioning the display component in an orientation directed towards the user; and positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration; determining a content display orientation responsive to a current one of the plurality of display modes; and displaying content according to the determined display orientation." As discussed above with respect to independent claim 1, Misawa cannot teach the frame mode as recited and does not determine an orientation of content responsive to a transition between display modes. It follows that Misawa does not disclose a method comprising "positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of: positioning the display component in an orientation directed towards the user; and positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration; determining a content display orientation responsive to a current one of the plurality of display modes; and displaying content according to the determined display orientation," as recited in claim 17, as amended. Misawa teaches a "shutter button 56" to activate a portable telephone camera while the portable telephone is in close-up photograph mode. (Para. 0059). However, Misawa does not teach "a sideways v configuration," as recited in claim 17. Further, even if Misawa taught a sideways v configuration, the shutter button disclosed by Misawa would be inoperable if the portable telephone were put in a sideways v configuration. As a result, Misawa does not disclose all of the elements in claim 17, as amended, and claim 17 is allowable.

Claims 4-10 and 12 depend from claim 1. Claims 14-16 depend from claim 13. Claim 18 depends from claim 17. Accordingly, each of claims 4-10, 12, 14-16, and 18 is allowable for at least the same reasons as independent claims 1, 13, and 17.

Accordingly, withdrawal of the rejection of claims 1, 4-10, and 12-18 is respectfully requested. New claims 20-26 have been added to further define Applicant's contribution to the art.

Rejections Under 35 U.S.C. §103

Claim 2 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa taken alone.

Claim 2 depends from claim 1. As discussed above, Misawa does not anticipate, teach, or suggest claim 1. Accordingly, withdrawal of the rejection of claim 2 is respectfully requested.

Claims 3 and 19 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa in view of Japanese Publication 08-179851 to Takagi et al. (hereinafter "Takagi").

The combination of Misawa and Takagi does not cure the deficiencies discussed above. For example, Takagi does not teach or suggest a "frame mode" wherein "the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface" and "wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode," as recited in claim 1, as amended. None of Misawa and Takagi (alone or in combination) teaches or suggests all the elements of the independent claims 1 from which claim 3 depends. Claim 19 has been canceled. Accordingly, withdrawal of the rejection of claim 3 is respectfully requested.

Claim 11 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa in view of U.S. Publication 2005/0221865 to Nishiyama et al. (hereinafter "Nishiyama").

The combination of Misawa and Nishiyama does not cure the deficiencies discussed above. For example, Nishiyama does not teach or suggest a "frame mode" wherein "the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface" and "wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode," as recited in claim 1, as amended. None of Misawa and Nishiyama (alone or in combination) teaches or suggests all the elements of the independent claim 1 from which claim 11 depends.

Further, the combination of Misawa and Nishiyama is improper. Nishiyama discloses "A stopper piece 24 is disposed on the shank 23 and is engaged with notches 25 and 26 formed in the end surfaces of the sleeve shaft 22 and the sleeve flange 20. As a result, the rotation of the sleeve flange 20 is stopped, and consequently the rotation of the display section 2 is stopped

stable." Therefore, Nishiyama teaches away from Misawa and the claim 1 because Nishiyama does not allow the device to rotate more than 270 degrees. Accordingly, withdrawal of the rejection of claim 11 is respectfully requested.

Newly Added Claims

New claims 20-26 have been added to further define Applicant's contribution to the art. Support for new claim 20 and 21 is provided in, for example, paragraphs [0059]-[0064] and [0085] of the Specification. Support for new claim 22 is provided in, for example, paragraph [0084] of the Specification. Support for new claim 23 is provided in, for example, paragraph [0056] of the Specification. Support for new claim 24 is provided in, for example, paragraphs [0064] and [0069] of the Specification. Support for new claim 25 and 26 is provided, for example, in paragraphs [0084]-[0085] of the Specification.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an accompanying payment, please charge any deficiency to Deposit Account No. 50/2762, Our Ref. L2039-700120.

Dated: March 18, 2015

Respectfully submitted,

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PTO/SB/22 (03-13)
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Docket Number (Optional) L2039-700120
Application Number 13/651,636	Filed October 15, 2012
For PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS	
Art Unit 2835	Examiner A. S. Wilson

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$
☐ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$
☒ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$ 1,400.00
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☒ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50/2762 .

☒ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).

☒ attorney or agent of record. Registration number 52,957 .

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____ .

_____ Signature	March 18, 2015 Date
Matthew H. Grady Typed or printed name	(617) 395-7017 Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of 1 forms are submitted.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: March 18, 2015 Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar et al.
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

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	1	8289688		2012-10-16	Behar et al.	
	2	8577957		2013-11-05	Behar et al.	
	3	8612888		2013-12-17	Pennington et al.	
	4	8624844		2014-01-07	Behar et al.	

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	2	20060015823		2006-01-19	Chao et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar et al.
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

	3	20060123353		2006-06-08	Matthews et al.	
	4	20080209493		2008-08-28	Choi et al.	
	5	20090019479		2009-01-15	KWAK et al.	
	6	20090193364		2009-07-30	JARRETT et al.	
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	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar et al.
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

EXAMINER SIGNATURE			
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar et al.
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew H. Grady/	Date (YYYY-MM-DD)	2015-03-18
Name/Print	Matthew H. Grady	Registration Number	52957

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Dated: March 18, 2015
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2835

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: A. S. Wilson

INFORMATION DISCLOSURE STATEMENT (IDS)

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed more than three months after the U.S. filing date, OR more than three months after the date of entry of the national stage of a PCT application, AND after the mailing date of the first Office Action on the merits, whichever occurs first, but before the mailing date of any of a Final Office Action, a Notice of Allowance (37 C.F.R. § 1.97(c)) or an action that otherwise closes prosecution in the application.

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicants have not submitted copies of the U.S. patents and the U.S. patent applications.

Petitioners - Exhibit 1002, page 662

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references.

Please charge our Deposit Account No. 50/2762 in the amount of $180.00 covering the fee set forth in 37 C.F.R. § 1.17(p). The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50/2762, under Order No. L2039-700120.

Dated: March 18, 2015

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
Matthew H. Grady
Registration No.: 52,957
Edward J. Russavage
Registration No.: 43,069
LANDO & ANASTASI LLP
Riverfront Office Park
One Main Street
Suite 1100
Cambridge, Massachusetts 02142
(617) 395-7000
Attorneys for Applicants

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Matthew H. Grady/Alexander Fyfe
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in Excess of 20	1202	5	80	400
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 3 months with $0 paid	1253	1	1400	1400
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**1980**

Electronic Acknowledgement Receipt

EFS ID:	21804663
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	18-MAR-2015
Filing Date:	15-OCT-2012
Time Stamp:	13:48:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1980
RAM confirmation Number	10384
Deposit Account	502762
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Response_to_OA_mailed_9-19-14.PDF	82960 871f76f522daaf3be7438a1ddb6a5f7638c9d1e7	yes	14
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	14	
Warnings:					
Information:					
2	Extension of Time	Petition_for_Extension_of_Time_Under_37_CFR_1136a_PTO_SB-22.pdf	22907 31dd2be674cface709ca5d033a52f25edfb90fac	no	1
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	Information_Disclosure_Statement_Fillable_PDF.PDF	612478 6f281eb3ac81785705fd2f441ee701de8770a6ba	no	5
Warnings:					
Information:					
4	Transmittal Letter	Information_Disclosure_Statement_IDS.pdf	25348 58073ac4a70d36937a534a04b274ec60ebc1dab6	no	2
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	34552 9d2737545943c7b3b062995353 59a88aa20c73bb	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	778245		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/651,636	Filing Date 10/15/2012	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☒ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	**390**
☒ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	**620**
☒ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	**250**
TOTAL CLAIMS (37 CFR 1.16(i))	19 minus 20 =	* 0	x $62 =	**0**
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	* 0	x $250 =	**0**
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	**1260**

APPLICATION AS AMENDED – PART II

AMENDMENT	03/18/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 20	= 5	x $80 =	400
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	x $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**400**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DIANE JOHNSON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030080995		2003-05-01	Tenenbaum et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Marcus E. Browne/	Date (YYYY-MM-DD)	2015-04-30
Name/Print	Marcus E. Browne	Registration Number	71897

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: April 30, 2015
Electronic Signature for Marcus E. Browne: /Marcus E. Browne/

Docket No.: L2039-700120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2835

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: A. S. Wilson

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed after the mailing date of the first Office Action on the merits, but before the mailing date of any of a Final Office Action, a Notice of Allowance (37 C.F.R. § 1.97(c)) or an action that otherwise closes prosecution in the application.

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patent applications.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material

information as defined in 37 C.F.R. § 1.56(a) exists. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50/2762 (Ref. L2039-700120).

Dated: April 30, 2015

Respectfully submitted,

Electronic signature: /Marcus E. Browne/
Marcus E. Browne
Registration No.: 71,897
Matthew H. Grady
Registration No.: 52,957
LANDO & ANASTASI LLP
Riverfront Office Park
One Main Street, Suite 1100
Cambridge, Massachusetts 02142
(617) 395-7000
Attorneys for Applicant

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne/Morgan O'Grady
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	22212917
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Marcus E. Browne
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	30-APR-2015
Filing Date:	15-OCT-2012
Time Stamp:	10:58:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	11217
Deposit Account	502762
Authorized User	BROWNE, MARCUS E.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

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Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	Information_Disclosure_Statement_Fillable_PDF.PDF	612017 08a5736be387021d1306b99c94393da87aeed97f	no	4
Warnings:					
Information:					
2	Transmittal Letter	Information_Disclosure_Statement.pdf	24372 b53794514b44af6d8702c4801b6407efd45dc159	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30940 fd2757e12aea4c2644b7865ae70da485cdc9440e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	667329		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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New International Application Filed with the USPTO as a Receiving Office

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

37462 7590 05/18/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER
WILSON, ADRIAN S

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
05/18/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@LALaw.com
gengelson@LALaw.com

Office Action Summary	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/18/2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-18 and 20-26* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-18 and 20-26* is/are rejected.

8)☒ Claim(s) *24* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

Reply Under 37 CFR 1.111

The Amendments and Applicant Arguments submitted on 03/18/2015 have been received and its contents have been carefully considered.

Claims 1-18 and 20-26 are pending in this application. Claims 1, 5-7, 9 and 11-18, as currently amended, are presented for examination. Claims 2-4, 8 and 10, as previously submitted, are now presented again for examination. Claim 19 has been cancelled. Claims 20-26 are new.

Claim Objections

Claim 24 is objected to because of the following informalities. Claim 24 claims "hardware controls" which are not claimed in Claim 13, which Claim 24 depends. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 5 is rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, applicant claims "wherein the interface further comprises a multiple axis hinge." However, looking at applicant's figures, applicant only discloses a single axis 101 as a point of rotation between the display and the base. Please advise or cancel this limitation.

Claims 20 and 21 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, applicant claims "wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode". However, looking at applicant's figures and specification, applicant only mentions the disabling of the keyboard in applicant's paragraph 0085 (from US Publication 2013/0141854), where applicant describes "software and/or hardware protection may be provided for the keyboard to prevent keys from being pressed (or to prevent the portable computer from responding to pressed keys) when the portable computer is in the frame mode." However, this is

not the same as disabling the keyboard in response to a mode sensor detecting the portable computer is in the frame mode (i.e. detecting rotation). Please advise and/or remove this limitation from Claims 20 and 21.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6-10, 12-19, 22 and 25-26 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) in view of Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013).

In re Claim 1, Misawa discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a

laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (i.e. Misawa is capable of this function). *Misawa does not explicitly disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode.* However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058.

Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base (i.e. based on orientation/mode). Misawa, paragraphs 0059-0063. *Takagi does not disclose wherein the detection occurs specifically at 270 degrees of rotation.* However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made such detection occur specifically at 270 degrees, since it has been held that discovering an optimum value (i.e. 270 degrees of rotation) of a result effective variable (i.e. detection at some predetermined angle) involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In re Claim 2, Misawa discloses wherein the angles of rotation of the display component in relation to the base are between 0 and 300 degrees (300 degrees being the easel mode). Misawa, paragraph 0073. Misawa does not explicitly disclose wherein the angle is 320 degrees. However, providing such would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention since it has been held that discovering an optimum value (i.e. 320 degrees) of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Misawa also teaches that the angle may be varied as required. Misawa, paragraph 0073.

In re Claims 3 and 19, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode).

In re Claim 4, Misawa disclose wherein the base and display are only rotatable at the interface 20.

In re Claims 6 and 7, Misawa discloses wherein the interface further comprises multiple hinges 30 and wherein the interface defines and/or consists of a single longitudinal axis.

In re Claim 8, Misawa discloses wherein the interface 20 includes a hinge assembly (Figure 4), wherein the hinge assembly is at least partially housed within one of the base 14 and the display component 18.

In re Claim 9, Misawa discloses wherein the interface 20 comprises means for rotating the display component 18 along the longitudinal axis relative to the base 14 to transition the portable computer for viewing in the frame mode. Misawa, Figures 4 and 8.

In re Claim 10, Misawa discloses wherein the interface 20 comprises a plurality of axles 44.

In re Claim 12, Misawa discloses wherein the display component 16 is rotatable relative the base 14 such that the keyboard 12 may be placed face down on a surface so as to be in a frame mode or can be rested on the edges of the base and display to be in an easel mode.

In re Claim 13, Misawa discloses a portable computer configurable between a plurality of display modes, the portable computer comprising: a display component 16 including a single display screen for viewing content; a base 14; an interface 20 connecting the display component and the base, defining a longitudinal axis running

along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis; wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis configures the portable computer into a first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the operating display mode (Figure 8); wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into a second operating display mode of the plurality of operating display modes (i.e. any variation in the angle could reasonably be considered an "operating display mode" and therefore Misawa discloses an infinite number of operating display modes), wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface (Misawa is capable of this function), wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode. *Misawa does not explicitly disclose wherein a display orientation of content is automatically changed when transitioning between the first and second operating display modes*. However, providing

such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058. Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base (i.e. based on orientation/mode). Misawa, paragraphs 0059-0063. *Takagi does not disclose wherein the detection occurs specifically at 270 degrees of rotation and/or at a specific angle of rotation.* However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made such detection occur specifically at 270 degrees, or any other specific angle, since it has been held that discovering an optimum value (i.e. 270 degrees of rotation) of a result effective variable (i.e. detection at some predetermined angle) involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In re Claim 14, Misawa discloses wherein at least a portion of the display component 18 and a portion of the base 14 define an inverted V configuration. See

Misawa, Figure 8. Misawa also discloses wherein the portable computer is capable of resting on the keyboard so as to be in a sideways V configuration.

In re Claim 15, Misawa discloses wherein the interface 20 comprises means for rotating (See Figure 4) the display component 18 relative the base 14.

In re Claim 16, Misawa discloses wherein the interface 20 is constructed and arranged to enable rotation of the base 14 and the display component 18 from a first position where the base and display component are disposed against each other and a second position where at least a portion of the base and at least a portion of the display component are in the inverted v configuration (Figure 8). Misawa also discloses wherein the portable computer is capable of resting on the keyboard so as to be in a sideways V configuration.

In re Claim 17, Misawa discloses a method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component 18 including a display screen 16, a base 14, and an interface 20 connecting the display component and the base defining a single longitudinal axis, the method comprising: rotating at least one of the display component and the base of the portable computer about the single longitudinal axis to configure the portable computer in one of the plurality of display modes (i.e. Figure 1), wherein the single longitudinal axis is configured to run along the connection between the display component and the base of the portable computer; and positioning at least a portion of the portable computer in an inverted v configuration for operation by a user (Figure 8), responsive to the act of rotating, wherein the act of positioning includes acts

of: positioning the display component in an orientation directed towards the user; and positioning the base on an opposite side of the display component to support the portable computer in the inverted v configuration (Figure 8). Misawa also discloses wherein the base is capable of being lied flat on a surface in a sideways V configuration (i.e. keyboard down). *Misawa does not specifically disclose wherein content on the display is varied based upon a particular display orientation (i.e. based upon a specific display angle).* However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058. Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base (i.e. based on orientation/mode). Misawa, paragraphs 0059-0063.

In re Claim 18, Misawa discloses wherein the base 14 includes a keyboard and the act of positioning the base on the opposite side of the display component 16

includes positioning the keyboard such that the keyboard faces towards the surface (i.e. See Figure 8, Misawa is capable of this function).

In re Claim 22, Misawa discloses the limitations as noted above, but does not explicitly disclose wherein the device is connected to a docking station. Takagi discloses a larger device that is more accustomed to being docked to a docking station, but also does not explicitly disclose docking to a docking station. The examiner takes official notice of facts outside the record that it was known at the time of applicant's invention to provide a docking station for a device such as those disclosed in Misawa and/or Takagi and the combination would have been obvious to a person of ordinary skill so as to expand the capabilities of and charge the portable electronic device.

In re Claim 25, Misawa discloses the limitations of Claim 1 above, but does not explicitly disclose wherein the display is configured to display segmented user interface comprising a plurality of modes of content (i.e. a windows like program, etc.). However, the examiner takes official notice of facts outside the record that such existed at the time of applicant's invention to have provided such on a device such as disclosed in Misawa and/or Takagi would have been obvious to a person of ordinary skill so as to improve the usability of the device.

In re Claim 26, Misawa discloses wherein the display component 18 and base 14 include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration (as shown in Figure 8, wherein the device in Misawa is capable of being placed in frame mode).

Claims 11 and 24 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013) and further in view of Nishiyama et al. (US Publication 2005/0221865).

In re Claims 11 and 24, Misawa discloses the limitations as noted above, but does not explicitly disclose all the limitations of Claims 11 or 24. However, Nishiyama discloses a portable electronic device comprising: a display component 2 rotatably connected to a base 4 via a hinge interface 3, wherein the interface further comprises at least one integrated navigation hardware control 8, 9, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop, frame and/or easel modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user, and further wherein the hardware control is a clickable scroll wheel rotatable about a longitudinal axis. It would have been obvious to a person having ordinary skill in the art of portable electronics to have incorporated a navigation control like that disclosed in Nishiyama so as to improve the ergonomics of the device. Nishiyama, paragraphs 0007-0015.

Claim 23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013),

Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013) and further in view of Skillman (US Patent 7,382,607).

In re Claim 23, Misawa discloses the limitations as noted above, but does not explicitly disclose cushioning strips on the device. However, providing such is not new in the art of portable electronics. For example, Skillman discloses a plurality of cushioning strips 118, 122, 126, 130 to stabilize a portable computer in a plurality of modes. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated cushioning strips, as disclosed in Skillman, with the device in Misawa so as to provide better stability on a surface as well as some shock absorption depending on what orientation the device is configured.

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot because of the new grounds of rejection above.

Potentially Allowable Subject Matter

Claims 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable, but for the 112 rejections above, if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The specific limitations of "wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the

frame mode" in Claims 20 and 21 are not anticipated or made obvious by the prior art of record in the examiner's opinion.

For example, Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (i.e. Misawa is capable of this function). Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base (i.e. based on orientation/mode). Misawa, paragraphs 0059-0063.

However, Misawa does not disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode.

Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013) discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). However, Takagi does not disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode.

Watanabe et al. (US Patent 6,094,191) discloses a keyboard 1 that is disabled based upon the rotation of a display 3 relative a base 2. However, Watanabe does not disclose the use of a mode sensor or wherein the display and base are rotatable into a frame mode wherein the keyboard is placed face down on a surface and the display is viewable by a user.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADRIAN S. WILSON whose telephone number is (571)270-3907. The examiner can normally be reached on Mon.-Thu. 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on (571) 272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

asw

Notice of References Cited	Application/Control No. 13/651,636	Applicant(s)/Patent Under Reexamination BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,094,191 A	07-2000	Watanabe et al.	345/168
*	B	US-2004/0025993 A1	02-2004	Russell, Paul Grady	150/154
*	C	US-2008/0074831 A1	03-2008	Lee et al.	361/683
*	D	US-7,382,607 B2	06-2008	Skillman, Peter	361/679.55
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar et al.
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8289688		2012-10-16	Behar et al.	
	2	8577957		2013-11-05	Behar et al.	
	3	8612888		2013-12-17	Pennington et al.	
	4	8624844		2014-01-07	Behar et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050071782		2005-03-31	Barrett et al.	
	2	20060015823		2006-01-19	Chao et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.W./

Receipt date: 03/18/2015	Application Number	13651636	13651636 - GAU: 2835
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2012-10-15	
	First Named Inventor	Yves Behar et al.	
	Art Unit	2835	
	Examiner Name	A. S. Wilson	
	Attorney Docket Number	L2039-700120	

	3	20060123353		2006-06-08	Matthews et al.	
	4	20080209493		2008-08-28	Choi et al.	
	5	20090019479		2009-01-15	KWAK et al.	
	6	20090193364		2009-07-30	JARRETT et al.	
	7	20140282263		2014-09-18	Pennington et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Petitioners - Exhibit 1002, page 702

Receipt date: 03/18/2015	Application Number	13651636 13651636 - GAU: 2835
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2012-10-15
	First Named Inventor	Yves Behar et al.
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

EXAMINER SIGNATURE			
Examiner Signature	/Adrian Wilson/	Date Considered	05/11/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.W./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030080995		2003-05-01	Tenenbaum et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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Receipt date: 04/30/2015	Application Number	13651636 13651636 - GAU: 2835
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2012-10-15
	First Named Inventor	Yves Behar
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

	1		☐

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Examiner Signature	/Adrian Wilson/	Date Considered	05/11/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.W./

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2846

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/15/2014	05/12/2015							
	1	✓	✓							
	2	✓	✓							
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	18	✓	✓							
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	26		✓							

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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		$).did. or (US-20050282596-$ or US-20050257400-$ or US-20050210399-$ or US-20050146845-$ or US-20050134717-$ or US-20050128695-$ or US-20050083642-$ or US-20050063145-$ or US-20050041378-$ or US-20050018396-$ or US-20040228076-$ or US-20040212602-$ or US-20040207568-$ or US-20040203535-$ or US-20040001049-$ or US-20030109232-$ or US-20030107603-$ or US-20030048595-$ or US-20020021258-$ or US-20020010707-$ or US-20020005818-$ or US-20010032320-$ or US-20140282263-$ or US-20090193364-$ or US-20090019479-$ or US-20080209493-$ or US-20060123353-$).did. or (US-20060015823-$ or US-20050071782-$ or US-20030080995-$ or US-20130191350-$ or US-20140254123-$).did. or (US-8289688-$ or US-7061472-$ or US-7869834-$ or US-7756928-$ or US-7698407-$ or US-D605635-$ or US-D593091-$ or US-D593086-$ or US-D593085-$ or US-7522946-$ or US-7467356-$ or US-D581371-$ or US-7428142-$ or US-7250207-$ or US-7239508-$ or US-D544846-$ or US-D535292-$ or US-D534531-$ or US-7138962-$ or US-D528993-$ or US-D528541-$ or US-7072179-$ or US-D523429-$ or US-7035665-$ or US-D518042-$ or US-D517541-$).did. or (US-D516552-$ or US-D513509-$ or US-D512997-$ or US-6972752-$ or US-6963485-$ or US-6944012-$ or US-D504128-$ or US-6882335-$ or US-8797265-$ or US-8624844-$ or US-8612888-$ or US-8577957-$ or US-8862558-$ or US-6094191-$).did. or (JP-08179851-$).did.				
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2846

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
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	455/575.1-575.4.ccls.	09/15/2014	asw
	345/168.ccls.	09/15/2014	asw

SEARCH NOTES		
Search Notes	Date	Examiner
East Search (including inventor search)	09/15/2014	asw
Updated East Search	05/12/2015	asw

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

37462 7590 06/09/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
06/09/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@LALaw.com
gengelson@LALaw.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/651,636	BEHAR ET AL.	
	Examiner	Art Unit	
	ADRIAN S. WILSON	2835	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADRIAN S. WILSON*. (3)_____.

(2) *Matthew Grady (52,957)*. (4)_____.

Date of Interview: *03 June 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☒112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1,5,20 and 21*.

Identification of prior art discussed: *Misawa, Takagi, both of record*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant proposed amendments to Claim 1 incorporating a variation of that which was claimed in Claims 20/21. Claims 20,21 were previously rejected under 112. I did not agree entirely that the amendment to Claim 1 would be allowable (i.e. that it would not still be rejectable under 112), but would like more time to consider applicant's arguments presented after final. I agree that the limitations of Claim 5 were disclosed in applicant's specification and therefore will remove the 112 rejection to that claim. A new search may be required and a new grounds of rejection possible. Applicant was also advised of possible double patenting issues with co-pending/parent applications. A terminal disclaimer may be required if it is deemed obvious type double patenting issues exist with any allowable claims .

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: July 20, 2015
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 Confirmation No.: 6472

Filed: October 15, 2012 Art Unit: 2835

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS Examiner: A. S. Wilson

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

INTRODUCTORY COMMENTS

In response to the Office Action dated May 18, 2015, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode and a frame mode, the portable computer comprising:

a display component;

a base;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode, and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface; and

wherein the portable computer is configured to detect a transition to the frame mode, ~~and~~ automatically determine a display orientation of content, and disable the keyboard when the portable computer is in ~~responsive to detecting the transition to~~ the frame mode.

2. (Original) The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. (Original) The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which detects a current display mode of the portable computer; and

wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. (Original) The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. (Previously Presented) The portable computer of claim 1, wherein the interface further comprises a multiple axis hinge.

6. (Previously Presented) The portable computer of claim 5, wherein the interface further comprises multiple hinges.

7. (Previously Presented) The portable computer of claim 1, wherein the interface defines a single longitudinal axis.

8. (Original) The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. (Previously Presented) The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the frame mode.

10. (Original) The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. (Previously Presented) The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and frame modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. (Previously Presented) The portable computer of claim 1, wherein the plurality of modes includes a easel mode in which the display component is oriented towards the operator and the keyboard is directed away from the operator.

13. (Currently Amended) A portable computer configurable between a plurality of operating display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis from a closed mode configures the portable computer into a first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode;

wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into a second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable

computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disabled and disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, ~~and~~ a display orientation of content is automatically changed when transitioning between the first and second operating display modes.

14. (Previously Presented) The portable computer of claim 13, wherein the first operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration and wherein the second operating display mode is configured so that at least a portion of the display component and at least a portion of the base define a sideways v configuration.

15. (Previously Presented) The portable computer of claim 13, wherein the interface comprises means for rotating the display component relative to the base.

16. (Previously Presented) The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a first position where the base and display component are disposed against each other, a second position where at least a portion of the base and the at least a portion of the display component are in the inverted v configuration, and a third position where at least a portion of the base and at least a portion of the display component are in the sideways v configuration.

17. (Currently Amended) A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base including a keyboard, and an interface connecting the display component and the base defining a longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the longitudinal axis to configure the portable computer in one of the plurality of display modes, wherein the longitudinal axis is configured to run along the connection between the display component and the base of the portable computer;

positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration;

determining a content display orientation responsive to a current one of the plurality of display modes;

executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration; and

displaying content according to the determined display orientation.

18. (Previously Presented) The method of claim 17, wherein the base includes a keyboard and the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard towards the surface.

19. (Canceled)

20. (Currently Amended) ~~The portable computer of claim 3,~~ A portable computer configurable between a plurality of display modes including at least a laptop mode and a frame mode, the portable computer comprising:

a display component;

a base;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode, and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface; and

wherein the portable computer is configured to detect a transition to the frame mode, automatically determine a display orientation of content, and disable ~~wherein the display orientation module further disables~~ the keyboard in response to ~~the mode sensor~~ detecting the portable computer is in the frame mode.

21. (Currently Amended) The portable computer of claim 1 [[3]], wherein the portable computer ~~display orientation module~~ further disables the keyboard in response to ~~the mode sensor detecting~~ an orientation of the portable computer.

22. (Previously Presented) The portable computer of claim 1, wherein the portable computer is further configured to connect to a docking station in the plurality of display modes, including the laptop mode and the frame mode.

23. (Previously Presented) The portable computer of claim 1, further comprising a cushioning strip configured to stabilize the portable computer in a plurality of modes.

24. (Currently Amended) The portable computer of claim 11 ~~13~~, wherein the at least one integrated navigation hardware control includes ~~controls include~~ a clickable scroll wheel configured to scroll along the longitudinal axis to select an item displayed by the display screen.

25. (Previously Presented) The portable computer of claim 1, wherein the display component is further configured to display a segmented user interface comprising a plurality of modes of content.

26. (Previously Presented) The portable computer of claim 1, wherein the display component and base include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration.

REMARKS

Claims 1-18 and 20-26 were previously pending for examination. Claims 1, 13, 17, 20, 21, and 24 have been amended. No new claims have been canceled or added. As a result claims 1-18 and 20-26 are pending for examination with claims 1, 13, 17, and 20 being independent claims. No new matter has been added.

Claim Objections

Claim 24 is objected to because of the following informalities. Claim 24 claims "hardware controls" which are not claimed in Claim 13, which Claim 24 depends. Claim 24 has been amended to depend from claim 11 and "hardware controls" has been corrected to "the at least one integrated navigation hardware control," which is claimed in claim 11, from which amended claim 24 depends.

Interview Summary

Applicant wishes to thank Examiner Wilson for the courtesies extended to Applicant's Representative Matthew Grady during the Interview of June 3, 2015. During the course of the Interview, the participants discussed the Application, Office Action, the rejections of record, and proposed amendments. In particular, the rejections under 35 U.S.C. §112 and the allowable subject matter were discussed. Methods of mode detection were discussed, including the use of an orientation sensor including an accelerometer to detect acceleration (due to both gravity and velocity) and the orientation of the portable computer. Paragraph 85 of the specification as published, particularly "software and/or hardware protection may be provided for the keyboard to prevent keys from being pressed (or to prevent the portable computer from responding to pressed keys) when the portable computer is in the frame mode" was also discussed. Applicant submitted that the specification supports that the portable computer is configured to disable the keyboard in response to detecting the frame mode. The Examiner agreed that the specification supports that the portable computer is configured to disable the keyboard "when the portable computer is in the frame mode." The Examiner also agreed that claim 5 is supported by the specification. As amended, claim 1 incorporates the allowable subject matter, as discussed. Accordingly, Applicant submits the present amendments and the following remarks in support of patentability. Favorable consideration is respectfully requested.

Rejection Under 35 U.S.C. §112

Claim 5 is rejected under 35 U.S. C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. Applicant respectfully traverses this rejection. As discussed during the Examiner Interview, the specification supports claim 5. Accordingly, withdrawal of the rejection of claim 5 is respectfully requested.

Claims 20 and 21 are rejected under 35 U.S. C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. Applicant has amended claims 20 and 21 by removing the mode sensor and orientation sensor. Claim 20 has been amended to be in independent form, and as amended is supported by the written description requirement.

As discussed during the interview, paragraph 85 of the specification recites "software and/or hardware protection may be provided for the keyboard to prevent keys from being pressed (or to prevent the portable computer from responding to pressed keys) when the portable computer is in the frame mode." Paragraph 85 describes example functions executed in the frame mode.

One of skill in the art would understand the software and/or hardware protection described is for the frame mode. More particularly, a person of ordinary skill in the art would understand that the specification's reference to "when the portable computer is in the frame mode" is intended to limit the software and/or hardware protection of disabling the keyboard to when the portable computer is in the frame mode. One of skill in the art would recognize the problem described (unintentionally activation of keys) would only occur in the frame mode and the solution would be implement "when the portable computer is in the frame mode." It would not be reasonable for the person of skill in the art to interpret paragraph 85 as teaching disabling the keyboard in other modes. Such an interpretation would needlessly make the system more difficult to operate. For example, consider disabling the keyboard in laptop mode. Preventing the user from using the keyboard in the laptop mode is not reasonable. As described in paragraph 85 and as illustrated in FIG. 26, keys are subject to being depressed unintentionally in the frame mode.

Further, paragraph 8 of the specification as published discloses "the portable computer according to embodiments of the invention is capable of different display modes and ***different***

functionality in the different configurations" (emphasis applied). As a result, one skilled in the art would recognize that a portable computer configured to disable the keyboard "when in the frame mode." is a function provided in the frame mode. Thus, claim 20 is fully supported by the specification.

Additionally, as amended, claim 21 recites "The portable computer of claim 1, wherein the portable computer further disables the keyboard in response to an orientation of the portable computer." As discussed above with reference to claim 20, claim 21 is supported by the specification for the same reasons as claim 20. Accordingly, withdrawal of the rejection of claims 20 and 21 is respectfully requested.

Additionally, none of the references disclose "wherein the portable computer is configured to…disable the keyboard in response to detecting the portable computer is in the frame mode" and "wherein the portable computer further disables the keyboard in response to an orientation of the portable computer," as recited in claims 20 and 21 respectively.

Rejections Under 35 U.S.C. §103

Claims 1-4, 6-10, 12-19, 22, and 25-26 stand rejected under pre-AIA 35 U.S.C. §103(a) as being unpatentable by US Publication 2005/0134717 to Misawa et al. (hereinafter "Misawa") in view of Japanese Publication 08-179851 to Takagi et al. (hereinafter "Takagi"). As indicated in the Office Action, the independent claims are amended to incorporate the allowable subject matter as amended overcome the rejection under 35 U.S.C. §103.

As amended, claim 1 recites, "A portable computer configurable between a plurality of display modes including at least a laptop mode and a frame mode, the portable computer comprising: a display component; a base; an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode

transitions the portable computer for viewing in the frame mode, and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface; and wherein the portable computer is configured to detect a transition to the frame mode, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode."

