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

Trials@uspto.gov
571-272-7822

Paper: 6
Entered: October 21, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LENOVO (UNITED STATES) INC.,
Petitioner,

v.

LITL LLC,
Patent Owner.

IPR2021-00822
Patent 8,624,844 B2

Before MICHELLE N. ANKENBRAND, GARTH D. BAER, and BRIAN D. RANGE, *Administrative Patent Judges*.

BAER, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Lenovo (United States) Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 1–16 and 18–22 of U.S. Patent No. 8,624,844 B2 (Ex. 1001, "the '844 patent"). LiTL LLC ("Patent Owner") filed a Preliminary Response. Paper 5 ("Prelim. Resp.").

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2020). The standard for institution is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." As discussed below, we determine that Petitioner does not show a reasonable likelihood of prevailing with respect to the challenged claims. Accordingly, we deny institution of an *inter partes* review.

II. BACKGROUND

A. Related Matters

The parties identify the following as a related matter: *LiTL LLC v. Lenovo (United States), Inc. and Lenovo (Beijing) Limited*, 1:20-cv-00689-RGA (D. Del.). Pet. 2; Paper 4, 1. Patent Owner also identifies the following as related matters: IPR2021-00681, IPR2021-00786, IPR2021-00800, and IPR2021-00821. Paper 4, 2.

B. The '844 Patent (Ex. 1001)

The '844 patent is titled "Portable Computer with Multiple Display Configurations." Ex. 1001, code (54). The computer system of the '844 patent describes different profiles to customize the graphical user interface in different modes, including a laptop mode in which the portable computer

has a conventional laptop appearance, with the display inclined at a viewing angle from the base (*id.* at 6:26–28); an easel mode in which the base of the computer and its display stand upright forming an inverted "V," and the display and keyboard are on opposite sides (*id.* at 7:48–61); and a frame mode in which the display and base are at a similar orientation and angle as in easel mode, but with the base lying flat on a surface and the keyboard facing down (*id.* at 16:3–13).

Figure 17 of the '844 patent, reproduced below, illustrates a portable computer in laptop mode. *Id.* at 5:13–15.

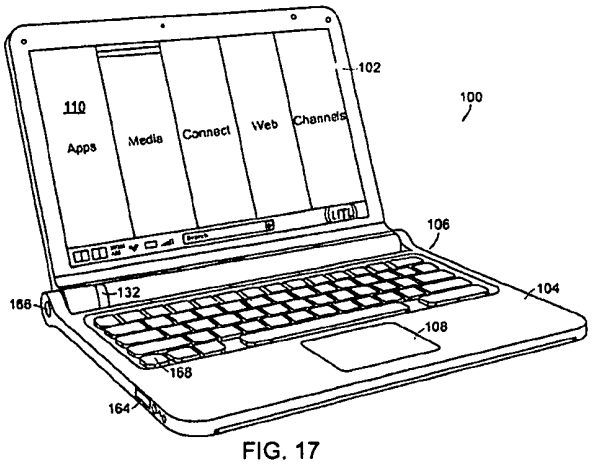


FIG. 17

Figure 4 of the '844 patent, reproduced below, illustrates the portable computer in easel mode. *Id.* at 4:47–48.

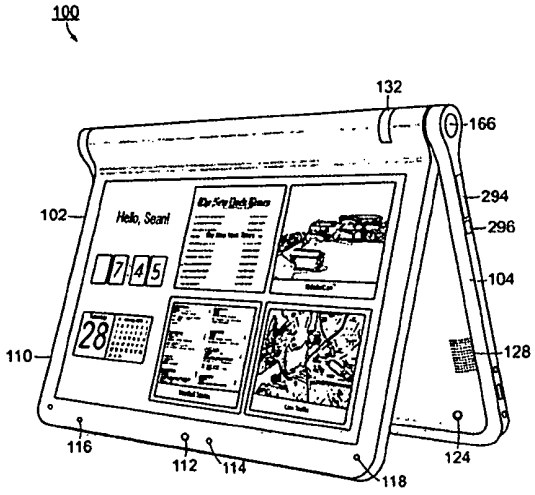


FIG. 4

Figure 26 of the '844 patent, reproduced below, illustrates the portable computer configured into frame mode. *Id.* at 5:35–37.

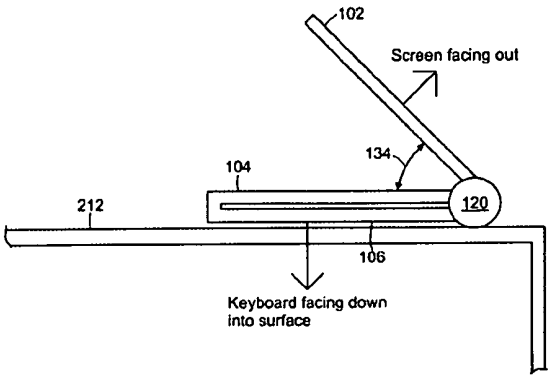


FIG. 26

The '844 patent explains that the display's orientation can change based on the different modes or in response to a user's input. *Id.* at 2:42–44.

C. Challenged Claims

Among challenged claims 1–16 and 18–22, claims 1, 10, and 18 are independent. Claim 1 is exemplary of the claimed subject matter and is reproduced as follows:

1. A portable computer configurable between a plurality of display modes including a laptop mode and an easel mode wherein transitions between the plurality of display modes allows an operator to interact with a single display screen in each of the plurality of display modes, the portable computer comprising:

a base including a keyboard;

a main display component rotatably coupled to the base such that the main display component and the base are rotatable with respect to one another about a longitudinal axis running along an interface between the main display component and the base to transition between at least the laptop mode and the easel mode, the main display component including the single display screen, wherein the transition between the laptop mode and the easel mode allows the operator to operate the portable computer while viewing the single display screen in each of the plurality of display modes, wherein

the laptop mode is configured to display to a user on the main display component a first content mode having a first content display orientation with the main display component oriented towards the user and the keyboard oriented to receive input from the user;

the easel mode is configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user, wherein the first and second content display orientations are 180 degrees relative to each other, and wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard; and

a navigation control disposed at least partially within the base and rotatable about the longitudinal axis, the navigation control configured to permit a user to control at least one of operating parameters of the portable computer and content displayed on the single display screen wherein the plurality of modes

> includes a frame [mode[1]] in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface.

Ex. 1001, 17:9–51.

D. Asserted Grounds of Unpatentability

Petitioner asserts the challenged claims are unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C. §[2]	Reference(s)/Basis
1, 3–5, 7–10, 13–16	103	Shimura,[3] Tsuji,[4] Pogue[5]
6	103	Shimura, Tsuji, Pogue, Escamilla[6]
2	103	Shimura, Tsuji, Pogue, Escamilla, Yeh[7]
18, 22	103	Shimura, Tsuji, Pogue, Lin[8]

[1] Original claim 1 recites a "frame" not a "frame mode." Ex. 1001, 17:47. On April 1, 2014, the Office issued a Certificate of Correction that inserts the word "mode" after the word "frame" in claim 1. *Id.* at Certificate of Correction.

[2] The Leahy-Smith America Invents Act ("AIA") amended 35 U.S.C. § 103. *See* Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011). As the application that issued as the '844 patent was filed before the effective date of the relevant amendments, the pre-AIA version of § 103 applies.

[3] JP1994-242853 (H6-242853), published September 2, 1994 (Ex. 1003). We refer to the Certified English translation (Ex. 1004, "Shimura").

[4] US 2005/0062715 A1, published Mar. 24, 2005 (Ex. 1005, "Tsuji").

[5] Windows XP Home Edition: The Missing Manual (2d ed.) (David Pogue, Pogue Press, LLC & O'Reilly Media, Inc. 2004) (Ex. 1006, "Pogue").

[6] US 6,724,365 B1, Apr. 20, 2004 (Ex. 1007, "Escamilla").

[7] US 6,396,419 B1, May 28, 2002 (Ex. 1008, "Yeh").

[8] US 2007/0013682 A1, published Jan. 18, 2007 (Ex. 1009, "Lin").

Claim(s) Challenged	35 U.S.C. §[2]	Reference(s)/Basis
11, 12, 19, 21	103	Shimura, Tsuji, Pogue, Escamilla, Lin

Pet. 3–4. Petitioner supports the asserted grounds with the Declaration of Jean Renard Ward. Ex. 1010.

III. DISCUSSION

A. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art ("POSITA")

> would have had at least a Bachelor's degree in Electrical Engineering, Computer Engineering, or Computer Science, plus two to three years of work experience in designing hardware and/or software aspects of the User Interface (UI) for portable computing devices; the POSITA would also be familiar with designs of the user interface employed and displayed by the operating system and its organization of content and functionality. Alternatively, the POSITA would have received a graduate degree such as a Master's or PhD degree with at least one year of work experience related to hardware and/or software design aspects of the UI for portable computing devices; the POSITA would also be familiar with designs of the user interface employed and displayed by the operating system and its organization of content and functionality.

Pet. 15–16 (citing Ex. 1010 ¶ 26).

Patent Owner does not dispute Petitioner's asserted level of ordinary skill in the art. *See generally* Prelim. Resp.

We find, based on the current record, that Petitioner's contention is reasonable. For purposes of this Decision, we adopt the level of ordinary skill in the art Petitioner proposes.

B. Claim Construction

Petitioner proposes a claim construction for "content mode," as well as several related terms, i.e., "first content mode," "second content mode," and "mode(s) of content." Pet. 16–18. We determine we need not explicitly construe those terms to determine whether to institute an *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

We determine, however, that construction is necessary for "frame mode." Claim 1 recites, among other things, "[a] portable computer configurable between a plurality of display modes . . . wherein the plurality of modes includes a frame mode in which the main display component is orientated towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface." Ex. 1001, 17:9–51; *see id.* at Certificate of Correction. Independent claims 10 and 18 have similar "frame mode" limitations. *Id.* at 18:65–19:2, 20:25–29. The '844 patent explains that frame mode is "illustrated in FIG. 26." *Id.* at 16:2–3. Figure 26 is reproduced below.

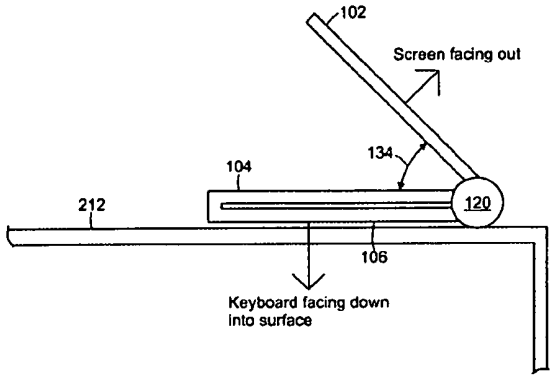


FIG. 26

Figure 26 and the accompanying text characterize frame mode as having the keyboard face down on a surface with the screen face up, and the base and display components forming a non-zero angle 134, similar to easel mode's inverted "V." *See id.* at 16:6–13.

Frame mode is distinct from "tablet mode," which the '844 patent acknowledges was known in the art. *See id.* at 1:32–55 (citing U.S. Patent Nos. 6,771,494 (Ex. 2009) and 6,266,236 ("the '236 patent") (Ex. 2010)). In tablet mode, the display is "rotated and folded against the base." *Id.* at 1:43–46. Tablet mode is depicted, for example, in the '236 patent's Figure 2, which is reproduced below.

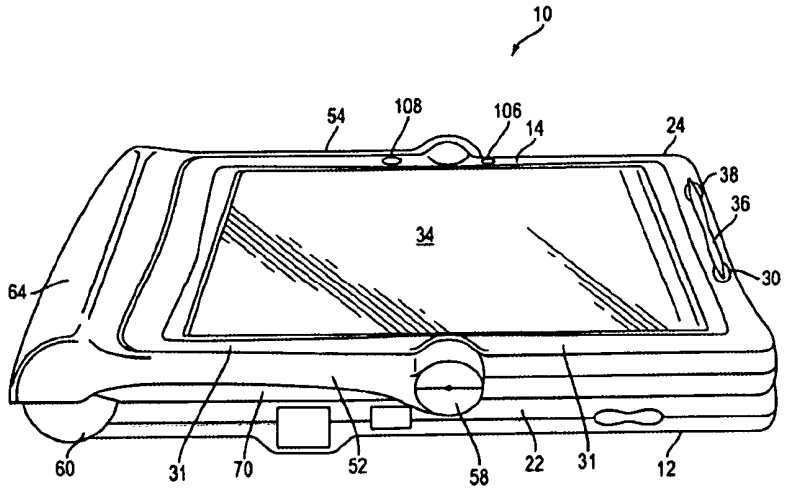


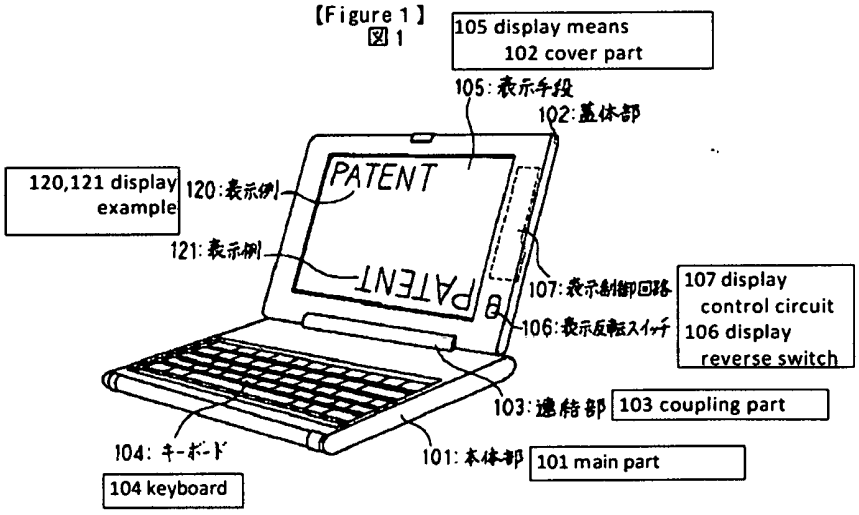
Figure 2

"[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Philips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005). Consistent with the '844 patent's specification, for purposes of this Decision, we construe "frame mode" as having the keyboard face down on a surface with the screen face up, and the base and display components forming a non-zero angle. Frame mode is distinct from "tablet mode," where the display is flush against the base.

C. Analysis

1. Overview of Shimura (Exs. 1003 and 1004)

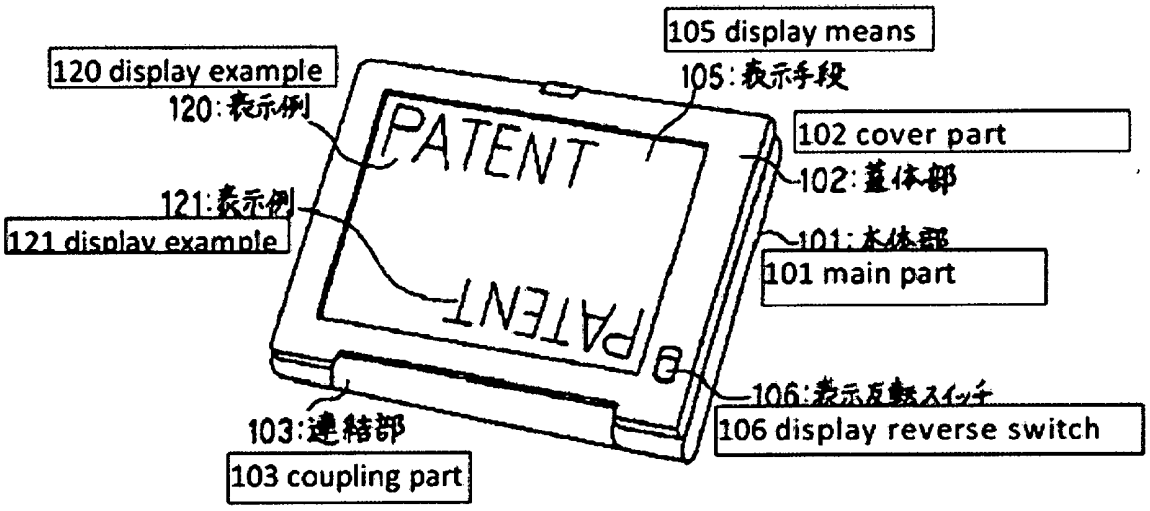
All grounds rely on Shimura. Shimura is a Japanese patent application publication (Ex. 1003), for which Petitioner provided a certified English translation (Ex. 1004). Shimura relates to a personal computer that "can adopt a mode suitable for a user environment centered on a pen input operation and a mouse input operation while retaining a mode which can use a keyboard." Ex. 1004, code (57). Figure 1 of Shimura, reproduced below, illustrates an example of the personal computer. *Id.*



As shown in Figure 1, the personal computer includes main part 101 provided with keyboard 104 on the front; cover part 102 provided with display 105 on the front; and coupling mechanism 103, which enables the opening and closing of computer parts 101 and 102 and is used to couple one end of main part 101 and one end of cover part 102 with display 105 such that cover part 102 faces main part 101. *Id.* Coupling mechanism 103 is structured so that it can also open cover part 102 so that the orientation of cover part 102 exceeds 180° relative to main part 101. *Id.* Figure 4 of Shimura, reproduced below, shows an inclined view of the personal computer, with main part 101 rotated nearly 360° with respect to cover part 102. *Id.* ¶¶ 16–17, Fig. 4.

[Figure 4]

図4



As shown in Figure 4, coupling mechanism 103 enables the rotation of cover part 102 with respect to main part 101. *Id.* ¶¶ 12–13. Coupling mechanism 103 is fastened by hinges to main part 101 and cover part 102. *Id.* ¶ 12.

2. Obviousness Analysis

Based on the present record, Petitioner does not demonstrate a reasonable likelihood of showing the asserted prior art would have rendered obvious the subject matter of challenged claims 1–16 and 18–22. Independent claims 1, 10, and 18 require a "frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface." Ex. 1001, 17:47–51, 18:66–19:2, 20:27–30, Certificate of Correction. For all of its asserted grounds, Petitioner relies on Shimura's Figure 4 for teaching the claimed "frame mode." Pet. 57, 87, 102. We agree with Patent Owner that Shimura's Figure 4 does not disclose or suggest a frame mode. *See* Prelim. Resp. 27–32.

Shimura's Figure 4 (reproduced below, left) depicts the device's display folded against the base—i.e., tablet mode—rather than in a frame mode where the base and display components form a non-zero angle similar to easel mode's inverted "V," as depicted in the '844 patent's Figure 26 (reproduced below, right).

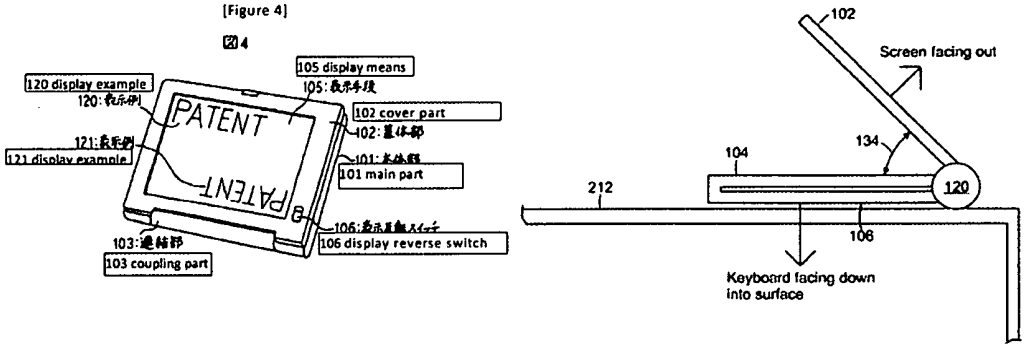


FIG. 26

Although, as Petitioner notes, Shimura teaches that its computer can be configured to any angle between 0° to 360°, *see* Pet. 22 n.1 (citing Ex. 1004

¶¶ 8, 10, 17), that too does not disclose frame mode. This is so because, as Patent Owner explains, beyond the required opening angle, frame mode additionally requires a hinge that "must support the display to prevent it from collapsing into tablet mode." Prelim. Resp. 31. Petitioner points to nothing in Shimura that would indicate its hinge could support the display in frame mode. *See* Pet. 22, 41–42, 46–47, 53, 57, 59, 70. Thus, on the current record, Petitioner has not made a sufficient showing that the asserted combinations of Shimura and other references teach or suggest the claimed plurality of modes including a "frame mode" as required in all the challenged claims.

IV. CONCLUSION

For the reasons above, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that at least one of the challenged claims is unpatentable.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied, and we do not institute an *inter partes* review of any claim of the '844 patent based on a ground asserted in the Petition.

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UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/170,951	07/10/2008	Yves Behar	L2039-700111

CONFIRMATION NO. 2004

23628
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

POA ACCEPTANCE LETTER

OC00000081825112

Date Mailed: 03/31/2016

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**.

/ylueng/

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
12/170,951	07/10/2008	Yves Behar	L2039-700111

CONFIRMATION NO. 2004

POWER OF ATTORNEY NOTICE

23628
WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

OC000000081825087

Date Mailed: 03/31/2016

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**.

/ylueng/

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

[x] Practitioners associated with the Customer Number: 23628

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

[x] The address associated with Customer Number: 23628

OR

[ ] Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

Assignee Name and Address:

LITL LLC
501 Boylston Street
Boston, MA 02116

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Kristin A Carroll	Date	2/24/2016
Name	Kristin Carroll	Telephone	617-535-8000
Title	General Counsel		

Electronic Acknowledgement Receipt

EFS ID:	25245180
Application Number:	12170951
International Application Number:	
Confirmation Number:	2004
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:	L2039-700111
Receipt Date:	18-MAR-2016
Filing Date:	10-JUL-2008
Time Stamp:	17:08:06
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	Assignee showing of ownership per 37 CFR 3.73	L203970001US02-373-EJR.pdf	25817 e4343e74dfa90e0d024a7e2ac809bac5a4542bfd	no	2
Warnings:					
Information:					

2	Power of Attorney	L203990000US00-prePOA-EJR.pdf	326446 11ff6f04a180721786985cac1b8da2341fc5a7d1	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	352263

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/96 (07-09)
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 displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: LiTL LLC

Application No./Patent No.: 8,624,844 Filed/Issue Date: January 7, 2014

Titled: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

LiTL LLC (Name of Assignee) , a Corporation (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. [X] the assignee of the entire right, title, and interest in;

2. [ ] an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or

3. [ ] an assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made) the patent application/patent identified above by virtue of either:

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.