As discussed during the interview, the written description supports that "the portable computer is configured to…disable the keyboard when the portable computer is in the frame mode," as recited in amended claim 1. As discussed during the interview and in the Office Action on pages 15 and 16, none of the references, alone or in combination, discloses the combination of limitations recited in claim 1. Therefore, claim 1 is allowable over the combination of Misawa and Takagi.

Claims 13 and 17 have also been amended. In particular, claim 13 recites, "A portable computer configurable between a plurality of operating display modes…wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into **a second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disabled and disposed towards the substantially horizontal surface**, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, a display orientation of content is automatically changed when transitioning between the first and second operating display modes." Claim 17 recites, in relevant part, "A method of managing user interaction with content displayed on a portable computer having a plurality of display modes…the method comprising… positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating…**executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration**; and displaying content according to the determined display orientation.

As amended, claims 13 and 17 are allowable over the combination of Misawa and Takagi because neither Misawa nor Takagi, alone or in combination, teach or suggest the recited

limitations. Each of claims 2-4, 6-10, 12-19, 22, and 25-26 depends from one of claims 1, 13, and 17 and is allowable for at least the same reasons as claims 1, 13, and 17. Accordingly, withdrawal of the rejections of claims 1-4, 6-10, 12-19, 22, and 25-26 is respectfully requested.

Claims 11 and 24 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa, Takagi and U.S. Patent Publication No. 2005/0221865 to Nishiyama et al. ("Nishiyama").

Claims 11 and 24 depend directly or indirectly from claim 1. Nishiyama does not cure the deficiencies of Misawa and Takagi. In particular, the combination of Misawa, Takagi, and Nishiyama does not teach or suggest that "the portable computer is configured to…disable the keyboard when the portable computer is in the frame mode," as recited in amended claim 1. Claims 11 and 24 are allowable over the combination of Misawa, Takagi, and Nishiyama for at least the same reasons as claim 1. Accordingly, withdrawal of the rejection of claims 11 and 24 is respectfully requested.

Claim 23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa, Takagi, and further in view of U.S. Patent No. 7,382,607 to Skillman et al. ("Skillman").

Claim 23 depends from claim 1. Skillman does not cure the deficiencies of Misawa and Takagi. In particular, the combination of Misawa, Takagi, and Skillman does not teach or suggest that "the portable computer is configured to…disable the keyboard when the portable computer is in the frame mode," as recited in amended claim 1. Claim 23 is allowable over the combination of Misawa, Takagi, and Skillman for at least the same reasons as claim 1. Accordingly, withdrawal of the rejection of claim 23 is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an accompanying payment, please charge any deficiency to Deposit Account No. 50/2762; Our Ref. L2039-700120.

Dated: July 20, 2015

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
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Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
L2039-700120	13/651,636	October 15, 2012

First Named Inventor:	Title:
Yves Behar	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).

2. The above-identified application contains an outstanding final rejection.

3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.

4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.

5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.

6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).

7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]

8. By filing this certification and request, applicant acknowledges the following:

- Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
- The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
  - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
  - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
    - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
    - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	/Matthew H. Grady/	Date	July 20, 2015
Name (Print/Typed)	Matthew H. Grady	Practitioner Registration No.	52,957

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☐ * Total of 1 forms are submitted.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: July 20, 2015 Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Matthew H. Grady
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Independent claims in excess of 3	1201	1	420	420
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**420**

Electronic Acknowledgement Receipt

EFS ID:	22965430
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Matthew H. Grady
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	20-JUL-2015
Filing Date:	15-OCT-2012
Time Stamp:	16:16:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$420
RAM confirmation Number	3107
Deposit Account	502762
Authorized User	GRADY, MATTHEW H.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Response_to_Final_OA_date_15-05-18.pdf	86139 fade4e1fc30d39866a302f9e3c6a6d31cb4fe515	yes	14

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Response After Final Action	1	1
Claims	2	8
Applicant Arguments/Remarks Made in an Amendment	9	14

Warnings:

Information:

2	After Final Consideration Program Request	Certification_and_Request_for_Consideration_Under_the_After_Final_Consideration.pdf	35694 3dd80965e037775ccce91a24becfc4debd3c6fa4	no	1

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30802 335b4d9413c7b79e68219ebe4c49500aeeed19e1	no	2

Warnings:

Information:

Total Files Size (in bytes):	152635

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/651,636	Filing Date 10/15/2012	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/20/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 25	=	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/TERRANCE LAWRENCE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/651,636	Filing Date 10/15/2012	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT

07/20/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 24	=	X $ =	
Independent (37 CFR 1.16(h))	* 2	Minus	***3	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/TERRANCE LAWRENCE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

37462 7590 08/10/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER
WILSON, ADRIAN S

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 08/10/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

TITLE OF INVENTION: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/10/2015

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Petitioners - Exhibit 1002, page 739

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

37462 7590 08/10/2015
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

TITLE OF INVENTION: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/10/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
WILSON, ADRIAN S	2835	361-679270

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

Petitioners - Exhibit 1002, page 740

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

37462 7590 08/10/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 08/10/2015

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendments filed 07/20/2015*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-18 and 20-26*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☒ Other *2323 Form* .

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

Allowance

Claims 1-18 and 20-26 are allowed.

The specific limitations of “wherein the portable computer is configured to detect a transition to the frame mode, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode” in Claim 1 are not anticipated or made obvious by the prior art of record in the examiner’s opinion. The specific limitations of "a keyboard of the base is disabled and disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, a display orientation of content is automatically changed when transitioning between the first and second operating display modes” in Claim 13 are not anticipated or made obvious by the prior art of record in the examiner's opinion. The specific limitations of "executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration; and displaying content according to the determined display orientation” in combination with all remaining limitations of Claim 17 are not anticipated or made obvious by the prior art of record in the examiner's opinion. The specific limitations of “wherein the portable computer is configured to detect a transition to the frame mode, automatically determine a display orientation of content, and disable the keyboard in response to detecting the portable computer is in the frame mode” in Claim 20 are not anticipated or made obvious by the prior art of record in the examiner’s opinion.

For example, Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (i.e. Misawa is capable of this function). However, does not explicitly disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode. Misawa also does not disclose wherein the

display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode.

Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013) discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). However, Takagi does not disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode.

Furthermore, the examiner has performed the assignee and inventor name searches in order to identify documents with possible double patenting issues. No documents with conflicting claims have been found.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADRIAN S. WILSON whose telephone number is (571)270-3907. The examiner can normally be reached on Mon.-Thu. 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on (571) 272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

asw

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2846

CPC- SEARCHED		
Symbol	Date	Examiner
G06F1/1677	07/28/2015	asw

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
36179.	361/679.21,679.26,679.27,679.55,679.56.ccls.	09/15/2014, 07/28/2015	asw
	455/575.1-575.4.ccls.	09/15/2014,07/28/2015	asw
	345/168.ccls.	09/15/2014,07/28/2015	asw

SEARCH NOTES		
Search Notes	Date	Examiner
East Search (including inventor search)	09/15/2014	asw
Updated East Search	05/12/2015	asw
Updated East Search	07/28/2015	asw

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
361	679.27,679.55	07/28/2015	asw
G06F	1/1677	07/28/2015	asw

EAST Search History

EAST Search History (Prior Art)

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EAST Search History (Interference)

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	**Art Unit**
	ADRIAN S WILSON	2835

CPC										
Symbol									**Type**	**Version**
G06F		1	/	1601					F	2013-01-01
G06F		1	/	162					I	2013-01-01
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CPC Combination Sets										
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NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/ADRIAN S WILSON/ Primary Examiner.Art Unit 2835	07/28/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	26

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	**Art Unit**
	ADRIAN S WILSON	2835

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION											
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED						
361	679.27	G	0	6	F	1 / 16 (2006.01.01)							
CROSS REFERENCE(S)													
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)												
361	679.55												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/ADRIAN S WILSON/ Primary Examiner.Art Unit 2835	07/28/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	26

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	**Art Unit**
	ADRIAN S WILSON	2835

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	17	17												
2	2	18	18												
3	3	-	19												
4	4	19	20												
5	5	20	21												
6	6	21	22												
7	7	22	23												
8	8	23	24												
9	9	24	25												
10	10	25	26												
11	11														
12	12														
13	13														
14	14														
15	15														
16	16														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/ADRIAN S WILSON/ Primary Examiner.Art Unit 2835	07/28/2015	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	26

OK TO ENTER: /A.W./

07/28/2015

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: July 20, 2015
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 Confirmation No.: 6472

Filed: October 15, 2012 Art Unit: 2835

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS Examiner: A. S. Wilson

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

INTRODUCTORY COMMENTS

In response to the Office Action dated May 18, 2015, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 9 of this paper.

AFCP 2.0 Decision	Application No.	Applicant(s)
	13/651,636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S. WILSON	2835

This is in response to the After Final Consideration Pilot request filed 20 July 2015.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.

   ☐ Other:

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☐ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☒ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other:

   Examiner Note: Please attach an interview summary when necessary as described above.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

7590 09/03/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
09/03/2015	ELECTRONIC

NOTICE REQUIRING INVENTOR'S OATH OR DECLARATION

An inventor's oath or declaration in compliance with 37 CFR 1.63 or 1.64 executed by or with respect to each inventor has not yet been submitted.

An oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each inventor MUST be filed **no later than the date on which the issue fee is paid.** See 35 U.S.C. 115(f). Failure to timely comply will result in ABANDONMENT of this application. This period for reply is not extendable under 37 CFR 1.136(a).

Questions relating to this Notice should be directed to the Application Assistance Unit at 571-272-4200.

(571)-272-4200 or 1(888)-786-0101
Patent Publication Branch
Office of Data Management

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2115
Examiner Name	Not Yet Assigned
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6097389		2000-08-01	Morris et al.	
	2	7366994		2008-04-29	Loui	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050091596		2005-04-28	Anthony et al.	
	2	20080174570		2008-07-24	Jobs et al.	
	3	20090019383		2009-01-15	Riley et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

Petitioners - Exhibit 1002, page 762

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /AW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2115
Examiner Name	Not Yet Assigned
Attorney Docket Number	L2039-700120

	1	11-296259	JP		1999-10-29	CANON INC.		☒
	2	2006-227409	JP		2006-08-31	NIKON CORP.		☒

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Final Rejection CN-OA -dated July 18, 2013 - Appl No.. 200980117859.8 - filed March 27, 2009	☒

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/ADRIAN WILSON/	Date Considered	09/15/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Petitioners - Exhibit 1002, page 763

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /AW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar
Art Unit	2115
Examiner Name	Not Yet Assigned
Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew H. Grady/	Date (YYYY-MM-DD)	2013-12-06
Name/Print	Matthew H. Grady	Registration Number	52957

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /AW/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

 ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /AW/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

37462 7590 11/02/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
11/02/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@LALaw.com
gengelson@LALaw.com

Supplemental Notice of Allowability	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *printer rush 10/19/2015*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-18 and 20-26*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

37462 7590 08/10/2015
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

TITLE OF INVENTION: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	11/10/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
WILSON, ADRIAN S	2835	361-679270

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 **Lando & Anastasi, LLP**
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: **LITL LLC**

(B) RESIDENCE: (CITY and STATE OR COUNTRY): **Boston, MA**

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number **50/2762** (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature **/ Marcus E. Browne /** Date **November 10, 2015**

Typed or printed name **Marcus E. Browne** Registration No. **71,897**

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: November 10, 2015
Electronic Signature for Marcus E. Browne: /Marcus E. Browne/

Docket No.: L2039-700120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 13/651,636 | Confirmation No.: 6472

Filed: October 15, 2012 | Art Unit: 2835

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: A. S. Wilson

REQUEST FOR CORRECTED FILING RECEIPT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant hereby requests correction of the Official Filing Receipt for the above-identified patent application to reflect the changes made in the Supplemental Application Data Sheet filed on February 15, 2013. Please update the Domestic Priority Information as it appears on the current Official Filing Receipt.

Changes are shown by underlining for added matter and ~~strikethrough~~ for deleted matter. Please update the following information:

Domestic Priority data as claimed by applicant:

This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008;
this application is also a CON of 12/170,951 07/10/2008 PAT 8624844
which claims benefit of 61/041,365 04/01/2008

Thus, the Corrected Filing Receipt should read as follows:

Domestic Priority data as claimed by applicant:
This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008;
this application is also a CON of 12/170,951 07/10/2008 PAT 8624844
which claims benefit of 61/041,365 04/01/2008

Applicant additionally requests that all pertinent U.S. Patent & Trademark Office records relating to the subject application be changed to reflect this updated information.

A copy of the current Filing Receipt noting the requested changes is attached. Applicant respectfully notes that the priority lineage illustrated above was provided to the U.S. Patent & Trademark within four months of filing of this application in a Supplemental Application Data Sheet filed February 15, 2013.

The Director is hereby authorized to charge any deficiencies or overpayments to Deposit Account No. 50/2762 (Ref. L2039-700120). The undersigned may be contacted at the telephone number listed below with any questions regarding this submission.

Dated: November 10, 2015

Respectfully submitted,

Electronic signature: /Marcus E. Browne/
Marcus E. Browne
Registration No.: 71,897
Matthew H. Grady
Registration No.: 52,957
LANDO & ANASTASI LLP
Riverfront Office Park
One Main Street, Suite 1100
Cambridge, Massachusetts 02142
(617) 395-7000

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/651,636	10/15/2012	2835	1390	L2039-700120	19	3

CONFIRMATION NO. 6472

CORRECTED FILING RECEIPT

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

OC000000063400867

Date Mailed: 08/26/2013

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Applicant(s)

LITL LLC, BOSTON, MA

; this application is also a CON of 12/170,951 07/10/2008 PAT 8624844 which claims benefit of 61/041,365 04/01/2008

Assignment For Published Patent Application

LITL LLC, BOSTON, MA

Power of Attorney: The patent practitioners associated with Customer Number 37462

Domestic Priority data as claimed by applicant

This application is a CON of 12/170,939 07/10/2008 PAT 8289688 which claims benefit of 61/041,365 04/01/2008

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 11/02/2012
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/651,636**
Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

Preliminary Class

361

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne/Morgan O'Grady
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt

EFS ID:	24035618
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Marcus E. Browne
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	10-NOV-2015
Filing Date:	15-OCT-2012
Time Stamp:	13:36:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$960
RAM confirmation Number	11918
Deposit Account	502762
Authorized User	BROWNE, MARCUS E.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	Declaration.pdf	505118 6a7bfd8cb8057414972459fecffdb3634b46e59d	no	9
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	Issue_Fee_Transmittal.pdf	190651 aa643ee52f2c003f2b1536f8972ae80d891dd145	no	1
Warnings:					
Information:					
3	Request for Corrected Filing Receipt	Request_for_Corrected_Filing_Receipt.pdf	27455 67dd2a5355a067b910e54986653e35152181ce89	no	2
Warnings:					
Information:					
4	Request for Corrected Filing Receipt	Marked_Up_Filing_Receipt.pdf	182993 16e8da0b0a2253d90c8d8efb0b40515afdff8845	no	3
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30727 eca93545c74eb5e459b85b0e4efa2ca4858bea8e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	936944		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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Doc code: Oath
Document Description: Oath or declaration filed

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SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

This statement is directed to:

[ ] The attached application,

OR

[X] United States application or PCT international application number 13/651,636 filed on 10/15/2012.

LEGAL NAME of inventor to whom this substitute statement applies:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Yves Behar

Residence (except for a deceased or legally incapacitated inventor):

Oakland	CA	United States of America
City	State	Country

Mailing Address (except for a deceased or legally incapacitated inventor):

5741 Scarborough Drive

Oakland	CA	94611	United States of America
City	State	Zip	Country

I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Relationship to the inventor to whom this substitute statement applies:

[ ] Legal Representative (for deceased or legally incapacitated inventor only),

[X] Assignee,

[ ] Person to whom the inventor is under an obligation to assign,

[ ] Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or

[ ] Joint Inventor.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: November 10, 2015 Signature: / Marcus E. Browne / (Marcus E. Browne)

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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- [ ] Inventor is deceased,
- [ ] Inventor is under legal incapacity,
- [x] Inventor cannot be found or reached after diligent effort, or
- [ ] Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- [x] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- [ ] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

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PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name:	Date (Optional):
Kristin Carroll	

Signature: Kristin Carroll

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: LITL LLC

Title of Person Executing This Substitute Statement: General Counsel

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City	State	Country
Boston	MA	US

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

33 Exeter Street

City	State	Zip	Country
Boston	MA	02116	US

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

Petitioners - Exhibit 1002, page 780

Doc code: Oath
Document Description: Oath or declaration filed

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SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

This statement is directed to:

[ ] The attached application,

OR

[X] United States application or PCT international application number 13/651,636 filed on 10/15/2012.

LEGAL NAME of inventor to whom this substitute statement applies:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Joshua Morenstein

Residence (except for a deceased or legally incapacitated inventor):

San Francisco	CA	United States of America
City	State	Country

Mailing Address (except for a deceased or legally incapacitated inventor):

124 Downey Street

San Francisco	CA	94117	United States of America
City	State	Zip	Country

I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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[X] Assignee,

[ ] Person to whom the inventor is under an obligation to assign,

[ ] Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or

[ ] Joint Inventor.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: November 10, 2015 Signature: / Marcus E. Browne / (Marcus E. Browne)

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OR

- [ ] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

WARNING:

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PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name:	Date (Optional):
Kristin Carroll	

Signature: Kristin Carroll

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: LITL LLC

Title of Person Executing This Substitute Statement: General Counsel

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

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City	State	Country
Boston	MA	US

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

33 Exeter Street

City	State	Zip	Country
Boston	MA	02116	US

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

Petitioners - Exhibit 1002, page 782

Doc code: Oath
Document Description: Oath or declaration filed

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SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

This statement is directed to:

[ ] The attached application,

OR

[X] United States application or PCT international application number 13/651,636 filed on 10/15/2012.

LEGAL NAME of inventor to whom this substitute statement applies:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Christopher Hibmacronan

Residence (except for a deceased or legally incapacitated inventor):

Oakland	CA	United States of America
City	State	Country

Mailing Address (except for a deceased or legally incapacitated inventor):

2429 Damuth Street

Oakland	CA	94602	United States of America
City	State	Zip	Country

I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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[X] Assignee,

[ ] Person to whom the inventor is under an obligation to assign,

[ ] Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or

[ ] Joint Inventor.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: November 10, 2015 Signature: / Marcus E. Browne / (Marcus E. Browne)

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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

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- [ ] Inventor is under legal incapacity,
- [x] Inventor cannot be found or reached after diligent effort, or
- [ ] Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- [x] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- [ ] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

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PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name:	Date (Optional):
Kristin Carroll	

Signature: Kristin Carroll

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: LITL LLC

Title of Person Executing This Substitute Statement: General Counsel

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

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33 Exeter Street

City	State	Zip	Country
Boston	MA	02116	US

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

DECLARATION FOR PATENT APPLICATION

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, titled PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS , or

☒ United States application or PCT International application number 13/651,636 filed on 10/15/2012 .

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby state that I have reviewed and understand the contents of the application, including the claims.

I acknowledge the duty to disclose all information which is known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that any willful false statements made in this declaration are punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five (5) years, or both, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

11.10.2014

Inventor's signature **Date**

Full legal name of original or original joint inventor: Naoya Edahiro

Doc code: Oath
Document Description: Oath or declaration filed

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

This statement is directed to:

[ ] The attached application,

OR

[X] United States application or PCT international application number 13/651,636 filed on 10/15/2012.

LEGAL NAME of inventor to whom this substitute statement applies:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Matthew David Day

Residence (except for a deceased or legally incapacitated inventor):

San Francisco	CA	United States of America
City	State	Country

Mailing Address (except for a deceased or legally incapacitated inventor):

425 2nd Street #301

San Francisco	CA	94107	United States of America
City	State	Zip	Country

I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Relationship to the inventor to whom this substitute statement applies:

[ ] Legal Representative (for deceased or legally incapacitated inventor only),

[X] Assignee,

[ ] Person to whom the inventor is under an obligation to assign,

[ ] Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or

[ ] Joint Inventor.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: November 10, 2015 Signature: / Marcus E. Browne / (Marcus E. Browne)

PTO/SB/AIA02 (07-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- [ ] Inventor is deceased,
- [ ] Inventor is under legal incapacity,
- [x] Inventor cannot be found or reached after diligent effort, or
- [ ] Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- [x] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- [ ] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name:	Date (Optional):
Kristin Carroll	

Signature: Kristin Carroll

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: LITL LLC

Title of Person Executing This Substitute Statement: General Counsel

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City	State	Country
Boston	MA	US

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

33 Exeter Street

City	State	Zip	Country
Boston	MA	02116	US

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

Petitioners - Exhibit 1002, page 787

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/651,636	10/15/2012	2835	2210	L2039-700120	19	3

CONFIRMATION NO. 6472

CORRECTED FILING RECEIPT

37462
LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

OC000000078633152

Date Mailed: 11/16/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

Applicant(s)

LITL LLC, BOSTON, MA;

Assignment For Published Patent Application

LITL LLC, BOSTON, MA

Power of Attorney: The patent practitioners associated with Customer Number 37462

Domestic Priority data as claimed by applicant

This application is a CON of 12/170,939 07/10/2008 PAT 8289688
which claims benefit of 61/041,365 04/01/2008
This application 13/651,636
is a CON of 12/170,951 07/10/2008 PAT 8624844
which claims benefit of 61/041,365 04/01/2008

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 11/02/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/651,636**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

Preliminary Class

361

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	01/19/2016	9239589	L2039-700120	6472

37462 7590 12/29/2015

LANDO & ANASTASI, LLP
ONE MAIN STREET, SUITE 1100
CAMBRIDGE, MA 02142

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 242 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

LITL LLC, BOSTON, MA;
Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	13651636	Filing Date	2012-10-15	Docket Number (if applicable)	L2039-700120	Art Unit	2835
First Named Inventor	Yves Behar et al.			Examiner Name	A. S. Wilson		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☒ Other e-Petition to Withdraw Patent Application from Issuance After Payment of Issue Fee

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 502762

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Marcus E. Browne/	Date (YYYY-MM-DD)	2016-01-07
Name	Marcus E. Browne	Registration Number	71897

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: January 7, 2016
Electronic Signature for Marcus E. Browne: /Marcus E. Browne/

Docket No.: L2039-700120
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Letters Patent of:
Yves Behar et al.

Patent No.: 9,239,589

Issued: January 19, 2016

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

INFORMATION DISCLOSURE STATEMENT (IDS)

MS RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 C.F.R. § 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed after the payment of the Issue Fee but in conjunction with an automatic e-petition to withdraw the patent application from issue and a Request for Continued Examination pursuant to 37 C.F.R. § 1.114.

I hereby certify, pursuant to 37 C.F.R. § 1.97(e)(1), that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicants have not submitted a copy of the U.S. patent.

Applicants would like to bring to the Examiner's attention the attached Extended European Communication from a corresponding foreign application.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50/2762, under Order No. L2039-700120.

Dated: January 7, 2016

Respectfully submitted,

Electronic signature: /Marcus E. Browne/
Marcus E. Browne
Registration No.: 71,897
Matthew H. Grady
Registration No.: 52,957
LANDO & ANASTASI, LLP
Riverfront Office Park
One Main Street, Suite 1100
Cambridge, Massachusetts 02142
(617) 395-7000
Attorneys for Applicants

PTO/SB/08a (03-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar et al.
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6154359		2000-11-28	Kamikakai et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar et al.
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

	1	European Communication from corresponding European Application No. 09727165.4 dated November 23, 2015.

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13651636
	Filing Date	2012-10-15
	First Named Inventor	Yves Behar et al.
	Art Unit	2835
	Examiner Name	A. S. Wilson
	Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Marcus E. Browne/	Date (YYYY-MM-DD)	2016-01-07
Name/Print	Marcus E. Browne	Registration Number	71897

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Petition fee- 37 CFR 1.17(h) (Group III)	1464	1	140	140
Request for Continued Examination	1801	1	1200	1200
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1340**

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : January 7, 2016

In re Application of :

Yves Behar

DECISION ON PETITION

UNDER CFR 1.313(c)(2)

Application No : 13651636

Filed : 15-Oct-2012

Attorney Docket No : L2039-700120

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed January 7, 2016 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2835 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt

EFS ID:	24559090
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Marcus E. Browne
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	07-JAN-2016
Filing Date:	15-OCT-2012
Time Stamp:	14:57:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1340
RAM confirmation Number	2618
Deposit Account	502762
Authorized User	BROWNE, MARCUS E.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	31470 fd1a699083de1c7206adfea3aa78613f280a187f	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	Certificate_and_Request_for_Consideration_of_an_Information_Disclosure_Statement.pdf	166936 63b84412a058e7aa1cd20de01c58f5a7fd046d2a	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	RCE.pdf	1350052 92e5aa7a4d3d7c94dd35b2e4e833da5d7631bb3b	no	3
Warnings:					
Information:					
4	Transmittal Letter	Information_Disclosure_Statement_IDS.pdf	26594 e626577f48a328ddd7400969c138ff1259371cd5	no	2
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	Information_Disclosure_Statement_SB08.pdf	1035103 fefa0602cdbbbde8135731aa84393d7c9f72078c	no	4
Warnings:					
Information:					
6	Non Patent Literature	NPL_EP_Communication.pdf	155580 273354a9cde45aac9fd0ee731626396ebc6588d2	no	5
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	32647 1c5d4916ba40cf071e44ae50815af1468ea4a6d7	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2798382		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	13651636
Filing Date	15-Oct-2012
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	ADRIAN WILSON
Attorney Docket Number	L2039-700120
Title	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

- ◯ Small Entity
- ◯ Micro Entity
- ◉ Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◯ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Marcus E. Browne/
Name	Marcus E. Browne
Registration Number	71897

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 01/12/2016

ZZENEBE SALE #00000018 Mailroom Dt: 01/07/2016 502762 13651636
01 FC : 1806 180.00 DA

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 02/10/2016

JEPPS1 ADJ #00000001 Mailroom Dt: 01/07/2016
Seq No: 18 Sales Acctg Dt: 01/12/2016 502762 13651636
01 FC : 1806 180.00 CR

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

PATENT WITHDRAWAL NOTICE

DATE WITHDRAWN	WITHDRAWAL NUMBER
1/12/2016	31708

The following application has been **WITHDRAWN** from the

1/19/2016 issue.

SERIAL NO.	PATENT NUMBER
13651636	9239589

TITLE

PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

NAME AND ADDRESS

YVES BEHAR
Oakland, CA

REASON FOR WITHDRAWAL

Auto-petition to withdraw - Granted
-

APPROVED

/Kimberly Terrell/, Manager

Patent Publication Branch
Office of Data Management

FORM PTO-302 -- (REV. 05-2009)

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar et al.
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6154359		2000-11-28	Kamikakai et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.S.W/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar et al.
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

	1	European Communication from corresponding European Application No. 09727165.4 dated November 23, 2015.

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/ADRIAN S WILSON/	Date Considered	01/19/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Petitioners - Exhibit 1002, page 813

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(Not for submission under 37 CFR 1.99)

Application Number	13651636
Filing Date	2012-10-15
First Named Inventor	Yves Behar et al.
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039-700120

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

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☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

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Signature	/Marcus E. Browne/	Date (YYYY-MM-DD)	2016-01-07
Name/Print	Marcus E. Browne	Registration Number	71897

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.S.W/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
13/651,636		2835	9200

OC000000080412627

Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 23628 on 02/05/2016

- **Correspondence Address**
- **Maintenance Fee Address**

The address of record for Customer Number 23628 is:

23628
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039-700120	6472

23628 7590 02/19/2016
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER
WILSON, ADRIAN S

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
02/19/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents_eOfficeAction@WolfGreenfield.com
WGS_eOfficeAction@WolfGreenfield.com

Office Action Summary	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01/07/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-18 and 20-26* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-18 and 20-26* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application on 01/07/2016 after the Notice of Allowance mailed on 11/02/2015. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission has been entered.

Claims 1-18 and 20-26, filed 07/20/2015, are now pending in this application. Claims 1, 13, 17, 20, 21 and 24, as currently amended, are presented for examination. Claims 2-12, 14-16, 18, 22-23 and 25-26, as previously presented, are now presented again for examination. Claim 19 has been canceled.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 5 is rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s)

contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, applicant claims "wherein the interface further comprises a multiple axis hinge." However, looking at applicant's figures, applicant only discloses a single axis 101 as a point of rotation between the display and the base. Please advise or cancel this limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6-10, 12-18, 20-22 and 25-26 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013) and further in view of Kamikakai et al. (US Patent 6,154,359).

In re Claim 1, Misawa discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal

axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (i.e. Misawa is capable of this function).

Misawa does not explicitly disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such

as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058.

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

In re Claim 2, Misawa discloses wherein the angles of rotation of the display component in relation to the base are between 0 and 300 degrees (300 degrees being the easel mode). Misawa, paragraph 0073. Misawa does not explicitly disclose wherein the angle is 320 degrees. However, providing such would have been obvious

to a person having ordinary skill in the art of portable electronics at the time of applicant's invention since it has been held that discovering an optimum value (i.e. 320 degrees) of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Misawa also teaches that the angle may be varied as required. Misawa, paragraph 0073.

In re Claim 3, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode).

In re Claim 4, Misawa disclose wherein the base and display are only rotatable at the interface 20.

In re Claims 6 and 7, Misawa discloses wherein the interface further comprises multiple hinges 30 and wherein the interface defines and/or consists of a single longitudinal axis.

In re Claim 8, Misawa discloses wherein the interface 20 includes a hinge assembly (Figure 4), wherein the hinge assembly is at least partially housed within one of the base 14 and the display component 18.

In re Claim 9, Misawa discloses wherein the interface 20 comprises means for rotating the display component 18 along the longitudinal axis relative to the base 14 to transition the portable computer for viewing in the frame mode. Misawa, Figures 4 and 8.

In re Claim 10, Misawa discloses wherein the interface 20 comprises a plurality of axles 44.

In re Claim 12, Misawa discloses wherein the display component 16 is rotatable relative the base 14 such that the keyboard 12 may be placed face down on a surface so as to be in a frame mode or can be rested on the edges of the base and display to be in an easel mode.

In re Claim 13, Misawa discloses a portable computer configurable between a plurality of display modes, the portable computer comprising: a display component 16 including a single display screen for viewing content; a base 14; an interface 20 connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis; wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis configures the portable computer into a first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the operating display mode (Figure 8); wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into a second operating display mode of

the plurality of operating display modes (i.e. any variation in the angle could reasonably be considered an "operating display mode" and therefore Misawa discloses an infinite number of operating display modes), wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface (Misawa is capable of this function), wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode.

Misawa does not explicitly disclose wherein a display orientation of content is automatically changed when transitioning between the first and second operating display modes. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058. Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base

(i.e. based on orientation/mode). Misawa, paragraphs 0059-0063. *Takagi does not disclose wherein the detection occurs specifically at 270 degrees of rotation and/or at a specific angle of rotation.* However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made such detection occur specifically at 270 degrees, or any other specific angle, since it has been held that discovering an optimum value (i.e. 270 degrees of rotation) of a result effective variable (i.e. detection at some predetermined angle) involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

In re Claim 14, Misawa discloses wherein at least a portion of the display component 18 and a portion of the base 14 define an inverted V configuration. See

Misawa, Figure 8. Misawa also discloses wherein the portable computer is capable of resting on the keyboard so as to be in a sideways V configuration.

In re Claim 15, Misawa discloses wherein the interface 20 comprises means for rotating (See Figure 4) the display component 18 relative the base 14.

In re Claim 16, Misawa discloses wherein the interface 20 is constructed and arranged to enable rotation of the base 14 and the display component 18 from a first position where the base and display component are disposed against each other and a second position where at least a portion of the base and at least a portion of the display component are in the inverted v configuration (Figure 8). Misawa also discloses wherein the portable computer is capable of resting on the keyboard so as to be in a sideways V configuration.

In re Claim 17, Misawa discloses a method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component 18 including a display screen 16, a base 14, and an interface 20 connecting the display component and the base defining a single longitudinal axis, the method comprising: rotating at least one of the display component and the base of the portable computer about the single longitudinal axis to configure the portable computer in one of the plurality of display modes (i.e. Figure 1), wherein the single longitudinal axis is configured to run along the connection between the display component and the base of the portable computer; and positioning at least a portion of the portable computer in an inverted v configuration for operation by a user (Figure 8), responsive to the act of rotating, wherein the act of positioning includes acts

of: positioning the display component in an orientation directed towards the user; and positioning the base on an opposite side of the display component to support the portable computer in the inverted v configuration (Figure 8). Misawa also discloses wherein the base is capable of being lied flat on a surface in a sideways V configuration (i.e. keyboard down).

Misawa does not specifically disclose wherein content on the display is varied based upon a particular display orientation (i.e. based upon a specific display angle). However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058. Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base (i.e. based on orientation/mode). Misawa, paragraphs 0059-0063.

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable

computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

In re Claim 18, Misawa discloses wherein the base 14 includes a keyboard and the act of positioning the base on the opposite side of the display component 16 includes positioning the keyboard such that the keyboard faces towards the surface (i.e. See Figure 8, Misawa is capable of this function).

In re Claim 20, Misawa discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a

laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator; wherein the interface 20 is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (Misawa is capable of this function).

Misawa does not explicitly disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa

teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058.

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

In re Claim 21, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67.

In re Claim 22, Misawa discloses the limitations as noted above, but does not explicitly disclose wherein the device is connected to a docking station. Takagi discloses a larger device that is more accustomed to being docked to a docking station,

but also does not explicitly disclose docking to a docking station. The examiner takes official notice of facts outside the record that it was known at the time of applicant's invention to provide a docking station for a device such as those disclosed in Misawa and/or Takagi and the combination would have been obvious to a person of ordinary skill so as to expand the capabilities of and charge the portable electronic device.

In re Claim 25, Misawa discloses the limitations of Claim 1 above, but does not explicitly disclose wherein the display is configured to display segmented user interface comprising a plurality of modes of content (i.e. a windows like program, etc.). However, the examiner takes official notice of facts outside the record that such existed at the time of applicant's invention to have provided such on a device such as disclosed in Misawa and/or Takagi would have been obvious to a person of ordinary skill so as to improve the usability of the device.

In re Claim 26, Misawa discloses wherein the display component 18 and base 14 include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration (as shown in Figure 8, wherein the device in Misawa is capable of being placed in frame mode).

Claims 11 and 24 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013), Kamikakai et al. (US Patent 6,154,359) and still further in view of Nishiyama et al. (US Publication 2005/0221865).

In re Claims 11 and 24, Misawa discloses the limitations as noted above, but does not explicitly disclose all the limitations of Claims 11 or 24. However, Nishiyama discloses a portable electronic device comprising: a display component 2 rotatably connected to a base 4 via a hinge interface 3, wherein the interface further comprises at least one integrated navigation hardware control 8, 9, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop, frame and/or easel modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user, and further wherein the hardware control is a clickable scroll wheel rotatable about a longitudinal axis. It would have been obvious to a person having ordinary skill in the art of portable electronics to have incorporated a navigation control like that disclosed in Nishiyama so as to improve the ergonomics of the device. Nishiyama, paragraphs 0007-0015.

Claim 23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013), Kamikakai et al. (US Patent 6,154,359) and still further in view of Skillman (US Patent 7,382,607).

In re Claim 23, Misawa discloses the limitations as noted above, but does not explicitly disclose cushioning strips on the device. However, providing such is not new in the art of portable electronics. For example, Skillman discloses a plurality of

cushioning strips 118, 122, 126, 130 to stabilize a portable computer in a plurality of modes. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated cushioning strips, as disclosed in Skillman, with the device in Misawa so as to provide better stability on a surface as well as some shock absorption depending on what orientation the device is configured.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot because of the new grounds of rejection above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADRIAN S. WILSON whose telephone number is (571)270-3907. The examiner can normally be reached on Mon.-Thu. 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on (571) 272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

asw

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2846

CPC- SEARCHED		
Symbol	Date	Examiner
G06F1/1677	07/28/2015	asw

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
36179.	361/679.21,679.26,679.27,679.55,679.56.ccls.	09/15/2014, 07/28/2015	asw
	455/575.1-575.4.ccls.	09/15/2014,07/28/2015	asw
	345/168.ccls.	09/15/2014,07/28/2015	asw

SEARCH NOTES		
Search Notes	Date	Examiner
East Search (including inventor search)	09/15/2014	asw
Updated East Search	05/12/2015	asw
Updated East Search	07/28/2015	asw
Updated East Search and Google Patent Search	02/12/2016	asw

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
361	679.27,679.55	07/28/2015	asw
G06F	1/1677	07/28/2015	asw

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	1	"6154359".did.	US-PGPUB; USPAT	OR	ON	2016/02/12 17:11
L4	16393	361/679.21,679.26,679.27.ccls. 455/575.1-575.4.ccls. 345/168.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2016/02/12 18:42
L5	1331	G06F1/1677.cpc.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2016/02/12 18:42
S1	1	13/651636.app.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:33
S2	1	"8289688".did.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:42
S3	1	"20060264243".did.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:45
S4	1	"7061472".did.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:53
S5	146	("20010032320" | "20020005818" | "20020010707" | "20020021258" | "20030048595" | "20030107603" | "20030109232" | "20040001049" | "20040203535" | "20040207568" | "20040212602" | "20040228076" | "20050018396" | "20050041378" | "20050063145" | "20050083642" | "20050128695" | "20050134717" | "20050146845" | "20050210399" | "20050221865" | "20050257400" | "20050282596" | "20060126284" | "20060238439" | "20060264243" | "20060268500" | "20070138806" | "20070182663" | "20070240076" | "20070242421" | "20070247446" | "20080024388" | "20080024465" | "20080042987" | "20080062625" | "20080158795" | "20080235594" | "20080284738" | "20090150826" | "20090190295" | "20090244012" | "20090244832" | "20090275366" | "20090300511" | "20090303676" | "20090322790" | "20100174993" | "3468576" | "4939514" | "5200913" | "5268817" | "5436954" | "5515345" | "5547698" | "5712760" | "5790371" | "5793355" | "5796575" | "5825352" | "5841631" | "5847698" | "5900848" | "5926364" | "5949643" | "5987704" | "6005767" |	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 15:15

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S11	486110	toshiba.as.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 10:57
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2/12/2016 6:42:59 PM
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2835

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/15/2014	05/12/2015	02/12/2016						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
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	7	✓	✓	✓						
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	18	✓	✓	✓						
	19	✓	-	-						
	20		✓	✓						
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	25		✓	✓						
	26		✓	✓						

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

[X] I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 23628

OR

[ ] I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

[X] The address associated with the above-mentioned Customer Number

OR

[ ] The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

LITL LLC

[ ] Inventor or Joint Inventor (title not required below)

[ ] Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

[X] Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

[ ] Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	Kristin N Carroll	Date (Optional)	2/26/2016
Name	Kristin Carroll		
Title	General Counsel		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

[ ] Total of 1 forms are submitted.

4565466.1

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	13/651,636
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Title	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039.70001US03

SIGNATURE of Applicant or Patent Practitioner

Signature	/Edward J. Russavage/	Date (Optional)	3/17/2016
Name	Edward J. Russavage	Registration Number	43,069
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of 1 forms are submitted.

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: March 18, 2016 Electronic Signature for Sara A. Sikorski: /Sara A. Sikorski/

Electronic Acknowledgement Receipt

EFS ID:	25243947
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	23628
Filer:	Edward J. Russavage/Sara Sikorski
Filer Authorized By:	Edward J. Russavage
Attorney Docket Number:	L2039-700120
Receipt Date:	18-MAR-2016
Filing Date:	15-OCT-2012
Time Stamp:	16:19:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	L203990000US00-POA82-EJR.pdf	371240 80cd05c7b4d5ae1af5b3b8f6a567fad2d925fd3c	no	1

Warnings:

Information:

2	Power of Attorney	L203970001US03-POA-EJR.pdf	17261 b6a3403e2051f2546113ebbdd03309e80a4c6e29	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	388501

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/651,636	10/15/2012	Yves Behar	L2039-700120

CONFIRMATION NO. 6472

POWER OF ATTORNEY NOTICE

23628
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

OC00000081797071

Date Mailed: 03/30/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/18/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zmoguss/

UNITED STATES PATENT AND TRADEMARK OFFICE

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13/651,636	10/15/2012	Yves Behar	L2039-700120

CONFIRMATION NO. 6472

23628
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

POA ACCEPTANCE LETTER

OC000000081797203

Date Mailed: 03/30/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/18/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/zmoguss/

Docket No.: L2039.70001US03
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	A. S. Wilson
Art Unit:	2835

Certificate of Electronic Filing Under 37 CFR 1.8
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: May 19, 2016 Electronic Signature: /Trish McDonald/

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated February 19, 2016, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

AMENDMENTS TO THE CLAIMS

Applicant submits below a complete listing of the current claims, including marked-up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing. This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, ~~and~~ a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, ~~and~~ wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode.

2. (Original) The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. (Currently Amended) The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which incorporates the accelerometer and detects [[a]] the current display mode of the portable computer based on the orientation information; and

wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. (Original) The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. (Previously Presented) The portable computer of claim 1, wherein the interface further comprises a multiple axis hinge.

6. (Previously Presented) The portable computer of claim 5, wherein the interface further comprises multiple hinges.

7. (Previously Presented) The portable computer of claim 1, wherein the interface defines a single longitudinal axis.

8. (Original) The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. (Previously Presented) The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the frame mode.

10. (Original) The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. (Previously Presented) The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and frame modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. (Canceled)

13. (Currently Amended) A portable computer configurable between a plurality of operating display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis from a closed mode to a first position configures the portable computer into a first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode;

wherein the interface is constructed and arranged so that reorienting the portable computer while the display component and the base are in the first position ~~from the first mode~~ configures the portable computer into a second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disabled and disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, a display orientation of content is automatically changed when transitioning between the first and second operating display modes.

14. (Previously Presented) The portable computer of claim 13, wherein the first operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration and wherein the second operating display mode is configured so that at least a portion of the display component and at least a portion of the base define a sideways v configuration.

15. (Previously Presented) The portable computer of claim 13, wherein the interface comprises means for rotating the display component relative to the base.

16. (Currently Amended) The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a second ~~first~~ position where the base and display component are disposed against each other[[,]] to the first ~~a second~~ position where at least a portion of the base and the at least a portion of the display component are in a ~~the inverted~~ v configuration~~, and a third position where at least a portion of the base and at least a portion of the display component are in the sideways v configuration~~.

17. (Currently Amended) A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base including a keyboard, and an interface connecting the display component and the base defining a longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the longitudinal axis to configure the portable computer in at least one of the plurality of display modes, wherein the longitudinal axis is configured to run along the connection between the display component and the base of the portable computer;

positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration;

detecting, by an accelerometer, an orientation of the device;

determining a current display mode of the plurality of display modes based on the orientation of the device, including distinguishing between a first display mode and a second display mode of the plurality of display modes where either the display component or the base is rotated about the longitudinal axis beyond approximately 270 degrees from a closed state;

determining a content display orientation responsive to the [[a]] current display mode ~~one of the plurality of display modes~~;

executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration; and

displaying content according to the determined display orientation.

18. (Previously Presented) The method of claim 17, wherein the base includes a keyboard and the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard towards the surface.

19. (Canceled)

20. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, ~~and~~ a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current mode of operation;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, ~~and~~ wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards

the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least one of the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard in response to detecting the portable computer is in the frame mode.

21. (Previously Presented) The portable computer of claim 1, wherein the portable computer further disables the keyboard in response to an orientation of the portable computer.

22. (Previously Presented) The portable computer of claim 1, wherein the portable computer is further configured to connect to a docking station in the plurality of display modes, including the laptop mode and the frame mode.

23. (Previously Presented) The portable computer of claim 1, further comprising a cushioning strip configured to stabilize the portable computer in a plurality of modes.

24. (Previously Presented) The portable computer of claim 11, wherein the at least one integrated navigation hardware control includes a clickable scroll wheel configured to scroll along the longitudinal axis to select an item displayed by the display screen.

25. (Previously Presented) The portable computer of claim 1, wherein the display component is further configured to display a segmented user interface comprising a plurality of modes of content.

26. (Previously Presented) The portable computer of claim 1, wherein the display component and base include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration.

27. (New) The portable computer of claim 3, wherein the display module is configured to display content in a first orientation during the frame and laptop display modes of operation and display content in a second orientation during the easel display mode, the second orientation being rotated 180 degrees relative to the first orientation.

REMARKS

In response to the Office Action mailed February 19, 2016, Applicant respectfully requests reconsideration in view of the amendments and the following remarks. Claims 1-18 and 20-26 were previously pending in this application. Claims 1, 3, 13, 16, 17, and 20 have been amended. Claim 12 has been canceled without prejudice or disclaimer. New claim 27 has been added. As a result claims 1-11, 13-18, and 20-27 are pending for examination with claims 1, 13, 17, and 20 being in independent form. No new matter has been added.

Support for the amendments to claims 1, 3, 13, 16, 17, and 20 is provided at, for example, Page 12 Line 1 – Page 13 Line 7, Page 20 Line 27 – Page 21 Line 7, and Page 23 Line 24 – Page 24 Line 10 of Applicant's Specification as Originally Filed.

REJECTIONS UNDER 35 U.S.C. § 112

Claim 5 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, the Office Action states that "applicant claims '… a multiple axis hinge.' However, looking at applicant's figures, applicant only discloses a single axis 101 as a point of rotation between the display and the base." Applicant respectfully traverses the rejection and requests reconsideration in light of the following remarks.

Applicant respectfully asserts that the Application as originally filed adequately describes the subject matter in dependent claim 5 so as to "allow persons of ordinary skill in the art to recognize that he or she invented what is claimed" (see, e.g., MPEP 2163.03 – Standard for Determining Compliance with the Written Description Requirement). Applicant's Specification as Originally Filed states that "[t]he hinge assembly may include single or multiple hinges, which may be any of a variety of hinge types, including, but not limited, to single-axis hinges, multiple-axis hinges, geared hinges, etc." (see, e.g., Page 9 Lines 18-20). Consequently, Applicant's Specification as Originally filed explicitly discloses a "multiple axis hinge" as claimed in claim 5. Accordingly, withdrawal of the rejection of claim 5 under 35 U.S.C. § 112 is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-4, 6-10, 12-18, 20-22 and 25-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2005/0134717 to Misawa (hereinafter "Misawa"), Japanese Publication No. 08-179851 to Takagi (hereinafter "Takagi"), and further in view of U.S. Patent No. 6, 154,359 to Kamikakai et al. (hereinafter "Kamikakai"). In response, Applicant has amended claims 1, 13, 17, and 20 and respectfully requests reconsidering in light of the following remarks.

Claim 1, as amended, is directed to "[a] portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode." The portable computer includes "an interface between the display component and the base" where "rotating either the display component or the base … beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in ***the frame mode or the easel mode***, wherein ***during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface***, and wherein ***during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator***" and an "***an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer***" where "the portable computer … ***detect[s] a transition to at least the easel mode and the frame mode based on the orientation information***."

Misawa discloses a "portable telephone with a camera which is capable of close-up photography." (Abstract). The portable telephone includes a first casing body and a second casing body that "can be invertedly stood on a flat surface G with the hinge portion 20 oriented upward." (Paragraph [0054]).

Takagi discloses "portable computers" with "[a] display processing part which rotates 180 degrees of displays when a difference angle sensor detects that a difference angle of a display became beyond a specified value" (see, e.g., Paragraph [0005]).[1]

Kamikakai discloses "[a] portable electronic device" (see, e.g., Abstract). The portable electronic device "includes a main body 2, a display part 3 which can open and close with respect to

[1] Machine Translation of Takagi submitted in an IDS filed on 4/8/2013

the main body 2, and a connection part 4" (see, e.g., Col. 3 Lines 39-46). The portable electronic device includes "a mechanism similar to a known mechanism for turning OFF power" that "may be used to disable the keyboard 6." (see, e.g., Col. 6 Lines 58-68).

The combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "a portable computer" comprising "an interface between the display component and the base" where "***rotating either the display component or the base … beyond approximately 270 degrees*** from the closed mode transitions the portable computer for viewing in ***the frame mode or the easel mode***." Instead, the combination of Misawa, Takagi, and Kamikakai teaches a device with two modes of operation delineated by angle between the base and the display. Specifically, Misawa and Kamikakai disclose devices with various hinge positions and Takagi discloses rotating the display "180 degrees [when] a difference angle sensor detects that a difference angle of a display [exceeds] a specified value" (see, e.g., Paragraph [0005]). The combination of Misawa, Takagi, and Kamikakai does not teach or suggest multiple modes of operation with the same (or similar) angle between the base and the display at least because such delineation between modes could not be determined based on hinge position alone (as taught by Takagi). Consequently, the combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "a portable computer" comprising "an interface between the display component and the base" where "***rotating either the display component or the base … beyond approximately 270 degrees*** from the closed mode transitions the portable computer for viewing in ***the frame mode or the easel mode***."

Further, the combination of Misawa, Takagi, and Kamikakai does not teach or suggest "***an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer***" where "the portable computer … ***detect[s] a transition to at least the easel mode and the frame mode based on the orientation information***," as recited in claim 1. As discussed above, the combination of Misawa, Takagi, and Kamikakai does not teach multiple modes with the same (or similar) hinge position at least because the modes are identified based on hinge position. Consequently, combination of Misawa, Takagi, and Kamikakai fails to teach or suggest a device to delineate between modes with the same (or similar) hinge position including "***an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes***

of the portable computer," as recited in claim 1. Consequently, the combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "***an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer***" where "the portable computer … ***detect[s] a transition to at least the easel mode and the frame mode based on the orientation information***," as recited in claim 1. Accordingly, withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a) is respectfully requested.

Claims 2-4, 6-10, 21-22, 25, and 26 depend from claim 1 and, therefore, are allowable for at least the same reasons. Accordingly, withdrawal of the rejection of claims 2-4, 6-10, 21-22, 25, and 26 under 35 U.S.C. § 103(a) is respectfully requested.

Claim 12 has been canceled without prejudice or disclaimer. Consequently, the rejection of claim 12 under 35 U.S.C. § 103(a) is now moot.

Independent claims 13, 17, and 20 have been amended similarly to independent claim 1 and are allowable over the cited references for similar reasons. For example, the combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "[a] portable computer" comprising "an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable" where "rotating either the display component or the base about the longitudinal axis from a closed mode to a first position configures the portable computer into a first operating display mode" and "reorienting the portable computer while the display component and the base are in the first position configures the portable computer into a second operating display mode" and also comprising "an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer," as recited in claim 13. In addition, the combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "detecting, by an accelerometer, an orientation of the device" and "determining a current display mode of the plurality of display modes based on the orientation of the device, including distinguishing between a first display mode and a second display mode of the plurality of display modes where either the display component or the base is rotated about the longitudinal axis beyond approximately 270

degrees from a closed state," as recited in claim 17. Further, the combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "[a] portable computer" comprising "an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable" where "rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode" and also comprising "an accelerometer configured to generate orientation information indicative of a current mode of operation" where "the portable computer is configured to detect a transition to at least one of the easel mode and the frame mode based on the orientation information," as recited in claim 20. Accordingly, withdrawal of the rejection of claims 13, 17, and 20 under 35 U.S.C. § 103(a) is respectfully requested.

Each of claims 14-16 and 18 depend from one of independent claims 13 and 17 and, therefore, are allowable over the cited references for at least the same reasons. Accordingly, withdrawal of the rejection of claims 14-16 and 18 under 35 U.S.C. § 103(a) is respectfully requested.

Claims 11 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Misawa, Takagi, Kamikakai, and still further in view of U.S. Publication No. 2005/0221865 to Nishiyama et al. (hereinafter "Nishiyama"). Claims 11 and 24 depend from independent claim 1 and, therefore, are allowable over the combination of Misawa, Takagi, Kamikakai for the same reasons stated above. The addition of Nishiyama teaching "[a] portable radio telephone set provided with a display section" and "includes a rotary selector which rotates to select various functions" (see, e.g., Abstract) fails to cure the deficiencies of Misawa, Takagi, Kamikakai discussed above. Accordingly, withdrawal of the rejection of claims 11 and 24 under 35 U.S.C. § 103(a) is respectfully requested.

Claim 23 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Misawa, Takagi, Kamikakai, and still further in view of U.S. Patent 7,382,607 to Skillman (hereinafter "Skillman"). Claim 23 depends from independent claim 1 and, therefore, is allowable over the combination of

Misawa, Takagi, Kamikakai for the same reasons stated above. The addition of Skillman teaching a "foot cushion insert [that] creates friction between the portable computing device and a surface" (see, e.g., Col. 4 Lines 20-23) fails to cure the deficiencies of Misawa, Takagi, Kamikakai discussed above. Accordingly, withdrawal of the rejection of claim 23 under 35 U.S.C. § 103(a) is respectfully requested.

NEWLY PRESENTED CLAIM

New claim 27 has been added to further define Applicant's contribution to the art. New claim 27 depends from claim 1 and, therefore, is allowable over the references of record for at least the same reasons. Support for new claim 27 is provided at, for example, Page 12 Line 1 – Page 13 Line 7, Page 20 Line 27 – Page 21 Line 7, and Page 23 Line 24 – Page 24 Line 10 of Applicant's Specification as Originally Filed.

GENERAL COMMENTS ON DEPENDENT CLAIMS

Since each of the dependent claims depends from a base claim that is believed to be in condition for allowance, for the sake of brevity, Applicant believes that it is unnecessary at this time to argue the further distinguishing features of the dependent claims. However, Applicant does not necessarily concur with the interpretation of the previously presented dependent claims as set forth in the Office Action, nor does Applicant concur that the basis for rejection of any of the previously presented dependent claims is proper. Therefore, Applicant reserves the right to specifically address the further patentability of the dependent claims in the future.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 23/2825 under Docket No. L2039.70001US03 from which the undersigned is authorized to draw.

Dated: May 19, 2016

Respectfully submitted,

Electronic signature: /Marcus E. Browne/
Marcus E. Browne
Registration No.: 71,897
Matthew H. Grady
Registration No.: 52,957
WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
617.646.8000

DOCKET NO.: L2039.70001US03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	Adrian S. Wilson
Art Unit:	2835

CERTIFICATE OF ELECTRONIC FILING UNDER 37 C.F.R. § 1.8

The undersigned hereby certifies that this paper, along with any paper referred to as being attached or enclosed, is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4), on the 19th day of May, 2016.

Electronic Signature: /Trish McDonald/

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT FILED PURSUANT TO THE DUTY OF DISCLOSURE UNDER 37 C.F.R. §§ 1.56, 1.97 AND 1.98

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§ 1.56, 1.97 and 1.98, the undersigned requests consideration of this Information Disclosure Statement.

PART I: Compliance with 37 C.F.R. § 1.97

This Information Disclosure Statement has been filed more than three months after the filing date of this application and after the mailing date of a first Office Action, but before the mailing date of any of a Final Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution in this application.

Please charge our Credit Card in the amount of $180.00 covering the fee set forth in 37 C.F.R. § 1.17(p).

PART II: Information Cited

The undersigned hereby makes of record in the above-identified application the information listed on the attached form PTO-1449 (modified PTO/SB/08). The order of presentation of the references should not be construed as an indication of the importance of the references.

The undersigned hereby makes the following additional information of record in the above-identified application.

The undersigned would like to bring to the Examiner's attention the following co-pending applications that may contain subject matter related to this application:

Serial No.	Filing Date	Inventor(s)	Docket No.
*12/416,479	04-01-2009	Behar et al.	L2039.70004US00
*14/680,422	04-07-2015	Behar et al.	L2039.70004US03
*14/108,576	12-17-2013	Pennington et al.	L2039.70014US01

*A copy of this reference is not provided as the Office has waived the requirement under 37 C.F.R. § 1.98(a)(2)(iii) for submitting a copy of a cited U.S. patent application if it is scanned to the Image File Wrapper system and is available on Private PAIR.

The undersigned would like to bring to the Examiner's attention the enclosed search reports or other communications from corresponding or related International or Foreign National Applications:

Serial No.	Date of Mailing	Type(s) of Communication	Docket No.
PCT/US2009/39117	**09-28-2009**	**International Search Report and Written Opinion**	**L2039.70004WO00**

The undersigned would like to bring to the Examiner's attention the following other information:

Office Action mailed April 16, 2013 in connection with Japanese Application No. 2011-503058.

PART III: Remarks

Documents cited anywhere in the Information Disclosure Statement are enclosed unless otherwise indicated. It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;

2. The enclosed form PTO-1449 (modified PTO/SB/08) be signed by the Examiner to evidence that the cited information has been fully considered by the United States Patent and Trademark Office during the examination of this application;

3. The citations for the information be printed on any patent which issues from this application.

By submitting this Information Disclosure Statement, the undersigned makes no representation that a search has been performed, of the extent of any search performed, or that more relevant information does not exist.

By submitting this Information Disclosure Statement, the undersigned makes no representation that the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

By submitting this Information Disclosure Statement, the undersigned makes no representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. § 102.

Notwithstanding any statements by the undersigned, the Examiner is urged to form his or her own conclusion regarding the relevance of the cited information.

An early and favorable action is hereby requested.

The Director is hereby authorized to charge any deficiency or credit any overpayment in the fees occasioned by the filing of this Information Disclosure Statement to our Deposit Account No. 23/2825 under Docket No. L2039.70001US03 from which the undersigned is authorized to draw.

Respectfully submitted,

By: /Marcus E. Browne/

Marcus E. Browne, Reg. No. 71,987
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000

Docket No.: L2039.70001US03
Date: May 19, 2016
xNDDx

FORM PTO-1449/A and B (modified PTO/SB/08)	APPLICATION NO.: 13/651,636	ATTY. DOCKET NO.: L2039.70001US03
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	FILING DATE: October 15, 2012	CONFIRMATION NO.: 6472
	FIRST NAMED INVENTOR: Yves Behar	
Sheet 1 of 1	GROUP ART UNIT: 2835	EXAMINER: Adrian S. Wilson

U.S. PATENT DOCUMENTS

Examiner's Initials #	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or Issue of Cited Document MM-DD-YYYY
		Number	Kind Code		
		8,464,161		Giles et al.	06-11-2013
		2008-0092039	A1	Brockway et al.	04-17-2008
		2009-0007001	A1	Morin et al.	01-01-2009
		2009-0150784	A1	Denney et al.	06-11-2009
		2009-0249244	A1	Robinson et al.	10-01-2009
		2015-0277688	A1	Behar et al.	10-01-2015

FOREIGN PATENT DOCUMENTS

Examiner's Initials #	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/ Country	Number	Kind Code			

OTHER ART – NON PATENT LITERATURE DOCUMENTS

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
	*	International Search Report and Written Opinion for International Application No. PCT/US2009/39117 mailed September 28, 2009. (L2039.70004WO00)	
	*	Final Japanese Office Action mailed April 16, 2013 in connection with Japanese Application No. 2011-503058 (L2039.70001JP00).	

[NOTE – No copies of U.S. patents, published U.S. patent applications, or pending, unpublished patent applications stored in the USPTO's Image File Wrapper (IFW) system, are included. See 37 CFR § 1.98 and 1287OG163. Copies of all other patent(s), publication(s), unpublished, pending U.S. patent applications, or other information listed are provided as required by 37 CFR § 1.98 unless 1) such copies were provided in an IDS in an earlier application that complies with 37 CFR § 1.98, and 2) the earlier application is relied upon for an earlier filing date under 35 U.S.C. § 120.]

EXAMINER:	DATE CONSIDERED:

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

*a copy of this reference is not provided as it was previously cited by or submitted to the office in a prior application, Serial No. **12/170,951**, filed **July 10, 2008**, and relied upon for an earlier filing date under 35 U.S.C. 120 (continuation, continuation-in-part, and divisional applications).

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne/Trish McDonald
Attorney Docket Number:	L2039.70001US03

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	25831764
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	23628
Filer:	Marcus E. Browne/Trish McDonald
Filer Authorized By:	Marcus E. Browne
Attorney Docket Number:	L2039.70001US03
Receipt Date:	19-MAY-2016
Filing Date:	15-OCT-2012
Time Stamp:	17:34:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$180
RAM confirmation Number	4345
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	L203970001US03-TRN-MEB.pdf	24655 cab0fc0792f7e4dd8b440bdc9cf35b270e79558a	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	L203970001US03-FEE-MEB.pdf	31308 c0e62b97c69837fff823203513fc9c4b7f738dd9	no	1
Warnings:					
Information:					
3		L203970001US03-AMN-MEB.pdf	77088 58ada0b8e3570263648577 4f8bdcd84aed6cc239	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	9
	Applicant Arguments/Remarks Made in an Amendment	10	16

Warnings:					
Information:					
4		L203970001US03-IDS-MEB.pdf	37059 341e4396fa27012c9beeae203f7dc164177eb93f	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Transmittal Letter	1	4
	Information Disclosure Statement (IDS) Form (SB08)	5	5

Warnings:	
Information:	

5	Fee Worksheet (SB06)	fee-info.pdf	30903 59b88dc44bbe310409ced0c145bd8563f9f3c0d2	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	201013

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	

Application Number	13/651,636-Conf. #6472
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	Adrian S. Wilson
Attorney Docket Number	L2039.70001US03

ENCLOSURES (*Check all that apply*)

- [X] Fee Transmittal Form
  - [ ] Fee Attached
- [X] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [X] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [X] Other Enclosure(s) (please Identify below):

  Form PTO-1449

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature	/Marcus E. Browne/		
Printed name	Marcus E. Browne		
Date	May 19, 2016	Reg. No.	71,897

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: May 19, 2016 Electronic Signature: /Trish McDonald/

PTO/SB/17 (03-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

FEE TRANSMITTAL

Complete if known	
Application Number	13/651,636-Conf. #6472
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Examiner Name	Adrian S. Wilson
Art Unit	2835
Practitioner Docket No.	L2039.70001US03

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($) 180.00

METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: 23/2825 Deposit Account Name: Wolf, Greenfield & Sacks, P.C.

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	280	140*	70	600	300	150	720	360	180	
Design	180	90	45	120	60	30	460	230	115	
Plant	180	90	45	380	190	95	580	290	145	
Reissue	280	140	70	600	300	150	2,160	1,080	540	
Provisional	260	130	65	0	0	0	0	0	0	

* The $140 small entity status filing fee for a utility application is further reduced to $70 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	80	40	20
Each independent claim over 3 (including Reissues)	420	210	105
Multiple dependent claims	780	390	195

Total Claims	**Extra Claims**	**Fee ($)**	**Fee Paid ($)**	**Multiple Dependent Claims**	
				Fee ($)	**Fee Paid ($)**
_____ - 20 or HP =	_____ x	_____ =	_____	_____	_____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____ - 3 or HP =	_____ x	_____ =	_____

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $400 ($200 for small entity) ($100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	**Extra Sheets**	**Number of each additional 50 or fraction thereof**	**Fee ($)**	**Fee Paid ($)**
_____ - 100 =	_____ /50 =	_____ (round **up** to a whole number) x	_____ =	_____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English specification, $130 fee (no small or micro entity discount)	
Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, $400 fee ($200 small or micro entity)	
Other (e.g., late filing surcharge): 1806 Submission of an Information Disclosure Statement	180.00

SUBMITTED BY

Signature	/Marcus E. Browne/	Registration No. (Attorney/Agent)	71,987	Telephone	617.646.8000
Name (Print/Type)	Marcus E. Browne			Date	May 19, 2016

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: May 19, 2016 Electronic Signature: /Trish McDonald/

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/651,636	Filing Date 10/15/2012	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **05/19/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 25	Minus	** 25	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/GLORIA ANTHONY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

23628 7590 06/14/2016
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
06/14/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents_eOfficeAction@WolfGreenfield.com
WGS_eOfficeAction@WolfGreenfield.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/651,636	BEHAR ET AL.	
	Examiner	Art Unit	
	ADRIAN S. WILSON	2835	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADRIAN S. WILSON*.

(3) *Matthew Grady*.

(2) *Marcus Browne*.

(4) _____.

Date of Interview: *07 June 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *Misawa, Takagi, Kamikakai (all of record)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Mr. Browne and Mr. Grady wanted to discuss the most current amendments that were filed on 05/19/2016. Specifically, they wanted to demonstrate the differences between the currently added limitations to Claim 1 and the prior art of record. I understand the current amendmends and the differences between the prior art and applicant's invention. I informed Mr. Browne and Mr. Grady that a new search would be needed which could result in a new grounds of rejection.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☒ Attachment

/ADRIAN S WILSON/ Primary Examiner, Art Unit 2835	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Wolf Greenfield
SPECIALISTS IN INTELLECTUAL PROPERTY LAW

FAX COVER

**********OFFICIAL FAX**********

Date: June 2, 2016 **Number of pages** (including cover): 2

To: Examiner Adrian S. Wilson U.S. Patent and Trademark Office

Fax No.: (571)-270-4907

Serial No.: 13/651,636

Title: **PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS**

From: Marcus E. Browne

Direct dial: 617-646-8524

Our File #: L2039.70001US03

CERTIFICATE OF FACSIMILE TRANSMISSION 37 C.F.R. §1.8(a)

The undersigned hereby certifies that this document is being transmitted via facsimile to the attention of Examiner Adrian S. Wilson, FAX number (571) 270-4907, at the United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, in accordance with 37 C.F.R. §1.6(d), on the 2nd day of June 2016.

/Marcus E. Browne/
Marcus E. Browne (Reg. No. 71,897)

ORIGINAL DOCUMENTS WILL NOT BE MAILED.

MESSAGE: Enclosed is a proposed Agenda for the Telephone Interview for June 7th at 11:00 a.m.:

- Applicant would like to discuss the Application, the Office Action mailed on 2/19/16, and the Response filed on 5/19/16 with particular attention to claim 1 (reproduced below)
- Applicant would like to discuss how the references cited in the Office Action mailed on 2/19/16 fail to teach or suggest claim 1, as amended in the response filed on 5/19/16.
- Tentative Participants:
  Marcus E. Browne (Reg. No. 71,897)
  Matthew H. Grady (Reg. No. 52,957)
  Examiner Wilson

IF YOU DID NOT RECEIVE ALL OF THE PAGES OF THIS TRANSMISSION, OR IF ANY OF THE PAGES ARE ILLEGIBLE, PLEASE CALL 617.646.8000 IMMEDIATELY.

Claim Amendments in Response Filed on 5/19/16

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, ~~and~~ a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, ~~and~~ wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode.

Petitioners - Exhibit 1002, page 884

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

23628 7590 06/23/2016

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
06/23/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents_eOfficeAction@WolfGreenfield.com
WGS_eOfficeAction@WolfGreenfield.com

Office Action Summary	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05/19/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-11,13-18 and 20-27* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-11,13-18 and 20-27* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

Reply Under 37 CFR 1.111

The Amendments and Applicant Arguments submitted on 05/19/2016 have been received and its contents have been carefully considered.