OR

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 To: AQUENT LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 021810 , Frame 0331 , or for which a copy thereof is attached.

2. From: Joshua Morenstein To: AQUENT LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 021810 , Frame 0331 , or for which a copy thereof is attached.

3. From: Christopher Hibmacronan To: AQUENT LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 021810 , Frame 0331 , or for which a copy thereof is attached.

[X] Additional documents in the chain of title are listed on a supplemental sheet(s).

[X] As required by 37 CFR 3.73(b)(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.

/Edward J. Russavage/	3/17/2016
Signature	Date
Edward J. Russavage	Attorney for Assignee
Printed or Typed Name	Title

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/

PTO/SB/96 (07-09)
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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STATEMENT UNDER 37 CFR 3.73(b) - Supplemental Sheet

Continuation of chain of title from the inventor(s) to the current assignee.

4. From: Naoya Edahiro To: AQUENT LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 021810 , Frame 0331 , or for which a copy thereof is attached.

5. From: Matthew David Day To: AQUENT LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 021810 , Frame 0331 , or for which a copy thereof is attached.

6. 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.

7. From: _____ To: _____
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8. 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.

9. 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.

10. 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.

11. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
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12. 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.

13. 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.

14. 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.

15. 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.

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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
12/170,951	8624844	2627	9200

OC000000080412642

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

CERTIFICATE OF CORRECTION

PATENT NO.	: 8,624,844 B2
APPLICATION NO.	: 12/170951
DATED	: January 7, 2014
INVENTOR(S)	: Yves Behar et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims:

Column 17, Claim 1, Line 47, insert -- mode -- after the word "frame".

Signed and Sealed this
First Day of April, 2014

Michelle K. Lee

Michelle K. Lee
Deputy Director of the United States Patent and Trademark Office

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 24, 2013
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700111

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Letters Patent of:
Yves Behar et al.

Patent No.: 8,624,844

Issued: January 7, 2014

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

REQUEST FOR CERTIFICATE OF CORRECTION PURSUANT TO 37 C.F.R. § 1.322

Commissioner for Patents

Dear Madam:

Applicant submits herewith a Request for Certificate of Correction under 37 C.F.R. §1.322 of the above-identified issued patent, to correct a typographical error made through no fault of the Applicant.

It is respectfully requested that the correction shown on the attached sheet be made to the patent. In column 17, claim 1, line 47, insert the word - - mode - - after the word "frame" (see Examiner's Amendment to the claims in the Notice of Allowance dated August 22, 2013).

There is no required fee as set forth under 37 C.F.R. §1.322 since the errors were not made by the Applicant. It is requested that the undersigned be contacted by telephone at (617) 395-7000 with any questions relating to this Request. The Commissioner is hereby authorized to charge any

deficiencies or credit any over payments to the undersigned's account, Deposit Account No. 50/2762, Ref. No. L2039-700111.

Dated: January 24, 2014

Respectfully submitted,

Electronic signature: /Matthew H. Grady/
Matthew H. Grady
Registration No.: 52,957
Marcus E. Browne
Registration No.: 71,897
LANDO & ANASTASI LLP
Riverfront Office Park
One Main Street, Suite 1100
Cambridge, Massachusetts 02142
(617) 395-7000
Attorneys for Applicant

PTO/SB/44 (09-07)
Approved for use through 08/31/2013. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.	:	8,624,844
APPLICATION NO.	:	12/170,951
ISSUE DATE	:	January 7, 2014
INVENTOR(S)	:	Yves Behar et al.

It is certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims:

Column 17, Claim 1, Line 47, insert - - mode - - after the word “frame”.

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 24, 2014 Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

MAILING ADDRESS OF SENDER (Please do not use customer number below):
Matthew H. Grady(Attorney for Applicant)
LANDO & ANASTASI LLP
Riverfront Office Park
One Main Street
Suite 1100
Cambridge, Massachusetts 02142

1

1862194

Electronic Acknowledgement Receipt

EFS ID:	18017146
Application Number:	12170951
International Application Number:	
Confirmation Number:	2004
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:	L2039-700111
Receipt Date:	24-JAN-2014
Filing Date:	10-JUL-2008
Time Stamp:	14:32:51
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	Request for Certificate of Correction	Request_for_Certificate_of_Correction_No_Fee.pdf	21488 d6a624970358cc1a906d6115f130f69bb16ff198	no	2

Warnings:	
Information:	

2	Request for Certificate of Correction	Certificate_of_Correction.pdf	16819 cc942e1c4300f462634949410c401291a011c81c	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	38307

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.

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.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/170,951	01/07/2014	8624844	L2039-700111	2004

37462 7590 12/18/2013

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 494 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):

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.

Receipt date: 12/18/2009	Application Number	12170951	12170951 - GAU: 2629
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2008-07-10	
	First Named Inventor	Yves Behar	
	Art Unit	2115	
	Examiner Name	Not Yet Assigned	
	Attorney Docket Number	A2029-700111	

	9	6262885		2001-07-17	Philip George Emma et al.	
	10	6266236	B1	2001-07-24	Edmund Ku et al.	
	11	6275376		2001-08-14	Joung-Nam Moon	
	12	6343006		2002-01-29	Jerry Moscovitch et al.	
	13	6377444		4/2002 ~~2003-04-29~~	Scott D. Price et al.	Change(s) applied to document, /R.K.C./ 12/9/2013
	14	6510049	B2	2003-01-21	John B. Rosen	
	15	6628267	B2	2003-09-03	John Peter Karidis et al.	
	16	6697055	B1	2004-02-24	Edward Bullister	
	17	6771494	B2	2004-08-03	Kenji Shimano	
	18	6788527	B2	2004-09-07	Paul J. Doczy et al.	
	19	6829140	B2	2004-12-07	Kenji Shimano et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.A./

Receipt date: 11/03/2010	Application Number	12170951	12170951 - GAU: 2629
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2008-07-10	
	First Named Inventor	Yves Behar	
	Art Unit	2629	
	Examiner Name	HJERPE, RICHARD A	
	Attorney Docket Number	L2039-700111	

	20	D512997		2005-12-20	Lee	
	21	D517541		2006-03-21	Maskatia	
	22	D518042		2006-03-28	Kanayama	
	23	D534531		2007-01-02	Ogasawara	
	24	5793355		1998-08-11	Youens	
	25	D399526		1998-10-13	Brady	
	26	D495694		2004-09-07	Chase	
	27	D528541		2006-09-19	Maskatia	
	28	5712760		1998-01-27	Coulon	Change(s) applied to document, /R.K.C./ 12/9/2013
	29	~~5547698~~ 5847698		1998-12-08	Reavey	
	30	6464195		2002-10-15	Hildebrandt	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.A./

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	12170951
Filing Date	2008-07-10
First Named Inventor	Yves Behar
Art Unit	2629
Examiner Name	HJERPE, RICHARD A
Attorney Docket Number	L2039-700111

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	6661426	B1	2003-12-09	Jetha	
	2	D593085		5/2009 ~~2008-03-12~~	Behar	
	3	D593091		5/2009 ~~2008-03-13~~	Behar	
	4	D593086		5/2009 ~~2008-07-15~~	Behar	
	5	D605635		12/2009 ~~2009-04-06~~	Edahiro	
	6	D333636	S	1993-03-02	Issa	
	7	5515345	A	1996-05-07	Barreira	
	8	D392944	S	1998-03-31	Issa	

Change(s) applied to document, /R.K.C./ 12/9/2013

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.A./

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/170,951	07/10/2008	Yves Behar	L2039-700111	2004

37462 7590 12/06/2013

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

EXAMINER	
ABEBE, SOSINA	
ART UNIT	**PAPER NUMBER**
2627	

NOTIFICATION DATE	DELIVERY MODE
12/06/2013	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

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
12/170,951	10 July, 2008	BEHAR ET AL.	L2039-700111

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

EXAMINER	
SOSINA ABEBE	
ART UNIT	PAPER
2627	20131202

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Correction on the Abstract 7/10/2008 has been made.

/SRILAKSHMI K KUMAR/ Supervisory Patent Examiner, Art Unit 2627	/S. A./ Examiner, Art Unit 2627

PTO-90C (Rev.04-03)

DETAILED ACTION

SUPPLEMENTAL EXAMINER'S AMENDMENT

1. 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 is a telephone interview with Matthew H. Grady on 12/02/2013.

The application has been amended as follows:

ABSTRACT

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 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~~

Contact Information

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sosina Abebe whose telephone number is (571) 270-7929. The examiner can normally be reached on Mon-Friday from 9:00-5:30 If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Srilakshmi Kumar can be reached on (571) 272-7769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. 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).

/S. A./

Examiner, Art Unit 2627

/SRILAKSHMI K KUMAR/

Supervisory Patent Examiner, Art Unit 2627

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 08/22/2013
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.
12/170,951	07/10/2008	Yves Behar	L2039-700111	2004

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	$1780	$300	$0	$2080	11/22/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABEBE, SOSINA	2692	345-169000

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 credit any overpayment, to Deposit Account Number 50/2762 (enclose an extra copy of this form).

HP Inc. - Exhibit 1003 - Page 40

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 form 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: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Matthew H. Grady/ Date November 19, 2013

Typed or printed name Matthew H. Grady Registration No. 52,957

This collection of information 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.

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Electronic Patent Application Fee Transmittal

Application Number:	12170951
Filing Date:	10-Jul-2008
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Matthew H. Grady
Attorney Docket Number:	L2039-700111

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:				
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	1780	1780

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**2080**

Electronic Acknowledgement Receipt

EFS ID:	17438361
Application Number:	12170951
International Application Number:	
Confirmation Number:	2004
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:	L2039-700111
Receipt Date:	19-NOV-2013
Filing Date:	10-JUL-2008
Time Stamp:	14:58:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$2080
RAM confirmation Number	1501
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	Issue Fee Payment (PTO-85B)	-_Issue_Fee_Payment_1.PDF	331458 9f5cf0ed0238e1544961835430694148745efec7	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32291 a9c22cb1eeb8afe1a3f2750d4a76ed7b9197ad35	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	363749		

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

37462 7590 08/22/2013

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

EXAMINER
ABEBE, SOSINA

ART UNIT	PAPER NUMBER
2692	

DATE MAILED: 08/22/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/170,951	07/10/2008	Yves Behar	L2039-700111	2004

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	$1780	$300	$0	$2080	11/22/2013

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.

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 08/22/2013
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.
12/170,951	07/10/2008	Yves Behar	L2039-700111	2004

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	$1780	$300	$0	$2080	11/22/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABEBE, SOSINA	2692	345-169000

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 credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

HP Inc. - Exhibit 1003 - Page 47

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 form 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: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information 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.

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.
12/170,951	07/10/2008	Yves Behar	L2039-700111	2004

37462 7590 08/22/2013

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

EXAMINER	
ABEBE, SOSINA	
ART UNIT	**PAPER NUMBER**
2692	

DATE MAILED: 08/22/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 239 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 239 day(s).

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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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. 12/170,951	Applicant(s) BEHAR ET AL.	
	Examiner SOSINA ABEBE	Art Unit 2692	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 *07/01/2013*.
   ☐ 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 *1-8,10-21and23-24*. 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 07/01/2013
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 _____.

/S. A./
Examiner, Art Unit 2692

EXAMINER'S AMENDMENT

1. 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 is a telephone interview with Matthew H. Grady on 08/09/2013.

The application has been amended as follows:

Claim 22 has been cancelled.

In claim 1, line 25 after "single display screen", please insert "wherein the plurality of modes includes a frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface"

In claim 7, lines 24 after "single display screen", please insert "wherein the plurality of modes includes a frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface"

In claim 13, lines 24 after "the longitudinal axis", please insert "wherein the plurality of modes includes a frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface"

In claims 23 – 24, line 1, "claim 22" has been changed to -- claim 1 --.

In claim 8, after claim 7,; should be changed to --,--

Allowable Subject Matter

2. Claims 1 – 8, 10 – 21 and 23 - 24 are allowed over the prior art of record.

3. Claims 9 and 22 have been cancelled.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schweizer (US 7,061,472) and Nishiyama (US 5,436,954) as a whole teach most of the limitations which is similar to the applicant's claimed invention but fail to teach of said claimed features.

The following is an examiner's statement of reasons for allowance: none of cited reference teaches "wherein the plurality of modes includes a frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard faces the substantially horizontal surface." (fig. 26) cited in claims 1, 7 & 13. Claims 1 – 8, 10 – 21 and 23 - 24 are therefore allowed over the prior art of record.

5. 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."

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sosina Abebe whose telephone number is (571) 270-7929. The examiner can normally be reached on Mon-Thurs from 9:00-5:00 If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, LunYi Lao can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. 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).

/S. A./

Examiner, Art Unit 2692

/LUN-YI LAO/

Supervisory Patent Examiner, Art Unit 2692

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S4	76	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2011/03/22 16:12
S5	34	Morenstein near Joshua.inv.	US-PGPUB; USPAT	OR	ON	2011/03/22 16:12
S6	19	Hibmacronan near Christopher.inv.	US-PGPUB; USPAT	OR	ON	2011/03/22 16:13
S7	14	Edahiro near Naoya.inv.	US-PGPUB; USPAT	OR	ON	2011/03/22 16:13
S8	17	Day near Matthew.inv.	US-PGPUB; USPAT	OR	ON	2011/03/22 16:13
S10	83	("20020005818" | "20020021258" | "20030048595" | "20030109232" | "20040203535" | "20040228076" | "20050018396" | "20050041378" | "20050063145" | "20050128695" | "20050146845" | "20050210399" | "20050210399" | "20050257400" | "20050282596" | "20060126284" | "20060264243" | "20060268500" | "20070138806" | "20070182663" | "20080042987" | "20080062625" | "20080284738" | "20090244832" | "20090275366" | "20090300511" | "20090303676" | "20090322790" | "20100174993" | "3468576" | "4939514" | "5200913" | "5268817" | "5515345" | "5547698" | "5712760" | "5790371" | "5793355" | "5796575" | "5825352" | "5841631" | "5900848" | "5949643" | "5987704" | "5987704" | "6005767" | "6005767" | "6067224" | "6222507" | "6223393" | "6262885" | "6266236" | "6266236" | "6275376" | "6275376" | "6295038" | "6302612" | "6323846" | "6327482" | "6343006" | "6343006" | "6377444" | "6464195" | "6510049" | "6628267" | "6628267" | "6642909" | "6659516" | "6659516" | "6661426" | "6661426" | "6665175" | "6697055" | "6771494" | "6771494" | "6788527" | "6819304" | "6829140" | "6829140" | "6859219" | "6944012" | "6963485" | "7061472" | "7061472" | "7072179" | "7138962" | "7239508" | "7250207" | "7428142" | "7522946" | "D333636" | "D391927" | "D392944" | "D395868" | "D399526" | "D416003" | "D452238" | "D462069" | "D463797" | "D476326" | "D479708" | "D491177" | "D491936" | "D494162" | "D495674" | "D495694" | "D504128" | "D512997" |	USPAT	OR	ON	2011/03/22 19:16

HP Inc. - Exhibit 1003 - Page 55

		"D513509" | "D516552" | "D517541" | "D518042" | "D523429" | "D528541" | "D528993" | "D534531" | "D535292" | "D544846" | "D581371" | "D593085" | "D593086" | "D593091" | "D605635").PN.				
S11	5	"12170951"	US-PGPUB; USPAT	OR	ON	2011/03/22 19:17
S13	11	345/169.ccls. and (rotat$4 near scroll near wheel)	US-PGPUB; USPAT	OR	ON	2011/03/22 19:28
S16	3	(rotat$4 near display) same (scroll near wheel) with base	US-PGPUB; USPAT	OR	ON	2011/03/22 19:31
S19	15	(rotat$4 near display) and (scroll and wheel) same base	US-PGPUB; USPAT	OR	ON	2011/03/22 19:34
S21	76	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2011/03/22 19:40
S22	2	"20060264243"	US-PGPUB; USPAT	OR	ON	2011/03/22 19:43
S23	1	"6295038".pn.	US-PGPUB; USPAT	OR	ON	2011/03/22 19:57
S25	1	345/184.ccls. and (scroll near wheel) and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/03/24 11:34
S30	1	"4481382".pn.	USPAT	OR	ON	2011/03/24 12:45
S34	7	(laptop) with (scroll near wheel) and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/03/24 16:43
S35	1	"6184867".pn.	US-PGPUB; USPAT	OR	ON	2011/03/24 16:45
S39	11	345/184.ccls. and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/03/25 15:38
S41	1	"455"/$.ccls. and (second near navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/03/25 16:01
S48	1	"11606556"	US-PGPUB; USPAT	OR	ON	2011/03/25 17:32
S51	5	(PDA or laptop or cellular) with (two near navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/03/25 18:40
S53	1	"20050246327"	US-PGPUB; USPAT	OR	ON	2011/03/25 20:11
S54	1	"7467356".pn.	US-PGPUB; USPAT	OR	ON	2011/03/26 19:50
S55	2	"20040001049"	US-PGPUB; USPAT	OR	ON	2011/10/11 12:57
S56	1	"20020010707"	US-PGPUB; USPAT	OR	ON	2011/10/11 12:57
S58	12	("20040001049" | "20020010707" | "5926364" | "6144358" | "6341061" | "6437974" | "6492974" | "6882335" | "6295038" | "7698407" | "20050221865" | "20080024465").pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 13:08
S59	1	"6040822".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 14:59
S60	2	"20010016508"	US-PGPUB; USPAT	OR	ON	2011/10/11 15:00
S73	9	(laptop) same (frame near mode) or (stand near mode) same (longtudinal	US-PGPUB; USPAT	OR	ON	2011/10/11 15:50

		near axis)				
S75	86	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2011/10/11 15:56
S78	1	"7061472".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:10
S80	1	"6341061".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/11 16:20
S81	1	"6304431".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/11 16:22
S82	1	"6295038".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/11 16:23
S83	1	"6297752".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/11 16:24
S84	1	"5966284".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/11 16:25
S86	1	"5926364".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:42
S87	1	"6144358".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:42
S88	1	"6341061".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:43
S89	1	"6437974".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:43
S91	1	"6492974".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:50
S92	1	"6882335".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 16:50
S94	106	(laptop) same (rotat$3 near axis)	US-PGPUB; USPAT	OR	ON	2011/10/11 16:54
S96	18	(laptop) same (rotat$3 near axis) same (frame)	US-PGPUB; USPAT	OR	ON	2011/10/11 16:55
S97	319	(laptop or mobile) same (rotat$3 near axis) same (frame)	US-PGPUB; USPAT	OR	ON	2011/10/11 16:58
S99	26	(laptop) same (longitudinal near axis) same (rotat$3)	US-PGPUB; USPAT	OR	ON	2011/10/11 17:04
S101	14	345/169.ccls. and (longitudinal near axis) same (rotat$3)	US-PGPUB; USPAT	OR	ON	2011/10/11 17:07
S103	1	"6040822".pn.	US-PGPUB; USPAT	OR	ON	2011/10/11 17:14
S104	2	"20040001049"	US-PGPUB; USPAT	OR	ON	2011/10/11 17:18
S106	4	"10185154"	US-PGPUB; USPAT	OR	ON	2011/10/12 13:52
S112	2	"20040001049"	US-PGPUB; USPAT	OR	ON	2011/10/12 16:11
S113	1	"20050221865"	US-PGPUB; USPAT	OR	ON	2011/10/12 16:21
S131	18	"455"/$.ccls. and (scroll near wheel) and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/10/12 17:51

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S132	2	345/169.ccls. and (scroll near wheel) and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/10/12 17:53
S133	23	(laptop or cellular or mobile) with (scroll near wheel) and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/10/12 17:55
S134	7	(laptop) with (scroll near wheel) and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/10/12 17:55
S135	1	"20010016508".pn.	US-PGPUB; USPAT	OR	ON	2011/10/12 18:03
S136	69	(laptop) with (scroll near wheel)	US-PGPUB; USPAT	OR	ON	2011/10/12 18:04
S142	305	(laptop or cellular) same (scroll near wheel)	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 10:07
S143	117	(laptop) same (scroll near wheel)	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 10:07
S146	77	S143 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 10:08
S147	1	"20060284787"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 10:16
S148	1	"7330923".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 10:17
S151	1	"20050221865"	US-PGPUB; USPAT	OR	ON	2011/10/13 14:48
S152	2	"20010016508"	US-PGPUB; USPAT	OR	ON	2011/10/13 14:51
S154	86	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2011/10/13 15:08
S157	1	"6266236".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 15:17
S158	2	"20040001049"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/13 15:31
S159	40	Morenstein near Joshua.inv.	US-PGPUB; USPAT	OR	ON	2011/10/13 15:34
S160	21	Hibmacronan near Christopher.inv.	US-PGPUB; USPAT	OR	ON	2011/10/13 15:34
S161	16	Edahiro near Naoya.inv.	US-PGPUB; USPAT	OR	ON	2011/10/13 15:34
S162	18	Day near Matthew.inv.	US-PGPUB; USPAT	OR	ON	2011/10/13 15:34
S169	54	345/169.ccls. and (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/10/14 12:36
S170	51	S169 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/14 12:36
S171	8	(laptop) with (navigat$3 near button)	US-PGPUB; USPAT	OR	ON	2011/10/14 12:40
S196	1	"20060264243"	USPAT	OR	OFF	2011/10/14 15:29