Claims 1-11, 13-18 and 20-27 are pending in this application. Claims 1, 3, 13, 16, 17 and 20, as currently amended, are presented for examination. Claims 2, 4-11, 14-15, 18 and 21-26, as previously submitted, are now presented again for examination. Claims 12 and 19 have been cancelled. Claim 27 is new.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 5-10, 13-18, 20-22 and 25-27 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013), Kamikakai et al. (US Patent 6,154,359) and still further in view of Saarinen (US Patent 6,882,335).

In re Claim 1, Misawa discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14;

an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (i.e. Misawa is capable of this function).

Misawa does not explicitly disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been

obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058.

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

Misawa as modified by Takagi and Kamikakai does not disclose wherein the sensor is an accelerometer (i.e. Takagi and Kamikakai both disclose the use of a rotation sensor in the hinge). However, providing such was not new in the art and

would have been an obvious modification. For example, Saarinen discloses a portable computer comprising an accelerometer 54 configured to generate orientation information indicative of a current display mode among a plurality of display modes so as to rotate display content based upon the mode of detection. See Saarinen, Figures 6a-6b and associated description. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have substituted an accelerometer as the sensor type, as disclosed in Saarinen, in place of the rotation sensors as disclosed in Takagi and/or Kamikakai, so as to reduce the likelihood of an incorrect mode detection. Saarinen, col. 10 ll. 16-34. This will also simplify the hinge construction since a rotation sensor will no longer be required in the hinge. Takagi suggests that other types of sensors could be used. Takagi, paragraph 0011. Kamikakai also suggests that other types of sensors could be used to detect orientation of a portable device. Kamikakai, col. 6 ll. 51-67.

In re Claim 2, Misawa discloses wherein the angles of rotation of the display component in relation to the base are between 0 and 300 degrees (300 degrees being the easel mode). Misawa, paragraph 0073. Misawa does not explicitly disclose wherein the angle is 320 degrees. However, providing such would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention since it has been held that discovering an optimum value (i.e. 320 degrees) of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Misawa also teaches that the angle may be varied as required. Misawa, paragraph 0073.

In re Claim 3, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). Saarinen discloses wherein the mode sensor incorporates an accelerometer 54 to detect the current display mode based on orientation information. Saarinen, Figures 6a-6b and associated description.

In re Claim 4, Misawa disclose wherein the base and display are only rotatable at the interface 20.

In re Claim 5, Misawa discloses the limitations as noted above, but does not explicitly disclose wherein the interface is a multiple axis hinge. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses a multiple axis hinge (See Figure 5) for use in a portable computer. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a multiple axis hinge, like that disclosed in Kamikakai, so as to provide greater freedom of movement between the display housing and the keyboard housing.

In re Claims 6 and 7, Misawa discloses wherein the interface further comprises multiple hinges 30 and wherein the interface defines and/or consists of a single longitudinal axis.

In re Claim 8, Misawa discloses wherein the interface 20 includes a hinge assembly (Figure 4), wherein the hinge assembly is at least partially housed within one of the base 14 and the display component 18.

In re Claim 9, Misawa discloses wherein the interface 20 comprises means for rotating the display component 18 along the longitudinal axis relative to the base 14 to transition the portable computer for viewing in the frame mode. Misawa, Figures 4 and 8.

In re Claim 10, Misawa discloses wherein the interface 20 comprises a plurality of axles 44.

In re Claim 13, Misawa discloses a portable computer configurable between a plurality of display modes, the portable computer comprising: a display component 16 including a single display screen for viewing content; a base 14; an interface 20 connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis; wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis configures the portable computer into a first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the operating display mode (Figure 8); wherein the interface is constructed and arranged so that reorienting the display component and the base from the first mode configures the portable computer into a second operating display mode of

the plurality of operating display modes (i.e. any variation in the angle could reasonably be considered an "operating display mode" and therefore Misawa discloses an infinite number of operating display modes), wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disposed towards the substantially horizontal surface (Misawa is capable of this function), wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode.

Misawa does not explicitly disclose wherein a display orientation of content is automatically changed when transitioning between the first and second operating display modes. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058. Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base

(i.e. based on orientation/mode). Misawa, paragraphs 0059-0063. *Takagi does not disclose wherein the detection occurs specifically at 270 degrees of rotation and/or at a specific angle of rotation.* However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made such detection occur specifically at 270 degrees, or any other specific angle, since it has been held that discovering an optimum value (i.e. 270 degrees of rotation) of a result effective variable (i.e. detection at some predetermined angle) involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

Misawa as modified by Takagi and Kamikakai does not disclose wherein the sensor is an accelerometer (i.e. Takagi and Kamikakai both disclose the use of a

rotation sensor in the hinge). However, providing such was not new in the art and would have been an obvious modification. For example, Saarinen discloses a portable computer comprising an accelerometer 54 configured to generate orientation information indicative of a current display mode among a plurality of display modes so as to rotate display content based upon the mode of detection. See Saarinen, Figures 6a-6b and associated description. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have substituted an accelerometer as the sensor type, as disclosed in Saarinen, in place of the rotation sensors as disclosed in Takagi and/or Kamikakai, so as to reduce the likelihood of an incorrect mode detection. Saarinen, col. 10 ll. 16-34. This will also simplify the hinge construction since a rotation sensor will no longer be required in the hinge. Takagi suggests that other types of sensors could be used. Takagi, paragraph 0011. Kamikakai also suggests that other types of sensors could be used to detect orientation of a portable device. Kamikakai, col. 6 ll. 51-67.

In re Claim 14, Misawa discloses wherein at least a portion of the display component 18 and a portion of the base 14 define an inverted V configuration. See Misawa, Figure 8. Misawa also discloses wherein the portable computer is capable of resting on the keyboard so as to be in a sideways V configuration.

In re Claim 15, Misawa discloses wherein the interface 20 comprises means for rotating (See Figure 4) the display component 18 relative the base 14.

In re Claim 16, Misawa discloses wherein the interface 20 is constructed and arranged to enable rotation of the base 14 and the display component 18 from a first

position where the base and display component are disposed against each other and a second position where at least a portion of the base and at least a portion of the display component are in the inverted v configuration (Figure 8). Misawa also discloses wherein the portable computer is capable of resting on the keyboard so as to be in a sideways V configuration.

In re Claim 17, Misawa discloses a method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component 18 including a display screen 16, a base 14, and an interface 20 connecting the display component and the base defining a single longitudinal axis, the method comprising: rotating at least one of the display component and the base of the portable computer about the single longitudinal axis to configure the portable computer in one of the plurality of display modes (i.e. Figure 1), wherein the single longitudinal axis is configured to run along the connection between the display component and the base of the portable computer; and positioning at least a portion of the portable computer in an inverted v configuration for operation by a user (Figure 8), responsive to the act of rotating, wherein the act of positioning includes acts of: positioning the display component in an orientation directed towards the user; and positioning the base on an opposite side of the display component to support the portable computer in the inverted v configuration (Figure 8). Misawa also discloses wherein the base is capable of being lied flat on a surface in a sideways V configuration (i.e. keyboard down).

Misawa does not specifically disclose wherein content on the display is varied based upon a particular display orientation (i.e. based upon a specific display angle). However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058. Misawa also suggests that various functions be controlled/altered by detection of a degree of rotation of the display relative the base (i.e. based on orientation/mode). Misawa, paragraphs 0059-0063.

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables

the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

Misawa as modified by Takagi and Kamikakai does not disclose wherein the sensor is an accelerometer (i.e. Takagi and Kamikakai both disclose the use of a rotation sensor in the hinge). However, providing such was not new in the art and would have been an obvious modification. For example, Saarinen discloses a portable computer comprising an accelerometer 54 configured to generate orientation information indicative of a current display mode among a plurality of display modes so as to rotate display content based upon the mode of detection. See Saarinen, Figures 6a-6b and associated description. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have substituted an accelerometer as the sensor type, as disclosed in Saarinen, in place of the rotation sensors as disclosed in Takagi and/or Kamikakai, so as to reduce the likelihood of an incorrect mode detection. Saarinen, col. 10 ll. 16-34. This will also simplify the hinge construction since a rotation sensor will no longer be required in the hinge. Takagi suggests that other types of sensors could be used. Takagi, paragraph 0011. Kamikakai also suggests that other types of sensors could be used to detect orientation of a portable device. Kamikakai, col. 6 ll. 51-67.

In re Claim 18, Misawa discloses wherein the base 14 includes a keyboard and the act of positioning the base on the opposite side of the display component 16 includes positioning the keyboard such that the keyboard faces towards the surface (i.e. See Figure 8, Misawa is capable of this function).

In re Claim 20, Misawa discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8), the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator; wherein the interface 20 is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (Misawa is capable of this function).

Misawa does not explicitly disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode. However, providing such is not new. For example, Takagi discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). It would have been obvious to a person having ordinary skill in the art to have incorporated a sensor such as that disclosed in Takagi with the apparatus as disclosed in Misawa so as to allow a user that is sitting in front of the display in the easel mode to be able to view the content of the display without having to manually adjust/rotate the display image. Takagi, paragraphs 0006-0007. Misawa is also suggestive of the improvement in that Misawa teaches that the content of the display in the easel mode be viewable by a user in front of the display. Misawa, paragraph 0058.

Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode. However, providing such is not new in the art of portable electronics. For example, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. It would have been obvious to a person

having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated a keyboard disabling feature as that disclosed in Kamikakai with the apparatus of Misawa so as to allow the apparatus to rest keyboard down on a surface without the possibility of inadvertent key inputs. Id.

Misawa as modified by Takagi and Kamikakai does not disclose wherein the sensor is an accelerometer (i.e. Takagi and Kamikakai both disclose the use of a rotation sensor in the hinge). However, providing such was not new in the art and would have been an obvious modification. For example, Saarinen discloses a portable computer comprising an accelerometer 54 configured to generate orientation information indicative of a current display mode among a plurality of display modes so as to rotate display content based upon the mode of detection. See Saarinen, Figures 6a-6b and associated description. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have substituted an accelerometer as the sensor type, as disclosed in Saarinen, in place of the rotation sensors as disclosed in Takagi and/or Kamikakai, so as to reduce the likelihood of an incorrect mode detection. Saarinen, col. 10 ll. 16-34. This will also simplify the hinge construction since a rotation sensor will no longer be required in the hinge. Takagi suggests that other types of sensors could be used. Takagi, paragraph 0011. Kamikakai also suggests that other types of sensors could be used to detect orientation of a portable device. Kamikakai, col. 6 ll. 51-67.

In re Claim 21, Kamikakai discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See

Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67.

In re Claim 22, Misawa discloses the limitations as noted above, but does not explicitly disclose wherein the device is connected to a docking station. Takagi discloses a larger device that is more accustomed to being docked to a docking station, but also does not explicitly disclose docking to a docking station. The examiner takes official notice of facts outside the record that it was known at the time of applicant's invention to provide a docking station for a device such as those disclosed in Misawa and/or Takagi and the combination would have been obvious to a person of ordinary skill so as to expand the capabilities of and charge the portable electronic device.

In re Claim 25, Misawa discloses the limitations of Claim 1 above, but does not explicitly disclose wherein the display is configured to display segmented user interface comprising a plurality of modes of content (i.e. a windows like program, etc.). However, the examiner takes official notice of facts outside the record that such existed at the time of applicant's invention to have provided such on a device such as disclosed in Misawa and/or Takagi would have been obvious to a person of ordinary skill so as to improve the usability of the device.

In re Claim 26, Misawa discloses wherein the display component 18 and base 14 include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the

base directly supports the display in the frame mode configuration (as shown in Figure 8, wherein the device in Misawa is capable of being placed in frame mode).

In re Claim 27, Saarinen discloses wherein an accelerometer 54 is configured to detect the mode of a device based upon gravity and thus will always orient the display content so as to be viewable in the correct orientation. See Saarinen, Figures 6a-6b and associated description.

Claims 11 and 24 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013), Kamikakai et al. (US Patent 6,154,359), Saarinen (US Patent 6,882,335) and still further in view of Nishiyama et al. (US Publication 2005/0221865).

In re Claims 11 and 24, Misawa discloses the limitations as noted above, but does not explicitly disclose all the limitations of Claims 11 or 24. However, Nishiyama discloses a portable electronic device comprising: a display component 2 rotatably connected to a base 4 via a hinge interface 3, wherein the interface further comprises at least one integrated navigation hardware control 8, 9, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop, frame and/or easel modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user, and further wherein the hardware control is a clickable scroll wheel rotatable about a longitudinal axis. It would have been obvious to a person having

ordinary skill in the art of portable electronics to have incorporated a navigation control like that disclosed in Nishiyama so as to improve the ergonomics of the device. Nishiyama, paragraphs 0007-0015.

Claim 23 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013), Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013), Kamikakai et al. (US Patent 6,154,359), Saarinen (US Patent 6,882,335) and still further in view of Skillman (US Patent 7,382,607).

In re Claim 23, Misawa discloses the limitations as noted above, but does not explicitly disclose cushioning strips on the device. However, providing such is not new in the art of portable electronics. For example, Skillman discloses a plurality of cushioning strips 118, 122, 126, 130 to stabilize a portable computer in a plurality of modes. It would have been obvious to a person having ordinary skill in the art of portable electronics at the time of applicant's invention to have incorporated cushioning strips, as disclosed in Skillman, with the device in Misawa so as to provide better stability on a surface as well as some shock absorption depending on what orientation the device is configured.

Response to Arguments

Applicant's arguments, filed 06/14/2016, with respect to the 112 rejection to Claim 5 have been fully considered and are persuasive. The 112 rejection of Claim 5 has been withdrawn.

Applicant's arguments with respect to the prior art rejections to the claims have been considered but are moot because of the new grounds of rejection above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADRIAN S. WILSON whose telephone number is (571)270-3907. The examiner can normally be reached on Mon.-Thu. 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on (571) 272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

asw

Notice of References Cited	Application/Control No. 13/651,636	Applicant(s)/Patent Under Reexamination BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	Page 1 of 2

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	P					
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	S					
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NON-PATENT DOCUMENTS

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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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	E	US-				
	F	US-				
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	J	US-				
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	M	US-				

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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

FORM PTO-1449/A and B (modified PTO/SB/08)	APPLICATION NO.: 13/651,636	ATTY. DOCKET NO.: L2039.70001US03
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	FILING DATE: October 15, 2012	CONFIRMATION NO.: 6472
	FIRST NAMED INVENTOR: Yves Behar	
Sheet 1 of 1	GROUP ART UNIT: 2835	EXAMINER: Adrian S. Wilson

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OTHER ART – NON PATENT LITERATURE DOCUMENTS

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
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	*	Final Japanese Office Action mailed April 16, 2013 in connection with Japanese Application No. 2011-503058 (L2039.70001JP00).	

[NOTE – No copies of U.S. patents, published U.S. patent applications, or pending, unpublished patent applications stored in the USPTO's Image File Wrapper (IFW) system, are included. See 37 CFR § 1.98 and 1287OG163. Copies of all other patent(s), publication(s), unpublished, pending U.S. patent applications, or other information listed are provided as required by 37 CFR § 1.98 unless 1) such copies were provided in an IDS in an earlier application that complies with 37 CFR § 1.98, and 2) the earlier application is relied upon for an earlier filing date under 35 U.S.C. § 120.]

EXAMINER:	DATE CONSIDERED:
/ADRIAN S WILSON/	06/17/2016

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

*a copy of this reference is not provided as it was previously cited by or submitted to the office in a prior application, Serial No. **12/170,951**, filed **July 10, 2008**, and relied upon for an earlier filing date under 35 U.S.C. 120 (continuation, continuation-in-part, and divisional applications).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.S.W/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2835

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/15/2014	05/12/2015	02/12/2016	06/17/2016					
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	27				✓					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
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CPC- SEARCHED		
Symbol	Date	Examiner
G06F1/1677	07/28/2015	asw

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
36179.	361/679.21,679.26,679.27,679.55,679.56.ccls.	09/15/2014, 07/28/2015	asw
	455/575.1-575.4.ccls.	09/15/2014,07/28/2015	asw
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SEARCH NOTES		
Search Notes	Date	Examiner
East Search (including inventor search)	09/15/2014	asw
Updated East Search	05/12/2015	asw
Updated East Search	07/28/2015	asw
Updated East Search and Google Patent Search	02/12/2016	asw
Updated East Search and Google Patent Search	06/17/2016	asw

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
361	679.27,679.55	07/28/2015	asw
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EAST Search History

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Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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S2	1	"8289688".did.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:42
S3	1	"20060264243".did.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:45
S4	1	"7061472".did.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 12:53
S5	146	("20010032320" | "20020005818" | "20020010707" | "20020021258" | "20030048595" | "20030107603" | "20030109232" | "20040001049" | "20040203535" | "20040207568" | "20040212602" | "20040228076" | "20050018396" | "20050041378" | "20050063145" | "20050083642" | "20050128695" | "20050134717" | "20050146845" | "20050210399" | "20050221865" | "20050257400" | "20050282596" | "20060126284" | "20060238439" | "20060264243" | "20060268500" | "20070138806" | "20070182663" | "20070240076" | "20070242421" | "20070247446" | "20080024388" | "20080024465" | "20080042987" | "20080062625" | "20080158795" | "20080235594" | "20080284738" | "20090150826" | "20090190295" | "20090244012" | "20090244832" | "20090275366" | "20090300511" | "20090303676" | "20090322790" | "20100174993" | "3468576" | "4939514" | "5200913" | "5268817" | "5436954" | "5515345" | "5547698" | "5712760" | "5790371" | "5793355" | "5796575" | "5825352" | "5841631" | "5847698" | "5900848" | "5926364" | "5949643" | "5987704" | "6005767" | "6067224" | "6144358" | "6222507" | "6223393" | "6262885" | "6266236" | "6275376" | "6295038" | "6302612" | "6323846" | "6327482" | "6341061" | "6343006" | "6377444" | "6437974" | "6464195" | "6492974" | "6510049" | "6628267" | "6642909" | "6659516" | "6661426" | "6665175" | "6693652" | "6697055" | "6771494" | "6788527" | "6819304" | "6829140" | "6859219" |	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/12 15:15

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S11	486110	toshiba.as.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 10:57
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S13	129200	"portable computer"	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 10:57
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			EPO; JPO			
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S21	152	("20010032320" | "20020005818" | "20020010707" | "20020021258" | "20030048595" | "20030107603" | "20030109232" | "20040001049" | "20040203535" | "20040207568" | "20040212602" | "20040228076" | "20050018396" | "20050041378" | "20050063145" | "20050083642" | "20050091596" | "20050128695" | "20050134717" | "20050146845" | "20050210399" | "20050221865" | "20050257400" | "20050282596" | "20060126284" | "20060238439" | "20060264243" | "20060268500" | "20070138806" | "20070182663" | "20070240076" | "20070242421" | "20070247446" | "20080024388" | "20080024465" | "20080042987" | "20080062625" | "20080158795" | "20080174570" | "20080235594" | "20080284738" | "20090019383" | "20090150826" | "20090190295" | "20090244012" | "20090244832" | "20090275366" | "20090300511" | "20090303676" | "20090322790" | "20100174993" | "3468576" | "4939514" | "5200913" | "5268817" | "5436954" | "5515345" | "5547698" | "5712760" | "5790371" | "5793355" | "5796575" | "5825352" | "5841631" | "5847698" | "5900848" | "5926364" | "5949643" | "5987704" | "6005767" | "6067224" | "6097389" | "6144358" | "6222507" | "6223393" | "6262885" | "6266236" | "6275376" | "6295038" | "6302612" | "6323846" | "6327482" | "6341061" | "6343006" | "6377444" | "6437974" | "6464195" | "6492974" | "6510049" | "6628267" | "6642909" | "6659516" | "6661426" | "6665175" | "6693652" | "6697055" | "6771494" | "6788527" | "6819304" | "6829140" | "6859219" | "6882335" | "6944012" | "6963485" | "6972752" | "7035665" | "7061472" | "7072179").PN. OR ("7138962" | "7239508" | "7250207" | "7366994" | "7428142" | "7467356" | "7522946" | "7698407" | "7756928" | "7869834" | "D333636" | "D391927" | "D392944" | "D395868" | "D399526" | "D416003" | "D452238" | "D462069" | "D463797" | "D476326" | "D479708" | "D491177" | "D491936" | "D494162" | "D495674" | "D495694" | "D504128" | "D512997" | "D513509" | "D516552" | "D517541" | "D518042" | "D523429" | "D528541" | "D528993" | "D534531" | "D535292" | "D544846" | "D581371" | "D593085" | "D593086" | "D593091" | "D605635").PN. OR ("8624844").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2014/09/15 15:02

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S24	1	13/156522.app.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 15:45
S25	15275	361/679.21,679.26,679.27.ccls. 455/575.1-575.4.ccls. 345/168.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 16:49
S26	17148	361/679.21,679.26,679.27,679.55,679.56.ccls. 455/575.1-575.4.ccls. 345/168.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2014/09/15 16:50
S27	11	("20050071782" | "20060015823" | "20060123353" | "20080209493" | "20090019479" | "20090193364" | "20140282263" | "8289688" | "8577957" | "8612888" | "8624844").PN.	US-PGPUB; USPAT	OR	ON	2015/05/11 16:37
S28	1	"20030080995".did.	US-PGPUB; USPAT	OR	ON	2015/05/11 16:43
S29	2	13/387614.app.	US-PGPUB; USPAT	OR	ON	2015/05/11 16:54
S30	1	13/787614.app.	US-PGPUB; USPAT	OR	ON	2015/05/11 16:54
S31	1	"6094191".did.	US-PGPUB; USPAT	OR	ON	2015/05/11 16:58
S32	3	"51385446".FMID.	US-PGPUB; USPAT; FPRS	OR	ON	2015/05/11 17:00
S33	8	osborne-christopher-miles.in.	US-PGPUB; USPAT	OR	ON	2015/05/11 17:00
S34	99	(US-20130141854-$ or US-20060264243-$ or US-20090322790-$ or US-20090303676-$ or US-20050221865-$ or US-20090300511-$ or US-20090275366-$ or US-20090244832-$ or US-20090244012-$ or US-20090190295-$ or US-20090150826-$ or US-20080284738-$ or US-20080235594-$ or US-20080158795-$ or US-20080062625-$ or US-20080042987-$ or US-20080024465-$ or US-20080024388-$ or US-20070247446-$ or US-20070242421-$ or US-20070240076-$ or US-20070182663-$ or US-20070138806-$ or US-20060268500-$ or US-20060238439-$ or US-20060126284-$).did. or (US-20050282596-$ or US-20050257400-$ or US-20050210399-$ or US-20050146845-$ or US-20050134717-$ or US-20050128695-$ or US-20050083642-$ or US-20050063145-$ or US-20050041378-$ or US-20050018396-$ or US-20040228076-$ or US-20040212602-$ or US-20040207568-$ or US-20040203535-$ or US-20040001049-$ or US-20030109232-$ or US-20030107603-$ or US-20030048595-$ or US-20020021258-$ or US-20020010707-$ or US-20020005818-$ or US-20010032320-$ or US-20140282263-$ or US-20090193364-$ or US-20090019479-$ or US-	US-PGPUB; USPAT; JPO	OR	ON	2015/05/12 11:30

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S38	10	"12170951"	US-PGPUB; USPAT	OR	ON	2015/07/28 16:00
S39	2	12/170951.app.	US-PGPUB; USPAT	OR	ON	2015/07/28 16:00
S40	2	12/170939.app.	US-PGPUB; USPAT	OR	ON	2015/07/28 16:34
S41	643	361/679.3.ccls.	US-PGPUB; USPAT	OR	ON	2015/07/28 16:35
S42	4884	361/679.27,679.55.ccls. G06F1/1677.cpc.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/07/28 16:41

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S45	8333	schweizer.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/01/19 12:28
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S47	17	S45 and S46	US-PGPUB;	OR	ON	2016/01/19

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S58	139521	accelerometer	US-PGPUB; USPAT	OR	ON	2016/06/17 09:39
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S64	829298	mode with operation	US-PGPUB; USPAT	OR	ON	2016/06/17 09:57
S65	594	S63 and S64	US-PGPUB; USPAT	OR	ON	2016/06/17 09:57
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S73	45	("20040049743" | "20050093868" | "20050132922" | "20060070103" | "20060187142" | "20070100282" | "20070103447" | "20070120762" | "20070182663" | "20080024388" | "20080075351" | "20090002391" | "20090003620" | "20090160734" | "20090244016" | "20100007613" | "20100085274" | "20100238196" | "5534888" | "5847698" | "6492974" | "6512497" | "6542721" | "6628244" | "6882335" | "7126588" | "7152806" | "7433179" | "7489286" | "7542052" | "7708240" | "7844301" | "7864517" | "7990338").PN. OR ("8300022").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2016/06/17 12:07
S74	139521	accelerometer	US-PGPUB; USPAT	OR	ON	2016/06/17 12:16
S75	16	S73 and S74	US-PGPUB; USPAT; USOCR	OR	ON	2016/06/17 12:16

6/ 17/ 2016 2:43:51 PM
C:\ Users\ awilson3\ Documents\ Workspaces\ 13-651636.wsp

Docket No.: L2039.70001US03
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	A. S. Wilson
Art Unit:	2835

Certificate of Electronic Filing Under 37 CFR 1.8
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: July 13, 2016 Electronic Signature for Sonya T. Pawlyshyn: /Sonya T. Pawlyshyn/

STATEMENT OF SUBSTANCE OF EXAMER INTERVIEW

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This paper is filed in response to the Applicant-Initiated Interview Summary mailed from the Office on June 14, 2016.

Applicant's Representatives Marcus Browne and Matthew Grady would like to thank Examiner Wilson for extending the courtesy of a telephonic interview conducted on June 7, 2016. During the interview, the participants discussed the claim amendments that were filed on May 19, 2016. Specifically, Applicant's Representatives demonstrated the differences between claim 1 and the references of record. Examiner Wilson indicated that further search and/or consideration would be required. No agreement as to the allowability of the claims was reached.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 23/2825 under Docket No. L2039.70001US03 from which the undersigned is authorized to draw.

Dated: July 13, 2016

Respectfully submitted,

Electronic signature: /Marcus E. Browne/
Marcus E. Browne
Registration No.: 71,897
Matthew H. Grady
Registration No.: 52,957
WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
617.646.8000

Electronic Acknowledgement Receipt

EFS ID:	26343696
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	23628
Filer:	Marcus E. Browne/Sonya T. Pawlyshyn
Filer Authorized By:	Marcus E. Browne
Attorney Docket Number:	L2039.70001US03
Receipt Date:	13-JUL-2016
Filing Date:	15-OCT-2012
Time Stamp:	19:08:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	L203970001US03-TRN-MEB.pdf	24318 4eb962d019eb846af3cf8f7a72f75d4a96f27aeb	no	1

Warnings:

Information:					
2	Miscellaneous Incoming Letter	L203970001US03-ISUM-MEB.pdf	24103 7113e1a50448047065c8d59eaa66b0fefba60bce	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	48421	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	

Application Number	13/651,636-Conf. #6472
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039.70001US03

ENCLOSURES (*Check all that apply*)

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) (please Identify below):

  Statement of Substance of Examiner Interview

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature	/Marcus E. Browne/		
Printed name	Marcus E. Browne		
Date	July 13, 2016	Reg. No.	71,897

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: July 13, 2016 Electronic Signature for Sonya T. Pawlyshyn: /Sonya T. Pawlyshyn/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

23628 7590 08/31/2016

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
08/31/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents_eOfficeAction@WolfGreenfield.com
WGS_eOfficeAction@WolfGreenfield.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	13/651,636	BEHAR ET AL.	
	Examiner	Art Unit	
	ADRIAN S. WILSON	2835	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADRIAN S. WILSON*.

(2) *Marcus Browne*.

(3) *Matthew Grady*.

(4) _____.

Date of Interview: *24 August 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *Misawa, Takagi, Kamikakai, Saarinen (all of record)*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicants discussed some of the differences between applicant's invention and the prior art. Specifically, in applicant's opinion the Saarinen reference only discloses a tilt sensor that orients display content based on detection between landscape and portriat orientations. In my opinion, the Saarinen reference discloses to a PHOSITA an accelerometer sensor that orients display content based upon the detection of what is up and down (i.e. gravity) to a user. No agreement as to allowable subject matter was reached. Applicant was advised that should the claims be further amended a new search is required that could result in a new grounds of rejection.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☒ Attachment

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

****
*** TX Result Report ***
****

TX complete.

Job No.	2242
Address	15712704904#6790
Name	
Start Time	08/23 02:08 PM
Call Length	00'50
Sheets	2
Result	OK

Wolf Greenfield
SPECIALISTS IN INTELLECTUAL PROPERTY LAW

FAX COVER

**************************OFFICIAL FAX****************************

Date: August 23, 2016 **Number of pages** (including cover): 2

To: Examiner Adrian S. Wilson U.S. Patent and Trademark Office

Fax No.: (571)-270-4907

Serial No.: 13/651,636

Title: **PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS**

From: Marcus E. Browne

Direct dial: 617-646-8524

Our File #: L2039.70001US03

CERTIFICATE OF FACSIMILE TRANSMISSION 37 C.F.R. §1.8(a)

The undersigned hereby certifies that this document is being transmitted via facsimile to the attention of Examiner Adrian S. Wilson, FAX number (571) 270-4907, at the United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, in accordance with 37 C.F.R. §1.6(d), on the 23rd day of August 2016.

/Sonya T. Pawlyshyn/ (Sonya T. Pawlyshyn)

ORIGINAL DOCUMENTS WILL NOT BE MAILED.

MESSAGE: Enclosed is a proposed Agenda for the Telephone Interview for August 24th at 1:00 p.m. Eastern Time;

- Applicant would like to discuss the Application, the Office Action, and the rejections of record including, for example, the rejection of claim 1 under 35 U.S.C. § 103.
- Applicant would like to propose and discuss a potential [illegible]

Wolf Greenfield
SPECIALISTS IN INTELLECTUAL PROPERTY LAW

FAX COVER

**********OFFICIAL FAX**********

Date: August 23, 2016 **Number of pages** (including cover): 2

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/Sonya T. Pawlyshyn/ (Sonya T. Pawlyshyn)

ORIGINAL DOCUMENTS WILL NOT BE MAILED.

MESSAGE: Enclosed is a proposed Agenda for the Telephone Interview for August 24th at 1:00 p.m. Eastern Time:

- Applicant would like to discuss the Application, the Office Action, and the rejections of record including, for example, the rejection of claim 1 under 35 U.S.C. § 103.
- Applicant would like to propose and discuss a potential claim amendment attached below.

- Tentative Participants:
  Marcus E. Browne (Reg. No. 71,897)
  Matthew H. Grady (Reg. No. 52,957)
  Examiner Wilson

IF YOU DID NOT RECEIVE ALL OF THE PAGES OF THIS TRANSMISSION, OR IF ANY OF THE PAGES ARE ILLEGIBLE, PLEASE CALL 617.646.8000 IMMEDIATELY.

Wolf Greenfield Fax Number: 617.646.8646

Wolf, Greenfield & Sacks, P.C. | 600 Atlantic Avenue | Boston, Massachusetts 02210-2206

617.646.8000 | fax 617.646.8646 | www.wolfgreenfield.com

PATENTS TRADEMARKS COPYRIGHTS TECHNOLOGY TRANSFERS LITIGATION

Potential Claim Amendment

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

a display orientation module configured to display content on the display screen in a first orientation during the frame and laptop display modes of operation and display content in a second orientation during the easel display mode that is rotated 180 degrees relative to the first orientation;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
L2039.70001US03	13/651,636-Conf. #6472	October 15, 2012

First Named Inventor:	Title:
Yves Behar	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).

2. The above-identified application contains an outstanding final rejection.

3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.

4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.

5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.

6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).

7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]

8. By filing this certification and request, applicant acknowledges the following:

- Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
- The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
  - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
  - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
    - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
    - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	/Marcus E. Browne/	Date	September 12, 2016
Name (Print/Typed)	Marcus E. Browne	Practitioner Registration No.	71,897

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☐ * Total of 1 forms are submitted.

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: September 12, 2016 Electronic Signature: /Trish McDonald/

Docket No.: L2039.70001US03
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	A. S. Wilson
Art Unit:	2835

Certificate of Electronic Filing Under 37 CFR 1.8
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: September 12, 2016 Electronic Signature: /Trish McDonald/

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated June 23, 2016, finally rejecting the claims, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

AMENDMENTS TO THE CLAIMS

Applicant submits below a complete listing of the current claims, including marked-up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing. This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into the [[a]] laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the

closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode.

2. (Original) The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. (Previously Presented) The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which incorporates the accelerometer and detects the current display mode of the portable computer based on the orientation information; and

wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. (Original) The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. (Previously Presented) The portable computer of claim 1, wherein the interface further comprises a multiple axis hinge.

6. (Previously Presented) The portable computer of claim 5, wherein the interface further comprises multiple hinges.

7. (Previously Presented) The portable computer of claim 1, wherein the interface defines a single longitudinal axis.

8. (Original) The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. (Previously Presented) The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the frame mode.

10. (Original) The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. (Previously Presented) The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and frame modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. (Canceled)

13. (Currently Amended) A portable computer configurable between a plurality of operating display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least two operating display modes of the plurality of operating display modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from a first operating display mode of the plurality of operating display modes to a second operating display mode of the plurality of operating display modes;

an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis from a closed mode to a first position configures the portable computer into the [[a]] first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode;

wherein the interface is constructed and arranged so that reorienting the portable computer while the display component and the base are in the first position configures the portable computer into the [[a]] second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disabled and disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, a display orientation of content is automatically changed when transitioning between the first and second operating display modes.

14. (Previously Presented) The portable computer of claim 13, wherein the first operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration and wherein the second operating display mode is configured so that at least a portion of the display component and at least a portion of the base define a sideways v configuration.

15. (Previously Presented) The portable computer of claim 13, wherein the interface comprises means for rotating the display component relative to the base.

16. (Previously Presented) The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a second position where the base and display component are disposed against each other to the first position where at least a portion of the base and the at least a portion of the display component are in a v configuration.

17. (Currently Amended) A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base including a keyboard, and an interface connecting the display component and the base defining a longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the longitudinal axis to configure the portable computer in at least one of the plurality of display modes, wherein the longitudinal axis is configured to run along the connection between the display component and the base of the portable computer;

positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration;

detecting, by an accelerometer, an orientation of the device;

determining a current display mode of the plurality of display modes based on the orientation of the device, including distinguishing between a first display mode and a second display mode of the plurality of display modes where either the display component or the base is rotated about the longitudinal axis beyond approximately 270 degrees from a closed state;

~~determining a content display orientation responsive to the current display mode;~~

executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration; and

displaying computer content ~~according to the determined display orientation~~ and varying the computer content displayed responsive to detecting a transition between at least two display modes of the plurality of display modes, wherein the act of varying the computer content includes:

enlarging the computer content displayed on the display component responsive to detecting a transition from the first display mode to the second display mode.

18. (Previously Presented) The method of claim 17, wherein the base includes a keyboard and the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard towards the surface.

19. (Canceled)

20. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current mode of operation;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least the laptop

and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least one of the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard in response to detecting the portable computer is in the frame mode.

21. (Previously Presented) The portable computer of claim 1, wherein the portable computer further disables the keyboard in response to an orientation of the portable computer.

22. (Previously Presented) The portable computer of claim 1, wherein the portable computer is further configured to connect to a docking station in the plurality of display modes, including the laptop mode and the frame mode.

23. (Previously Presented) The portable computer of claim 1, further comprising a cushioning strip configured to stabilize the portable computer in a plurality of modes.

24. (Previously Presented) The portable computer of claim 11, wherein the at least one integrated navigation hardware control includes a clickable scroll wheel configured to scroll along the longitudinal axis to select an item displayed by the display screen.

25. (Previously Presented) The portable computer of claim 1, wherein the display component is further configured to display a segmented user interface comprising a plurality of modes of content.

26. (Previously Presented) The portable computer of claim 1, wherein the display component and base include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration.

27. (Previously Presented) The portable computer of claim 3, wherein the display module is configured to display content in a first orientation during the frame and laptop display modes of operation and display content in a second orientation during the easel display mode, the second orientation being rotated 180 degrees relative to the first orientation.

REMARKS

In response to the Office Action mailed June 23, 2016, Applicant respectfully requests reconsideration in view of the amendments and the following remarks. Claims 1-11, 13-18, and 20-27 were previously pending in this application. Claims 1, 13, 17, and 20 have been amended. As a result, claims 1-11, 13-18, and 20-27 are pending for examination with claims 1, 13, 17, and 20 being in independent form. No new matter has been added.

Support for the amendments to claims 1, 13, 17, and 20 is provided at, for example, paragraph [0078] of Applicant's Specification as Originally Published (US 2013/0141854).

EXAMINER INTERVIEW SUMMARY

Applicant's Representatives Marcus Browne and Matthew Grady would like to thank Examiner Wilson for extending the courtesy of a telephonic interview conducted on August 24, 2016. During the course of the Interview, the participants discussed the application, the rejections of record, and proposed amendments. In particular, the participants discussed the reference U.S. Patent No. 6,882,335 to Saarinen (hereinafter "Saarinen"). The Examiner stated that he believed that Saarinen taught an accelerometer sensor that orients display content based upon the detection of what is up and down. The Applicant's Representatives respectfully disagreed and indicated that Saarinen discloses a portrait mode of operation and a landscape mode of operation where the screen is rotated 90 degrees based on the output from "a tilt sensor," which may be an "Analog Devices ADXL202 Accelerometer" (see, e.g., Col. 10 Lines 16-34). Consequently, Applicant's Representatives stated that Saarinen does not teach or suggest "an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer" where the plurality of display modes include "a laptop mode, a frame mode, and an easel mode," as recited in claim 1. No agreement as to the allowability of the claims was reached.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-10, 13-18, 20-22 and 25-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2005/0134717 to Misawa (hereinafter "Misawa"), Japanese Publication No. 08-179851 to Takagi (hereinafter "Takagi"), U.S. Patent No. 6,154,359 to Kamikakai et al. (hereinafter "Kamikakai"), and Saarinen.

Applicant respectfully disagrees with the rejection. As discussed during the interview, Saarinen discloses the word "accelerometer" once on Column 10 Line 19 stating that an "[o]rientation detector 54 may comprise a tilt sensor such as Analog Devices ADXL202 Accelerometer" where the "orientation detector 54 is configured to determine whether the display apparatus 20 is in landscape orientation or portrait orientation" (see, e.g., Col. 10 Lines 16 – 33). Consequently, Saarinen teaches the use of an accelerometer to detect portrait and landscape modes where the screen is rotated 90 degrees in landscape mode relative to portrait mode. Saarinen does not teach or suggest "an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer" where the plurality of display modes include "a laptop mode, a frame mode, and an easel mode," as recited in claim 1, as previously presented.

Further, Applicant respectfully disagrees that a person having ordinary skill in the art (hereinafter "POSITA") would have combined all four references as stated by the Office Action. In particular, the Office Action states that a POSITA would "have substituted an accelerometer as the sensor type, as disclosed in Takagi and/or Kamikakai, so as to reduce the likelihood of an incorrect mode detection … This will also simplify the hinge construction since a rotation sensor will no longer be required in the hinge." The Applicant respectfully disagrees at least because substituting the simple hinge mechanism of Takagi to detect modes for an accelerometer would both increase the complexity of detecting modes and increase the likelihood of incorrect mode detection. The output of an accelerometer is noisy and would need to be interpreted by the computer system to identify a current display mode based on the noisy output. In contrast, the hinge sensor disclosed in Takagi is a simple binary switch between two modes triggered by moving the screen beyond a certain position. The output of the binary switch is neither noisy nor needs to be interpreted to

identify the correct mode. Consequently, a POSITA would not combine the references as proposed by the Office Action.

As discussed above, Applicant respectfully disagrees with the rejection. However, solely for the purposes of advancing prosecution, Applicant has amended claims 1, 13, 17, and 20 and respectfully requests reconsideration in light of the following remarks.

Claim 1, as amended, is directed to "[a] portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode." The portable computer includes "a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode."

Misawa discloses a "portable telephone with a camera which is capable of close-up photography." (Abstract). The portable telephone includes a first casing body and a second casing body that "can be invertedly stood on a flat surface G with the hinge portion 20 oriented upward." (Paragraph [0054]).

Takagi discloses "portable computers" with "[a] display processing part which rotates 180 degrees of displays when a difference angle sensor detects that a difference angle of a display became beyond a specified value" (see, e.g., Paragraph [0005]).[1]

Kamikakai discloses "[a] portable electronic device" (see, e.g., Abstract). The portable electronic device "includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4" (see, e.g., Col. 3 Lines 39-46). The portable electronic device includes "a mechanism similar to a known mechanism for turning OFF power" that "may be used to disable the keyboard 6." (see, e.g., Col. 6 Lines 58-68).

Saarinen discloses a "[d]isplay apparatus including a display and an orientation sensitive interface mechanism" (see, e.g., Abstract). The display apparatus includes an "[o]rientation detector 54 [that] may comprise a tilt sensor such as Analog Devices ADXL202 Accelerometer" where the

[1] Machine Translation of Takagi submitted in an IDS filed on 4/8/2013

"orientation detector 54 is configured to determine whether the display apparatus 20 is in landscape orientation or portrait orientation" (see, e.g., Col. 10 Lines 16 – 33).

The combination of Misawa, Takagi, Kamikakai, and Saarinen fails to teach or suggest "a portable computer" comprising "a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode," as recited in claim 1, as amended. None of the cited references disclose enlarging content responsive to a transition between two modes of operation. Consequently, the combination of Misawa, Takagi, Kamikakai, and Saarinen fails to teach or suggest "a portable computer" comprising "a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode," as recited in claim 1, as amended. Accordingly, withdrawal of all the rejections of claim 1, and each claim that depends from claim 1, is respectfully requested.

Independent claims 13, 17, and 20 have been amended similarly to independent claim 1 and are allowable over the cited references for similar reasons. For example, the combination of Misawa, Takagi, Kamikakai, and Saarinen fails to teach or suggest "[a] portable computer" comprising "a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least two operating display modes of the plurality of operating display modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from a first operating display mode of the plurality of operating display modes to a second operating display mode of the plurality of operating display modes," as recited in claim 13. In addition, the combination of Misawa, Takagi, and Kamikakai fails to teach or suggest "displaying computer content and varying the computer content displayed responsive to detecting a transition

between at least two display modes of the plurality of display modes, wherein the act of varying the computer content includes: enlarging the computer content displayed on the display component responsive to detecting a transition from the first display mode to the second display mode," as recited in claim 17. Further, the combination of Misawa, Takagi, Kamikakai, and Saarinen fails to teach or suggest "[a] portable computer" comprising "a display manager configured to display computer content on the display component and vary the computer content displayed responsive to detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode," as recited in claim 20. Accordingly, withdrawal of all of the rejections of claims 13, 17, and 20, and each claim that depends from one of claims 13, 17, and 20, is respectfully requested.

Claims 11 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Misawa, Takagi, Kamikakai, Saarinen, and U.S. Publication No. 2005/0221865 to Nishiyama et al. (hereinafter "Nishiyama"). Claims 11 and 24 depend from independent claim 1 and, therefore, are allowable over the combination of Misawa, Takagi, Kamikakai, and Saarinen for the same reasons stated above. The addition of Nishiyama teaching "[a] portable radio telephone set provided with a display section" and "includes a rotary selector which rotates to select various functions" (see, e.g., Abstract) fails to cure the deficiencies of Misawa, Takagi, Kamikakai, and Saarinen discussed above. Accordingly, withdrawal of all the rejections of claims 11 and 24 is respectfully requested.

Claim 23 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Misawa, Takagi, Kamikakai, Saarinen, and U.S. Patent 7,382,607 to Skillman (hereinafter "Skillman"). Claim 23 depends from independent claim 1 and, therefore, is allowable over the combination of Misawa, Takagi, Kamikakai, and Saarinen for the same reasons stated above. The addition of Skillman teaching a "foot cushion insert [that] creates friction between the portable computing device and a surface" (see, e.g., Col. 4 Lines 20-23) fails to cure the deficiencies of Misawa, Takagi, Kamikakai, and Saarinen discussed above. Accordingly, withdrawal of all the rejections of claim 23 is respectfully requested.

GENERAL COMMENTS ON DEPENDENT CLAIMS

Since each of the dependent claims depends from a base claim that is believed to be in condition for allowance, for the sake of brevity, Applicant believes that it is unnecessary at this time to argue the further distinguishing features of the dependent claims. However, Applicant does not necessarily concur with the interpretation of the previously presented dependent claims as set forth in the Office Action, nor does Applicant concur that the basis for rejection of any of the previously presented dependent claims is proper. Therefore, Applicant reserves the right to specifically address the further patentability of the dependent claims in the future.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 23/2825 under Docket No. L2039.70001US03 from which the undersigned is authorized to draw.

Dated: September 12, 2016

Respectfully submitted,

Electronic signature: /Marcus E. Browne/
Marcus E. Browne
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Boston, Massachusetts 02210-2206
617.646.8000

Electronic Acknowledgement Receipt

EFS ID:	26899689
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	23628
Filer:	Marcus E. Browne/Trish McDonald
Filer Authorized By:	Marcus E. Browne
Attorney Docket Number:	L2039.70001US03
Receipt Date:	12-SEP-2016
Filing Date:	15-OCT-2012
Time Stamp:	17:03:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	L203970001US03-TRN-MEB.pdf	24720 22a01b30486323763f54b508ed4c7af7a5bd6979	no	1

Warnings:

Information:					
2	After Final Consideration Program Request	L203970001US03-RAFFP-MEB.pdf	36778 873d251b04a6a5f53a040601c895d13dfcd58fcf	no	1
Warnings:					
Information:					
3		L203970001US03-116AMN-MEB.pdf	72185 9b88ac1fba9e80814588e1f16d7c163a668067d5	yes	16

Multipart Description/PDF files in .zip description

Document Description	Start	End
Response After Final Action	1	1
Claims	2	9
Applicant Arguments/Remarks Made in an Amendment	10	16

Warnings:	
Information:	
Total Files Size (in bytes):	133683

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	

Application Number	13/651,636-Conf. #6472
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039.70001US03

ENCLOSURES (*Check all that apply*)

- [ ] Fee Transmittal Form
  - [ ] Fee Attached
- [x] Amendment/Reply
  - [x] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
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- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
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- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature	/Marcus E. Browne/		
Printed name	Marcus E. Browne		
Date	September 12, 2016	Reg. No.	71,897

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I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: September 12, 2016 Electronic Signature: /Trish McDonald/

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/651,636	Filing Date 10/15/2012	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 09/12/2016	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 25	Minus	** 25	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
ZURIASHWORK ZENEBE

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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NOTICE OF ALLOWANCE AND FEE(S) DUE

23628 7590 09/30/2016
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER
WILSON, ADRIAN S

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 09/30/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

TITLE OF INVENTION: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$960	$960	12/30/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

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For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Petitioners - Exhibit 1002, page 953

PART B - FEE(S) TRANSMITTAL

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23628 7590 09/30/2016
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

TITLE OF INVENTION: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$960	$960	12/30/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
WILSON, ADRIAN S	2835	361-679270

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
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2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

Petitioners - Exhibit 1002, page 954

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

23628 7590 09/30/2016

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 09/30/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice Requiring Inventor's Oath or Declaration	Application No. 13/651,636	Applicant(s) Yves Behar	
	Examiner WILSON, ADRIAN S	Art Unit 2835	

This notice is an attachment to the Notice of Allowability (PTOL-37), or the Notice of Allowability For A Design Application (PTOL-37D).

An inventor's oath or declaration in compliance with 37 CFR 1.63 or 1.64 executed by or with respect to each inventor has not yet been submitted.

An oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each inventor (for any inventor for which a compliant oath, declaration, or substitute statement has not yet been submitted) MUST be filed no later than the date on which the issue fee is paid. See 35 U.S.C. 115(f). Failure to timely comply will result in ABANDONMENT of this application.

A properly executed inventor's oath to declaration has not been received for the following inventor(s):

If applicant previously filed one or more oaths, declarations, or substitute statements, applicant may have received an informational notice regarding deficiencies therein.

The following deficiencies are noted:

INFORMAL ACTION PROBLEMS

- A properly executed inventor's oath or declaration has not been received for the following inventor(s): **Yves Behar**, **Joshua Morenstein**, **Christopher Hibmacronan**, **Naoya Edahiro**, and **Matthew David Day**. Applicant may submit the inventor's oath or declaration at any time before the Notice of Allowance and Fee(s) Due, PTOL-85, is mailed.

Questions relating to this Notice should be directed to the Application Assistance Unit at 571-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	13/651,636	BEHAR ET AL.	
	Examiner	Art Unit	
	ADRIAN S. WILSON	2835	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADRIAN S. WILSON*.

(2) *Marcus Browne*.

(3) *Matthew Grady*.

(4) _____.

Date of Interview: *20 September 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *Misawa; Takagi; Kamikakai; Saarinen*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

I proposed some minor changes to applicant's claims for an examiner's amendment. Applicant agreed to the proposed changes. .

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ADRIAN S WILSON/ Primary Examiner, Art Unit 2835	

Notice of Allowability	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *AF 2.0 filed 09/12/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-11, 13-18 and 20-27*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☒ Other *AF 2323; Interview Agenda + Authorization for Email*.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

Allowance

Claims 1-11, 13-18 and 20-27 are hereby allowed.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Marcus Browne and Matthew Grady on 09/20/2016. Please amend the claims as follows.

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into the laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode.

2. (Original) The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. (Previously Presented) The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which incorporates the accelerometer and detects the current display mode of the portable computer based on the orientation information; and

wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. (Original) The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. (Previously Presented) The portable computer of claim 1, wherein the interface further comprises a multiple axis hinge.

6. (Previously Presented) The portable computer of claim 5, wherein the interface further comprises multiple hinges.

7. (Previously Presented) The portable computer of claim 1, wherein the interface defines a single longitudinal axis.

8. (Original) The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. (Previously Presented) The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the frame mode.

10. (Original) The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. (Previously Presented) The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and frame modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. (Canceled)

13. (Currently Amended) A portable computer configurable between a plurality of operating display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least two operating display modes of the plurality of operating display modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from a first operating display mode of the plurality of operating display modes to a second operating display mode of the plurality of operating display modes;

an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis from a closed mode to a first position configures the portable computer into the first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode;

wherein the interface is constructed and arranged so that reorienting the portable computer while the display component and the base are in the first position configures the portable computer into the second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disabled and disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, a display orientation of content is automatically changed when transitioning between the first and second operating display modes.

14. (Previously Presented) The portable computer of claim 13, wherein the first operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration and wherein the second operating display mode is configured so that at least a portion of the display component and at least a portion of the base define a sideways v configuration.

15. (Previously Presented) The portable computer of claim 13, wherein the interface comprises means for rotating the display component relative to the base.

16. (Previously Presented) The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a second position where the base and display component are disposed against each other to the first position where at least a portion of the base and the at least a portion of the display component are in a v configuration.

17. (Currently Amended) A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base including

a keyboard, and an interface connecting the display component and the base defining a longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the longitudinal axis to configure the portable computer in at least one of the plurality of display modes, wherein the longitudinal axis is configured to run along the connection between the display component and the base of the portable computer;

positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration;

~~detecting~~ generating, by an accelerometer, orientation information indicative of an orientation of the device;

determining a current display mode of the plurality of display modes based on the orientation of the device, including distinguishing between a first display mode and a second display mode of the plurality of display modes where either the display component or the base is rotated about the longitudinal axis beyond approximately 270 degrees from a closed state;

executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration; and

displaying computer content and varying the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least two display modes of the plurality of display modes, wherein the act of varying the computer content includes:

enlarging the computer content displayed on the display component responsive to detecting a transition from the first display mode to the second display mode.

18. (Previously Presented) The method of claim 17, wherein the base includes a keyboard and the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard towards the surface.

19. (Canceled)

20. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current mode of operation;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270

degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least one of the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard in response to detecting the portable computer is in the frame mode.

21. (Previously Presented) The portable computer of claim 1, wherein the portable computer further disables the keyboard in response to an orientation of the portable computer.

22. (Previously Presented) The portable computer of claim 1, wherein the portable computer is further configured to connect to a docking station in the plurality of display modes, including the laptop mode and the frame mode.

23. (Previously Presented) The portable computer of claim 1, further comprising a cushioning strip configured to stabilize the portable computer in a plurality of modes.

24. (Previously Presented) The portable computer of claim 11, wherein the at least one integrated navigation hardware control includes a clickable scroll wheel configured to scroll along the longitudinal axis to select an item displayed by the display screen.

25. (Previously Presented) The portable computer of claim 1, wherein the display component is further configured to display a segmented user interface comprising a plurality of modes of content.

26. (Previously Presented) The portable computer of claim 1, wherein the display component and base include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration.

27. (Previously Presented) The portable computer of claim 3, wherein the display module is configured to display content in a first orientation during the frame and laptop display modes of operation and display content in a second orientation during the easel display mode, the second orientation being rotated 180 degrees relative to the first orientation.

Reasons for Allowance

The specific limitations of "an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer; a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode" in Claim 1, and similarly in Claims 13, 17 and 20, are not anticipated or made obvious by the prior art of record in the examiner's opinion.

For example, Misawa (US Publication 2005/0134717) (from applicant's IDS submitted 04/08/2013) discloses a portable computer configurable between a plurality of display modes including at least a laptop mode (Figure 1) and a frame mode (Figure 8),

the portable computer comprising: a display component 16; a base 14; an interface 20 between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable; wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode (Figure 1), wherein in the laptop mode the display component 16 is oriented towards an operator and a keyboard 12 disposed within the base is oriented to receive input from the operator; and wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode (Figure 8), and wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface (i.e. Misawa is capable of this function).

However, Misawa does not disclose wherein the portable computer is configured to detect a transition to the frame mode and automatically determine a display orientation of content responsive to detecting the transition to the frame mode. Misawa also does not explicitly disclose wherein the display orientation module further disables the keyboard in response to the mode sensor detecting the portable computer is in the frame mode.

Takagi (Japanese Publication 08-179851) (from applicant's IDS submitted on 04/08/2013) discloses a portable computer comprising a display 5 rotatable relative to a base 2, wherein content on the display is oriented (i.e. 180 degrees) based upon the detection of rotation in the hinge via a sensor 6 (i.e. detection of a change in operation/mode). However, Takagi does not disclose the use of an accelerometer or a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode.

Kamikakai et al. (US Patent 6,154,359) discloses wherein a display 3 is rotatable relative a base 2 via a hinge 4, and wherein the apparatus is configurable into a frame mode (See Kamikakai, Figure 8), and wherein a mechanism (i.e. a sensor) detects rotation of the display relative the base into a frame mode and upon detection disables the keyboard. Kamikakai, col. 6 ll. 51-67. However, Kamikakai does not disclose an accelerometer or a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode.

Saarinen (US Patent 6,882,335) discloses a portable computer comprising an accelerometer 54 configured to generate orientation information indicative of a current display mode among a plurality of display modes so as to rotate display content based upon the mode of detection. See Saarinen, Figures 6a-6b and associated description. However, Saarinen does not disclose wherein a display manager is configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating detecting a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode.

Furthermore, the examiner has performed the assignee and inventor name searches in order to identify documents with possible double patenting issues. In the examiner's opinion, no documents with conflicting claims have been found.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADRIAN S. WILSON whose telephone number is (571)270-3907. The examiner can normally be reached on Mon.-Thu. 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on (571) 272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

asw

Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	13/651,636	BEHAR ET AL.	
	Examiner	Art Unit	
	ADRIAN S. WILSON	2835	

All participants (applicant, applicant's representative, PTO personnel):

(1) *ADRIAN S. WILSON*.

(2) *Marcus Browne*.

(3) *Matthew Grady*.

(4) _____.

Date of Interview: *20 September 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☒103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1*.

Identification of prior art discussed: *Misawa; Takagi; Kamikakai; Saarinen*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

I proposed some minor changes to applicant's claims for an examiner's amendment. Applicant agreed to the proposed changes. .

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ADRIAN S WILSON/ Primary Examiner, Art Unit 2835	

Notice of References Cited	Application/Control No. 13/651,636	Applicant(s)/Patent Under Reexamination BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,137,468 A	10-2000	Martinez; Anthony Edward	G06F1/1616	345/649
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

OK TO ENTER: /A.S.W/

Docket No.: L2039.70001US03
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	A. S. Wilson
Art Unit:	2835

Certificate of Electronic Filing Under 37 CFR 1.8
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: September 12, 2016 Electronic Signature: /Trish McDonald/

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated June 23, 2016, finally rejecting the claims, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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S41	643	361/679.3.ccls.	US-PGPUB; USPAT	OR	ON	2015/07/28 16:35

S42	4884	361/679.27,679.55.ccls. G06F1/1677.cpc.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2015/07/28 16:41
S44	102	(US-20130141854-$ or US-20060264243-$ or US-20090322790-$ or US-20090303676-$ or US-20050221865-$ or US-20090300511-$ or US-20090275366-$ or US-20090244832-$ or US-20090244012-$ or US-20090190295-$ or US-20090150826-$ or US-20080284738-$ or US-20080235594-$ or US-20080158795-$ or US-20080062625-$ or US-20080042987-$ or US-20080024465-$ or US-20080024388-$ or US-20070247446-$ or US-20070242421-$ or US-20070240076-$ or US-20070182663-$ or US-20070138806-$ or US-20060268500-$ or US-20060238439-$ or US-20060126284-$).did. or (US-20050282596-$ or US-20050257400-$ or US-20050210399-$ or US-20050146845-$ or US-20050134717-$ or US-20050128695-$ or US-20050083642-$ or US-20050063145-$ or US-20050041378-$ or US-20050018396-$ or US-20040228076-$ or US-20040212602-$ or US-20040207568-$ or US-20040203535-$ or US-20040001049-$ or US-20030109232-$ or US-20030107603-$ or US-20030048595-$ or US-20020021258-$ or US-20020010707-$ or US-20020005818-$ or US-20010032320-$ or US-20140282263-$ or US-20090193364-$ or US-20090019479-$ or US-20080209493-$ or US-20060123353-$).did. or (US-20060015823-$ or US-20050071782-$ or US-20030080995-$ or US-20130191350-$ or US-20140254123-$ or US-20080074831-$ or US-20040025993-$).did. or (US-8289688-$ or US-7061472-$ or US-7869834-$ or US-7756928-$ or US-7698407-$ or US-D605635-$ or US-D593091-$ or US-D593086-$ or US-D593085-$ or US-7522946-$ or US-7467356-$ or US-D581371-$ or US-7428142-$ or US-7250207-$ or US-7239508-$ or US-D544846-$ or US-D535292-$ or US-D534531-$ or US-7138962-$ or US-D528993-$ or US-D528541-$ or US-7072179-$ or US-D523429-$ or US-7035665-$ or US-D518042-$ or US-D517541-$).did. or (US-D516552-$ or US-D513509-$ or US-D512997-$ or US-6972752-$ or US-6963485-$ or US-6944012-$ or US-D504128-$ or US-6882335-$ or US-8797265-$ or US-8624844-$ or US-8612888-$ or US-8577957-$ or US-8862558-$ or US-6094191-$ or US-7382607-$).did. or (JP-08179851-$).did.	US-PGPUB; USPAT; JPO	OR	ON	2015/08/27 11:56
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S46	479	ruettiger.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2016/01/19 12:28

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S48	1	"7061472".did.	US-PGPUB; USPAT	OR	ON	2016/01/19 12:33
S49	1	"6154359".did.	US-PGPUB; USPAT	OR	ON	2016/01/19 12:57
S50	1	"6154359".did.	US-PGPUB; USPAT	OR	ON	2016/02/12 17:11
S51	16393	361/679.21,679.26,679.27.ccls. 455/575.1-575.4.ccls. 345/168.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2016/02/12 18:42
S52	1331	G06F1/1677.cpc.	US-PGPUB; USPAT; EPO; JPO	OR	ON	2016/02/12 18:42
S53	12394	345/156.ccls.	US-PGPUB; USPAT	OR	ON	2016/06/15 11:03
S54	0	"235".ccls.	US-PGPUB; USPAT	OR	ON	2016/06/15 11:08
S55	81771	"235".clas.	US-PGPUB; USPAT	OR	ON	2016/06/15 11:08
S56	6	("20080092039" | "20090007001" | "20090150784" | "20090249244" | "20150277688" | "8464161").PN.	US-PGPUB; USPAT	OR	ON	2016/06/17 09:36
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S63	2879	S58 and S62	US-PGPUB; USPAT	OR	ON	2016/06/17 09:57
S64	829298	mode with operation	US-PGPUB; USPAT	OR	ON	2016/06/17 09:57
S65	594	S63 and S64	US-PGPUB; USPAT	OR	ON	2016/06/17 09:57
S66	2700580	rotate or rotated or rotating	US-PGPUB; USPAT	OR	ON	2016/06/17 09:57
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S69	1	"20090303205".did.	US-PGPUB; USPAT	OR	ON	2016/06/17 10:05
S70	2	12/133588.app.	US-PGPUB; USPAT	OR	ON	2016/06/17 10:05
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S72	79	("20020140675" | "4570158" | "5396301" |	US-PGPUB;	OR	ON	2016/06/17

		"5640627" | "5661632" | "5708561" | "6078497" | "6597384").PN. OR ("6882335").URPN.	USPAT; USOCR			11:59
S73	45	("20040049743" | "20050093868" | "20050132922" | "20060070103" | "20060187142" | "20070100282" | "20070103447" | "20070120762" | "20070182663" | "20080024388" | "20080075351" | "20090002391" | "20090003620" | "20090160734" | "20090244016" | "20100007613" | "20100085274" | "20100238196" | "5534888" | "5847698" | "6492974" | "6512497" | "6542721" | "6628244" | "6882335" | "7126588" | "7152806" | "7433179" | "7489286" | "7542052" | "7708240" | "7844301" | "7864517" | "7990338").PN. OR ("8300022").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2016/06/17 12:07
S74	139521	accelerometer	US-PGPUB; USPAT	OR	ON	2016/06/17 12:16
S75	16	S73 and S74	US-PGPUB; USPAT; USOCR	OR	ON	2016/06/17 12:16

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	1000	G06F1/162.cpc.	US-PGPUB; USPAT	OR	ON	2016/09/22 14:24
S43	4886	361/679.27,679.55.ccls. G06F1/1677.cpc.	US-PGPUB; USPAT	OR	ON	2015/07/28 16:41

9/22/2016 2:42:11 PM
C:\Users\awilson3\Documents\Workspaces\13-651636.wsp

Docket No.: L2039.70001US03
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	A. S. Wilson
Art Unit:	2835

PROPOSED EXAMINER AMENDMENT AND AUTHORIZATION TO COMMUNICATE BY EMAIL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated June 23, 2016, finally rejecting the claims, and the subsequent response filed on September 12, 2016, Applicant submits the present document including the following parts:

Proposed Examiner Amendments begins on page 2 of this paper.

Authorization to Communicate by Email begins on page 10 of this paper.

PROPOSED EXAMINER AMENDMENT

Applicant hereby gives the Examiner permission to enter an Examiner's amendment consistent with the listing of the claims shown below that amends claims 1, 13, 17, and 20. To facilitate review by the Examiner, Applicant hereby submits below a complete listing of the claims showing the changes relative to the claims previously submitted on September 12, 2016. In the listing of claims, insertions are indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Listing of Claims

1. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into the laptop mode, wherein in the laptop mode the

display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard when the portable computer is in the frame mode.

2. (Original) The portable computer of claim 1, wherein the display component is rotatable about the longitudinal axis up to approximately 320 degrees from the closed mode.

3. (Previously Presented) The portable computer of claim 1, further comprising:

a display orientation module that displays content on the display screen in one of a plurality of content orientations relative to the longitudinal axis;

a mode sensor which incorporates the accelerometer and detects the current display mode of the portable computer based on the orientation information; and

wherein the display orientation module displays content on the display screen in the one of the plurality of content orientations dependent on the current display mode detected by the mode sensor.

4. (Original) The portable computer of claim 1, wherein the base and the display are only rotatable with respect to each other at the interface.

5. (Previously Presented) The portable computer of claim 1, wherein the interface further comprises a multiple axis hinge.

6. (Previously Presented) The portable computer of claim 5, wherein the interface further comprises multiple hinges.

7. (Previously Presented) The portable computer of claim 1, wherein the interface defines a single longitudinal axis.

8. (Original) The portable computer of claim 1, wherein the interface includes a hinge assembly, wherein the hinge assembly is at least partially housed within one of the base and the display component.

9. (Previously Presented) The portable computer of claim 1, wherein the interface comprises means for rotating the display component along the longitudinal axis relative to the base to transition the portable computer for viewing in the frame mode.

10. (Original) The portable computer of claim 1, wherein the interface comprises a plurality of axles.

11. (Previously Presented) The portable computer of claim 1, further comprising at least one integrated navigation hardware control, wherein at least one of the at least one integrated navigation hardware control is accessible in at least the laptop and frame modes, and wherein the integrated navigation hardware can be operated by a user to control features and manipulate content displayed on the portable computer, including in any mode wherein the keyboard is inaccessible or oriented away from the user.

12. (Canceled)

13. (Currently Amended) A portable computer configurable between a plurality of operating display modes, the portable computer comprising:

a display component including a single display screen for viewing content;

a base;

an accelerometer configured to generate orientation information indicative of a current display mode among the plurality of display modes of the portable computer;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least two operating display modes of the plurality of operating display modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from a first operating display mode of the plurality of operating display modes to a second operating display mode of the plurality of operating display modes;

an interface connecting the display component and the base, defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged so that the display component and the base are rotatable with respect to each other about the longitudinal axis;

wherein the interface is constructed and arranged so that rotating either the display component or the base about the longitudinal axis from a closed mode to a first position configures the portable computer into the first operating display mode of the plurality of operating display modes, wherein in the first operating display mode the display component is oriented towards an operator of the portable computer, and the base is disposed on an opposite side of the display, wherein at least a portion of the base is configured to support the display in position when in the first operating display mode;

wherein the interface is constructed and arranged so that reorienting the portable computer while the display component and the base are in the first position configures the portable computer into the second operating display mode of the plurality of operating display modes, wherein in the second operating display mode the display component is oriented towards an operator of the

portable computer, the base lies flat on a substantially horizontal surface, and a keyboard of the base is disabled and disposed towards the substantially horizontal surface, wherein at least a portion of the base is configured to support the portable computer in position when in the second operating display mode, a display orientation of content is automatically changed when transitioning between the first and second operating display modes.

14. (Previously Presented) The portable computer of claim 13, wherein the first operating display mode is configured so that at least a portion of display component and at least a portion of the base define an inverted v configuration and wherein the second operating display mode is configured so that at least a portion of the display component and at least a portion of the base define a sideways v configuration.