S197	69	(laptop) with (scroll near wheel)	US-PGPUB; USPAT	OR	ON	2011/10/14 16:08
S198	50	S197 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/14 16:08
S200	153	(laptop) same (scroll near wheel)	US-PGPUB; USPAT	OR	ON	2011/10/14 16:25
S201	95	S200 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/14 16:25
S225	1	"5767842".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2011/10/15 14:00
S238	305	(scroll near wheel) same (laptop or cellular)	US-PGPUB; USPAT	OR	OFF	2011/10/17 10:13
S240	117	(scroll near wheel) same (laptop)	US-PGPUB; USPAT	OR	OFF	2011/10/17 10:13
S250	2	"5436954".pn.	US-PGPUB; USPAT; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2011/10/17 14:02
S252	1	"6295038".pn.	US-PGPUB; USPAT	OR	ON	2011/10/17 14:12
S282	2	"20060264243"	US-PGPUB; USPAT	OR	ON	2011/10/18 09:30
S328	1	"7084919".pn.	US-PGPUB; USPAT	OR	ON	2012/05/21 13:23
S329	2	"20040198460"	US-PGPUB; USPAT	OR	ON	2012/05/21 13:23
S330	1	"20050272462"	US-PGPUB; USPAT	OR	ON	2012/05/21 13:23
S331	1	"5436954".pn.	US-PGPUB; USPAT	OR	ON	2012/05/21 13:24
S334	1	"09979897"	US-PGPUB; USPAT	OR	ON	2012/05/21 14:02
S335	28	("5719799" | "5982429" | "6069648" | "6510325" | "6697117" | "6750848").PN. OR ("7084919").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 14:36
S336	75	("4120038" | "5442512" | "5475441" | "5488558").PN. OR ("5719799").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 16:01
S337	103	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:08
S338	43	Morenstein near Joshua.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:08
S339	22	Hibmacronan near Christopher.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:08
S340	23	Edahiro near Naoya.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:08
S341	19	Day near Matthew.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:08
S342	9	S337 and S338 and S339 and S340 and S341	US-PGPUB; USPAT	OR	ON	2012/05/21 16:08

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S343	2	"20040001049"	US-PGPUB; USPAT	OR	ON	2012/05/21 16:13
S345	14	("20050018396" | "20050041378" | "6067224" | "D395868" | "D452238" | "D463797" | "D476326" | "D491177" | "D491936" | "D494162" | "D513509" | "D516552" | "D523429").PN. OR ("D593085").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 16:20
S346	103	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:59
S347	43	Morenstein near Joshua.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:59
S348	22	Hibmacronan near Christopher.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:59
S349	23	Edahiro near Naoya.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:59
S350	19	Day near Matthew.inv.	US-PGPUB; USPAT	OR	ON	2012/05/21 16:59
S351	9	S346 and S347 and S348 and S349 and S350	US-PGPUB; USPAT	OR	ON	2012/05/21 17:00
S352	4	("20070242421" | "20080024388" | "20080158795" | "20090190295").PN.	US-PGPUB; USPAT	OR	ON	2012/05/21 17:01
S353	117737	configuration with display	US-PGPUB; USPAT	OR	ON	2012/05/21 17:08
S354	1739765	sensor or detector	US-PGPUB; USPAT	OR	ON	2012/05/21 17:08
S355	325998	laptop or "notebook computer" or "portable computer"	US-PGPUB; USPAT	OR	ON	2012/05/21 17:08
S356	37894	S353 and S354	US-PGPUB; USPAT	OR	ON	2012/05/21 17:09
S357	89456	S354 and S355	US-PGPUB; USPAT	OR	ON	2012/05/21 17:09
S358	349331	hinge	US-PGPUB; USPAT	OR	ON	2012/05/21 17:09
S359	4988	S358 and S357	US-PGPUB; USPAT	OR	ON	2012/05/21 17:10
S360	3370	S359 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 17:10
S361	6728	flip with image	US-PGPUB; USPAT	OR	ON	2012/05/21 17:11
S362	46	S361 and S359	US-PGPUB; USPAT	OR	ON	2012/05/21 17:11
S363	32	S362 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 17:11
S364	2400838	rotate or rotatable or rotating	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 17:15
S365	40	S362 and S364	US-PGPUB; USPAT	OR	ON	2012/05/21 17:16
S366	2214	345/169.ccls.	US-PGPUB; USPAT	OR	ON	2012/05/21 17:17
S367	2966	361/679.21,679.26,679.27.ccls.	US-PGPUB; USPAT	OR	ON	2012/05/21 17:17

S368	4137	455/575.1-575.2.ccls.	US-PGPUB; USPAT	OR	ON	2012/05/21 17:19
S369	3238	345/168.ccls.	US-PGPUB; USPAT	OR	ON	2012/05/21 17:21
S370	2620	S369 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 17:22
S371	1855	S366 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/21 17:22
S378	1	"6492974".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/22 15:10
S379	2	"20060264243"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/22 15:56
S381	5	"12170939"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/22 16:48
S382	1	"5436954".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/22 16:51
S413	1	"6492974".pn.	US-PGPUB; USPAT	OR	OFF	2012/05/29 14:24
S414	1	"11559763"	US-PGPUB; USPAT	OR	ON	2012/05/29 17:57
S419	17	("20030048595" | "20040228076" | "20050063145" | "20050128695" | "5712760" | "5847698" | "6464195" | "6642909" | "6665175" | "D399526" | "D495694" | "D528541" | "D535292").PN. OR ("D593091").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/30 14:49
S421	1	"5436954".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/30 14:50
S432	312	361/679.3.ccls.	US-PGPUB; USPAT	OR	ON	2012/05/31 12:18
S433	260	S432 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/31 12:18
S434	757	345/184.ccls.	US-PGPUB; USPAT	OR	ON	2012/05/31 12:19
S435	622	S434 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2012/05/31 12:19
S440	1	"7061472".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 10:31
S441	1	"6295038".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 10:36
S442	63	("4243986" | "4749364" | "5038301" | "5115229" | "5307055" | "5335192" | "5384579" | "5537127" | "5539658" | "5568603" | "5590021" | "5659361" | "5856819").PN. OR	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 10:37

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		("6295038").URPN.				
S444	1	"5436954".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 12:47
S445	23	("5490039" | "5745340" | "6262785" | "6295038" | "6487068" | "6489932" | "6643124" | "6700773").PN. OR ("6909597").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 16:16
S446	35	("5262926" | "5414444" | "5508720" | "5644338" | "5739810" | "5926364" | "5949643" | "5966284" | "6006243" | "6144358" | "6295038" | "6297752" | "6304431" | "6327482" | "6341061" | "6492974" | "6700773" | "6836404").PN. OR ("7061472").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 16:17
S449	7	("6693652" | "7756928" | "20050210399" | "20070240076" | "20090150826" | "20010032320" | "20080235594").PN.	US-PGPUB; USPAT	OR	OFF	2013/01/14 16:39
S450	110	Behar near Yves.inv.	US-PGPUB; USPAT	OR	ON	2013/01/14 16:42
S451	49	Morenstein near Joshua.inv.	US-PGPUB; USPAT	OR	ON	2013/01/14 16:42
S452	24	Hibmacronan near Christopher.inv.	US-PGPUB; USPAT	OR	ON	2013/01/14 16:43
S453	24	Edahiro near Naoya.inv.	US-PGPUB; USPAT	OR	ON	2013/01/14 16:43
S454	21	Day near Matthew.inv.	US-PGPUB; USPAT	OR	ON	2013/01/14 16:43
S455	10	(S450 and S451 and S452 and S453 and S454)	US-PGPUB; USPAT	OR	ON	2013/01/14 16:44
S456	5	S455 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/14 16:44
S457	1	"7061472".pn.	US-PGPUB; USPAT	OR	ON	2013/01/18 09:50
S458	1	"5436954".pn.	US-PGPUB; USPAT	OR	ON	2013/01/18 09:51
S459	3193	345/169,184.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/18 11:52
S460	6206	345/168-169,184.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/18 11:53
S461	814	345/184.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/18 11:53
S462	3180	361/679.21,679.26,679.27.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/18 11:54
S463	3519	345/168.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/18 11:54
S464	2665	S463 and @ad<="20080710"	US-PGPUB; USPAT; USOCR	OR	OFF	2013/01/18 11:59
S467	121	"Behar Yves".inv.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:29
S468	55	"Morenstein Joshua".inv.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:30

S469	26	"Hibmacronan Christopher".inv.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:30
S470	28	"Edahiro Naoya".inv.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:30
S471	24	"Day Matthew".inv.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:30
S472	30	("20040207568" | "20040212602" | "20050063145" | "20050091596" | "20050134717" | "20050282596" | "20060268500" | "20070138806" | "20080042987" | "20080174570" | "20080284738" | "20090019383" | "20090244012" | "20090244832" | "5515345" | "5547698" | "5790371" | "5793355" | "5847698" | "5900848" | "5949643" | "6067224" | "6097389" | "6222507" | "6464195" | "6642909" | "6665175" | "6697055" | "6972752" | "7366994").PN.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:31
S478	2	"2004302179"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/10 12:37
S481	2	"2005242436"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/10 12:39
S482	2	"2001167211"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/10 12:40
S483	2	"2005159741"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/10 12:40
S485	2	"2006227409"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/10 12:42
S487	2618	345/169.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 12:59
S488	838	345/184.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 13:07
S489	17	(laptop) same (frame near mode) or (stand near mode) same (longtudinal	US-PGPUB; USPAT	OR	ON	2013/08/10 13:07

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		near axis)				
S490	19	(laptop) same (rotat$3 near axis) same (frame)	US-PGPUB; USPAT	OR	ON	2013/08/10 13:08
S491	400	(laptop or mobile) same (rotat$3 near axis) same (frame)	US-PGPUB; USPAT	OR	ON	2013/08/10 13:09
S498	862	"455"/$.ccls. and (scroll near wheel)	US-PGPUB; USPAT	OR	ON	2013/08/10 14:47
S499	3369	361/679.21,679.26,679.27.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 14:51
S500	4755	455/575.1-575.2.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 14:52
S501	3773	345/168.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 14:52
S502	427	361/679.3.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 14:53
S503	838	345/184.ccls.	US-PGPUB; USPAT	OR	ON	2013/08/10 14:53
S504	1	"8289688".pn.	US-PGPUB; USPAT	OR	ON	2013/08/10 14:54
S505	138	("20020005818" | "20020010707" | "20020021258" | "20030048595" | "20030107603" | "20030109232" | "20040001049" | "20040203535" | "20040228076" | "20050018396" | "20050041378" | "20050063145" | "20050083642" | "20050128695" | "20050146845" | "20050210399" | "20050221865" | "20050257400" | "20050282596" | "20060126284" | "20060238439" | "20060264243" | "20060268500" | "20070138806" | "20070182663" | "20070242421" | "20070247446" | "20080024388" | "20080024465" | "20080042987" | "20080062625" | "20080158795" | "20080284738" | "20090190295" | "20090244012" | "20090275366" | "20090300511" | "20090303676" | "20090322790" | "20100174993" | "3468576" | "4939514" | "5200913" | "5268817" | "5436954" | "5515345" | "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" | "6697055" | "6771494" | "6788527" | "6819304" | "6829140" | "6859219" | "6882335" | "6944012" | "6963485" | "7035665" | "7061472" | "7072179" | "7138962" | "7239508" | "7250207" | "7428142" | "7467356" | "7522946" | "7698407" | "7869834" | "D333636" | "D391927" |	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/10 14:55

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		"D392944" | "D395868" | "D399526" | "D416003" | "D452238" | "D462069" | "D463797" | "D476326").PN. OR ("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 ("8289688").URPN.				
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S511	90	("20030142469" | "20030221876" | "20040114319" | "20050052833" | "20050099533" | "20050124394" | "20050186985" | "20050239520" | "20060126284" | "20060146488" | "20060238968" | "20060264243" | "20070217135" | "20080169351" | "4825395" | "5175672" | "5243549" | "5251102" | "5416730" | "5477129" | "5481645" | "5583744" | "5594617" | "5768164" | "5841630" | "5898600" | "5926364" | "6073187" | "6078496" | "6116767" | "6154359" | "6307740" | "6341061" | "6353529" | "6392871" | "6392877" | "6430038" | "6456488" | "6480373" | "6480374" | "6492974" | "6558057" | "6612668" | "6628506" | "6643124" | "6654234" | "6687119" | "6700773" | "6707666" | "6744623" | "6791597" | "6792480" | "6816365" | "6819961" | "6825415" | "6831229" | "6862171" | "6873521" | "6882529" | "6900981" | "6903927" | "6912121" | "6930881" | "6947279" | "6980420" | "6980423" | "7016183" | "7061472" | "7104516" | "7106579" | "7113397" | "7155266" | "7196901" | "7255317" | "7328481" | "7345872" | "7352565" | "7353050" | "7419099" | "7450978" | "7489503" | "7492891" | "7570482" | "7630193" | "7667959" | "7787914" | "7930803" | "7934689" | "8106887" | "D359275").PN. OR ("8208249").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/08/10 15:29
S513	146046	laptop or "notebook computer" or	USPAT	OR	ON	2013/08/10

HP Inc. - Exhibit 1003 - Page 65

		"portable computer"				15:40
S514	1057480	sensor or detector	USPAT	OR	ON	2013/08/10 15:40
S515	4035	flip with image	USPAT	OR	ON	2013/08/10 15:40
S516	182	S513 and S514 and S515	USPAT	OR	ON	2013/08/10 15:40
S518	0	S516 and easel near mode	USPAT	OR	ON	2013/08/10 15:41
S519	2	S516 and frame near mode	USPAT	OR	ON	2013/08/10 15:41
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S548	3177	345/173.ccls. and (rotate or rotatable or rotating)	US-PGPUB; USPAT	OR	ON	2013/08/12 11:08
S549	65265	S548 and "laptop" or "notebook computer" or "portable computer"	USPAT	OR	ON	2013/08/12 11:08
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S553	2	S552 and flip with image	US-PGPUB; USPAT	OR	ON	2013/08/12 11:21

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S531	1	(laptop) same (frame near mode) or (stand near mode) same (longtudinal near axis)	USPAT; UPAD	OR	ON	2013/08/10 13:08
S532	10	(laptop) same (rotat$3 near axis) same (frame)	USPAT; UPAD	OR	ON	2013/08/10 13:09
S533	236	(laptop or mobile) same (rotat$3 near axis) same (frame)	USPAT; UPAD	OR	ON	2013/08/10 13:10
S536	152404	laptop or "notebook computer" or "portable computer"	USPAT; UPAD	OR	ON	2013/08/10 15:33
S537	59335	configuration with display	USPAT; UPAD	OR	ON	2013/08/10 15:34
S538	1063798	sensor or detector	USPAT; UPAD	OR	ON	2013/08/10 15:34
S539	18427	S537 and S538	USPAT; UPAD	OR	ON	2013/08/10 15:35
S540	3485	S536 and S539	USPAT; UPAD	OR	ON	2013/08/10 15:35

S542	4080	flip with image	USPAT; UPAD	OR	ON	2013/08/10 15:35
S543	79	S540 and S542	USPAT; UPAD	OR	ON	2013/08/10 15:36
S544	59	S543 and @ad<="20080710"	USPAT; UPAD	OR	OFF	2013/08/10 15:36
S545	1	S540 and easel near mode	USPAT; UPAD	OR	ON	2013/08/10 15:38
S546	10	S540 and frame near mode	USPAT; UPAD	OR	ON	2013/08/10 15:38

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12170951	BEHAR ET AL.
	Examiner	**Art Unit**
	SOSINA ABEBE	2692

CPC						
Symbol					**Type**	**Version**
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
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/SOSINA ABEBE/ Examiner.Art Unit 2692	08/09/2013	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	22	
/LUN-YI LAO/ Supervisory Patent Examiner.Art Unit 2692	08/16/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	26

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	**Art Unit**
	SOSINA ABEBE	2692

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
345	169	G 0 6 F 3 / 02 (2006.0)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
345	168	173	184		
361	679.27				
455	575.3				

/SOSINA ABEBE/ Examiner.Art Unit 2692	08/09/2013	**Total Claims Allowed:** 22	
(Assistant Examiner)	(Date)		
/LUN-YI LAO/ Supervisory Patent Examiner.Art Unit 2692	08/16/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	26

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12170951	BEHAR ET AL.
	Examiner	**Art Unit**
	SOSINA ABEBE	2692

☐ 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	22	17												
2	2	7	18												
3	3	16	19												
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19	14														
20	15														
21	16														

/SOSINA ABEBE/ Examiner.Art Unit 2692 (Assistant Examiner)	08/09/2013 (Date)	**Total Claims Allowed:** 22	
/LUN-YI LAO/ Supervisory Patent Examiner.Art Unit 2692 (Primary Examiner)	08/16/2013 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 26

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	12170951
Filing Date	2008-07-10
First Named Inventor	Yves Behar
Art Unit	2692
Examiner Name	S. Abebe
Attorney Docket Number	L2039-700111

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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	6972752		2005-12-06	Nako et al.	
	2	5515345		1996-05-07	Barreira et al.	
	3	5793355		1998-08-11	Youens	
	4	5847698		1998-12-08	Reavey et al.	
	5	6464195		2002-10-15	Hildebrandt	
	6	6642909		2003-11-04	Oliva	
	7	6665175		2003-12-16	deBoer et al.	
	8	6067224		2000-05-23	Nobuchi	

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Receipt date: 07/01/2013	Application Number	12170951	12170951 - GAU: 2692
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	2008-07-10	
	First Named Inventor	Yves Behar	
	Art Unit	2692	
	Examiner Name	S. Abebe	
	Attorney Docket Number	L2039-700111	

	9	5790371		1998-08-04	Latocha et al.	
	10	5900848		1999-05-04	Haneda et al.	
	11	6222507		2001-04-24	Gouko	
	12	5949643		1999-09-07	Batio	
	13	6697055		2004-02-24	Bullister	
	14	5547698		1996-08-20	Lansbergen et al.	
	15	6097389		2000-08-01	Morris et al.	
	16	7366994		2008-04-29	Loui	

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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	20050134717		2005-06-23	Misawa	

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	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	2	20050282596		2005-12-22	Park et al.	
	3	20050063145		2005-03-24	Homer et al.	
	4	20060268500		2006-11-30	Kuhn	
	5	20080284738		2008-11-20	HOVDEN et al.	
	6	20090244832		2009-10-01	Behar et al.	
	7	20040207568		2004-10-21	Ooshima et al.	
	8	20070138806		2007-06-21	Ligtenberg et al.	
	9	20080042987		2008-02-21	Westerman et al.	
	10	20090244012		2009-10-01	Behar et al.	
	11	20040212602		2004-10-28	Nako et al.	
	12	20050091596		2005-04-28	Anthony et al.	

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(Not for submission under 37 CFR 1.99)	First Named Inventor	Yves Behar	
	Art Unit	2692	
	Examiner Name	S. Abebe	
	Attorney Docket Number	L2039-700111	

	13	20090019383		2009-01-15	Riley et al.	
	14	20080174570		2008-07-24	Jobs 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	6-242853	JP	A	1994-09-02	Hitachi Ltd et al.		☒
	2	6-259166	JP	A	1994-09-16	Hitachi Ltd		☒
	3	8-179851	JP	A	1996-07-12	Toshiba Corp		☒
	4	5-197507	JP	A	1993-08-06	Hitachi Ltd		☒
	5	1292112	CN	A	2001-04-18	Sharp Kk		☒
	6	2005-242436	JP	A	2005-09-08	Matsushita Electric Ind Co Ltd		☒
	7	2001-167211	JP	A	2001-06-22	Hitachi Ltd et al.		☒

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	Art Unit	2692	
	Examiner Name	S. Abebe	
	Attorney Docket Number	L2039-700111	

	8	2005-159741	JP	A	2005-06-16	Fuji Photo Film Co Ltd		☒
	9	10-111658	JP	A	1998-04-28	Fujitsu Ltd		☒
	10	6090200	JP	A	1994-03-29	HITACHI LTD		☒
	11	2004-302179	JP	A	2004-10-28	Hitachi Ltd		☒
	12	11-296259	JP		1999-10-29	CANON INC.		☒
	13	2006-227409	JP		2006-08-31	NIKON CORP.		☒

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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.	T5
	1	Japanese Office Action mailed 12-4-2012 from national phase entry of the corresponding PCT application. (L2039-7001JP).	☐
	2	Partial translation of Japanese Office Action from national phase examination of the Corresponding PCT application. (Letter dated 12-7-12 including English partial translation of JP OA dated 12-4-12).	☐
	3	Search Report from corresponding International Application PCT/US2009/038599 dated March 6, 2009	☐

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	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	4	International Search Report from a commonly owned PCT application PCT/US09/39117, dated September 29, 2009.	☐
	5	Final Office Action for Japanese Application No. 2011-503058 mailed April 16, 2013, 3 pages.	☒

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Examiner Signature	/S.A./	Date Considered	08/09/2013

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[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.

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Receipt date: 07/01/2013	Application Number	12170951	12170951 - GAU: 2692
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	First Named Inventor	Yves Behar	
	Art Unit	2692	
	Examiner Name	S. Abebe	
	Attorney Docket Number	L2039-700111	

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.

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)	2013-07-01
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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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. /S.A./

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12170951	BEHAR ET AL.
	Examiner	Art Unit
	SOSINA ABEBE	2629

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	169,184	03/24/11	SA
	updated the above searches	10/13/11	SA
345	168-169,184	05/21/12	SA
361	679.3,679.21,679.26-679.27	05/21/12	SA
	Updated the above searches	01/18/13	SA
345	156,168-169,184	08/10/13	SA
361	679.3,679.21,679.26-679.27	08/10/13	SA
455	575.3	08/10/13	SA
345	173	08/12/13	SA

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor name search	03/24/11	SA
East Search	03/24/11	SA
Consulted with SPE LunYi Lao	10/13/11	SA
Updated East Search	10/13/11	SA
Updated East Search	05/21/12	SA
Consulted with Primary Grant Sitta	05/22/12	SA
Consulted with Gregory Tryder	01/08/13	SA
Updated East Search	01/18/13	SA
Consulted with SPE LunYi Lao	08/08/13	SA
Updated East Search	08/10/13	SA

/S. A./ Examiner.Art Unit 2629	

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
	See East Search History	08/10/13	SA

/S. A./ Examiner.Art Unit 2629	

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	12/170,951	BEHAR ET AL.	