15. (Previously Presented) The portable computer of claim 13, wherein the interface comprises means for rotating the display component relative to the base.

16. (Previously Presented) The portable computer of claim 14, wherein the interface is constructed and arranged to enable rotation of the base and the display component from a second position where the base and display component are disposed against each other to the first position where at least a portion of the base and the at least a portion of the display component are in a v configuration.

17. (Currently Amended) A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a display component including a display screen, a base including a keyboard, and an interface connecting the display component and the base defining a longitudinal axis, the method comprising:

rotating at least one of the display component and the base of the portable computer about the longitudinal axis to configure the portable computer in at least one of the plurality of display modes, wherein the longitudinal axis is configured to run along the connection between the display component and the base of the portable computer;

positioning at least a portion of the portable computer in a sideways v configuration for operation by a user, responsive to the act of rotating, wherein the act of positioning includes acts of:

positioning the display component in an orientation directed towards the user; and

positioning the base to lie flat on a surface and support the portable computer in the sideways v configuration;

~~detecting~~ generating, by an accelerometer, orientation information indicative of an orientation of the device;

determining a current display mode of the plurality of display modes based on the orientation of the device, including distinguishing between a first display mode and a second display mode of the plurality of display modes where either the display component or the base is rotated about the longitudinal axis beyond approximately 270 degrees from a closed state;

executing software protection configured to disable the keyboard when the portable computer is in the sideways v configuration; and

displaying computer content and varying the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least two display modes of the plurality of display modes, wherein the act of varying the computer content includes:

enlarging the computer content displayed on the display component responsive to detecting a transition from the first display mode to the second display mode.

18. (Previously Presented) The method of claim 17, wherein the base includes a keyboard and the act of positioning the base on the opposite side of the display component includes positioning the keyboard such that the keyboard towards the surface.

19. (Canceled)

20. (Currently Amended) A portable computer configurable between a plurality of display modes including at least a laptop mode, a frame mode, and an easel mode, the portable computer comprising:

a display component;

a base;

an accelerometer configured to generate orientation information indicative of a current mode of operation;

a display manager configured to display computer content on the display component and vary the computer content displayed responsive to the orientation information indicating ~~detecting~~ a transition between at least the laptop and easel modes, wherein the display manager is further configured to enlarge the computer content displayed on the display component responsive to a transition from the laptop mode to the easel mode;

an interface between the display component and the base defining a longitudinal axis running along the display component and the base about which the display component and the base are rotatable;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode configures the portable computer into a laptop mode, wherein in the laptop mode the display component is oriented towards an operator and a keyboard disposed within the base is oriented to receive input from the operator;

wherein the interface is constructed and arranged such that rotating either the display component or the base about the longitudinal axis beyond approximately 270 degrees from the closed mode transitions the portable computer for viewing in the frame mode or the easel mode, wherein during operation in the frame mode the display component is positioned toward the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein during operation in the easel mode the display component is oriented facing the operator with the keyboard oriented away from the operator; and

wherein the portable computer is configured to detect a transition to at least one of the easel mode and the frame mode based on the orientation information, automatically determine a display orientation of content, and disable the keyboard in response to detecting the portable computer is in the frame mode.

21. (Previously Presented) The portable computer of claim 1, wherein the portable computer further disables the keyboard in response to an orientation of the portable computer.

22. (Previously Presented) The portable computer of claim 1, wherein the portable computer is further configured to connect to a docking station in the plurality of display modes, including the laptop mode and the frame mode.

23. (Previously Presented) The portable computer of claim 1, further comprising a cushioning strip configured to stabilize the portable computer in a plurality of modes.

24. (Previously Presented) The portable computer of claim 11, wherein the at least one integrated navigation hardware control includes a clickable scroll wheel configured to scroll along the longitudinal axis to select an item displayed by the display screen.

25. (Previously Presented) The portable computer of claim 1, wherein the display component is further configured to display a segmented user interface comprising a plurality of modes of content.

26. (Previously Presented) The portable computer of claim 1, wherein the display component and base include an overlapping portion such that responsive to rotation of display component and base, the display component contacts the base preventing further rotation, and the base directly supports the display in the frame mode configuration.

27. (Previously Presented) The portable computer of claim 3, wherein the display module is configured to display content in a first orientation during the frame and laptop display modes of operation and display content in a second orientation during the easel display mode, the second orientation being rotated 180 degrees relative to the first orientation.

AUTHORIZATION TO COMMUNICATE BY EMAIL

Recognizing that Internet communications are not secure, the Applicant hereby authorizes the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application by video conferencing, instant messaging, or electronic mail. The Applicant understands that a copy of these communications will be made of record in the application file.

CONCLUSION

In view of the proposed Examiner's amendment illustrated herein, this application should now be in condition for allowance and a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

Dated: September 21, 2016

Respectfully submitted,

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AFCP 2.0 Decision	Application No.	Applicant(s)
	13/651,636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S. WILSON	2835

This is in response to the After Final Consideration Pilot request filed 09/12/2016.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.

   ☐ Other:

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☐ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☒ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other:

   Examiner Note: Please attach an interview summary when necessary as described above.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	Art Unit
	ADRIAN S WILSON	2846

CPC- SEARCHED		
Symbol	Date	Examiner
G06F1/1677	07/28/2015	asw
G06F1/162	09/22/2016	asw

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
36179.	361/679.21,679.26,679.27,679.55,679.56.ccls.	09/15/2014, 07/28/2015	asw
	455/575.1-575.4.ccls.	09/15/2014,07/28/2015	asw
	345/168.ccls.	09/15/2014,07/28/2015	asw

SEARCH NOTES		
Search Notes	Date	Examiner
East Search (including inventor search)	09/15/2014	asw
Updated East Search	05/12/2015	asw
Updated East Search	07/28/2015	asw
Updated East Search and Google Patent Search	02/12/2016	asw
Updated East Search and Google Patent Search	06/17/2016	asw
Updated East Search and Google Patent Search	09/22/2016	asw

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
361	679.27,679.55	07/28/2015	asw

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
G06F	1/162,1677	07/28/2015, 09/22/2016	asw

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	**Art Unit**
	ADRIAN S WILSON	2835

CPC								
Symbol							**Type**	**Version**
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G06F		1	/	162			I	2013-01-01
G06F		1	/	169			I	2013-01-01
G06F		1	/	1613			I	2013-01-01
G06F		1	/	1677			I	2013-01-01
G06F		3	/	0481			I	2013-01-01
G06F		3	/	04812			I	2013-01-01
G06F		2200	/	1614			A	2013-01-01
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NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/ADRIAN S WILSON/ Primary Examiner.Art Unit 2835	09/22/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	26

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13651636	BEHAR ET AL.
	Examiner	**Art Unit**
	ADRIAN S WILSON	2835

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
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CROSS REFERENCE(S)					
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361	679.55				

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	13651636	BEHAR ET AL.
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	ADRIAN S WILSON	2835

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	16	17												
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/ADRIAN S WILSON/ Primary Examiner.Art Unit 2835 (Primary Examiner)	09/22/2016 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 26

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				FIRST NAMED INVENTOR: Yves Behar	
Sheet	1	of	1	GROUP ART UNIT: 2835	EXAMINER: Adrian S. Wilson

U.S. PATENT DOCUMENTS

Examiner's Initials #	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or Issue of Cited Document MM-DD-YYYY
		Number	Kind Code		
		6,493,216		Lin	12-10-2002
		7,164,432		Amemiya	01-16-2007

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Examiner's Initials #	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		Office/ Country	Number	Kind Code			
		GB	2321982	A	Fujitsu ICL Computers OY	08-12-1998	
		WO	95/24007	A1	Lane	09-08-1995	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		European Examination Report dated November 22, 2016 in connection with European Application No. 09727165.4 (L2039.70001EP00)	

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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

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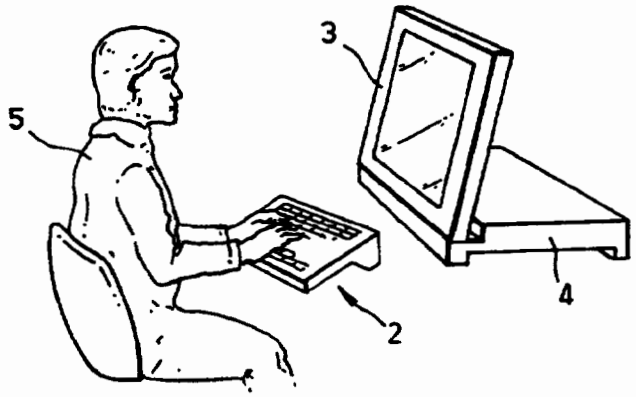
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(54) Abstract Title
Positioning notebook computer screen to facilitate use with external keyboard

(57) When using an external keyboard with a notebook computer, the integral keyboard prevents the screen from being located at the optimum distance from the user. So that the external keyboard can be placed nearer to the notebook's screen, said screen may be capable of rotating through 270° about its hinge from the closed position, allowing the notebook to be placed with its integral keyboard face down on a work surface thereby permitting location of the external keyboard nearer the screen. Alternatively, with the screen open to an angle of 270° the notebook can be stood on its ends in an "A" shaped configuration. In this mode the screen display needs inverting. In a further mode the screen is detachable and may be relocated at the end of the integral keyboard which is nearest the user. Alternatively, the screen can rotate about an axis perpendicular to its hinge.

Fig.2.



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

Fig.1.

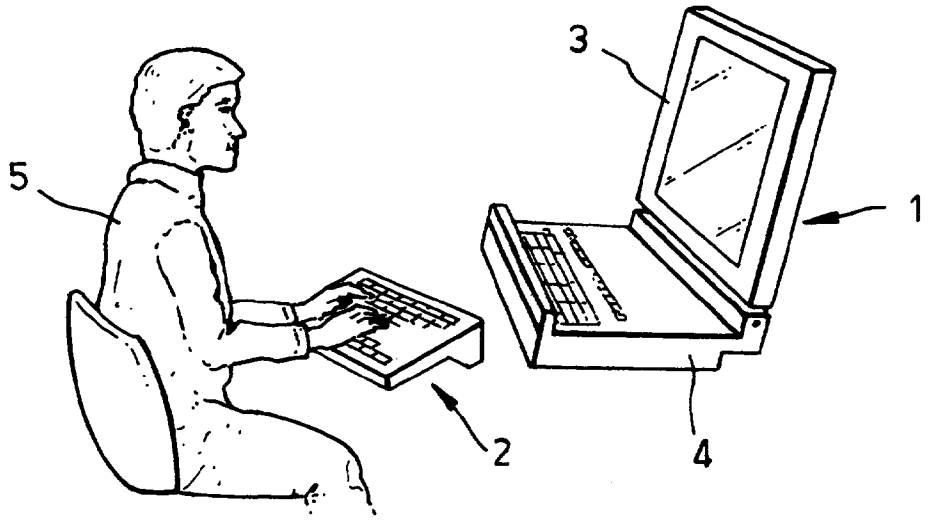


Fig.2.

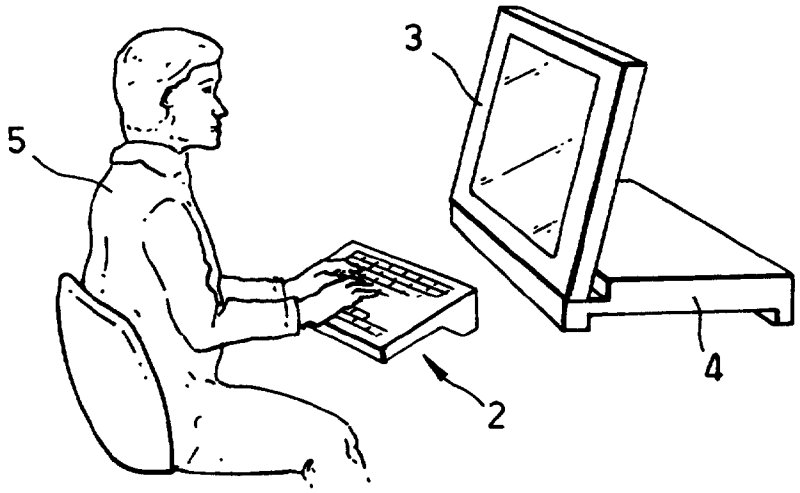


Fig.3.

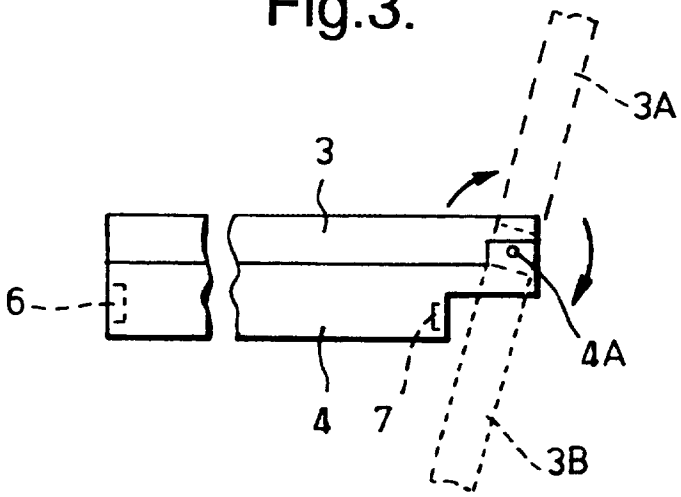


Fig.4.

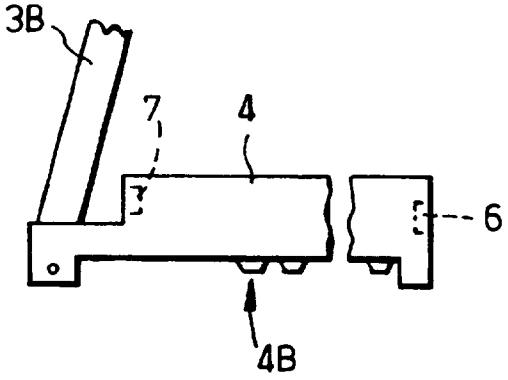


Fig.4A.

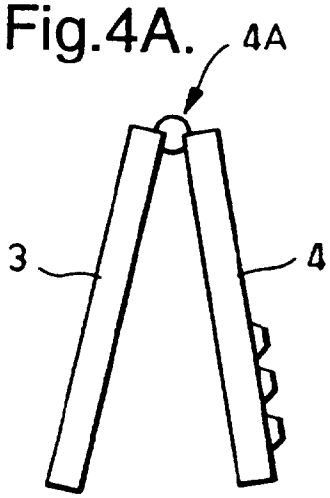
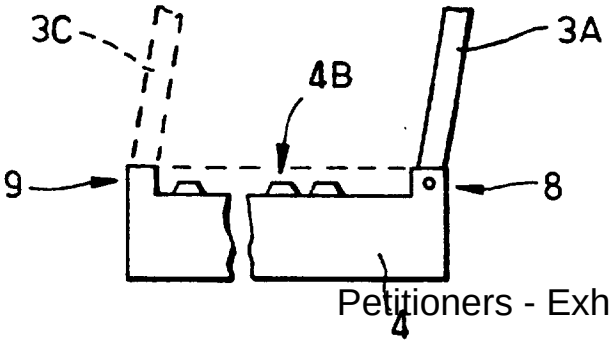


Fig.5.



NOTEBOOK COMPUTERS

This invention relates to notebook computers and in particular to notebook computers which, in addition to being usable in the portable, or free-standing, mode, facilitate use in a primary workstation arrangement at a workplace.

The technological advances in notebook screen technology, in particular the increased screen sizes which have become possible, mean that a notebook's own screen can be used as a primary display at a workstation, instead of for example a CRT monitor or another form of substantially non-portable display. However, the keyboard and mouse solutions of the notebook do not meet the current requirements for primary workstation input devices. When a notebook screen is used in a primary workstation context, external input devices must be used. Thus for example, the notebook computer is opened up in order to be able to view its screen and a separate primary workstation keyboard is employed as illustrated schematically in Figure 1. The keyboard may be connected to the notebook and/or other elements comprising the primary workstation by, for example, cables, infrared links, or the like. However, when the separate keyboard is disposed in front of the notebook in this manner, the distance between the user and the notebook screen is longer than is desirable for optimum viewing of the screen.

It is an object of the present invention to provide a means of achieving the optimum view distance between a notebook screen and a user employing a separate keyboard.

According to one aspect of the present invention there is provided a notebook computer comprising a body portion with a screen portion operatively connected thereto, wherein the screen portion is positionable relative to the body portion

such that it can be used in conjunction with a separate keyboard disposed at a distance from the screen portion corresponding to the optimum viewing distance for a user of the separate keyboard and closer to the screen portion than the depth of the body portion.

According to another aspect of the present invention there is provided a notebook computer comprising a body portion with a screen portion operatively connected thereto, wherein the screen portion is pivotable between a first position in which the notebook computer is closed, a second position in which the screen portion has been rotated through an angle of the order of 90° relative to the first position, and a third position in which the screen has been rotated through an angle of the order of 270° relative to the first position.

According to yet another aspect of the present invention there is provided a notebook computer comprising a body portion with a screen portion operatively connected thereto, wherein the screen is disconnectibly mounted to a back edge of the body portion and pivotable thereat between a first position in which the notebook computer is closed and a second position in which the screen has been rotated through an angle of the order of 90° relative to the first position, and wherein the screen is alternatively mountable to a front edge of the body portion in an orientation such that it extends substantially parallel to the second position.

Embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 illustrates, schematically a conventional notebook computer being used in combination with a separate keyboard;

Figure 2 illustrates schematically a notebook computer according to one embodiment of the present invention being used in combination with a separate keyboard;

Figure 3 illustrates highly schematically and not to scale a partial end view of a notebook computer according to the one embodiment of the present invention with the screen in the closed position; the normal (portable) open position (dashed lines) and the fully open position (dotted lines);

Figure 4 illustrates the notebook of Figure 3 with the screen in the fully open position and orientated for use (integral keyboard facing downwards) with an external keyboard;

Figure 4A illustrates another possible arrangement of the notebook of Figure 3, and

Figure 5 illustrates highly schematically and not to scale an end view of another embodiment of the invention in which the screen is normally hinged to the back of the computer body but is movable from that position to an alternative position (dashed lines) at the front of the computer body for use with an external keyboard.

Referring firstly to Figure 1, which illustrates a conventional notebook computer 1 being used with a primary workstation keyboard 2, the screen 3 of the notebook computer 1 is being used as the primary workstation display. In this set-up, the body 4 of the notebook computer can prevent the keyboard 2 being positioned close enough to the screen so that the user 5 is at the optimum viewing distance from the screen. The screen 3 is hinged to the back edge of body 4 in such a manner that when the notebook computer is opened for use there is an angle between them that will be referred to as of the order of 90°, although in practice it can be somewhat greater and will be such as to provide an optimum view of the screen.

In order to enable the keyboard 2 to be positioned closer to the screen 3 than previously possible, that is closer to the screen than the distance between the front and back edges of

the body ie its depth, it is proposed to arrange that the relative positions of the screen 3 and the body 4 of the notebook computer be changeable. One possible means of achieving this is to provide a hinge arrangement between the screen 3 and the body 4 at the back edge thereof that enables the notebook computer to be opened to such an extent that there is an angle between them which will be referred to as of the order of 270°, although in practice it can be somewhat greater in order to provide an optimum view of the screen. Such an arrangement is illustrated in Figure 2, in which the notebook computer has been opened up to the order of 270° and the body has been positioned on a work top with the integral keyboard facing downwards. Figure 3 illustrates very schematically, in order to indicate the principle, a partial end view of a notebook computer having a screen able to pivot about an axis 4A and open to such an extent, and indicating the closed position of the screen 3 relative to the body 4 in a solid line, the normal of the order of 90° viewing position of the screen in a dashed line 3A, and the order of 270° viewing position of the screen in a dotted line 3B. To enable the screen to be viewed with the image the right way up in the order of 270° orientation the body 4 must be disposed with the integral keyboard 4B downwards, as indicated in Figure 4.

In the order of 270° orientation illustrated in Figure 3 the image on the screen is the wrong way up when the body is disposed with the integral keyboard uppermost. If the image could be reversed (top to bottom) this order of 270° orientation could also be employed by, for example, disposing the body 4 at a higher level than the keyboard 2, for example, on some form of shelf, and with the integral keyboard uppermost. In such a case the orientation would be somewhat less than 270° for optimum viewing. Such an arrangement might be preferable in certain circumstances, particularly in connection with CD Roms or floppy disks, the drives for which may not operate in an upside down

configuration, as well as possibly being difficult to use when upside down. Instead of disposing the body on a shelf and angling the screen as appropriate, the opened out notebook computer could just be stood up as illustrated schematically in Figure 4A, in which the angle will be greater than 270° and the image will need reversing, top to bottom. Locking means could be provided to ensure that this angle is maintained.

In the arrangements illustrated in Figures 2, 3 and 4, a docking connection 6 can be disposed at the front of the body 4 in order to be accessible when the order of 270° orientation is employed (Figure 4), the docking connection being required when the screen is to be used as a primary workstation display. Connections 7 which are required when the notebook computer is to be used in the normal order of 90° orientation can be disposed at the back of the body as illustrated, these include parallel and serial ports. Locking means (not shown) are preferably provided in order to lock the screen into the desired orientation (90 or 270°).

An alternative possibility which permits the screen 3 and external keyboard 2 to be positioned closer together, and with the body the right way up, is to arrange that the screen 3 and body 4 are operatively connectible to one another both at the front and back edges of the body 4, as illustrated in Figure 5. At the back of the body is a hinge arrangement 8 permitting the screen to be closed down onto the keyboard 4B (as indicated by the dotted line) and disposed at the order of 90° orientation 3A (solid lines), and also to be disconnected therefrom, whereas at the front of the body there is an alternative hinge or other connection arrangement 9 permitting the screen to be operatively connected thereat and disposed in an orientation 3C equivalent to the order of 270° orientation referred to above, but which is actually an order of 90° orientation and parallel to orientation 3A, but which will be closer to the external keyboard, as indicated

by the dotted lines. In this arrangement the docking and other connections will not be covered by the screen in any orientation thereof and can thus be disposed in positions determined by other criteria.

A variant of the Figure 5 arrangement is as follows. As will be appreciated, such as from Figure 1, the screen portion 3 can be attached to the body portion 4 by means of two hinge arrangements. The screen portion is disconnectibly mounted to the back edge of the body portion, but instead of the alternative mounting position being at the front edge of the portion as in Figure 5, in a variant the alternative mounting position is also at the back edge, but with the left and right hinge connection positions interchanged, so that the picture side of the screen portion is then at the back, ie when regarding Figure 5 the image on the screen portion (in position 3A) is viewed from the right, rather than the left. If the wire connection between the screen and body portions is, say, in the middle of the bottom side of the screen, it need not be disconnected, rather "twisted" through 180°. If the wire connection is through one hinge and both hinge and wire are pivotable through 180°, the other hinge being disconnectible, the screen portion can readily be turned around. A separate support for the other hinge can be provided for such a variant. Alternatively, there can be a single hinge which is centrally disposed at the bottom side of the screen portion and with the wire connection extending through it, the whole hinge/wire arrangement being pivotable through 180° to present the image on the opposite side of the screen portion to the usual notebook configuration.

The arrangements proposed by the invention thus permit the screen of a notebook computer to be used as a primary workstation display, saving the cost of purchasing a CRT monitor or other display for the workstation, whilst allowing an external keyboard to be positioned close enough to the screen for optimum viewing thereof by a keyboard user.

CLAIMS

1. A notebook computer comprising a body portion with a screen portion operatively connected thereto, wherein the screen portion is positionable relative to the body portion such that it can be used in conjunction with a separate keyboard disposed at a distance from the screen portion corresponding to the optimum viewing distance for a user of the separate keyboard and closer to the screen portion than the depth of the body portion.

2. A notebook computer as claimed in Claim 1, wherein the screen portion is pivotable between a first position in which the notebook computer is closed, a second position in which the screen portion has been rotated through an angle of the order of 90° relative to the first position, and a third position in which the screen portion has been rotated through an angle of the order of 270° relative to the first position.

3. A notebook computer as claimed in Claim 2, wherein the screen portion is pivotably connected to a back edge of the body portion, wherein a docking connection is disposed at a front edge of the body portion, the depth of the body portion corresponding to the distance between the front and back edges of the body portion, and wherein in use with the external keyboard the screen portion is disposed in the third position.

4. A notebook computer as claimed in Claim 3, and wherein in use the body portion is disposed upside down on a work surface.

5. A notebook computer is claimed in Claim 3, including means for reversing the image top-to-bottom on the screen.

6. A notebook computer as claimed in Claim 1, wherein the screen portion is disconnectively mounted to a back edge of the body portion and pivotable thereat between a first position in which the notebook computer is closed and a second position in which the screen portion has been rotated through an angle of the order of 90° relative to the first position, and wherein the screen portion is alternatively mountable to a front edge of the body portion in an orientation such that it extends substantially parallel to the second position, the depth of the body portion corresponding to the distance between the front and back edges.

7. A notebook computer comprising a body portion with a screen portion operatively connected thereto, wherein the screen portion is pivotable between a first position in which the notebook computer is closed, a second position in which the screen portion has been rotated through an angle of the order of 90° relative to the first position, and a third position in which the screen has been rotated through an angle of the order of 270° relative to the first position.

8. A notebook computer comprising a body portion with a screen portion operatively connected thereto, wherein the screen is disconnectibly mounted to a back edge of the body portion and pivotable thereat between a first position in which the notebook computer is closed and a second position in which the screen has been rotated through an angle of the order of 90° relative to the first position, and wherein the screen is alternatively mountable to a front edge of the body portion in an orientation such that it extends substantially parallel to the second position.

9. A notebook computer substantially as herein described with reference to and as illustrated in any one of Figures 2 to 5 of the accompanying drawings.

The Patent Office

9

Application No:	GB 9702544.9	**Examiner:**	Matthew Gillard
Claims searched:	All	**Date of search:**	13 April 1997

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Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

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Int Cl (Ed.6): G06F 1/16

Other: On-line: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 0394879 A1	(SANYO). See figs 3, 4 & 11.	1 at least
X	US 5544005	(I. B. M.). See fig 1.	1 at least
X	US 4903221	(ZENITH). See fig 1.	1 at least

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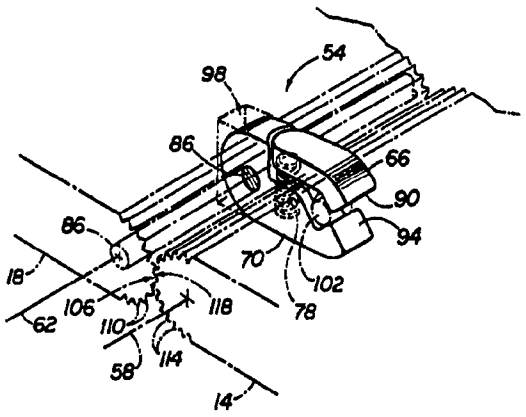
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(54) Title: MODULAR, RECONFIGURABLE DEVICES



(57) Abstract

A modular, reconfigurable system designed to permit coupling and decoupling of devices or components (14, 18) of varying types, including portable computers or other electrical devices, is disclosed. The system also is adapted to rotate about two adjacent, parallel axes (58, 62) permitting components to be positioned throughout approximately 0-360 degrees. The components (14, 18) are coupled by a connector (54).

Petitioners - Exhibit 1002, page 1015

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MODULAR, RECONFIGURABLE DEVICES

FIELD OF THE INVENTION

This invention relates to modular devices and more particularly to reconfigurable portable computers and other electronic or similar apparatus.

BACKGROUND OF THE INVENTION

Technological advances in the computing, electronics, and telecommunications industries have created devices useful to an ever-expanding number of users in a wider variety of operating situations. Increased memory capacities, processing speeds, and telecommunications capabilities of "portable" computers, for example, have combined with decreased size and weight to contribute to greater use of these devices. The advent of multi-media apparatus and component commonality has also augmented the usefulness of many electronic devices, as has rapid improvement in quality and capability of individual components. These rapid improvements to components of an overall device have contributed to consumers desiring periodically to upgrade their systems merely by purchasing the improved components. Consumers also appear eager for access to reconfigurable components to meet the requirements of the varied locations and situations in which the components operate. Many existing electronic systems have components which can neither be decoupled nor reconfigured, however, and thus fail to address these and other consumer needs.

U.S. Patent No. 5,103,376 to Blonder (incorporated herein in its entirety by this reference), for example, provides a laptop computer having keyboard and display portions whose

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positions relative to a user can be reversed. The computer includes a pair of dual-pivoting hinges, each capable of rotation about respective pins, to permit the reversal. According to the Blonder patent, however, the reversing portions are designed merely to facilitate information entry via both the keyboard and a graphics pen associated with the computer. As a result, neither the keyboard nor display is detachable from the remainder of the device, and their reconfigurability is severely limited.

U.S. Patent No. 5,034,858 to Kawamoto, et al., also incorporated herein in its entirety by this reference, discloses electronic equipment having a separable keyboard. The equipment also includes a display that can be both rotated about an axis and tilted into place about a perpendicular axis for use. As with that disclosed in the Blonder patent, however, the display cannot be detached from the main equipment body. Additionally, neither the Blonder nor Kawamoto patent contemplates rotation about two adjacent, parallel axes to permit reconfiguration of components throughout approximately 0-360°.

SUMMARY OF THE INVENTION

The present invention, by contrast, provides a modular, reconfigurable system designed to permit mechanical (and, if necessary, electrical) coupling and decoupling of devices or components of varying types. Because system elements can be decoupled, consumers can upgrade individual components as desired without having to purchase an entirely new system. Component redundancy can also be decreased, as a single electronic display, for example, can be coupled for use not only with computers but with appropriate audio-visual or

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telecommunications equipment as well. In essence, the invention permits a user to "mix and match" electronic or other devices and components as needed.

The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

It is therefore an object of the present invention to provide a system composed of reconfigurable modules.

It is another object of the present invention to provide a modular system permitting coupling and decoupling of devices and components, particularly electronic devices and components.

It is also an object of the present invention to provide a system having two adjacent, parallel axes of rotation to facilitate component rotation about approximately 0-360°.

Other objects, features, and advantages of the present invention will become apparent with reference to the remainder of the written portion and the drawings of this application.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an exemplary modular device incorporating the technology of the present invention shown in a nominally "open" position.

FIG. 2 is a perspective view of the device of FIG. 1 shown in a nominally "closed" position.

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FIG. 3 is a fragmentary perspective view of a connector of the present invention.

FIG. 4 is a cross-sectional view of the connector of FIG. 3.

FIGS. 5-9 are a series of fragmentary side cross-sectional views of the device of FIG. 1 shown in various configurations.

FIG. 10 is a perspective view of the device of FIG. 1 having a support.

FIG. 11 is an exploded perspective view of a mechanism connected to the support of FIG. 10.

FIGS. 12-13 are a series of side elevational views of the device of FIG. 10 shown in various configurations.

FIG. 14 is a perspective view of an alternate coupling mechanism forming part of the present invention.

FIG. 15 is a perspective view of an alternate exemplary modular device incorporating the technology of the present invention shown in a nominally "open" position.

FIG. 16 is a perspective view of the device of FIG. 15 shown in a nominally "closed" position.

FIG. 17 is a perspective view of the device of FIG. 15 illustrating a coupling mechanism.

FIG. 18 is a perspective view of the device of FIG. 15 illustrating an alternate coupling mechanism.

FIGS. 19-28 are a series of side elevational views of an exemplary modular device incorporating the technology of the present invention shown in various configurations.

FIG. 29 is an elevational view of a position indicator that can be incorporated in the modular devices of the present invention.

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DETAILED DESCRIPTION

FIGS. 1-2 illustrate generally an exemplary modular device 10 consistent with the present invention. As shown in FIG. 1, device 10 may be a portable computer comprising first module 14 (e.g. a keyboard) and second module 18 (e.g. a display). Also appearing in FIG. 1 are disk 22, a magnetic storage device which may be loaded into port 26, and compact disc 30 (which may be loaded into another port not shown in FIG. 1). An electronic mouse or other pointer 32 adapted to convert manual pressure to electronic signals capable of moving a cursor about the visual display 35 provided by second module 18 may also be included, as may video camera 34. FIG. 1 illustrates device 10 in a nominally "open" position permitting access both to visual display 35 and keys 36, while FIG. 2 shows device 10 in a nominally "closed" position. Torque-generating device 37, such as a spring, is designed to retain second module 18 in a selected position relative to first module 14 when device 10 is in use.

Also shown in FIG. 1 (and FIG. 29) as part of second module 18 is position-indicating mechanism 38. Mechanism 38 includes a moveable conductor 42 (such as liquid mercury) in a spherical cavity 46 having contacts 50 spaced about its periphery. Conductor 42 responds via gravitational forces to spatial reorientation of mechanism 38 by moving relative to contacts 50 (to contact at least one contact 50 to close its respective circuit). Including mechanism 38 as a component of either first or second modules 14 or 18 would thus permit it to indicate the spatial orientation of that module. Doing so would also allow mechanism 38 to assist device 10 (and its associated software) in determining, for example, whether the information

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to appear on visual display 35 should be in "landscape" or "portrait" position as the visual display 35 is spatially configured, the direction in which to move a curser of second module 18 when a visual display, or whether to render keys 36 of first module 14 inoperable when unused.