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 8/9/13	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

Lawana Hixon

U.S. Patent and Trademark Office

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TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) L2039-700111

In re Application of: Yves Behar et al.

Application No.: 12/170,951

Filed: July 10, 2008

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS

The owner*, LiTL LLC, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,289,688

as the term of said **prior patent** is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

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 willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 52,957

/Matthew H. Grady/ — Signature

August 9, 2013 — Date

Matthew H. Grady — Typed or printed name

(617) 395-7017 — Telephone Number

☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included.

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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: August 9, 2013 — Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

1702763

Electronic Patent Application Fee Transmittal

Application Number:	12170951
Filing Date:	10-Jul-2008
Title of Invention:	PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS
First Named Inventor/Applicant Name:	Yves Behar
Filer:	Matthew H. Grady
Attorney Docket Number:	L2039-700111

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:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	1	160	160
		Total in USD ($)		**160**

Electronic Acknowledgement Receipt

EFS ID:	16547385
Application Number:	12170951
International Application Number:	
Confirmation Number:	2004
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:	L2039-700111
Receipt Date:	09-AUG-2013
Filing Date:	10-JUL-2008
Time Stamp:	17:02:07
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Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$160
RAM confirmation Number	4095
Deposit Account	502762
Authorized User	

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer Filed	Terminal_Disclaimer_1.pdf	21973 d243232a6db77bfd264a8b84fdcab18beba8b25e	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30527 a0abc7d43528c0b0ff10f80de422d9e9aa9392ef	no	2
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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.

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Dated: July 1, 2013
Electronic Signature for Matthew H. Grady: /Matthew H. Grady/

Docket No.: L2039-700111
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yves Behar et al.

Application No.: 12/170,951 | Confirmation No.: 2004

Filed: July 10, 2008 | Art Unit: 2692

For: PORTABLE COMPUTER WITH MULTIPLE DISPLAY CONFIGURATIONS | Examiner: S. Abebe

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. 1.111

Commissioner for Patents

Dear Madam:

INTRODUCTORY COMMENTS

In response to the Office Action dated February 1, 2013, 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.

1605588

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings, of claims in the application.

Listing of the Claims:

1. (Currently Amended) A portable computer configurable between a plurality of display modes including a laptop mode and an easel mode wherein transitions between the plurality of display modes allows an operator to interact with a single display screen in each of the plurality of display modes, the portable computer comprising:

a base including a keyboard;

a ~~single~~ main display component rotatably coupled to the base such that the ~~single~~ main display component and the base are rotatable with respect to one another about a longitudinal axis running along an interface between the main display component and the base to transition between at least [[a]] the laptop mode and [[an]] the easel mode, the ~~single~~ main display component including [[a]] the single display screen, wherein the transition between the laptop mode and the easel mode allows the operator to operate the portable computer while viewing the single display screen in each of the plurality of display modes, wherein

the laptop mode is configured to display to a user on the ~~single~~ main display component a first content mode having a first content display orientation with the ~~single~~ main display component oriented towards the user and the keyboard oriented to receive input from the user;

the easel mode is configured to display to the user on the ~~single~~ main display component a second content mode having a second content display orientation with the ~~single~~ main display component oriented towards the user and the keyboard oriented away from the user, wherein the first and second content display orientations are 180 degrees relative to each other, and wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard; and

a ~~scroll wheel~~ navigation control disposed at least partially within the base and rotatable about the longitudinal axis, the ~~scroll wheel~~ navigation control configured to permit a user to control

at least one of operating parameters of the portable computer and content displayed on the single display screen.

2. (Currently Amended) The portable computer of claim 1, where the navigation control includes a scroll wheel [[is]] configured to permit the user to adjust a volume of sound produced by the portable computer.

3. (Original) The portable computer of claim 1, further comprising a first navigation button disposed on one of the base and the display component and configured to permit the user to manipulate selected content displayed on the screen.

4. (Original) The portable computer of claim 3, wherein the screen is configured to display at least one of a plurality of modes of content; and

wherein the navigation button is configured to permit the user to select for display one of the plurality of modes of content.

5. (Original) The portable computer of claim 3, further comprising a second navigation button;

wherein the first navigation button is disposed on a major surface of the base; and

wherein the second navigation button is disposed on a minor surface of the base.

6. (Currently Amended) The portable computer of claim 1, wherein the navigation control includes a scroll wheel [[is]] configured to permit the user to select a mode of content for display by the portable computer.

7. (Currently Amended) A portable computer configurable between a plurality of display modes including a laptop mode and an easel mode wherein transitions between the plurality of display modes permit an operator to interact with a single display screen in each of the plurality of display modes, the portable computer comprising:

a base including a keyboard;

a ~~single~~ main display component rotatably coupled to the base and including [[a]] the single display screen which displays content;

a hinge assembly disposed at least partially within the base and the main display component that defines an axis of rotation about which both the base and the main display component are rotatable to transition the portable computer between at least the laptop mode and the easel mode, wherein the transition between the laptop mode and the easel mode allows the operator to operate the portable computer while viewing the single display screen in each of the plurality of display modes, wherein

the laptop mode is configured to display to a user on the ~~single~~ main display component a first content mode having a first content display orientation with the ~~single~~ main display component oriented towards the user and the keyboard oriented to receive input from the user;

the easel mode is configured to display to the user on the ~~single~~ main display component a second content mode having a second content display orientation with the ~~single~~ main display component oriented towards the user and the keyboard oriented away from the user, wherein the first and second content display orientations are 180 degrees relative to each other, and wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard; and

a ~~scroll wheel~~ navigation control 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 single display screen.

8. (Currently Amended) The portable computer of claim 7; wherein the navigation control includes a scroll wheel [[is]] disposed at least partially about the axis of rotation of the display component relative to the base.

9. (Canceled)

10. (Original) The portable computer of claim 7, further comprising a first navigation button user-accessible in each of the laptop mode and the easel mode, and configured to permit the user to manipulate selected content displayed on the screen.

11. (Original) The portable computer of claim 10, wherein the screen is configured to display at least one of a plurality of modes of content; and

wherein the first navigation button is configured to permit the user to select for display one of the plurality of modes of content.

12. (Previously Presented) The portable computer of claim 10, further comprising a second navigation button that is not user-accessible when the portable computer is in the easel mode.

13. (Currently Amended) A portable computer configurable between a plurality of display modes including a laptop mode and an easel mode wherein transitions between the plurality of display modes allow an operator to interact with a single display screen in each of the plurality of display modes, the portable computer comprising:

a base including a keyboard;

a ~~single~~ main display component including [[a]] the single display screen configured to display content;

a hinge assembly disposed at least partially within the base configured to rotatably couple the main display component to the base, the hinge assembly defining a longitudinal axis running along an interface between the display component and the base about which the display component and the base are rotatable to transition the portable computer between at least [[a]] the laptop mode and [[an]] the easel mode, wherein the transition between the laptop mode and the easel mode allows the operator to operate the portable computer while viewing the single display screen in each of the plurality of display modes, wherein

the laptop mode is configured to display to a user on the ~~single~~ main display component a first content mode having a first content display orientation with the ~~single~~ main display component oriented towards the user and the keyboard oriented to receive input from the user;

the easel mode is configured to display to the user on the ~~single~~ main display component a second content mode having a second content display orientation with the ~~single~~ main display component oriented towards the user and the keyboard oriented away from the user, wherein the

first and second content display orientations are 180 degrees relative to each other, and wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard; and

a ~~scroll wheel~~ navigation control disposed at least partially about the longitudinal axis.

14. (Currently Amended) The portable computer of claim 13, wherein the navigation control includes a scroll wheel [[is]] configured to permit a user to manipulate the content displayed on the screen.

15. (Currently Amended) The portable computer of claim 13, wherein the navigation control includes a scroll wheel [[is]] configured to permit a user to control a volume of sound played by the portable computer.

16. (Currently Amended) The portable computer of claim 13, wherein the navigation control includes a scroll wheel [[is]] disposed at least partially within the hinge assembly.

17. (Original) The portable computer of claim 13, further comprising at least one navigation button disposed on one of the base and the display component.

18. (Previously Presented) The portable computer of claim 1, wherein rotating either the display component or the base about the longitudinal axis up to approximately 180 degrees from a closed mode in which the display screen is disposed substantially against the base configures the portable computer into the laptop mode; and

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

19. (Previously Presented) The portable computer of claim 7, wherein an operating display mode is selected from the plurality of display modes based on a physical orientation of the portable computer.

20. (Currently Amended) The portable computer of claim 7, wherein an operating display mode is selected from the plurality of display modes in response to operation of the navigation control ~~scroll wheel~~.

21. (Previously Presented) The portable computer of claim 8, wherein the scroll wheel provides a default action which effects manipulation of the at least one of the operating parameters of the portable computer, wherein the default action is defined differently responsive to a display mode of the portable computer.

22. (Currently Amended) The portable computer of claim 1, wherein the plurality of modes includes a frame mode in which the ~~single~~ main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard ~~is directed towards~~ faces the substantially horizontal surface.

23. (Currently Amended) The portable computer of claim 22, wherein the frame mode is configured to display to a user on the ~~single~~ main display component the first content mode having the first content display orientation.

24. (Previously Presented) The portable computer of claim 22, wherein the portable computer is configured to prevent the portable computer from responding to keyboard input when the portable computer is in the frame mode.

REMARKS

Claims 1-8 and 10-24 were previously pending in this application. By this amendment, Applicant is amending claims 1-2, 6-8, 13-16, 20, and 22-23. As a result claims 1-8 and 10-24 are pending for examination with claims 1, 7, and 13 being independent claims. No new matter has been added.

Examiner Interview

Applicant wishes to thank Examiner Abebe and Examiner Lao for the courtesies extended to Applicant's Representative during the course of the Interview conducted on June 6, 2013. Applicant's Representative, Examiner Abebe, and Examiner Lao discussed the Application, the references of record, and proposed amendments to the claims.

In particular, Applicant attempted to clarify the differences between the claims and the Schweizer reference. Applicant argued that the Schweizer reference explicitly discloses a "presentation device" configured to allow an "operator" to give a presentation to a "second person" (e.g., a customer) through a "presentation mode." Schweizer explicitly teaches the use of a secondary display by the operator of the presentation device, for example, that may be viewed by removing the keyboard or pulled out from the base of the unit. (See e.g., Figs. 2, 4, and 6). The secondary display (5) enables the operator to control the presentation device. The "main display," (2) in presentation mode, is solely for the secondary user to view the presentation. The Schweizer reference does not disclose a device with a "laptop mode" and an "easel mode" operation where the ***same operator interacts with the same display throughout both modes***.

If as suggested by the Examiners, one rotates the device disclosed by Schweizer about its hinges, into an orientation similar to presentation mode, without removing the keyboard and/or revealing the secondary display, the configuration would prevent the operator from being able to operate the presentation device. The Examiners argued that it would be obvious to configure the presentation device of Schweizer into an inoperable configuration with the main display (2) facing the operator and the keyboard (1) facing the customer. As discussed, the configuration proposed by the Examiners would prevent the operator from operating the presentation device, and make

irrelevant the system elements disclosed for enabling the operator to operate the presentation device in presentation mode. Preventing the operator from using the presentation device cannot as a matter of law be obvious. (Please see M.P.E.P §2143.01). The proposed configuration would either make the device inoperable by the user in the alleged configuration or change the principal of operation of the device – namely a dual display presentation system viewed by an operator and customer. (See e.g., Figs. 2, 4, and 6 and associated description). Thus, modifying the device to achieve an "easel mode" as described alleged by the Examiners would change the principle of operation of the device from a presentation device to a content generation and consumption device. M.P.E.P. 2143.01 VI states "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious."

Agreement was not reached on the principle of operation disclosed, nor why a person of ordinary skill would be motivated to disregard the keyboard and secondary display present in Schweizer in favor of modifying a configuration of Schweizer that is not described in the reference (e.g., with the main display (2) facing the operator and the keyboard (1) facing the customer) and would not provide for operation of the device.

In addition, Applicant's Representative, Examiner Abebe, and Examiner Lao discussed a "frame mode" of operation claimed in dependent claim 22. Examiner Abebe and Examiner Lao suggested that the frame mode operation of the device would distinguish over the current rejection with clarification to the claim language.

Although agreement was not reached, Examiner Abebe and Examiner Lao suggested submission of the amendments and argument for further consideration. Accordingly, Applicant respectfully submits the enclosed Amendments and Remarks and requests reconsideration.

Double Patenting Rejection

The Office Action rejected claims 1-8 and 10-24 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-32 of U.S. Patent No. 8,289,688.

Without acceding to the correctness of the rejection, Applicant respectfully requests the rejection be held in abeyance until patentable subject matter is identified in this Application.

Rejections Under 35 U.S.C. §103

The Office Action rejected claims 1-8 and 10-24 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 7,061,472 to Schweizer (hereinafter Schweizer) in view of U.S. Patent No. 5,436,954 to Nishiyama (hereinafter Nishiyama). In response, Applicant has amended independent claims 1, 7, and 13 to further clarify patentable subject matter and submits the following remarks.

Schweizer is directed to "a presentation device primarily designed for advising customers while conducting visits outside of the office." (Abstract). According to Schweizer, the device has "a primary display screen (2) [that] can be pivoted … so that during a presentation, ***two people located opposite one another*** can each view a display screen." (Abstract)(Emphasis supplied). As described, "the presentation device is a conventional laptop computer with a removable keyboard and a main display screen that can be rotated out." (Col. 1, lines 54-57). The presentation device includes "another display screen … arranged under the keyboard in the base unit of the laptop computer." (Col. 1, lines 59-61). "The keyboard can be removed as desired." (Col. 1, lines 66-67). During a presentation, the main display screen is rotated out "so the second person can view the main display screen," and "the image of the main display screen is rotated 180 degrees by a control device." (Col. 2, lines 1-5). The main display can be rotated out and the second display turned on manually or "by a device that recognizes the turning angle coupled to the hinge." (Col. 2, lines 23-31).

Schweizer further discloses three embodiments of the presentation device in presentation mode that are illustrated by Figs. 2, 4, and 6 of Schweizer shown below:

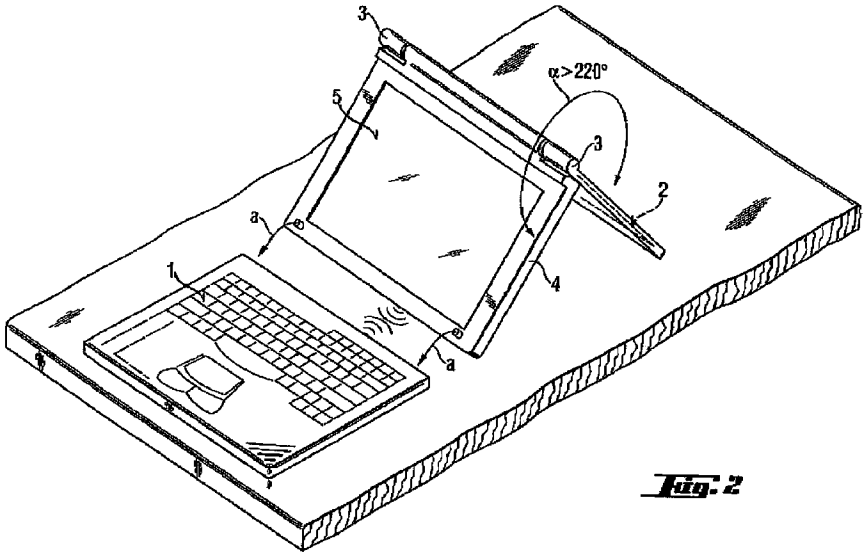


Fig. 2

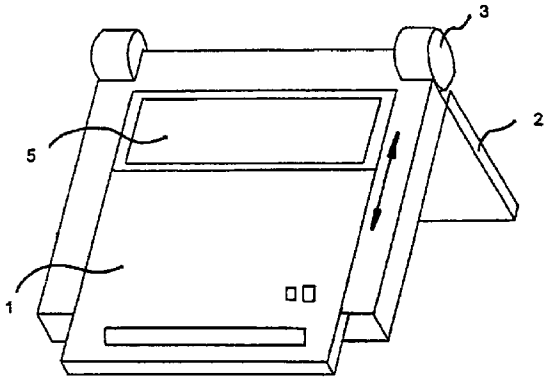


Fig. 4

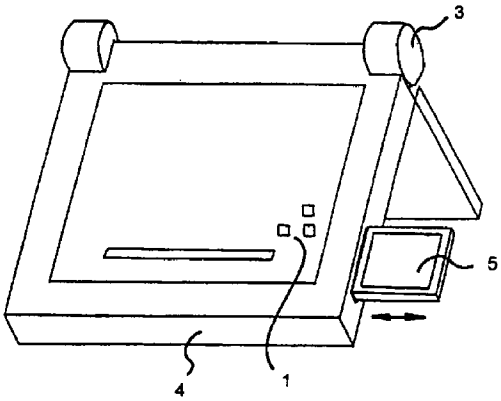


Fig. 6

In the first embodiment of the presentation device illustrated in Fig. 2 of Schweizer, the removable keyboard (1) is removed to reveal a secondary display (5). The second embodiment illustrated by Fig. 4 also illustrates a removable keyboard (1) that slides out of the base of the device to reveal a secondary display (5). The third embodiment of the presentation device shown in Fig. 5 leaves the keyboard (1) attached to the presentation device, but includes a secondary display (5) that is pulled out from the side of the base of the device. In all of the embodiments disclosed in Schweizer, the operator views a secondary display (5) in presentation mode to operate the device using the keyboard (1).

In summary, Schweizer teaches a dual display laptop configured for presenting the main display to a second viewer (e.g., a customer) while an operator (e.g., a user) interacts with the laptop using a secondary display and the detachable keyboard.

Schweizer does not teach or suggest all of the claim elements of claim 1, as amended. In particular, Schweizer does not teach or suggest "a portable computer configurable between a plurality of display modes including a laptop mode and an easel mode" that allow an operator to interact with the same "single display screen in each of the display modes," as recited in claim 1, as amended. Schweizer teaches and relies on a main display oriented towards a second viewer and an additional display oriented towards an operator of the device to permit the operator to control the presentation device. (Please see Col. 2, lines 1 – 31). Further, Schweizer does not teach or suggest an "easel mode" wherein the portable computer "is configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claim 1, as amended. As discussed above, Schweizer is directed to a dual display laptop computer, wherein a main display is rotated and a display orientation on the main display can be adjusted for viewing by a second user opposite the computer operator. (Please see e.g., Col. 1, line 54 – Col. 2, line 31; and Abstract). The operator controls the laptop using a second display oriented towards the operator, which can be viewed by removing the detachable keyboard or by moving the second display screen out of a slot in which it is positioned. (Please see e.g., Col. 1, line 54 – Col. 2, line 31; and Abstract). As described in Schweizer, Schweizer orients the main display towards the second viewer. Thus, Schweizer does not teach or suggest a portable computer having an "easel mode" wherein the portable computer "is configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claim 1, as amended.

Schweizer does not teach or suggest all of the claim elements of independent claims 7 and 13, as amended. In particular, Schweizer does not teach or suggest an "easel mode" wherein the portable computer is "configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claims 7 and 13, as amended.

As discussed above, Schweizer teaches and relies on dual display screens to operate the presentation device. (Please see e.g., Col. 1, line 54 – Col. 2, line 31; and Abstract). Schweizer is not concerned with managing an operator's interaction with the same display in all modes of operation, rather Schweizer is directed a laptop having two displays, a main display presented to a viewing user and a second display presented to an operator to control the presentation device. (Please see e.g., Col. 1, line 54 – Col. 2, line 31; and Abstract). Thus, Schweizer does not teach or suggest an easel mode wherein the portable computer is "configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claims 7 and 13, as amended. Further, Schweizer teaches a detachable keyboard that can be used to operate the presentation device in any configuration. Schweizer is not concerned with providing a device operable when the keyboard is inaccessible or oriented away from the user. In Schweizer the keyboard is always accessible, thus the proposed modification and rejection would alter the principal of operation disclosed, making the rejection not prima facie obvious as a matter of law (Please see M.P.E.P. § 2143.01 VI).

Further Combination with Nishiyama

Nishiyama discloses a telephone set with a rotary selector configurable between a closed position and an open position about a single axis joint portion. The single axis joint portion includes the structures for the rotary selector, which are configured to lock the sections of

Nishiyama device into the open telephone configuration, and prevent rotation of the sections of Nishiyama past the telephone configuration. (Please see Col. 2, lines 18-22; Col. 4, lines 1-4; Col. 5, lines 12-13; Col. 7, line 54 – Col. 8, line 2; and Fig. 5). Thus, Nishiyama does not teach or suggest an easel mode, and cannot cure the deficiencies discussed above with respect to Schweizer.

Further, Schweizer describes a device with sections that are rotatable past 180 degrees. (e.g., Schweizer Fig. 2). Nishiyama discloses a selector (alleged to read on the claimed scroll wheel) integral with a single axis hinge including structures that are configured to prevent rotation past a ***telephone configuration***. It would not be obvious to the person of ordinary skill to combine a telephone device (Nishiyama) having a single axis hinge, selector, and a stopper ***that prevents the device from rotating*** with the device of Schweizer.

Schweizer requires complete rotation about a single axis in excess of 180 degrees. This teaching and the structures disclosed associated with the teaching are not compatible with the single axis hinge/selector that incorporates a stop position disclosed by Nishiyama. Modifying Schweizer to include the teaching of Nishiyama's joint portion and selector would result in the Schweizer device's rotation being stopped at an open position (i.e., a positing allowing less than 180 degrees of rotation). Thus, the alleged combination would either render Schweizer inoperable by preventing complete rotation, or change the nature of operation, both are improper. (Please see M.P.E.P. §2143.03 Sec. V & VI). Due to the stop position disclosed in Nishiyama, the telephone device of Nishiyama ***cannot*** be transitioned from a laptop mode to an easel mode, thus, claim 1 would not be obvious in light of any of Nishiyama and Schweizer taken alone or in combination.

Neither of Nishiyama nor Schweizer teach or suggest an easel mode wherein the portable computer is "configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claim 1, as amended. Thus, even if the combination of Nishiyama and Schweizer is assumed proper, the combination does not teach or suggest claim 1, as amended. Claims 2-6 depend from claim 1 and are allowable for at least the same reasons.

Accordingly, withdrawal of the rejection of claims 1-6 under 35 U.S.C. §103 is respectfully requested.

Independent claims 7 and 13, as amended, also recite an easel mode wherein the portable computer is "configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard." Likewise, Schweizer does not teach or suggest an easel mode, nor a transition "between at least the laptop mode and the easel mode." Nishiyama discloses a stopper that prevents the disclosed device from rotating past a telephone configuration. Thus, neither Schweizer nor Nishiyama teach or suggest an easel mode wherein the portable computer is "configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claims 7 and 13, as amended.

As discussed above, it is not obvious to modify Schweizer and Nishiyama as a matter of law. Further, none of the references teach the recited transition an easel mode wherein the portable computer is "configured to display to the user on the main display component a second content mode having a second content display orientation with the main display component oriented towards the user and the keyboard oriented away from the user," and "wherein the portable computer is operable in the easel mode to enable the user to interact with displayed content without interacting with the keyboard," as recited in claims 7 and 13, as amended. Thus, even assuming for the purposes of argument the combination proper, the combination does not teach or suggest at least one element of independent claims 7 and 13. Claims 8 and 11-24 depend from independent claims 7 and 13 respectively, and are allowable for at least the same reasons. Accordingly, withdrawal of the rejection of claims 7-8 and 10-24 under 35 U.S.C. §103 is respectfully requested.

Frame Mode

As suggested by Examiner Abebe and Examiner Lao during the Interview, Applicant has amended dependent claim 22 to further clarify frame mode operation of the portable computer. Claim 22, as amended, recites "wherein the plurality of modes includes a frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and ***the keyboard faces the substantially horizontal surface***." Support for this amendment may be found at, for example, paragraph [0085] and Fig. 26 of Applicant's published application. Neither Nishiyama nor Schweizer teach or suggest "wherein the plurality of modes includes a frame mode in which the main display component is oriented towards the operator, the base contacts a substantially horizontal surface, and ***the keyboard faces the substantially horizontal surface***," as recited in claim 22.

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 (Ref. L2039-700111).

Dated: July 1, 2013

Respectfully submitted,

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Attorneys for Applicant

PATENT COOPERATION TREATY

ADVANCE E-MAIL

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

GATES, Sarah, M.
Lowrie, Lando & Anastasi, LLP
One Main Street, Eleventh Floor
Cambridge, MA 02142
ETATS-UNIS D'AMERIQUE

Date of mailing *(day/month/year)* 14 October 2010 (14.10.2010)	
Applicant's or agent's file reference L2039-7001WO	**IMPORTANT NOTICE**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2009/038599	27 March 2009 (27.03.2009)	01 April 2008 (01.04.2008)

Applicant
LITL LLC et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer
Dorothée Mülhausen

e-mail: pt01.pct@wipo.int

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference L2039-7001WO	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2009/038599	International filing date *(day/month/year)* 27 March 2009 (27.03.2009)	Priority date *(day/month/year)* 01 April 2008 (01.04.2008)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant LITL LLC		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) 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
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 05 October 2010 (05.10.2010)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Dorothée Mülhausen e-mail: pt01.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2009/038599	27.03.2009	01.04.2008

International Patent Classification (IPC) or both national classification and IPC
INV. G06F1/16

Applicant
AQUENT, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.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
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually 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 notifed the International Bureau under Rule 66.1*bis*(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:	Date of completion of this opinion	Authorized Officer
European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	see form PCT/ISA/210	Arranz, José Telephone No. +31 70 340-4870

Form PCT/ISA/237 (Cover Sheet) (April 2005)

Box No. I Basis of the 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 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, 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 additional 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:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	6,7,14-24
	No:	Claims	1-5,8-13,25,26
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-26
Industrial applicability (IA)	Yes:	Claims	1-26
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V.

1 Reference is made to the following documents:
D1: DE 199 52 486 A1 (SCHWEIZER JOACHIM [DE]; RUETTIGER MAXIMILIAN [DE]; JAENICKE VOLKMAR [D) 3 May 2001 (2001-05-03)
D2: US 2007/182663 A1 (BIECH GRANT S [CA]) 9 August 2007 (2007-08-09)
D3: EP-A-0 588 210 (HITACHI LTD [JP]) 23 March 1994 (1994-03-23)

2 INDEPENDENT CLAIMS 1,25

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
Document D1 discloses (the references in parentheses applying to this document):

a portable computer configurable between plurality of display modes including a laptop mode and an easel mode (Col.1, line 56 - Col.2, line 24), the portable computer comprising:
a display component including a display screen configured to display content (Fig.1);
a base (Fig.1); and
a hinge assembly configured to rotatably couple the display component to the base (Col.1, line 56 - Col.2, line 24);
wherein the hinge assembly is 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 (Col.1, line 56 - Col.2, line 24).

Consequently, D1 discloses all the features of claim 1.

2.2 A corresponding objection as raised in §2.1 applies, mutatis mutandis, to claim 25.

3 DEPENDENT CLAIMS 2-24, 26
Dependent claims 2-24, 26 do not contain any features which, in combination with

the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1-D3 and the corresponding passages cited in the search report.

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)

Applicant's or agent's file reference A2029-7004WO	Date of mailing *(day/month/year)* 28 SEPTEMBER 2009 (28.09.2009) **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 Facsimile No. 82-42-472-7140	Authorized officer COMMISSIONER Telephone No. 82-42-481-5207

Form PCT/ISA/220 (July 2009) *(See notes on accompanying sheet)*

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.

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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.

HP Inc. - Exhibit 1003 - Page 113

* 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

HP Inc. - Exhibit 1003 - Page 114

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

Form PCT/ISA/237 (cover sheet) (April 2007)

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:

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.

HP Inc. - Exhibit 1003 - Page 117

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

Form PCT/ISA/210 (second sheet) (July 2008)

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	

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	12170951
Filing Date	2008-07-10
First Named Inventor	Yves Behar
Art Unit	2692
Examiner Name	S. Abebe
Attorney Docket Number	L2039-700111

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	6972752		2005-12-06	Nako et al.	
	2	5515345		1996-05-07	Barreira et al.	
	3	5793355		1998-08-11	Youens	
	4	5847698		1998-12-08	Reavey et al.	
	5	6464195		2002-10-15	Hildebrandt	
	6	6642909		2003-11-04	Oliva	
	7	6665175		2003-12-16	deBoer et al.	
	8	6067224		2000-05-23	Nobuchi	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12170951
	Filing Date	2008-07-10
	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	9	5790371		1998-08-04	Latocha et al.	
	10	5900848		1999-05-04	Haneda et al.	
	11	6222507		2001-04-24	Gouko	
	12	5949643		1999-09-07	Batio	
	13	6697055		2004-02-24	Bullister	
	14	5547698		1996-08-20	Lansbergen et al.	
	15	6097389		2000-08-01	Morris et al.	
	16	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	20050134717		2005-06-23	Misawa	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12170951
	Filing Date	2008-07-10
	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	2	20050282596		2005-12-22	Park et al.	
	3	20050063145		2005-03-24	Homer et al.	
	4	20060268500		2006-11-30	Kuhn	
	5	20080284738		2008-11-20	HOVDEN et al.	
	6	20090244832		2009-10-01	Behar et al.	
	7	20040207568		2004-10-21	Ooshima et al.	
	8	20070138806		2007-06-21	Ligtenberg et al.	
	9	20080042987		2008-02-21	Westerman et al.	
	10	20090244012		2009-10-01	Behar et al.	
	11	20040212602		2004-10-28	Nako et al.	
	12	20050091596		2005-04-28	Anthony et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2008-07-10
	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	13	20090019383		2009-01-15	Riley et al.	
	14	20080174570		2008-07-24	Jobs 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	6-242853	JP	A	1994-09-02	Hitachi Ltd et al.		☒
	2	6-259166	JP	A	1994-09-16	Hitachi Ltd		☒
	3	8-179851	JP	A	1996-07-12	Toshiba Corp		☒
	4	5-197507	JP	A	1993-08-06	Hitachi Ltd		☒
	5	1292112	CN	A	2001-04-18	Sharp Kk		☒
	6	2005-242436	JP	A	2005-09-08	Matsushita Electric Ind Co Ltd		☒
	7	2001-167211	JP	A	2001-06-22	Hitachi Ltd et al.		☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12170951
	Filing Date	2008-07-10
	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	8	2005-159741	JP	A	2005-06-16	Fuji Photo Film Co Ltd		☒
	9	10-111658	JP	A	1998-04-28	Fujitsu Ltd		☒
	10	6090200	JP	A	1994-03-29	HITACHI LTD		☒
	11	2004-302179	JP	A	2004-10-28	Hitachi Ltd		☒
	12	11-296259	JP		1999-10-29	CANON INC.		☒
	13	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.	T5
	1	Japanese Office Action mailed 12-4-2012 from national phase entry of the corresponding PCT application. (L2039-7001JP).	☐
	2	Partial translation of Japanese Office Action from national phase examination of the Corresponding PCT application. (Letter dated 12-7-12 including English partial translation of JP OA dated 12-4-12).	☐
	3	Search Report from corresponding International Application PCT/US2009/038599 dated March 6, 2009	☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	12170951
	Filing Date	2008-07-10
	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

	4	International Search Report from a commonly owned PCT application PCT/US09/39117, dated September 29, 2009.	☐
	5	Final Office Action for Japanese Application No. 2011-503058 mailed April 16, 2013, 3 pages.	☒

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	12170951
	Filing Date	2008-07-10
	First Named Inventor	Yves Behar
	Art Unit	2692
	Examiner Name	S. Abebe
	Attorney Docket Number	L2039-700111

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)	2013-07-01
Name/Print	Matthew H. Grady	Registration Number	52957

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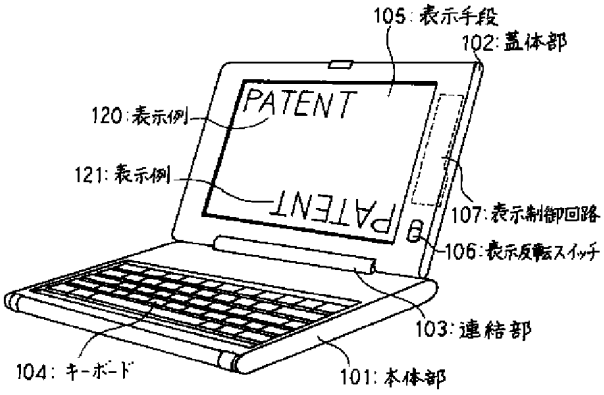
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最終頁に続く

(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



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【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

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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。

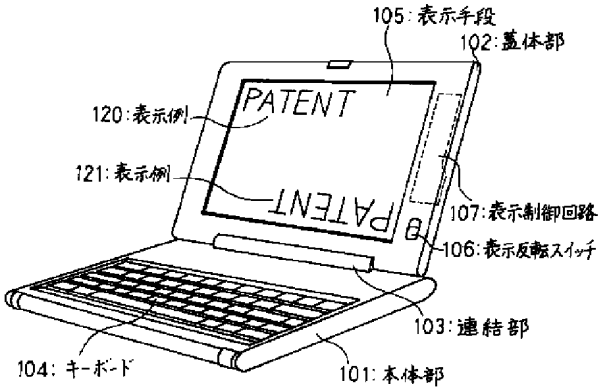
【符号の説明】

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

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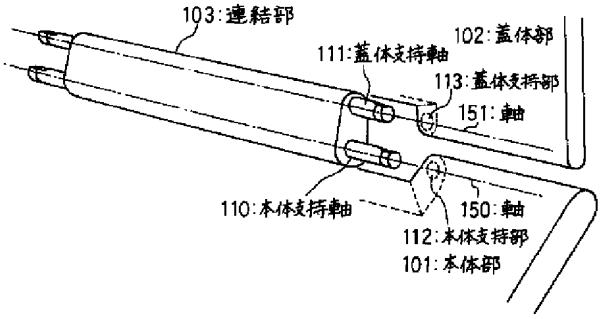
【図１】

図１



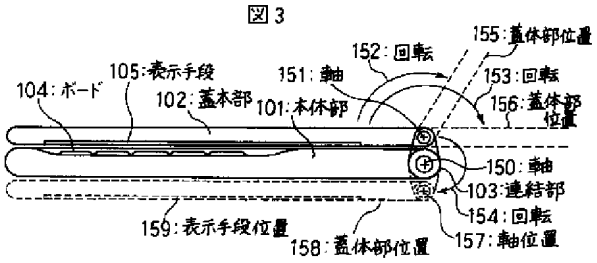
【図２】

図２



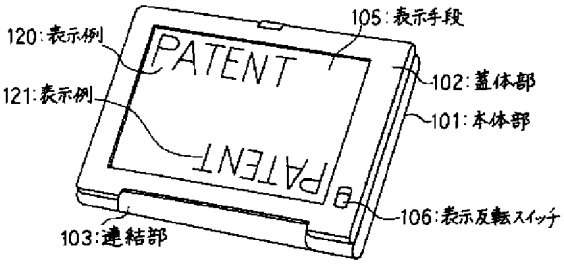
【図３】

図３



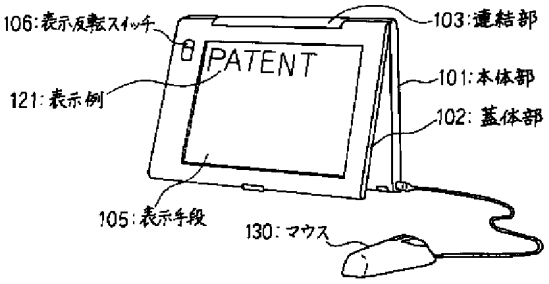
【図４】

図４



【図５】

図５



フロントページの続き

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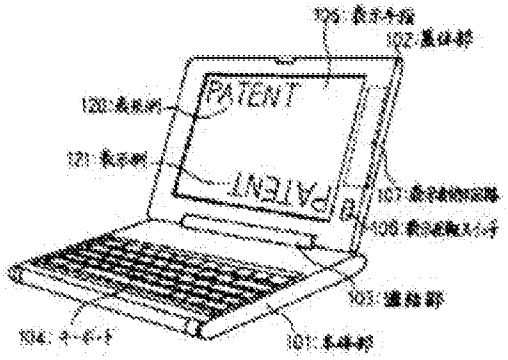
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(54) **ELECTRONIC APPARATUS DEVICE AND PERSONAL COMPUTER**

(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.

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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.

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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.

[Translation done.]

* NOTICES *

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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.

[Translation done.]

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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 *

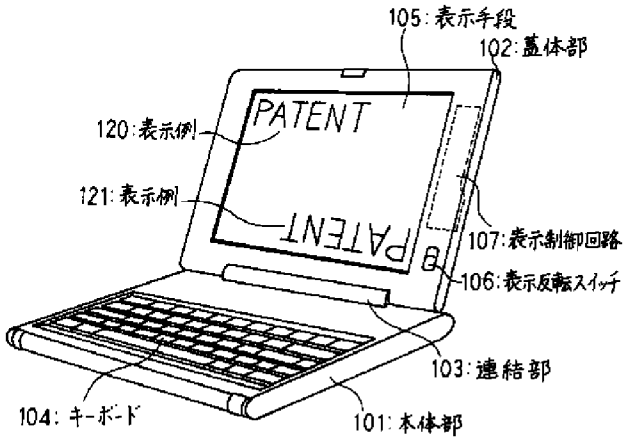
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DRAWINGS

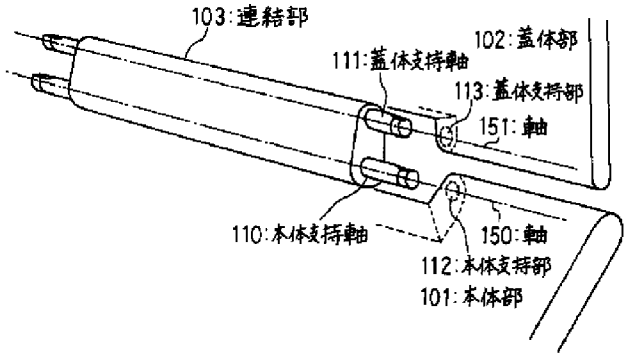
[Drawing 1]

図1



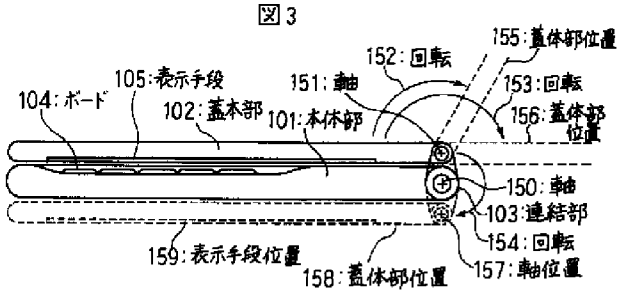
[Drawing 2]

図2



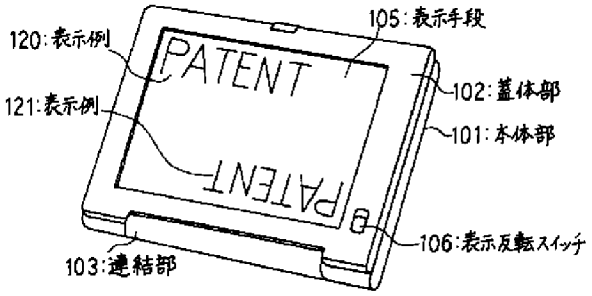
[Drawing 3]

図3



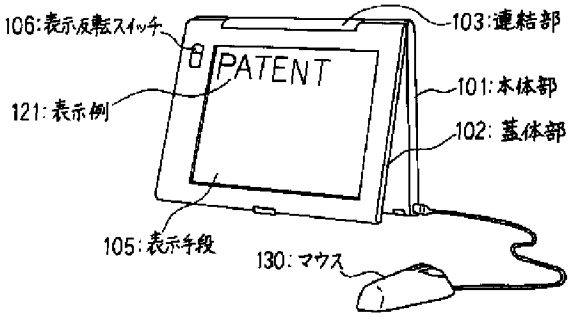
[Drawing 4]

図4



[Drawing 5]

図5



[Translation done.]