One or more connectors 54 operate to attach first and second modules 14 and 18. As shown in FIG. 3, for example, first module 14 defines a primary axis of rotation 58, while second module 18 defines a corresponding primary axis of rotation 62 parallel to axis 58. In some embodiments of device 10, the size of connector 54 is designed to be approximately equal to the combined thicknesses of first module 14 and second module 18. As a result, in these embodiments the size of connector 54 is significantly less than the length of either first module 14 or second module 18, placing parallel axes 58 and 62 essentially adjacent each other. Connector 54 mechanically couples first module 14 and second module 18 and can provide electrical coupling of the modules as well. Alternatively, first and second modules 14 and 18 may be coupled electrically using conventional means.

FIGS. 3-4 detail connector 54 of the present invention. Connector 54 comprises (moveable) leg 66, (fixed) leg 70, pin 74, and spring 78 and defines tube 82 for permanently receiving axle 86 embedded within second module 18. Leg 66 is designed to pivot about pin 74, with its flared end 90 biased by spring 78 toward a similar flared end 94 of leg 70. As a consequence, legs 66 and 70 of connector 54, when fitted into slots 98 of first module 14, snap, or clamp, onto axle 102 of that module and thereby connect first and second modules 14 and 18. The camming action of connector 54

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forces axles 82 and 94 toward each other, facilitating attachment of the modules.

Edge 106 of second module 18 may also include teeth 110 which are complementary to and designed to engage corresponding teeth 114 of edge 118 of first module 14. If present, teeth 110 and 114 permit more consistent rotation of first and second modules 14 and 18. Engaging the teeth 110 and 114 also permits use of a torque-generating device 37 in only one of first and second modules 14 and 18, providing a commensurate savings in space, weight, and cost. Use of teeth 110 and 114 may also reduce stress on connectors 54, stabilizing device 10 when in use by supporting the upper of first or second modules 14 or 18 along a greater length of the lower of axes 58 or 62. Teeth 110 and 114 additionally provide a convenient hand-grip surface for carrying first and second modules 14 and 18 when device 10 is configured as in FIG. 2.

Although slots 98 are shown in FIGS. 1-3 as formed at edge 118 of first module 14, they may additionally or alternatively appear along other edges or portions of first module 14 (e.g. slots 98A of FIG. 1). If so placed, the slots would permit device 10 to be configured in other ways, including, for example, as illustrated in FIGS. 22-23. Connector 54 could, moreover, be permanently connected to axle 102 rather than axle 86 or not permanently connected to either.

FIGS. 5-9 show first and second modules 14 and 18 of device 10 in various configurations accessible using the present invention. FIG. 5 shows second module 18 in an unrotated, or nominally closed, position relative to first module 14, placing the first and second modules 14 and 18 in parallel planes respectively intersecting axes 58 and 62. This position protects visual display

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35 and keys 36 from damage by securing them within the interior of device 10. FIG. 6, by contrast, illustrates second module 18 rotated about axis 62 to form an obtuse angle relative to first module 14 (described above as a nominally "open" position), positions representative of those assumed by the displays and keyboards of many operating laptop computers.

FIG. 7 illustrates an alternative positioning, in which second module 18 has been rotated approximately 180° relative to first module 14 to expose visual display 35. In FIG. 8, the rotation of second module 18 exceeds 270°, useful particularly when only visual display 35 need be accessible. FIG. 9, finally, shows second module 18 rotated approximately 360° relative to first module 14 (or vice-versa), exposing visual display 35 for use as, for example, a tablet for pen-based computing. Providing an upper surface 120 for keys 36 of first module 14 essentially flush with (or not protruding beyond) its upper surface 121 reduces the likelihood of damage to keys 36 in this configuration.

FIG. 10 details support 122 that may be incorporated into device 10. Support 122 rotates away from second module 18 and is held in position by mechanism 126 either to brace second module 18 (see FIG. 12) or elevate, for instance, a keyboard used as first module 14 (see FIG. 13) to facilitate information or data entry. By positioning support 122 other than at edge 106 of second module 18, the edge 106 continues to be available for locating ports, jacks, or other useful or necessary devices. If present, knobs 128 of support 122 may be fitted into recesses 130, with key 134, spring 138, and tension-adjustment screw 142 of mechanism 126 utilized to retain them in place. As shown in FIG.

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11, key 134 includes radial teeth 146 that engage similar teeth 150 on knob 128, with protrusion 154 of key 134 fitting into keyway 158 for rotational stability.

FIG. 14 details an alternative connector 162, such as a ball joint, of the present invention. Unlike connector 54, connector 162 permits rotation about an axis perpendicular to axes 58 and 62. This in turn increases the versatility of device 10, allowing a wider variety of possible configurations to be assumed without having to detach first and second modules 14 and 18.

FIGS. 15-19 illustrate more of the modular, reconfigurable nature of devices made according to the present invention. Shown in FIGS. 15-19 is device 210, which may include first, second, and third modules 214, 218, and 222, respectively. First and second modules 214 and 218 may be connected as described earlier or using either of the mechanical connectors 226 and 230 shown in FIGS. 17 and 18. If mechanical connectors 226 or 230 are employed, electrical connections between first and second modules 214 and 218 may be made using conventional ribbon cable 234, for example. Third module 222 may be connected to either first module 214 or second module 218 (and switched back and forth as desired), with slots 238 along edges 242 and 246 receiving connectors 250. Although keys 254 appear on first module 214 and visual display 258 is shown on second module 218, either or both modules could be electronic tablets, videotape or compact disc players, radios, television receivers, video game players, or other entertainment, educational, or scientific instrumentation modules. Among other devices conceivable as first, second, and third modules 214, 218, and 222 are communications modules

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(including cellular telephones, portable facsimile, copying, scanning, and printing devices, digital dictaphones), digital still or video cameras, digital transducers and data recorders, bar-code readers, and other electronic equipment. FIG. 16 illustrates recess 260 formed when device 210 is nominally "closed," which provides an area to which a user can apply pressure when opening the device 210 manually.

FIGS. 19-28 detail various couplings of the first and second modules 14 and 18 (or 214 and 218) useful with the present invention. In the nominally closed position of FIG. 19, second module 18 is unrotated relative to first module 14, protecting visual display 35 of second module 18 from damage by securing it within the interior of device 10. FIG. 27 shows second module 18 rotated approximately 360° relative to first module 14 (or vice-versa), exposing visual display 35 for use as, for example, a tablet for pen-based computing. FIG. 21 illustrates an alternative positioning, in which second module 18 has been rotated approximately 180° relative to first module 14 to expose visual display 35. Other alternative positionings involving rotation of second module 18 about axis 62 are detailed in FIG. 20 (in which second module 18 is rotated more than 90° to provide a standard "desktop" orientation) and in FIGS. 25 and 28 (in which second module 18 is rotated more than 270°, when only the visual display 35 need be accessible).

FIG. 22, 23, and 24 detail additional alternative positionings of first module 14 and second module 18. Detaching connector 54 from first module 14 and reattaching it about a secondary axis 262 of that module (if first module 14 is adapted for such axis to be present) permits

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device 10 to be configured as shown in FIG. 22, while thereafter detaching connector 54 from second module 18 and reattaching it about secondary axis 266 (again if that module is adapted to permit attachment about the axis) reconfigures device 10 as illustrated in FIG. 23. Similarly, reattaching connector 54 about secondary axis 266 of second module 18 while retaining its connection about axis 58 of first module 14 configures device 10 according to FIG. 24. FIG. 26, finally, illustrates the detachable mechanical connection between first module 14 and second module 18, permitting visual display 35 to be visible and device 10 to operate with merely an electrical connector 270 between the first and second modules 14 and 18.

The foregoing is provided for purposes of illustrating, explaining, and describing embodiments of the present invention. Modifications and adaptations to these embodiments will be apparent to those skilled in the art and may be made without departing from the scope or spirit of the invention.

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I claim:

1. A modular, reconfigurable system comprising:
   a. a first electronic module defining a first axis of rotation;
   b. a second electronic module defining a second axis of rotation parallel to the first axis of rotation;
   c. means for connecting the first and second electronic modules; and
   d. means for retaining the second electronic module in a selected position relative to the first electronic module.

2. A system according to claim 1 in which the connecting means intersects the first and second axes of rotation and permits rotation of the second electronic module approximately 0-360° about the first electronic module.

3. A system according to claim 1 further comprising means for hindering the first electronic module from rotating about the first axis of rotation.

4. A system according to claim 1 further comprising means for hindering the second electronic module from rotating about the second axis of rotation.

5. A system according to claim 1 in which the connecting means comprises means for detachably connecting the first and second electronic modules.

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6. A system according to claim 1 in which the first electronic module defines a secondary axis of rotation.

7. A system according to claim 6 in which the connecting means intersects the secondary axis of rotation.

8. A system according to claim 1 in which:
   a. the first electronic module comprises a curved surface radial to the first axis of rotation, which curved surface includes a plurality of first teeth; and
   b. the second electronic module comprises a curved surface radial to the second axis of rotation, which curved surface includes a plurality of second teeth complementary to and engaging the first teeth.

9. A system according to claim 1 in which the second electronic module comprises an integral position indicator, which position indicator comprises:
   a. a fluid conductor;
   b. a housing for the conductor, which housing:
      i. is adapted to permit the conductor to move responsive to reorientation of the second electronic module; and
      ii. comprises a plurality of electrical contacts, each adapted to contact the fluid conductor as a function of the orientation of the second electronic module.

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10. A system according to claim 1 further comprising means, connected to the second electronic module, for supporting the first electronic module.

11. A system according to claim 10 in which the supporting means comprises:
    a. an extension adapted to rotate about the second axis of rotation; and
    b. means for retaining the extension in a selected position.

12. A system according to claim 1 in which the first electronic module:
    a. defines a surface; and
    b. comprises a keyboard having a plurality of keys, each key having:
        i. an upper surface not protruding beyond the surface of the first electronic module; and
        ii. a recessed portion for accommodating a fingertip of a user.

13. A system according to claim 12 in which the first electronic module further comprises an electronic cursor-moving device comprising:
    a. an upper surface flush with the surface of the first electronic module, for receiving pressure from the fingertip of the user; and
    b. means for translating the fingertip pressure into motion of an electronic cursor.

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14. A system according to claim 1 further comprising means for selectively hindering the first electronic module from rotating about the first axis of rotation and in which the connecting means:
    a. intersects the first and second axes of rotation; and
    b. comprises means for detachably connecting the first and second electronic modules.

15. A system according to claim 14 in which the first electronic module defines a secondary axis of rotation and the connecting means intersects the secondary axis of rotation.

16. A system according to claim 14 further comprising means, connected to the first electronic module, for supporting the first electronic module, which supporting means comprises:
    a. an extension adapted to rotate about the first axis of rotation; and
    b. means for retaining the extension in a selected position.

17. A system according to claim 1 in which (1) the second electronic module defines a third axis of rotation perpendicular to the first and second axes of rotation and (2) the connecting means permits rotation of the second electronic module about the third axis of rotation.

18. A system according to claim 1 in which the connecting means comprises:

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a. a fixed leg connected to the second electronic module and having a length and a recess;
b. a spring positioned within the recess;
c. a pin spanning at least a portion of the length of the fixed leg; and
d. a moveable leg contacted by the spring and adapted to pivot about the pin.

19. A system according to claim 11 in which the extension-retaining means comprises a key positioned within the second electronic module and having a surface adapted to engage the extension.

20. A system according to claim 1 in which the first electronic module comprises a generally curved surface radial to the first axis of rotation, which generally curved surface comprises a recess.

21. A modular system comprising:
a. a keyboard;
b. a visual display mechanically and electrically connected to the keyboard; and
c. a telephone mechanically connected to at least one of the keyboard and visual display.

22. A modular, reconfigurable system comprising:
a. a first module defining:
i. a first primary axis of rotation;
ii. a secondary axis of rotation; and
iii. a curved surface radial to the first primary axis of rotation,

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which curved surface includes a plurality of first teeth;

b. a second module defining:
   i. a second primary axis of rotation parallel to the first primary axis of rotation; and
   ii. a curved surface radial to the second primary axis of rotation, which curved surface includes a plurality of second teeth complementary to and engaging the first teeth;

c. means, intersecting at least two of the first and second primary axes of rotation and the secondary axis of rotation, for detachably connecting the first and second modules;

d. torque-generating means for retaining the second module in a selected position relative to the first module;

e. means for selectively hindering the first module from rotating about the first primary axis of rotation; and

f. means, connected to the first module, for supporting the first module, which means comprises:
   i. an extension adapted to rotate about the first primary axis of rotation; and
   ii. means for retaining the extension in a selected position.

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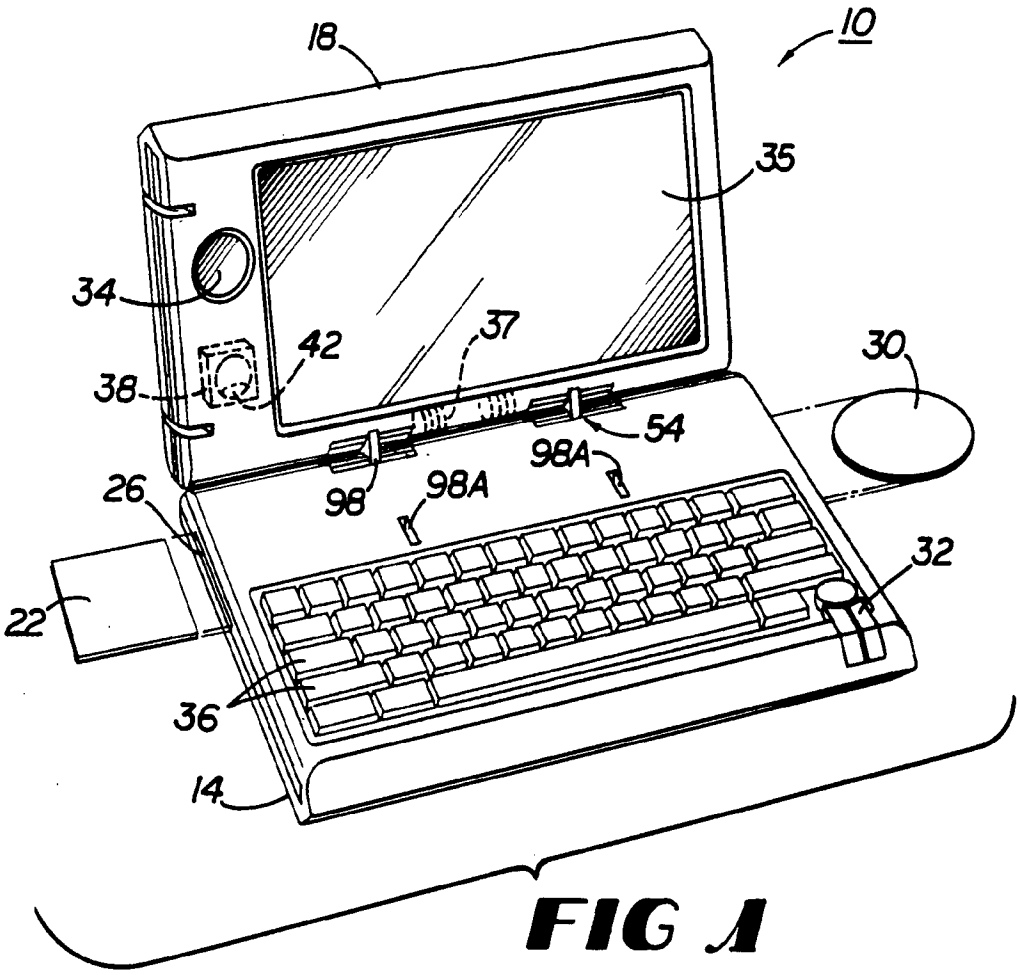


FIG 1

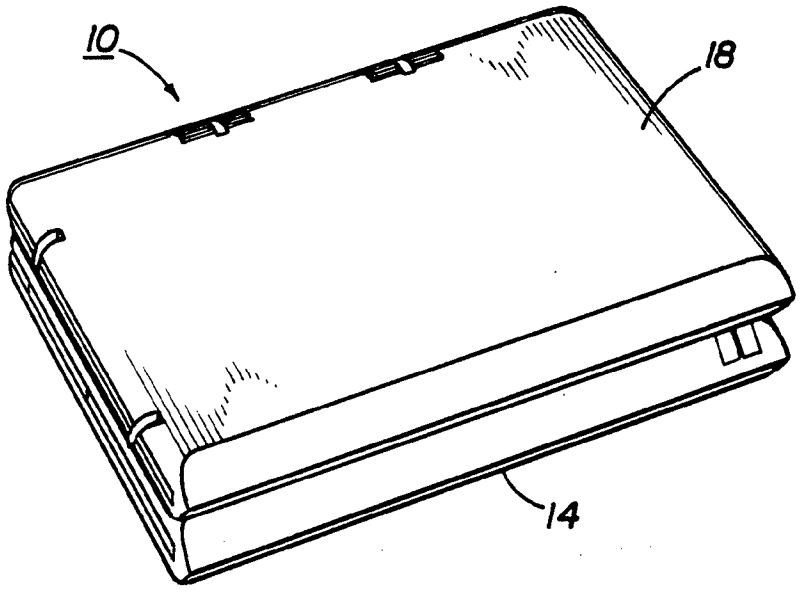


FIG 2

SUBSTITUTE SHEET (RULE 26)
Petitioners' Exhibit 1002, page 1034

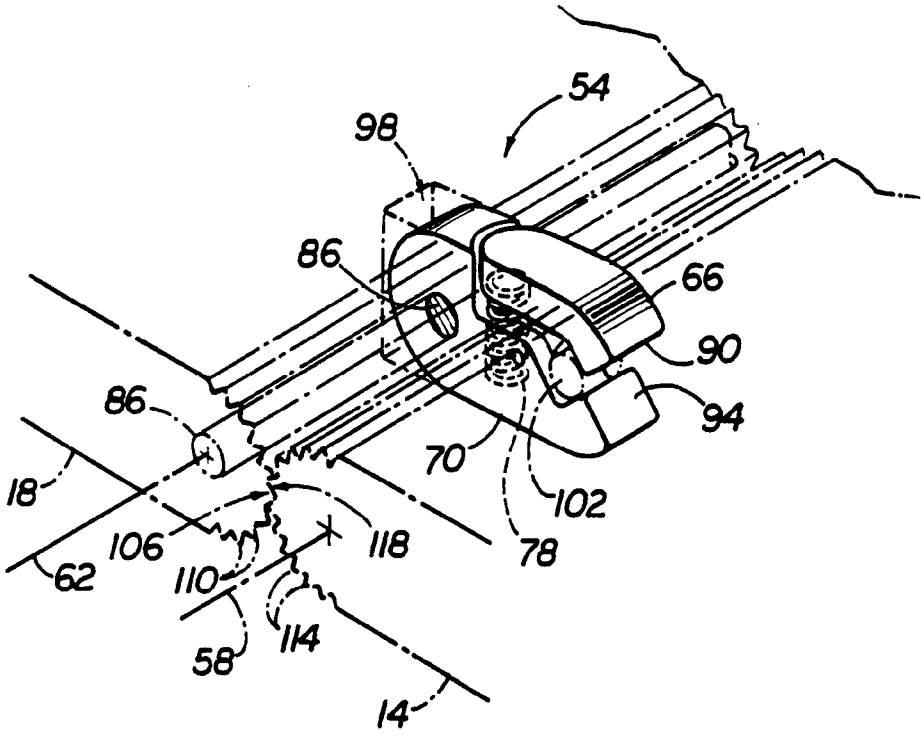


FIG 3

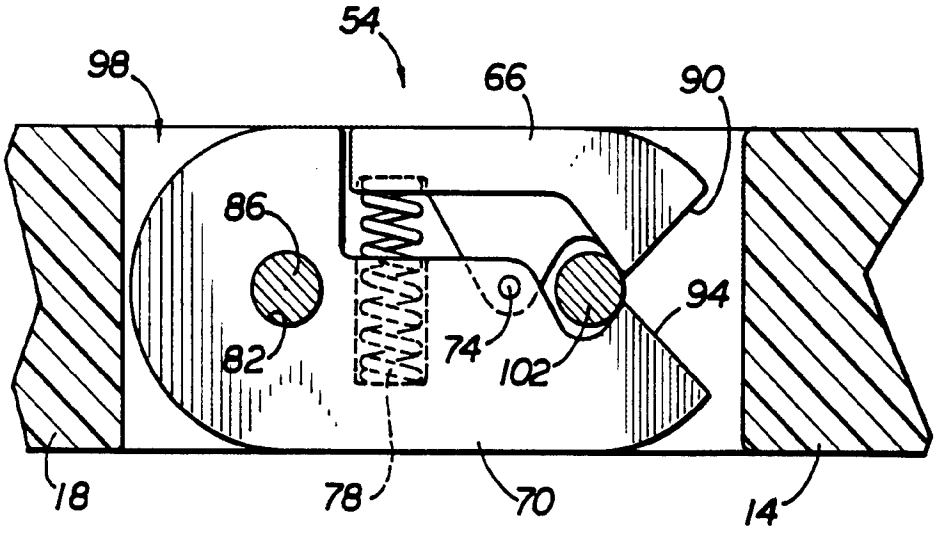


FIG 4

SUBSTITUTE SHEET (RULE 26)
Petitioners - Exhibit 1002, page 1035

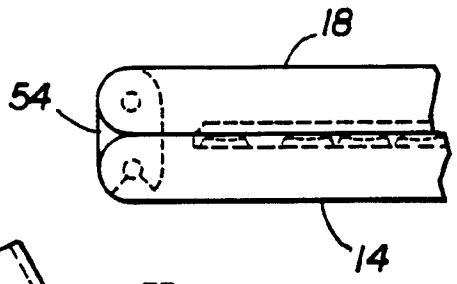


FIG 5

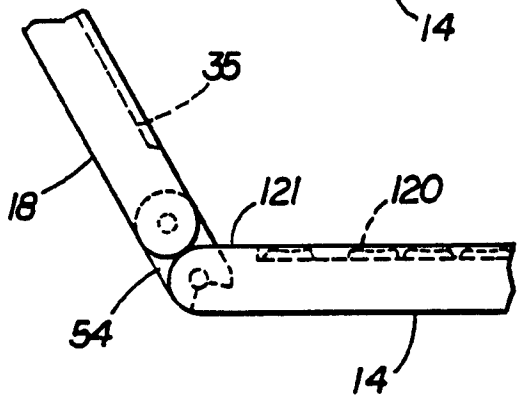


FIG 6

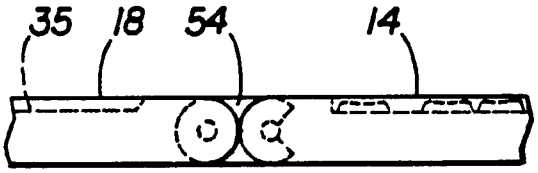


FIG 7

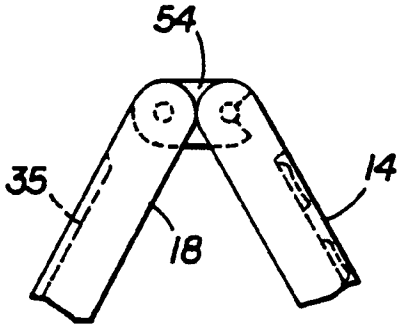


FIG 8

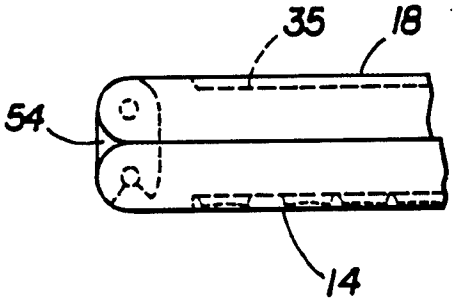


FIG 9

SUBSTITUTE SHEET (RULE 26)
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FIG 10

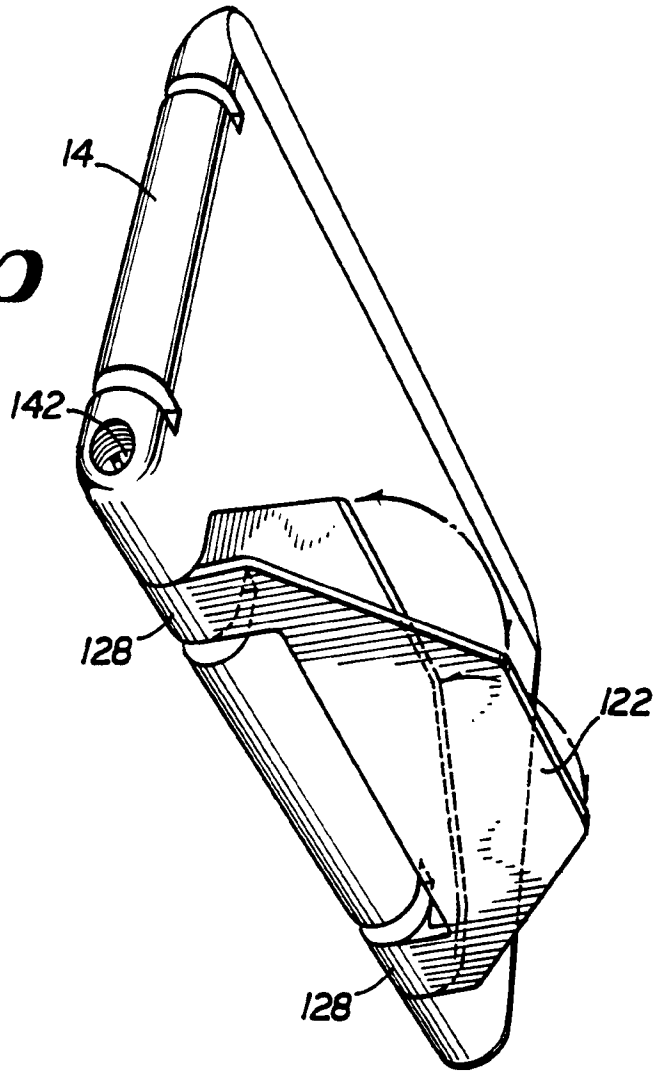
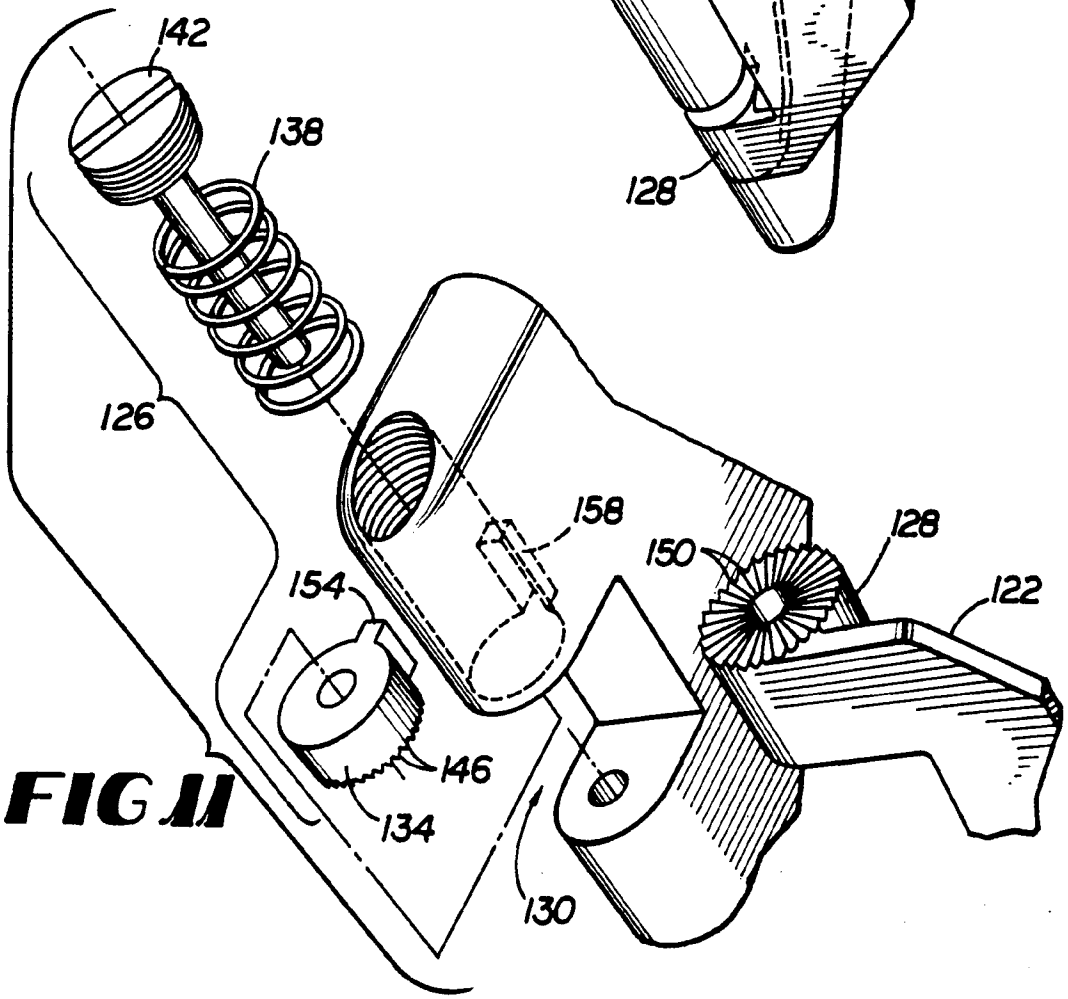


FIG 11



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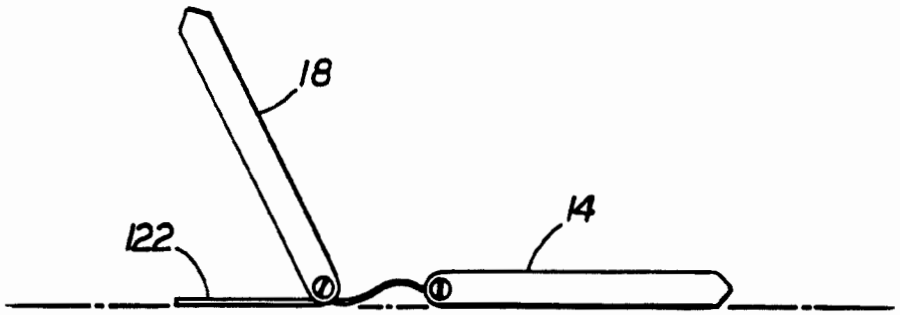