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		7165－5B	３１２	Ｅ

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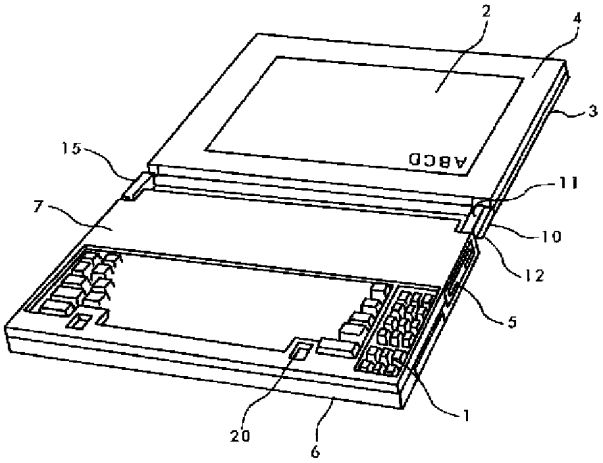
(74)代理人　弁理士　小川　勝男

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



HP Inc. - Exhibit 1003 - Page 153

【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

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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。

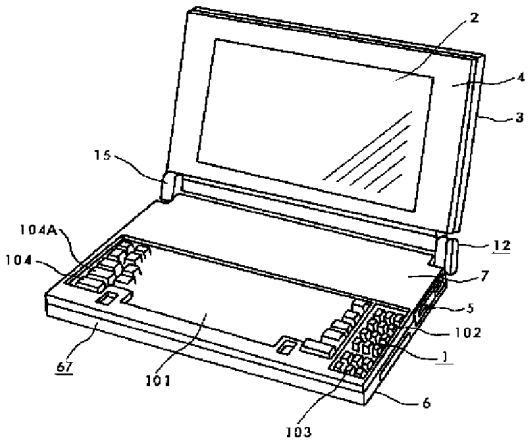
【図１２】使用時における壁掛け状態の断面図。

【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。

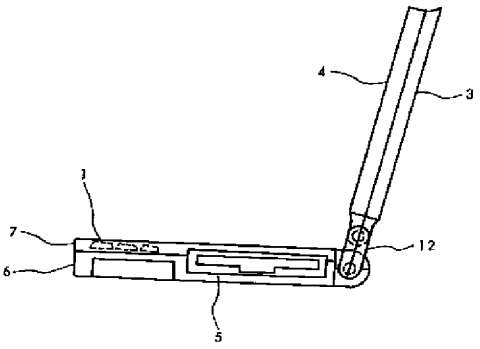
【図１】

図 1

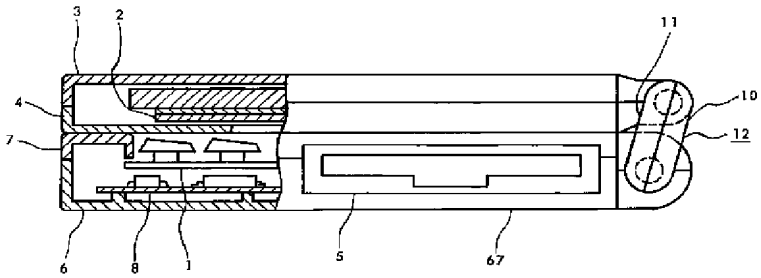


【図２】

図 2

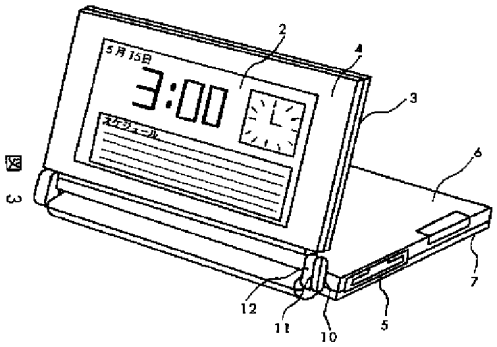


【図３】



【図９】

図 9



【図４】

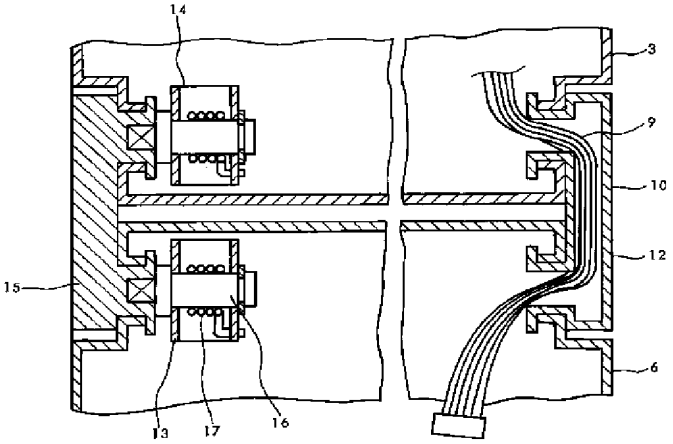
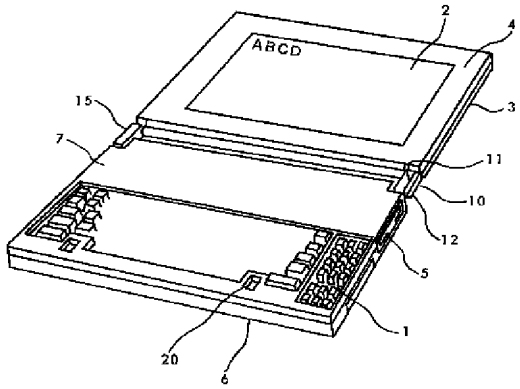


図４

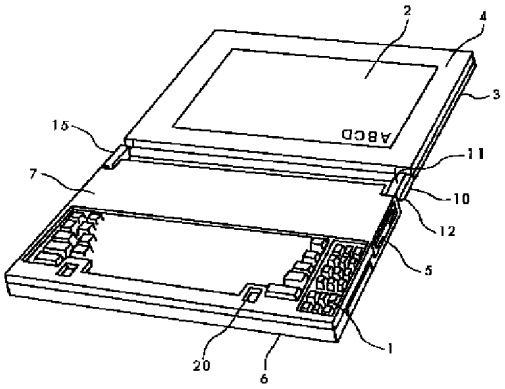
【図６】

図　６



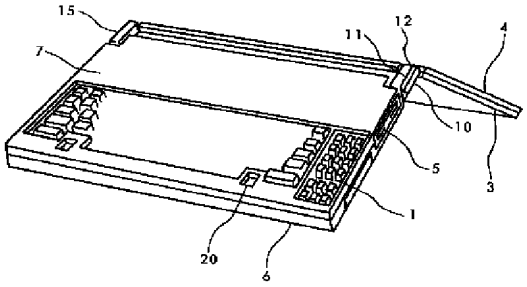
【図７】

図　７



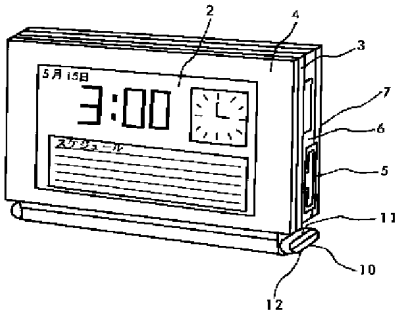
【図８】

図　８



【図１０】

図　１０



【図１１】

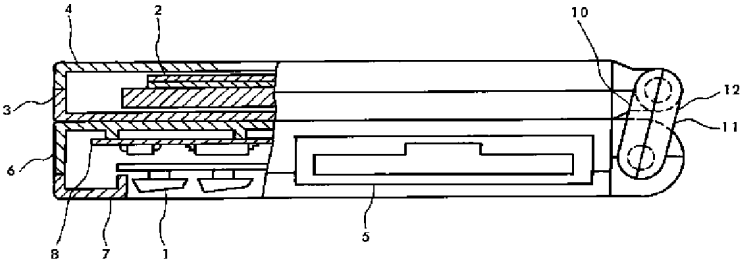
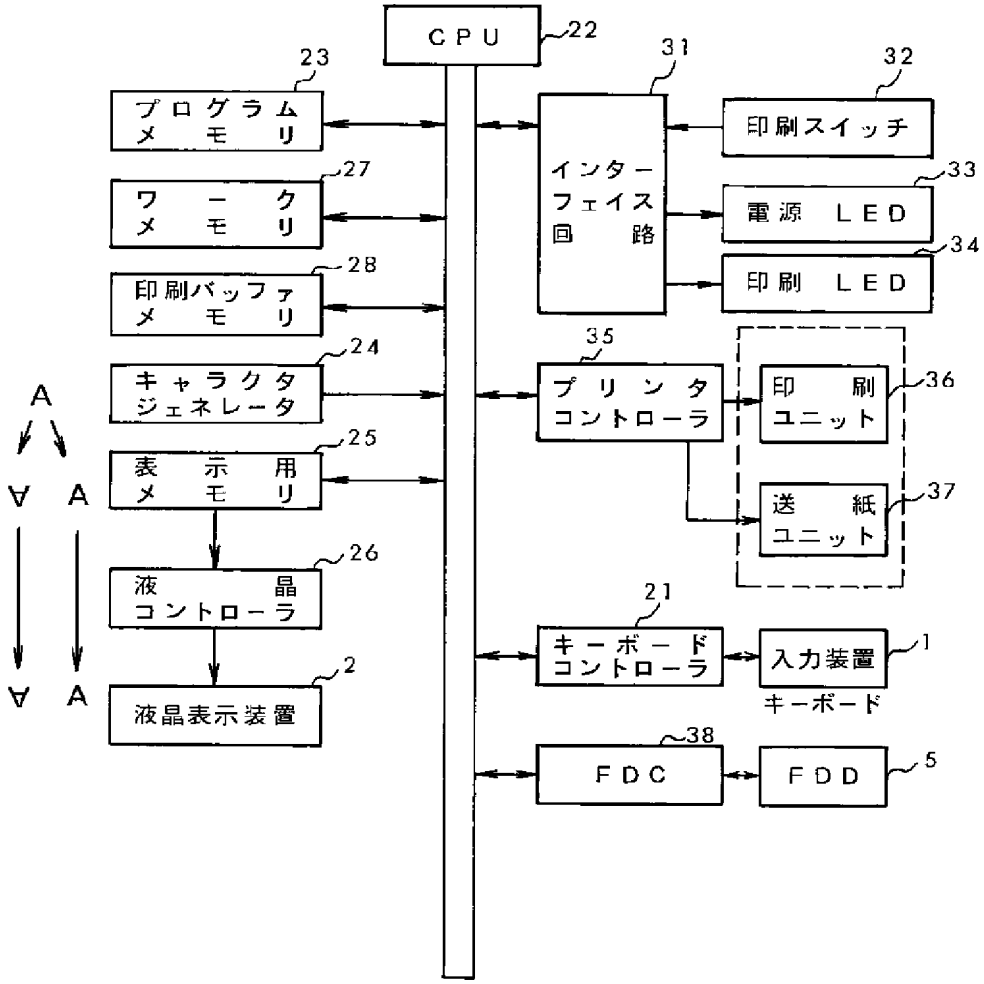


図１１

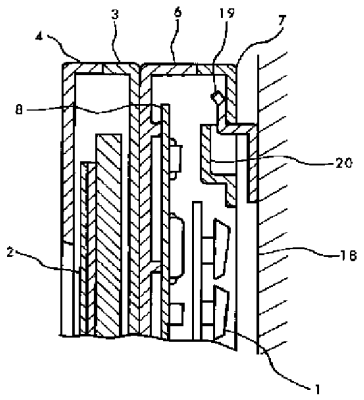
【図５】

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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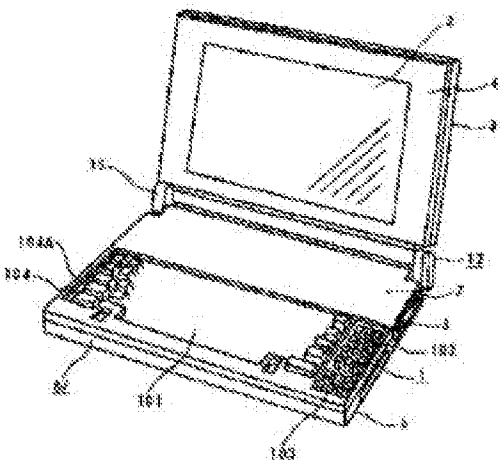
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MATSUOKA SHIGERU
SAITO KOICHI

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

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.

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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 *

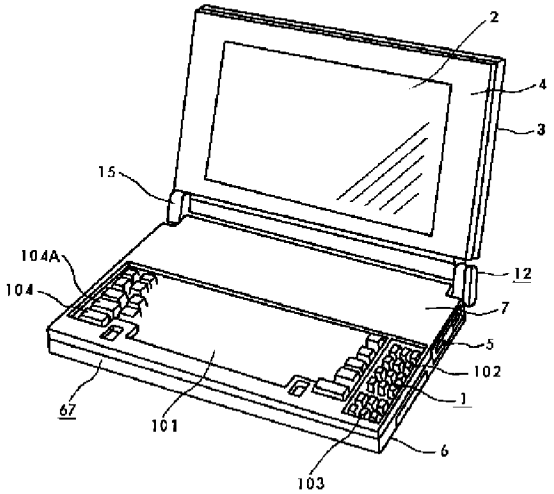
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DRAWINGS

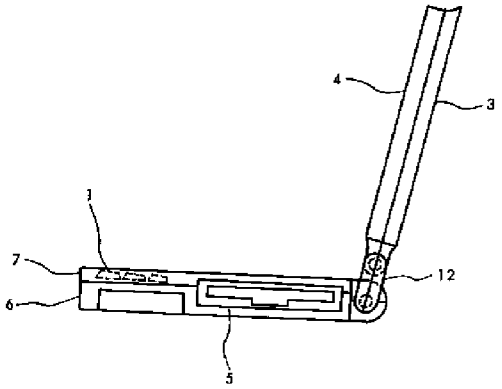
[Drawing 1]

図 1



[Drawing 2]

図 2



[Drawing 3]

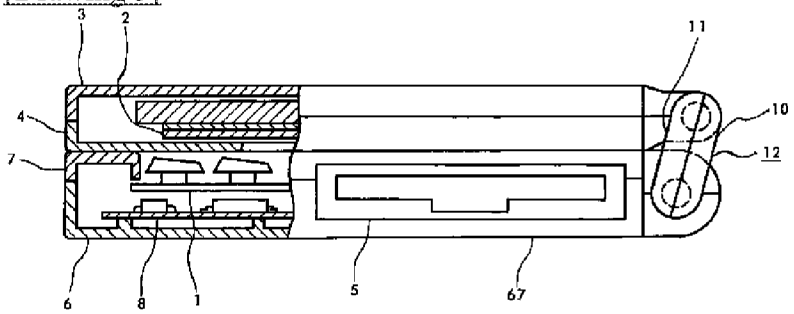
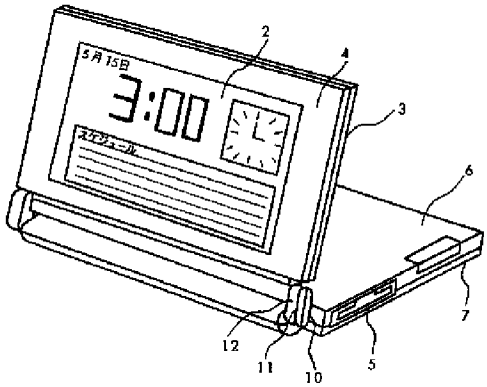


図 3

[Drawing 9]

図 9



[Drawing 4]

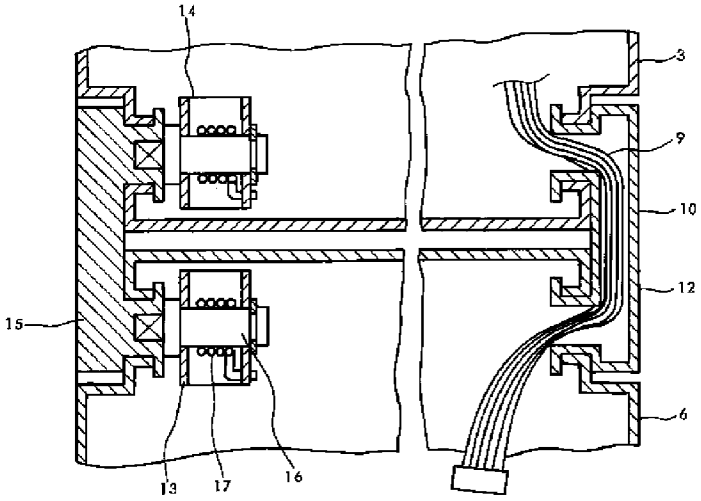
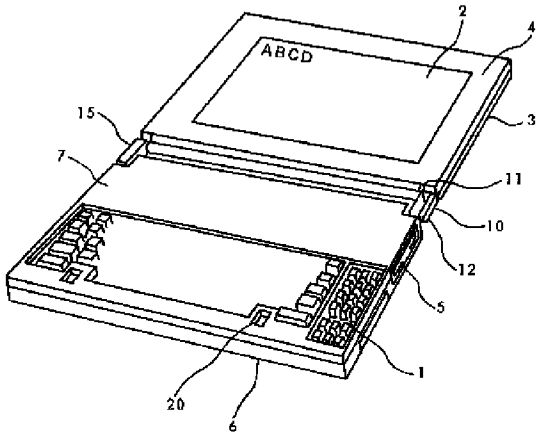


図 4

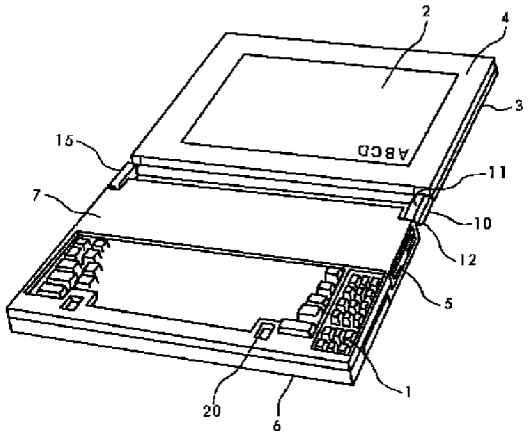
[Drawing 6]

図 6



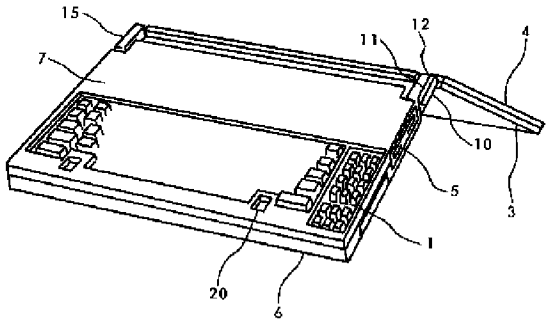
[Drawing 7]

図 7



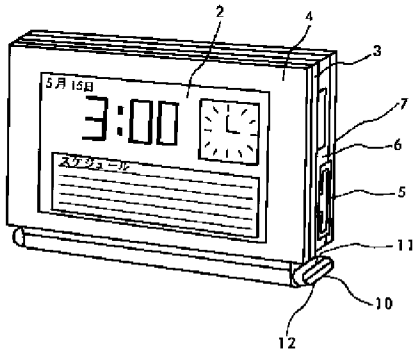
[Drawing 8]

図 8



[Drawing 10]

図 10



[Drawing 11]

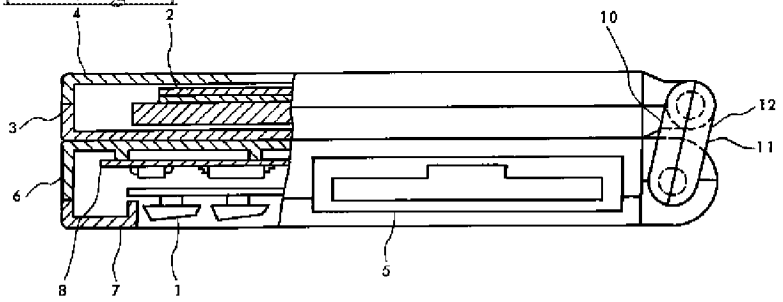
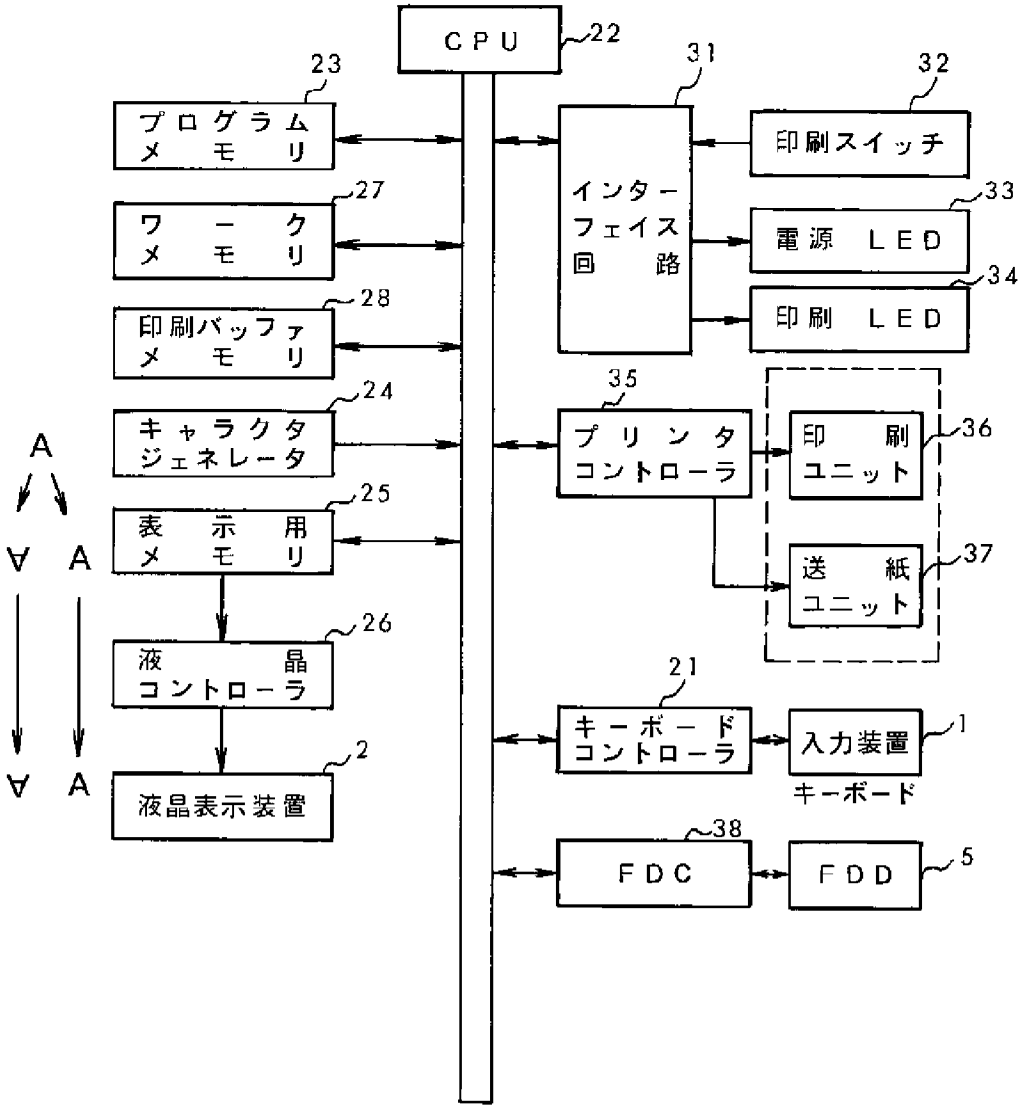


図 11

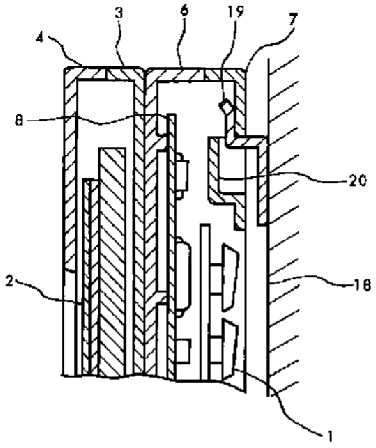
[Drawing 5]

図　5



[Drawing 12]

図 12



[Translation done.]