FIG 12

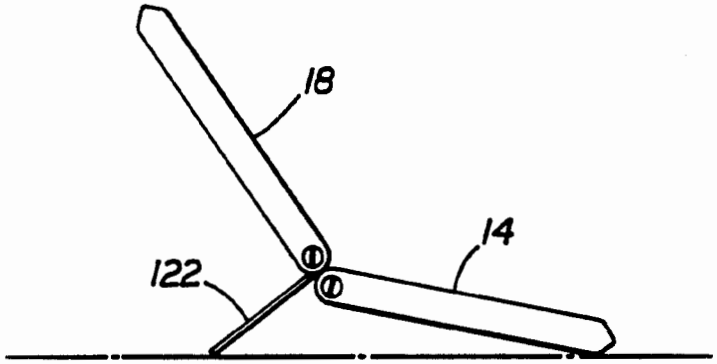


FIG 13

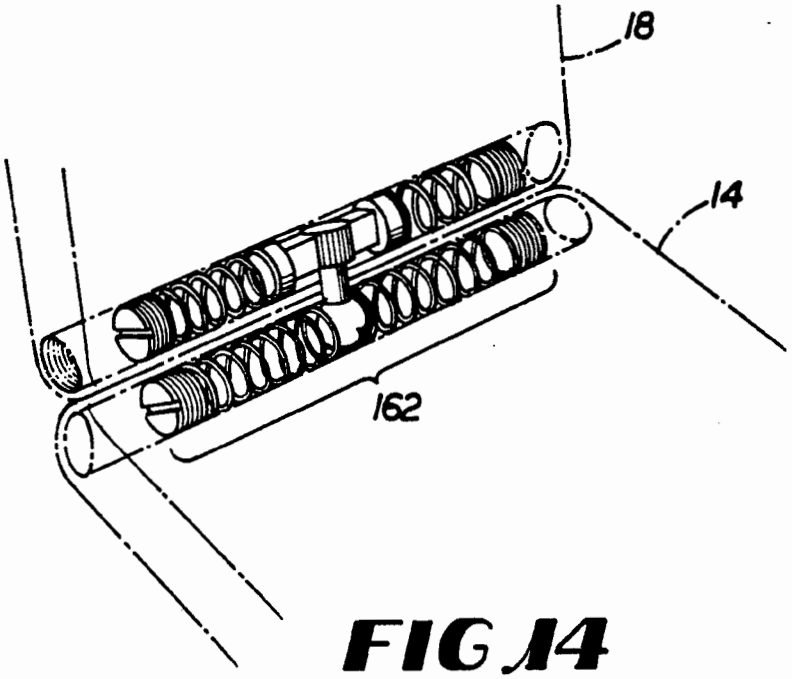


FIG 14

SUBSTITUTE SHEET (RULE 26) - Exhibit 1002, page 1038

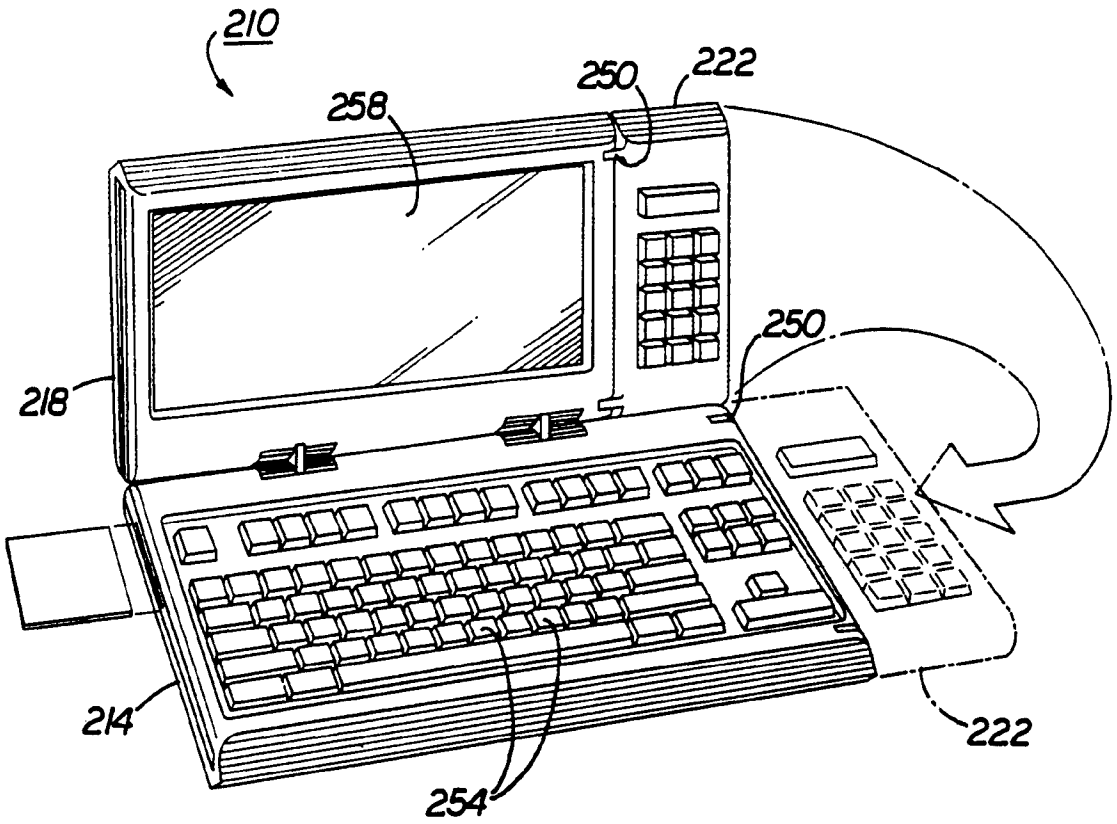


FIG 15

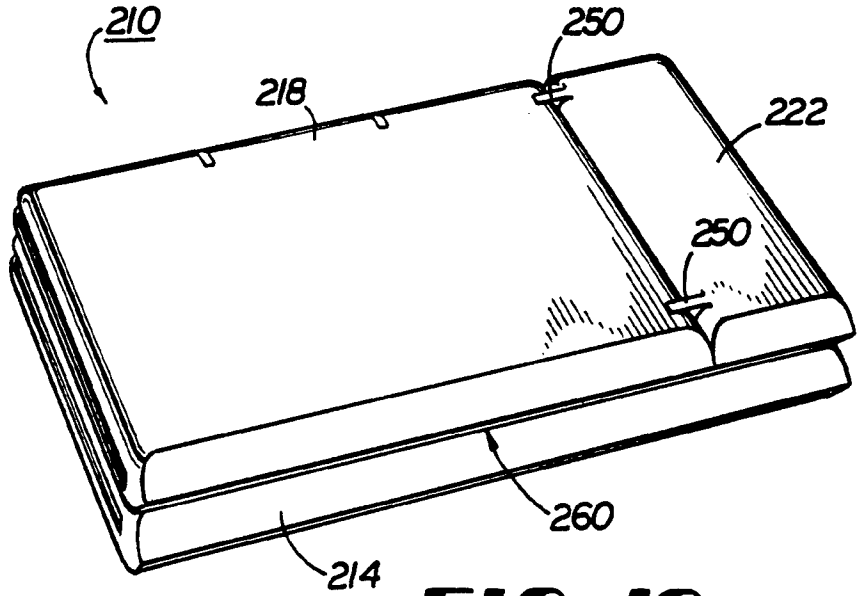


FIG 16

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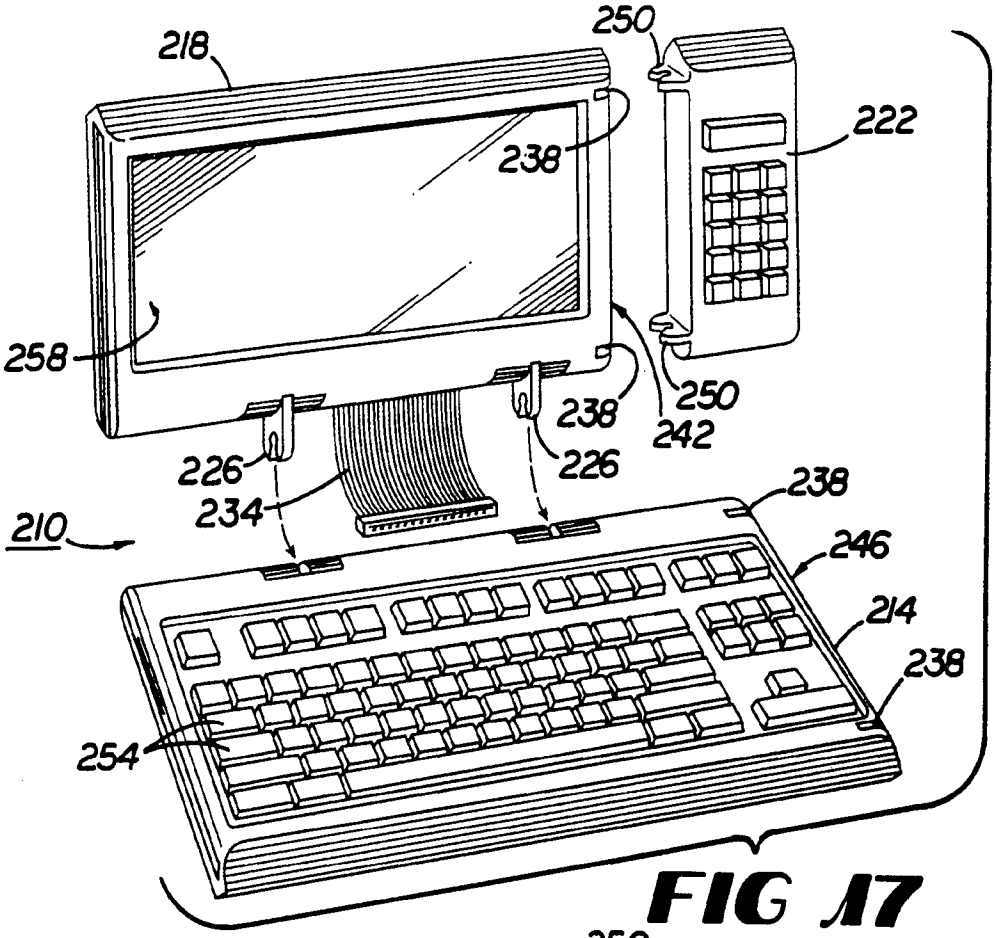


FIG 17

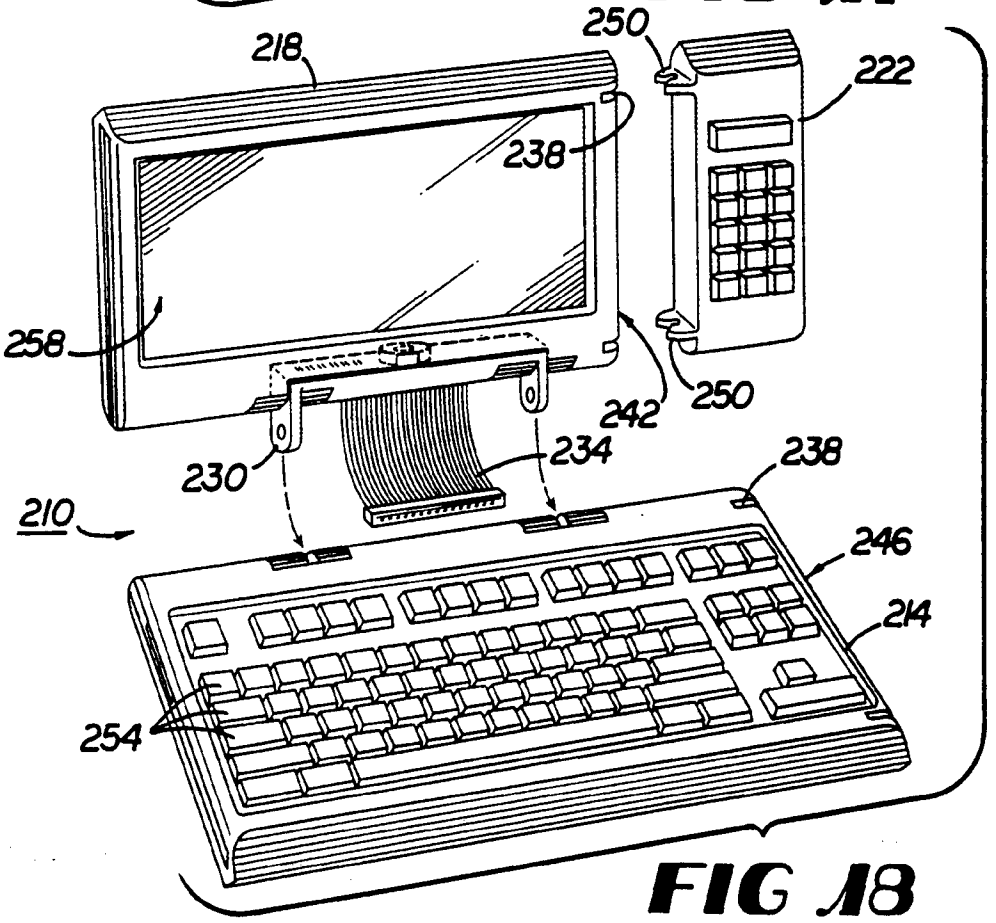


FIG 18

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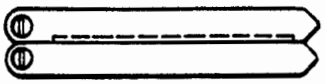


FIG 19

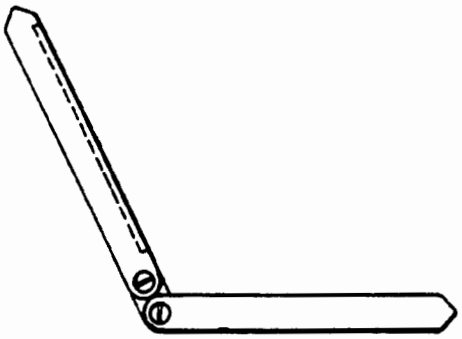


FIG 20



FIG 21

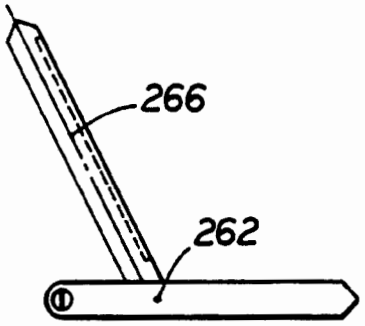


FIG 22

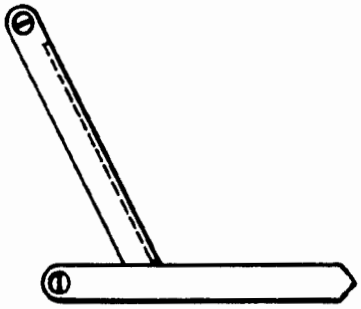


FIG 23

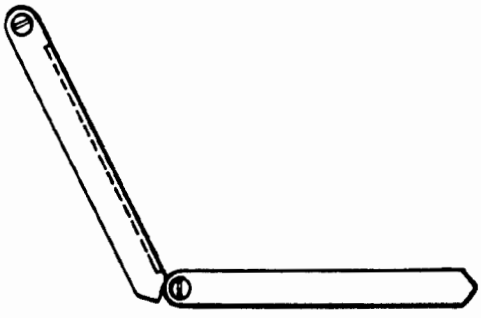


FIG 24

Petitioners - Exhibit 1002, page 1041

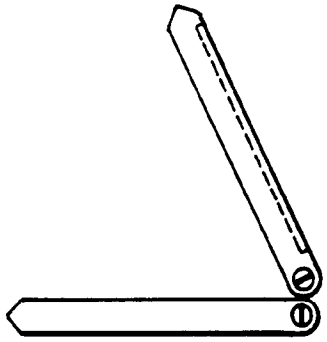


FIG 25

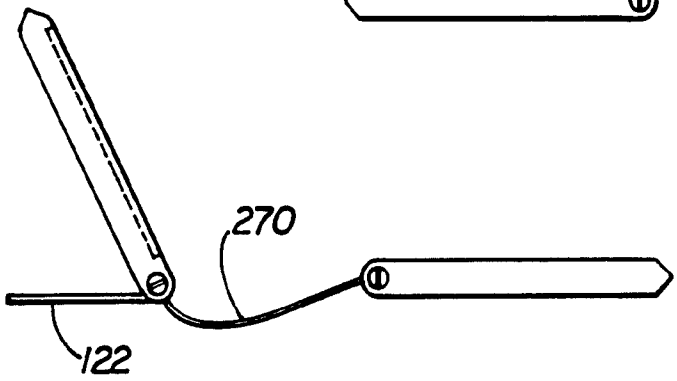


FIG 26

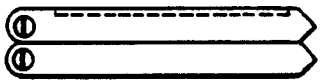


FIG 27

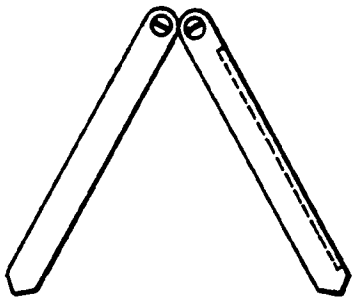


FIG 28

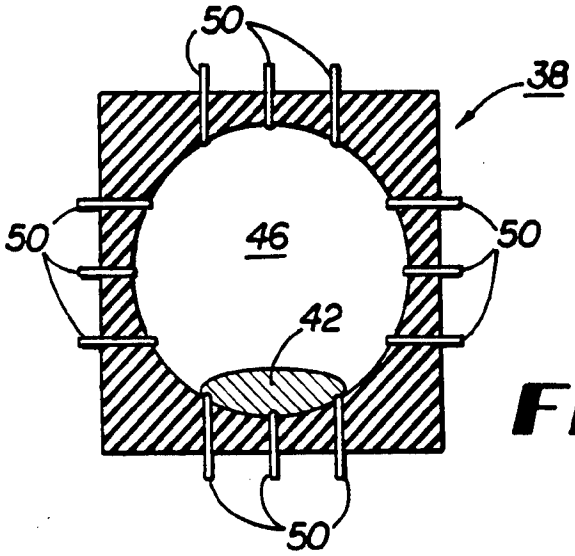


FIG 29

Petitioners - Exhibit 1002, page 1042

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/02468

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 1/16; H05K 7/12
US CL :361/683

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 361/680-683; 364/708.1; 439/928

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US, A, 5,268,817 (MIYAGAWA ET AL) 07 December 1993, Figures 8A-11B and column 6, line 66- column 9, line 59.	1-5, 14 --- 6, 7, 15, 16
Y	US, A, 5,034,858 (KAWAMOTO ET AL) 23 JULY 1991, Figures 9-15 and column 4, line 1- column 5, line 23.	6, 7, 15
Y	US, A, 5,235,495 (BLAIR ET AL) 10 August 1993, see the entire document.	16

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
06 JUNE 1995

Date of mailing of the international search report
10 JUL 1995

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer
MICHAEL W. PHILLIPS

Telephone No. (703) 308-3191

Petitioners' Exhibit 1002, page 1043

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/02468

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-7, 14-16, and 22

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

Petitioners - Exhibit 1002, page 1044

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/02468

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s)1-7, 14-16, and 22, drawn to a system having the special technical feature of a means for detachably connecting modules.
Group II, claim 8, drawn to a system having the special technical feature of teeth.
Group III, claim 9, drawn to a system having the special technical feature of a position indicator.
Group IV, claims 10, 11, and 19, drawn to a system having the special technical feature of means for supporting.
Group V, claims 12 and 13, drawn to a system having the special technical feature of a keys with a recessed portion for accommodating a fingertip.
Group VI, claim 17, drawn to a system having the special technical feature of a third axis of rotation.
Group VII, claim 18, drawn to a system having the special technical feature of a fixed leg.
Group VIII, claim 20, drawn to a system having the special technical feature of a recess.
Group IX, claim 21, drawn to a system having the special technical feature of a telephone.
The inventions listed as Groups I-IX do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: a special technical feature is a technical feature which defines a contribution over the prior art. The technical features in claims 1-4 are not special technical feature because they do not define a contribution over the prior art as shown by Figures 8A-11B of U. S. Patent No. 5,268,817 to Miyagawa et al., issued 07 December 1993. These Figures show two modules connected, retained, and hindered from rotation as claimed in claims 1-4 (and also claim 6). Thus claim 5 is the first claim with a special technical feature, i.e. a means for detachably connecting modules.

Groups II-IX do not include the special technical feature of a means for detachably connecting modules. Thus unity of invention is lacking.

Petitioners - Exhibit 1002, page 1045

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne/Lynn McNamara
Attorney Docket Number:	L2039.70001US03

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	27801948
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	23628
Filer:	Marcus E. Browne/Lynn McNamara
Filer Authorized By:	Marcus E. Browne
Attorney Docket Number:	L2039.70001US03
Receipt Date:	15-DEC-2016
Filing Date:	15-OCT-2012
Time Stamp:	11:07:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$180
RAM confirmation Number	121516INTEFSW11082000
Deposit Account	232825
Authorized User	Wolf Greenfield

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	L203970001US03-TRN-MEB.pdf	74651 5750d071480ff472d567fde7f75c045557f880d2	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	L203970001US03-FEE-MEB.pdf	92272 89251abb4c8a57387800cef79b0eb2b169edc637	no	1
Warnings:					
Information:					
3		L203970001US03-IDS-MEB.pdf	90359 a476a56a35c859442224addff27ac94abca0071c	yes	4

Multipart Description/PDF files in .zip description

Document Description	Start	End
Transmittal Letter	1	3
Information Disclosure Statement (IDS) Form (SB08)	4	4

Warnings:					
Information:					
4	Foreign Reference	GB2321982A.pdf	2126667 716e5368e7fcc1509c715ade06f7d1bc56d834ee	no	12
Warnings:					
Information:					
5	Foreign Reference	WO9524007A1.pdf	5161067 682b6e8bac03fe2d1d9e2d49f36e0773c227dfb9	no	31
Warnings:					
Information:					

6	Other Reference-Patent/App/Search documents	L203970001EP00_ER_dated_11-22-2016.pdf	275378 1a03a118ef3072b41500d8683afa39c741779435	no	8
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	30903 0626c6bd67d8f7b2ccb8b0e575506cfb0289b152	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	7851297		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM (to be used for all correspondence after initial filing)			
		Application Number	13/651,636-Conf. #6472
		Filing Date	October 15, 2012
		First Named Inventor	Yves Behar
		Art Unit	2835
		Examiner Name	Adrian S. Wilson
Total Number of Pages in This Submission		Attorney Docket Number	L2039.70001US03

ENCLOSURES (*Check all that apply*)

[X] Fee Transmittal Form	[ ] Drawing(s)	[ ] After Allowance Communication to TC
[ ] Fee Attached	[ ] Licensing-related Papers	[ ] Appeal Communication to Board of Appeals and Interferences
[ ] Amendment/Reply	[ ] Petition	[ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
[ ] After Final	[ ] Petition to Convert to a Provisional Application	[ ] Proprietary Information
[ ] Affidavits/declaration(s)	[ ] Power of Attorney, Revocation Change of Correspondence Address	[ ] Status Letter
[ ] Extension of Time Request	[ ] Terminal Disclaimer	[X] Other Enclosure(s) (please Identify below):
[ ] Express Abandonment Request	[ ] Request for Refund	Form PTO - 1449
[X] Information Disclosure Statement	[ ] CD, Number of CD(s) _____	Copies of cited references
[ ] Certified Copy of Priority Document(s)	[ ] Landscape Table on CD	
[ ] Reply to Missing Parts/ Incomplete Application	Remarks	
[ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature	/Marcus E. Browne/		
Printed name	Marcus E. Browne		
Date	December 15, 2016	Reg. No.	71,897

Certificate of Electronic Filing under 37 CFR §1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office's electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: 12-15-2016 Signature: /Lynn P. McNamara/ (Lynn P. McNamara)

PTO/SB/17 (03-13)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

FEE TRANSMITTAL

Complete if known	
Application Number	13/651,636-Conf. #6472
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Examiner Name	Adrian S. Wilson
Art Unit	2835
Practitioner Docket No.	L2039.70001US03

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($) 180.00

METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: 23/2825 Deposit Account Name: Wolf, Greenfield & Sacks, P.C.

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	280	140*	70	600	300	150	720	360	180	
Design	180	90	45	120	60	30	460	230	115	
Plant	180	90	45	380	190	95	580	290	145	
Reissue	280	140	70	600	300	150	2,160	1,080	540	
Provisional	260	130	65	0	0	0	0	0	0	

* The $140 small entity status filing fee for a utility application is further reduced to $70 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	80	40	20
Each independent claim over 3 (including Reissues)	420	210	105
Multiple dependent claims	780	390	195

Total Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____	=	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**	**Fee ($)**	**Fee Paid ($)**
_____	=	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	**Fee Paid ($)**
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $400 ($200 for small entity) ($100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**	**Fee ($)**	**Fee Paid ($)**
_____	=	_____	=	_____ (round **up** to a whole number) x	_____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English specification, $130 fee (no small or micro entity discount)	
Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, $400 fee ($200 small or micro entity)	
Other (e.g., late filing surcharge): 1806 Submission of an Information Disclosure Statement	180.00

SUBMITTED BY

Signature	/Marcus E. Browne/	Registration No. (Attorney/Agent)	71,897	Telephone	617.646.8000
Name (Print/Type)	Marcus E. Browne			Date	December 15, 2016

Certificate of Electronic Filing under 37 CFR §1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office's electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: 12-15-2016 Signature: /Lynn P. McNamara/ (Lynn P. McNamara)

DOCKET NO.: L2039.70001US03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Yves Behar
Application No.:	13/651,636
Confirmation No.:	6472
Filed:	October 15, 2012
For:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
Examiner:	Adrian S. Wilson
Art Unit:	2835

CERTIFICATE OF ELECTRONIC FILING UNDER 37 C.F.R. § 1.8

The undersigned hereby certifies that this paper, along with any paper referred to as being attached or enclosed, is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4), on the 15th day of December, 2016.

__/Lynn P. McNamara/_____
Lynn P. McNamara

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT FILED PURSUANT TO THE DUTY OF DISCLOSURE UNDER 37 C.F.R. §§ 1.56, 1.97 AND 1.98

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§ 1.56, 1.97 and 1.98, the undersigned requests consideration of this Information Disclosure Statement.

PART I: Compliance with 37 C.F.R. § 1.97

This Information Disclosure Statement has been filed after the mailing date of either a Final Action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311 and is being filed on or before payment of an Issue Fee.

The undersigned hereby states, as specified in 37 C.F.R. § 1.97(e), that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart for this application not more than three months prior to the filing of this Statement.

Please charge our Credit Card in the amount of $180.00 covering the fee set forth in 37 C.F.R. § 1.17(p).

PART II: Information Cited

The undersigned hereby makes of record in the above-identified application the information listed on the attached form PTO-1449 (modified PTO/SB/08). The order of presentation of the references should not be construed as an indication of the importance of the references.

The undersigned hereby makes the following additional information of record in the above-identified application.

The undersigned would like to bring to the Examiner's attention the enclosed search report or other communication from a corresponding or related International or Foreign National Application:

Serial No.	Date of Mailing	Type(s) of Communication	Docket No.
EP 9727165.4	**11-22-2016**	**European Examination Report**	**L2039.70001EP00**

PART III: Remarks

Documents cited anywhere in the Information Disclosure Statement are enclosed unless otherwise indicated. It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;

2. The enclosed form PTO-1449 (modified PTO/SB/08) be signed by the Examiner to evidence that the cited information has been fully considered by the United States Patent and Trademark Office during the examination of this application;

3. The citations for the information be printed on any patent which issues from this application.

By submitting this Information Disclosure Statement, the undersigned makes no representation that a search has been performed, of the extent of any search performed, or that more relevant information does not exist.

By submitting this Information Disclosure Statement, the undersigned makes no representation that the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

By submitting this Information Disclosure Statement, the undersigned makes no representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. § 102.

Notwithstanding any statements by the undersigned, the Examiner is urged to form his or her own conclusion regarding the relevance of the cited information.

An early and favorable action is hereby requested.

The Director is hereby authorized to charge any deficiency or credit any overpayment in the fees occasioned by the filing of this Information Disclosure Statement to our Deposit Account No. 23/2825 under Docket No. L2039.70001US03 from which the undersigned is authorized to draw.

Respectfully submitted,

By: /Marcus E. Browne/
Marcus E. Browne, Reg. No. 71,897
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000

Docket No.: L2039.70001US03
Date: December 15, 2016
xNDDx

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

7590 12/16/2016

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
WILSON, ADRIAN S	
ART UNIT	PAPER NUMBER
2835	
NOTIFICATION DATE	DELIVERY MODE
12/16/2016	ELECTRONIC

Letter Withdrawing a Notice Requiring Inventor's Oath or Declaration

The Notice Requiring Inventor's Oath or Declaration mailed on 9-30-16 was sent in error, and is hereby withdrawn. The time period set forth in the Notice of Allowance and Fee(s) Due to file a reply and pay the required fees continues to run from the mailing date of the Notice of Allowance and Fee(s) Due. Any time period set forth in the Notice of Allowability continues to run from the mailing date of the Notice of Allowability.

Questions relating to this Notice should be directed to the Application Assistance Unit at 571-272-4200.

(571)-272-4200 or 1(888)-786-0101
Patent Publication Branch
Office of Data Management

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

TITLE OF INVENTION: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960.00			$960.00	12/30/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
A. S. Wilson	2835	

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- [ ] Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- [ ] "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Wolf, Greenfield & Sacks, P.C.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: LiTL LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Boston, Massachusetts

Please check the appropriate assignee category or categories (will not be printed on the patent) : [ ] Individual [X] Corporation or other private group entity [ ] Government

4a. The following fee(s) are submitted:
- [X] Issue Fee
- [ ] Publication Fee (No small entity discount permitted)
- [ ] Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- [ ] A check is enclosed.
- [X] Payment by credit card. ~~Form PTO-2038 is attached.~~
- [ ] The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 23/2825 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- [ ] Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- [ ] Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- [ ] Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Marcus E. Browne/ Date December 23, 2016

Typed or printed name Marcus E. Browne Registration No. 71,897

Certificate of Mailing or Transmission under 37 CFR 1.8

I hereby certify that this correspondence is being:

1. ☐ Deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:
   Mail Stop Issue Fee
   Commissioner for Patents
   P.O. Box 1450
   Alexandria, VA 22313-1450

   on _____.
   Date

2. ☐ Facsimile transmitted to the United States Patent and Trademark Office, or

   OR

3. ☒ EFS-Web transmitted to the USPTO.

/Eileen M. MacKenzie/	December 23, 2016
Signature	Date
Eileen M. MacKenzie	617-646-8000
Typed or printed name	Telephone number

Note: Each paper must have its own certificate of mailing or transmission, or this certificate must identify each submitted paper:

Issue Fee Transmittal (1 page)

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne/Eileen MacKenzie
Attorney Docket Number:	L2039.70001US03

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt

EFS ID:	27896739
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	23628
Filer:	Marcus E. Browne/Eileen MacKenzie
Filer Authorized By:	Marcus E. Browne
Attorney Docket Number:	L2039.70001US03
Receipt Date:	23-DEC-2016
Filing Date:	15-OCT-2012
Time Stamp:	17:06:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$960
RAM confirmation Number	122716INTEFSW17072900
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	L203970001US03-TRN-MEB.pdf	26081 41d1ed937585d1039757facd14e5396820e989f2	no	1
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	l203970001US03-ISSFEE-MEB.pdf	49969 5d43f1d1e525bd9718907a5712bd7b7b91efb6c4	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30702 fec1651163e538b09704d977c420d387535b8854	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	106752		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	

Application Number	13/651,636-Conf. #6472
Filing Date	October 15, 2012
First Named Inventor	Yves Behar
Art Unit	2835
Examiner Name	A. S. Wilson
Attorney Docket Number	L2039.70001US03

ENCLOSURES (*Check all that apply*)

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) (please Identify below):
  - PTOL-85B Issue Fee Payment

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature	/Marcus E. Browne/		
Printed name	Marcus E. Browne		
Date	December 23, 2016	Reg. No.	71,897

Certificate of Electronic Filing under 37 CFR §1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office's electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: December 23, 2016 Electronic Signature for: /Eileen M. MacKenzie/

FORM PTO-1449/A and B (modified PTO/SB/08)				APPLICATION NO.: 13/651,636	ATTY. DOCKET NO.: L2039.70001US03
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				FILING DATE: October 15, 2012	CONFIRMATION NO.: 6472
				FIRST NAMED INVENTOR: Yves Behar	
Sheet	1	of	1	GROUP ART UNIT: 2835	EXAMINER: Adrian S. Wilson

U.S. PATENT DOCUMENTS

Examiner's Initials #	Cite No.	U.S. Patent Document Number	U.S. Patent Document Kind Code	Name of Patentee or Applicant of Cited Document	Date of Publication or Issue of Cited Document MM-DD-YYYY
		6,493,216		Lin	12-10-2002
		7,164,432		Amemiya	01-16-2007

FOREIGN PATENT DOCUMENTS

Examiner's Initials #	Cite No.	Foreign Patent Document Office/ Country	Foreign Patent Document Number	Foreign Patent Document Kind Code	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Translation (Y/N)
		GB	2321982	A	Fujitsu ICL Computers OY	08-12-1998	
		WO	95/24007	A1	Lane	09-08-1995	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		European Examination Report dated November 22, 2016 in connection with European Application No. 09727165.4 (L2039.70001EP00)	

[NOTE – No copies of U.S. patents, published U.S. patent applications, or pending, unpublished patent applications stored in the USPTO's Image File Wrapper (IFW) system, are included. See 37 CFR § 1.98 and 1287OG163. Copies of all other patent(s), publication(s), unpublished, pending U.S. patent applications, or other information listed are provided as required by 37 CFR § 1.98 unless 1) such copies were provided in an IDS in an earlier application that complies with 37 CFR § 1.98, and 2) the earlier application is relied upon for an earlier filing date under 35 U.S.C. § 120.]

EXAMINER:	DATE CONSIDERED:
/ADRIAN S WILSON/	12/27/2016

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Petitioners - Exhibit 1002, page 1064

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.S.W/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	10/15/2012	Yves Behar	L2039.70001US03	6472

23628 7590 01/05/2017

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
WILSON, ADRIAN S	

ART UNIT	PAPER NUMBER
2835	

NOTIFICATION DATE	DELIVERY MODE
01/05/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents_eOfficeAction@WolfGreenfield.com
WGS_eOfficeAction@WolfGreenfield.com

Supplemental Notice of Allowability	Application No. 13/651,636	Applicant(s) BEHAR ET AL.	
	Examiner ADRIAN S. WILSON	Art Unit 2835	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *IDS submitted on 12/15/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-11, 13-18 and 20-27*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ADRIAN S WILSON/
Primary Examiner, Art Unit 2835

Electronic Acknowledgement Receipt

EFS ID:	24559090
Application Number:	13651636
International Application Number:	
Confirmation Number:	6472
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Customer Number:	37462
Filer:	Marcus E. Browne
Filer Authorized By:	
Attorney Docket Number:	L2039-700120
Receipt Date:	07-JAN-2016
Filing Date:	15-OCT-2012
Time Stamp:	14:57:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1340
RAM confirmation Number	2618
Deposit Account	502762
Authorized User	BROWNE, MARCUS E.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

Electronic Patent Application Fee Transmittal

Application Number:	13651636
Filing Date:	15-Oct-2012
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Marcus E. Browne
Attorney Docket Number:	L2039-700120

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Petition fee- 37 CFR 1.17(h) (Group III)	1464	1	140	140
Request for Continued Examination	1801	1	1200	1200
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Adjustment date: 01/09/2017 SDIRETAI
01/08/2016 INTEFSW 00002618 502762 13651636
02 FC:1801 1200.00 CR

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/651,636	02/07/2017	9563229	L2039.70001US03	6472

23628 7590 01/18/2017

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 187 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

LITL LLC, BOSTON, MA;
Yves Behar, Oakland, CA;
Joshua Morenstein, San Francisco, CA;
Christopher Hibmacronan, Oakland, CA;
Naoya Edahiro, San Francisco, CA;
Matthew David Day, San Francisco, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	2/1/2023	for the District of Delaware

PLAINTIFF	DEFENDANT
LiTL LLC	ASUSTeK Computer Inc., ASUS Global Pte. Ltd., and ASUS Technology Pte. Limited

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,289,688	10/16/2012	LiTL LLC
2	8,624,844	1/7/2014	LiTL LLC
3	9,563,229	2/7/2017	LiTL LLC
4	10,289,154	5/14/2019	LiTL LLC
5	9,003,315	4/7/2015	LiTL LLC

See attached Addendum

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

Addendum to Patent/Trademark Report – (LiTL LLC v. ASUSTeK Computer Inc., et al.)

List of Additional Patents

Patent Number	Date of Patent	Holder of Patent
9,880,715	01/30/2018	LiTL LLC
10,564,818	2/18/2020	LiTL LLC
8,612,888	12/17/2013	LiTL LLC