(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

特開平8－179851

(43)公開日　平成８年(1996)７月12日

(51)Int.Cl.[6]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｇ０６Ｆ　1/16				
			Ｇ０６Ｆ　1/ 00　３１２　Ｆ	

審査請求　未請求　請求項の数１　ＯＬ　（全　４　頁）

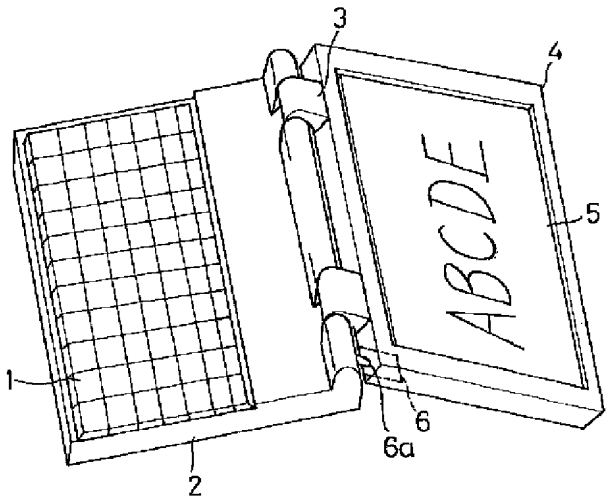
(21)出願番号　特願平6－322621

(22)出願日　平成６年(1994)12月26日

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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

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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。

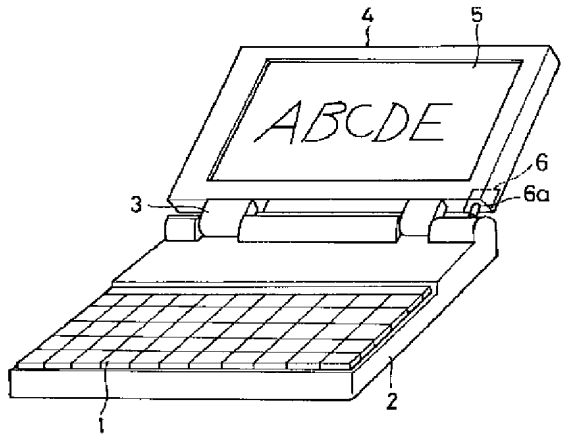
【図３】上記実施例の回路ブロック図。

【図４】上記実施例の使用説明図。

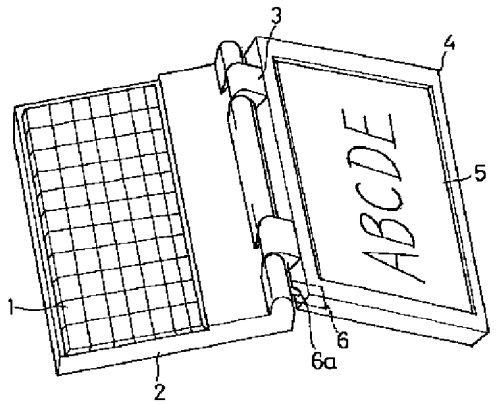
【符号の説明】

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

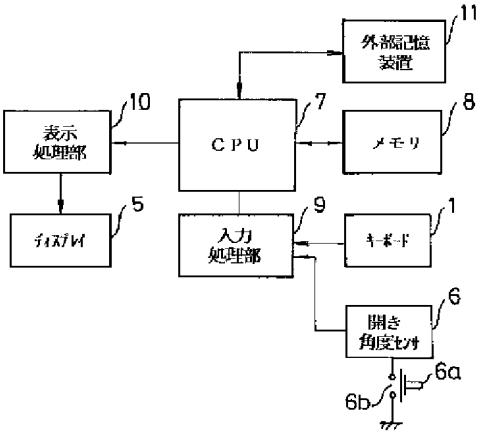
【図１】



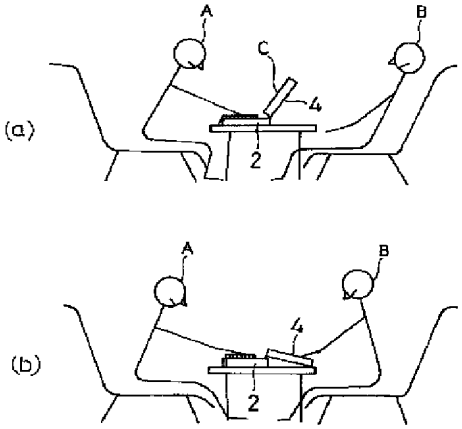
【図２】



【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**

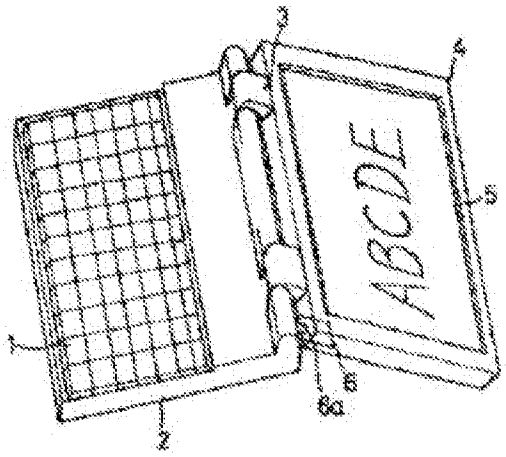
(51)Int.Cl. G06F 1/16

(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.

[Translation done.]

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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.
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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.
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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.]

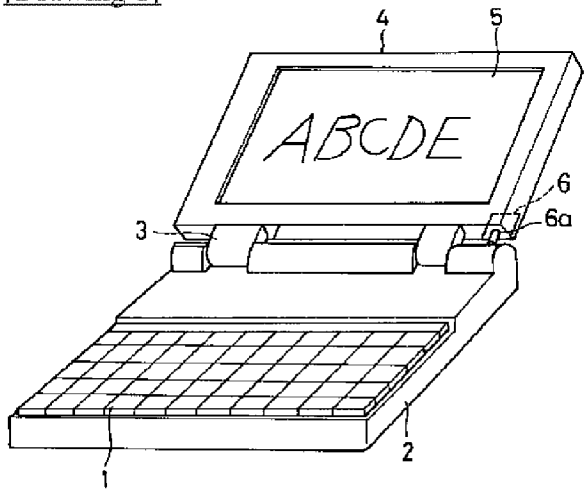
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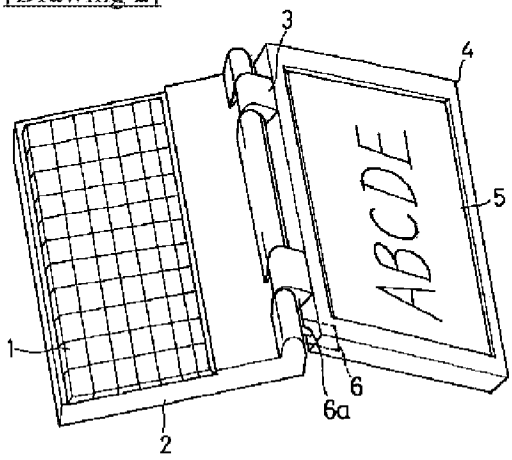
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DRAWINGS

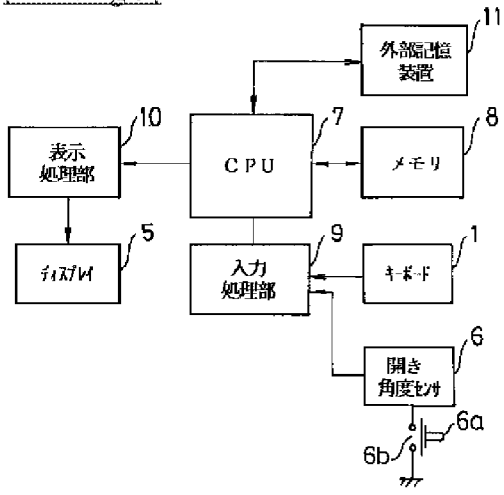
[Drawing 1]



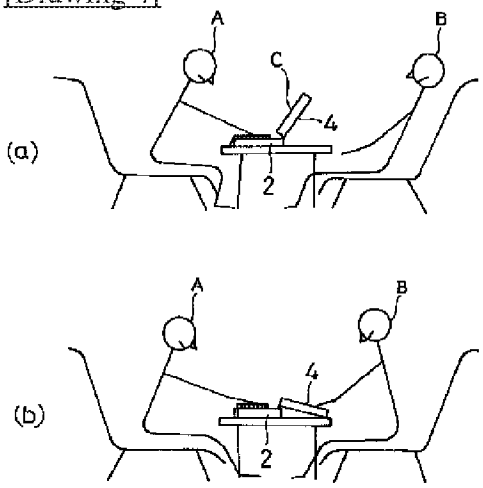
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

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Ｇ０６Ｆ	3/14	３５０　Ｂ	7165－5B		
	1/16				
Ｇ０９Ｆ	9/00	３１２	6447－5G		
Ｇ０９Ｇ	3/20	Ｕ	8621－5G		
			7927－5B	Ｇ０６Ｆ　1/ 00　３１２　Ｆ	

審査請求　未請求　請求項の数９(全 12 頁)　最終頁に続く

(21)出願番号　特願平4－6643

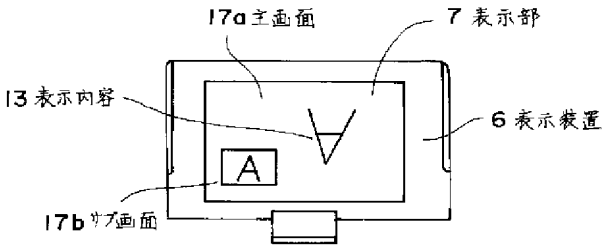
(22)出願日　平成４年(1992)１月17日

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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］



【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

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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

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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

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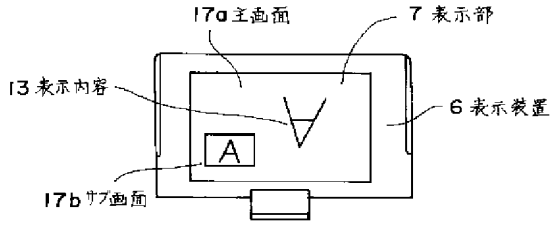
示部に３つ以上の画面を設けるようにしてもよい。
【００４６】上記実施例のポータブルコンピュータによれば、キーボードの操作者と該操作者と対面している人物等の複数の人物が、単一の表示部７を目視することで、同一の表示内容を読み取ることができる。
【００４７】さらに、上記実施例のポータブルコンピュータによれば、会社等で業務を進行する際に、複数の人物間でデータの表示、見積りの提示等の情報交換を行うことが容易である。また、学校、塾等で、教育者と被教育者が対面して学習を行う場合にも有効となる。
【００４８】また、上記実施例において、ポータブルコンピュータの表示装置６だけを銀行のカウンター等に設置し、銀行員と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

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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。

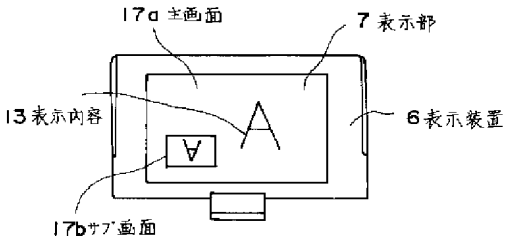
【図１】

［図　１］



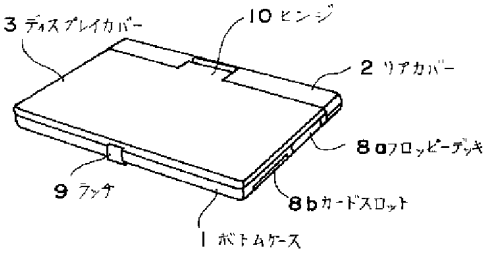
【図２】

［図　２］



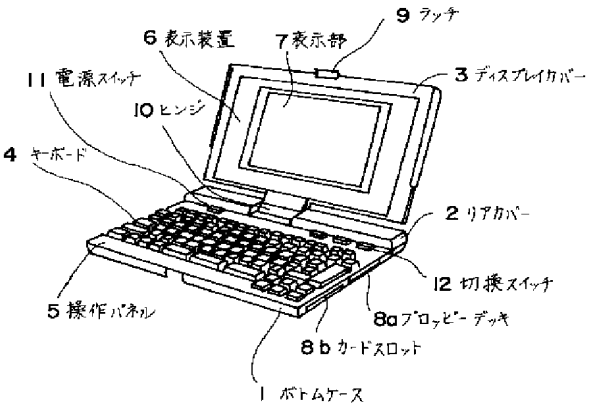
【図３】

［図　３］



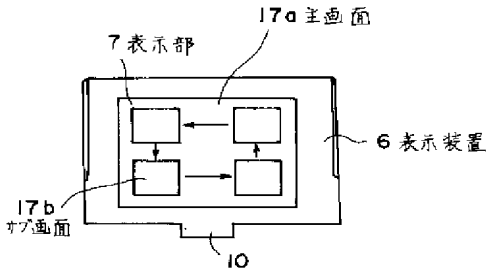
【図４】

［図　４］



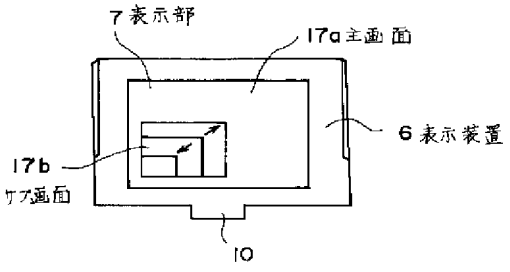
【図５】

［図　５］



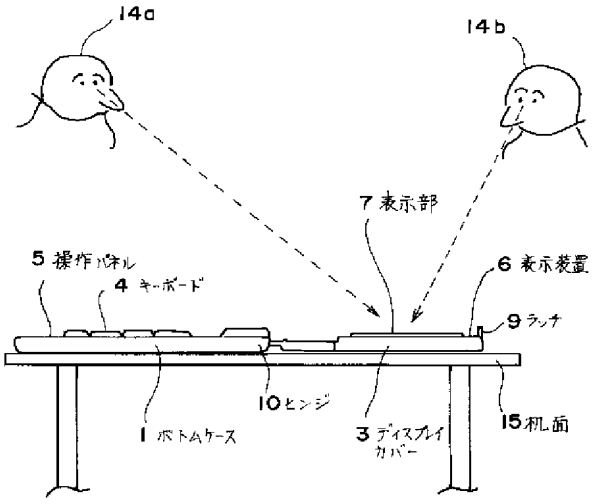
【図６】

［図　６］



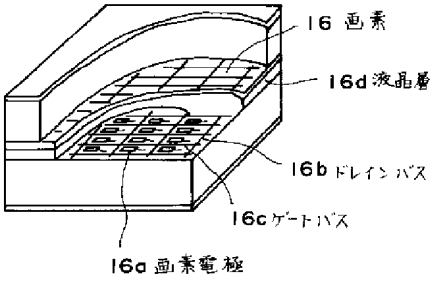
【図７】

[図 7]



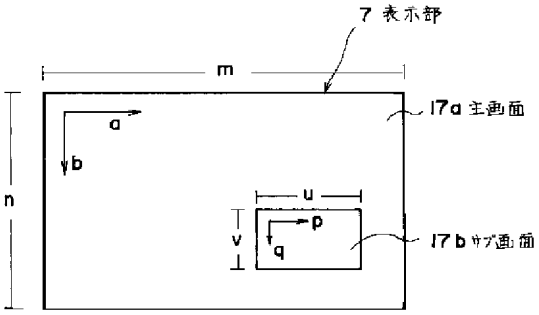
【図８】

[図 8]



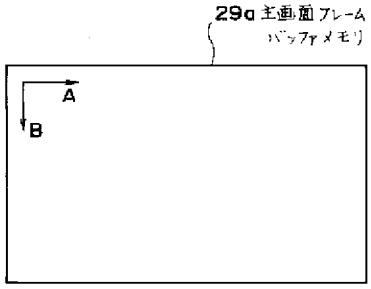
【図１０】

[図 10]



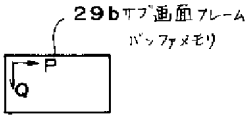
【図１１】

[図 11]



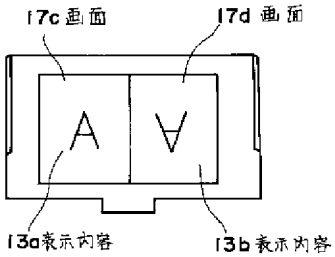
【図１２】

[図 12]



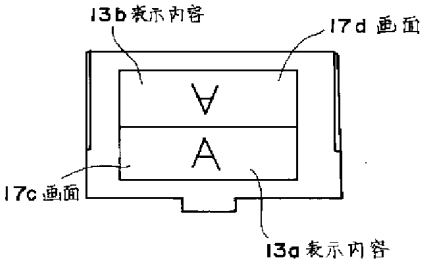
【図１３】

[図 13]



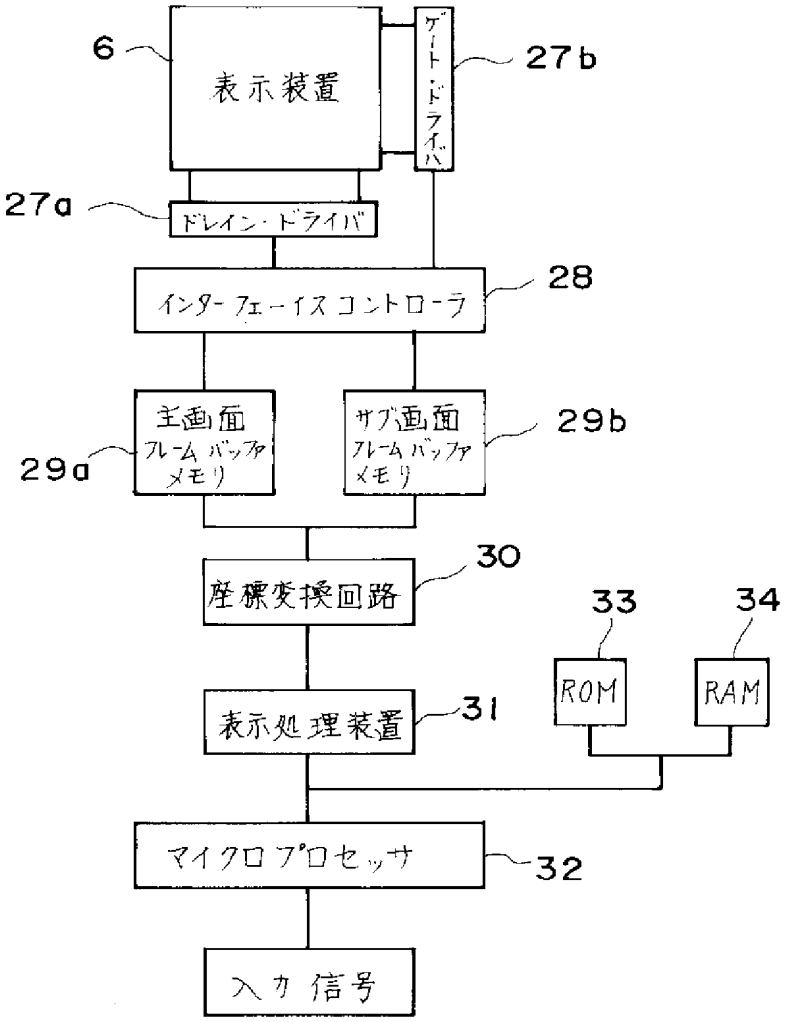
【図１４】

[図 14]



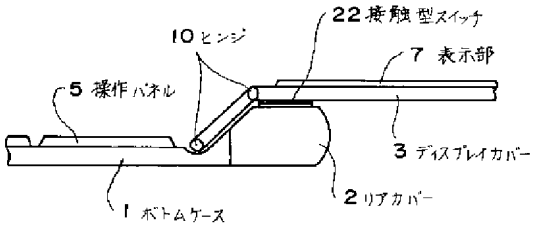
【図９】

［図　９］



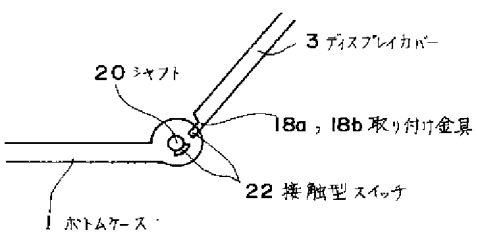
【図１７】

［図 17］



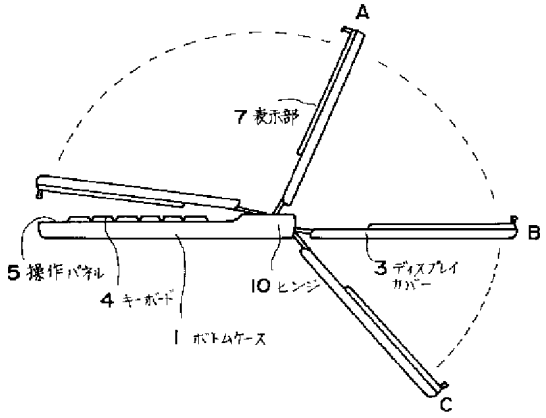
【図１８】

［図 18］



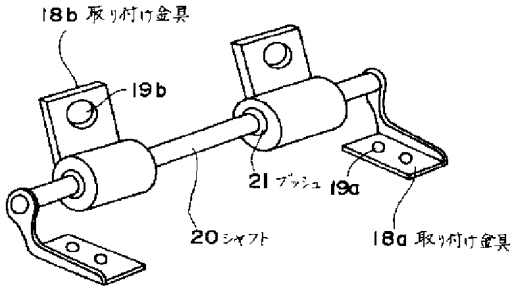
【図１５】

[図 15]



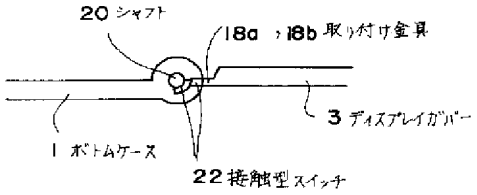
【図１６】

[図 16]



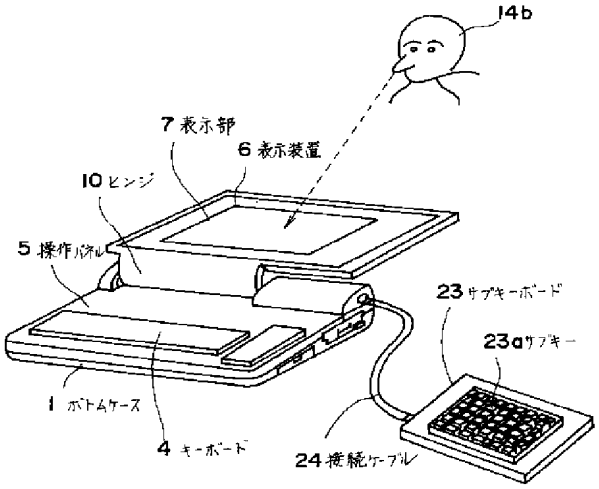
【図１９】

[図 19]



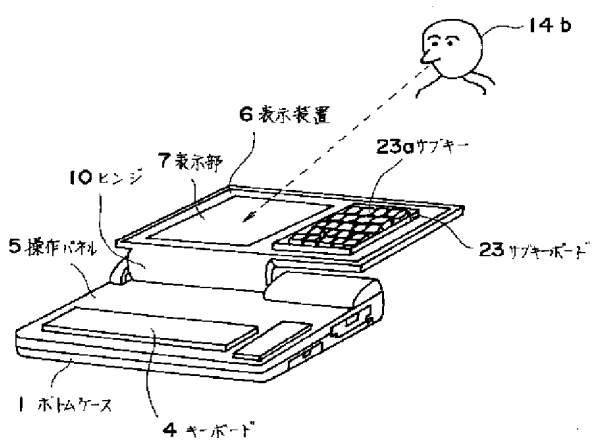
【図２０】

[図 20]



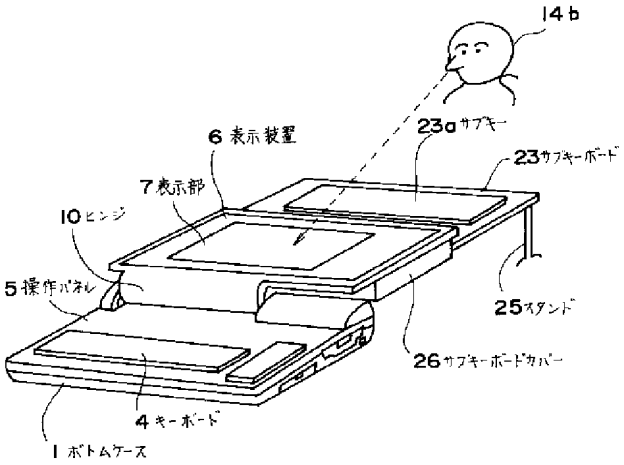
【図２１】

［図２１］



【図２２】

［図２２］



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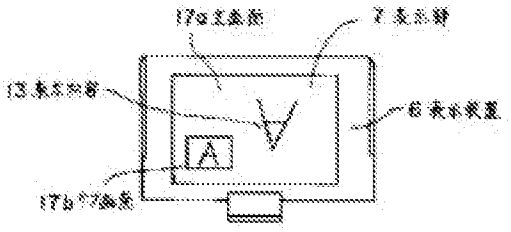
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(54) PORTABLE COMPUTER

(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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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.

[Translation done.]

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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.]

* 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]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.]

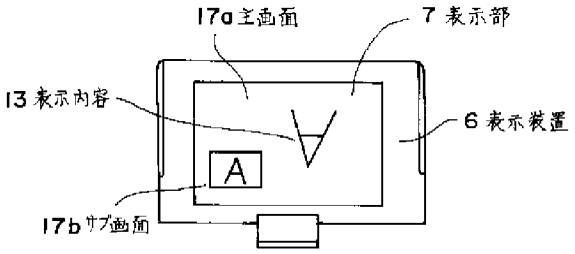
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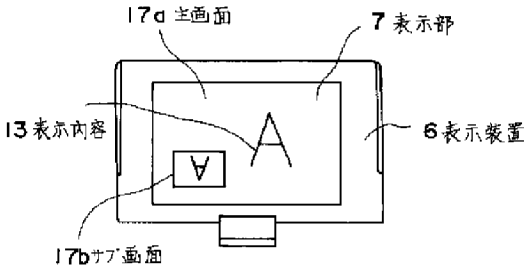
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DRAWINGS

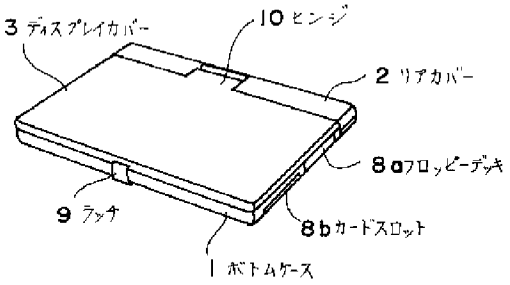
[Drawing 1]
[図 1]



[Drawing 2]
[図 2]

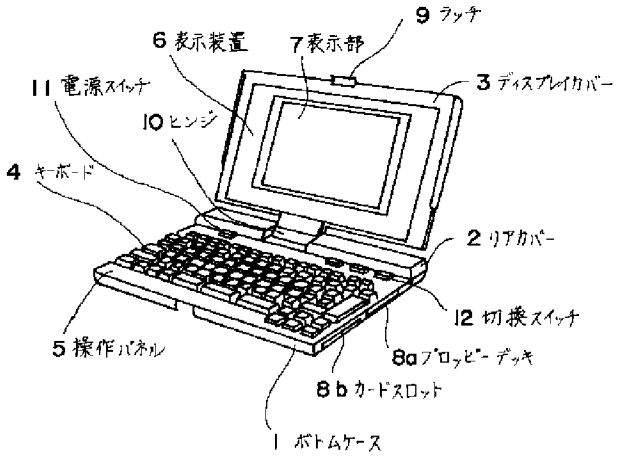


[Drawing 3]
[図 3]



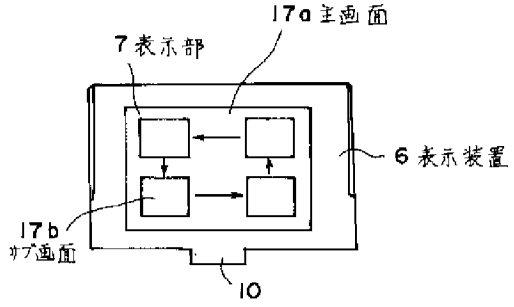
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[図 4]



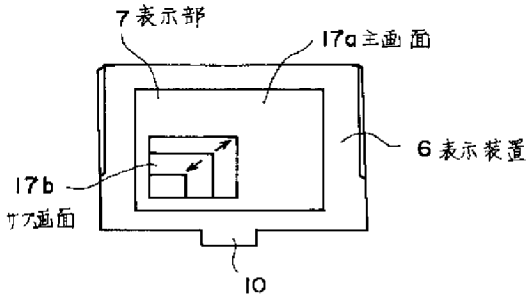
[Drawing 5]

[図 5]



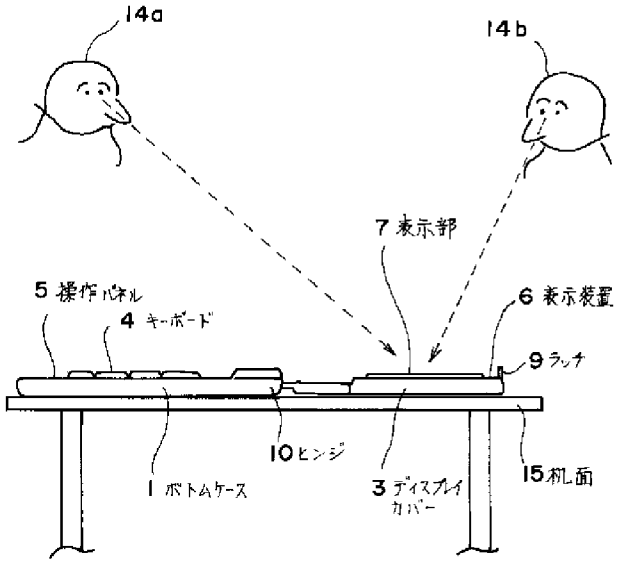
[Drawing 6]

[図 6]

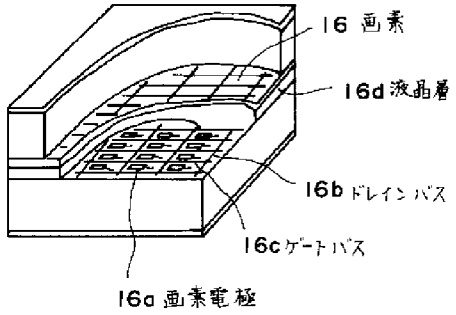


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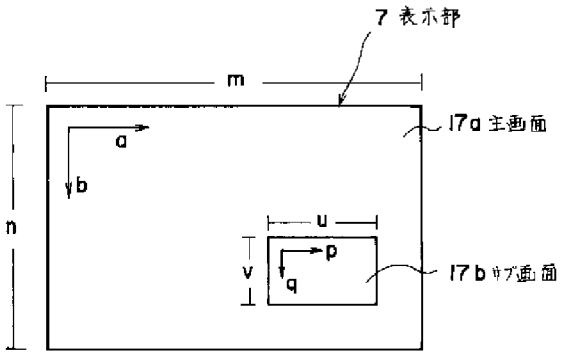
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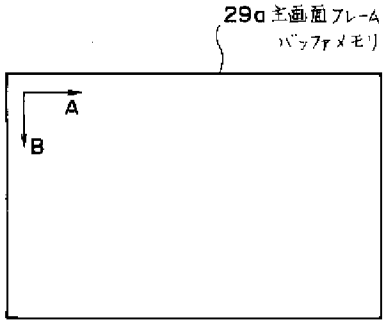
[Drawing 8]
[図 8]



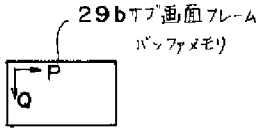
[Drawing 10]
[図 10]



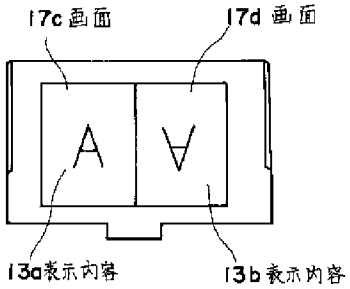
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[図 11]



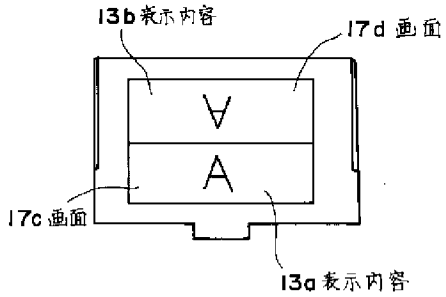
[Drawing 12]
[図 12]



[Drawing 13]
[図 13]

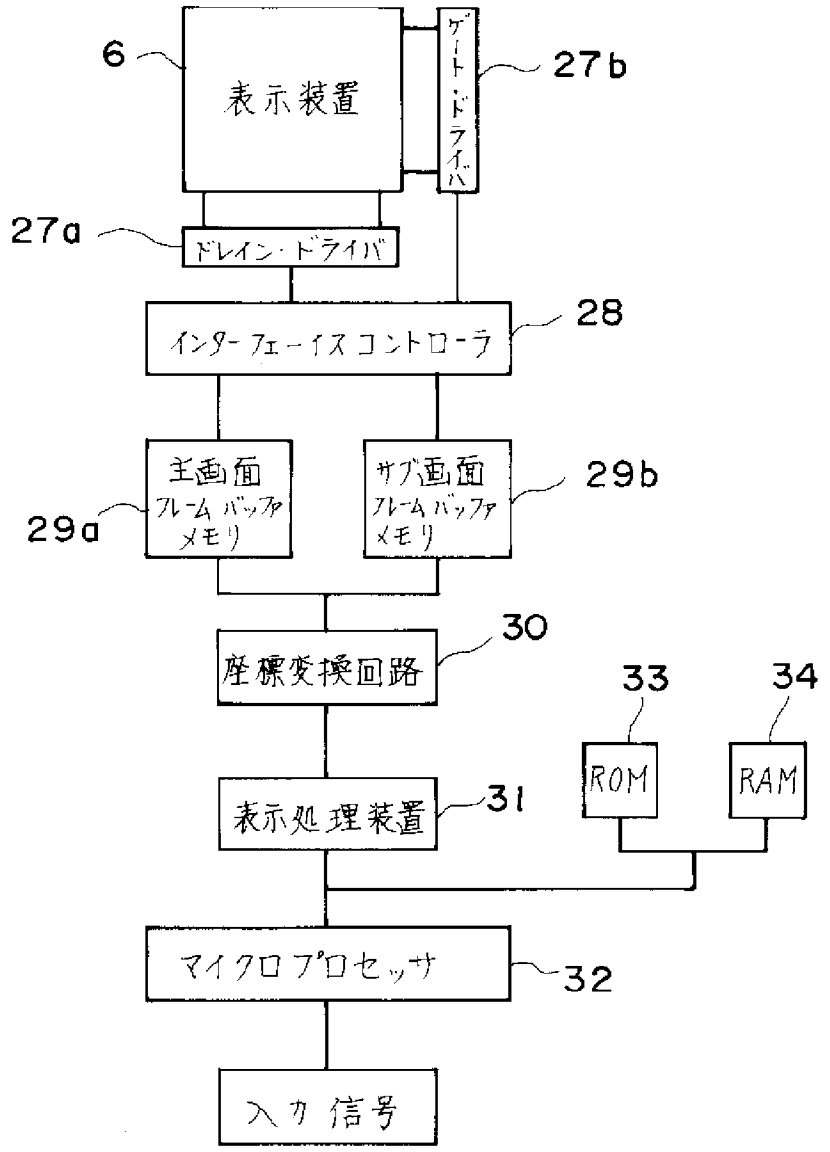


[Drawing 14]
[図 14]

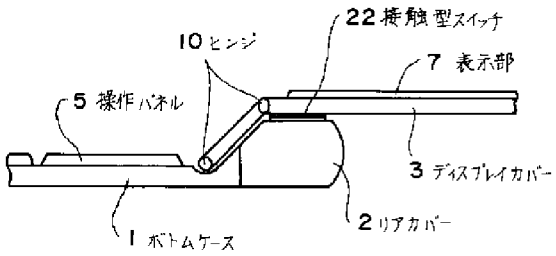


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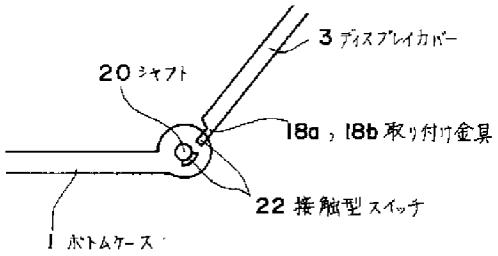
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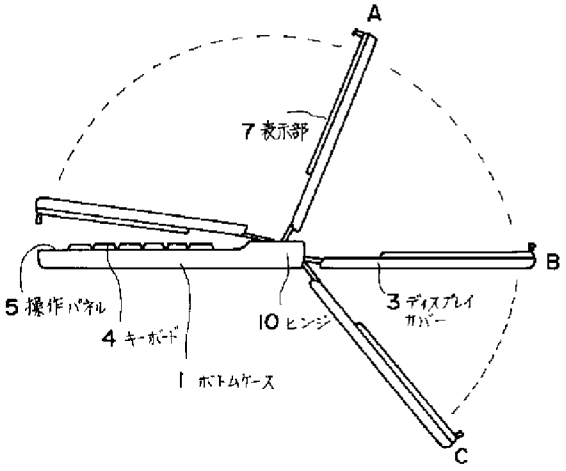
[Drawing 17]
[図 17]



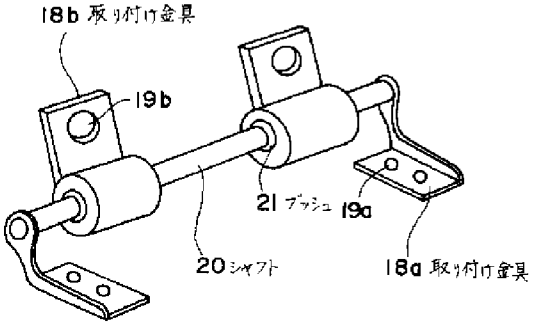
[Drawing 18]
[図 18]



[Drawing 15]
[図 15]

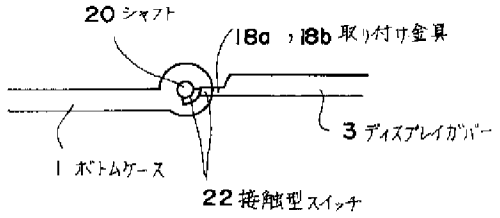


[Drawing 16]
[図 16]



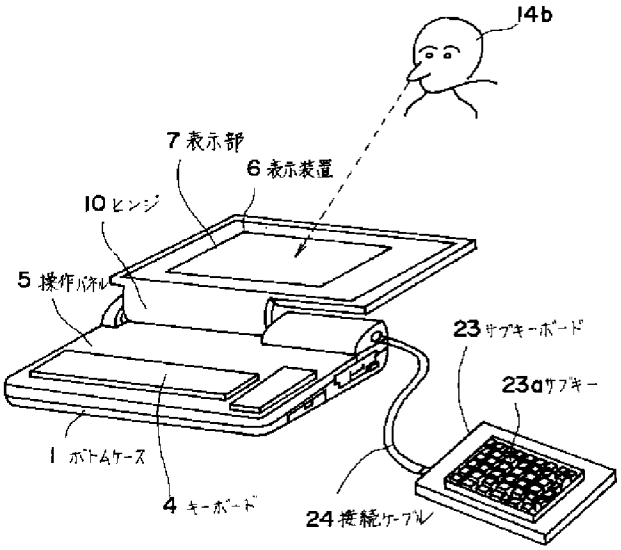
[Drawing 19]

[図19]



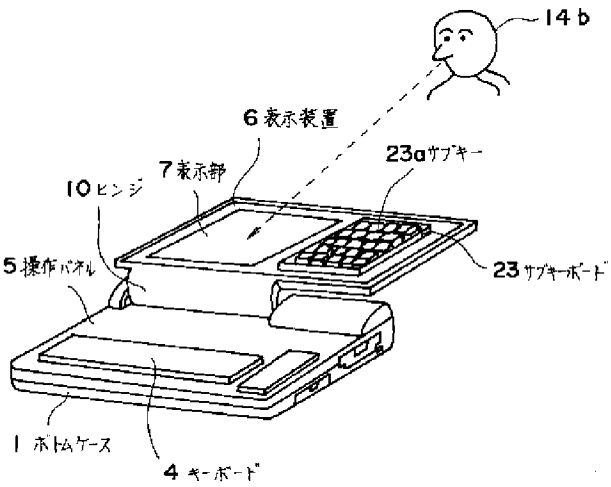
[Drawing 20]

[図20]



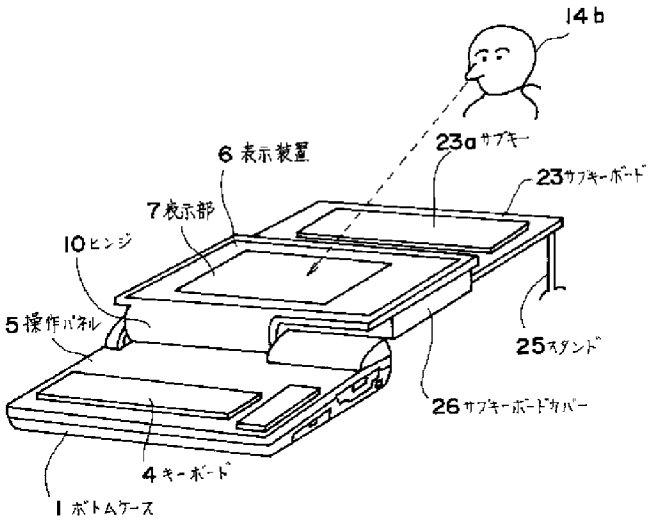
[Drawing 21]

[図21]



[Drawing 22]

【図２２】



[Translation done.]

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G06F 3/00
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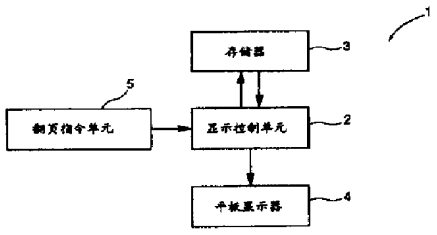
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代理人 马 莹

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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权 利 要 求 书

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。

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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。

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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

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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。

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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

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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

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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

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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

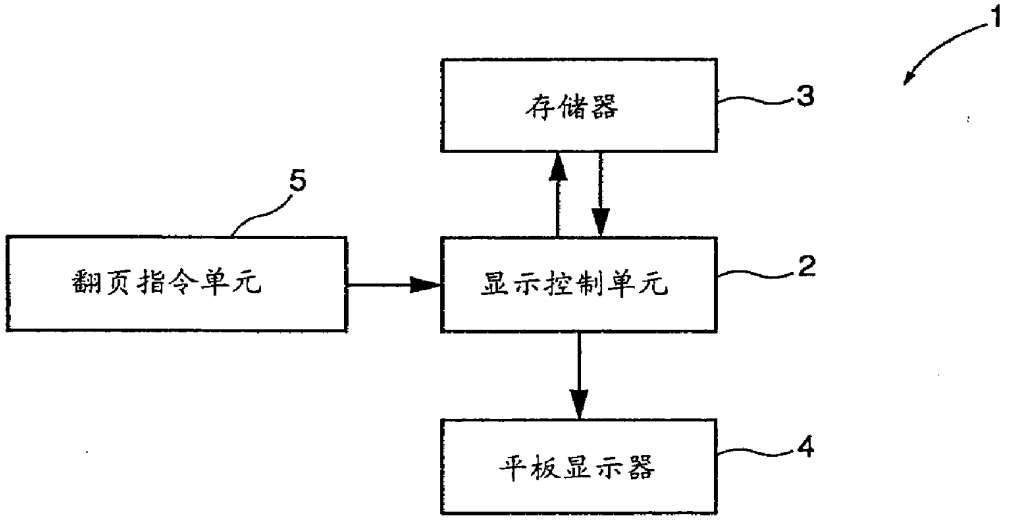


图 1

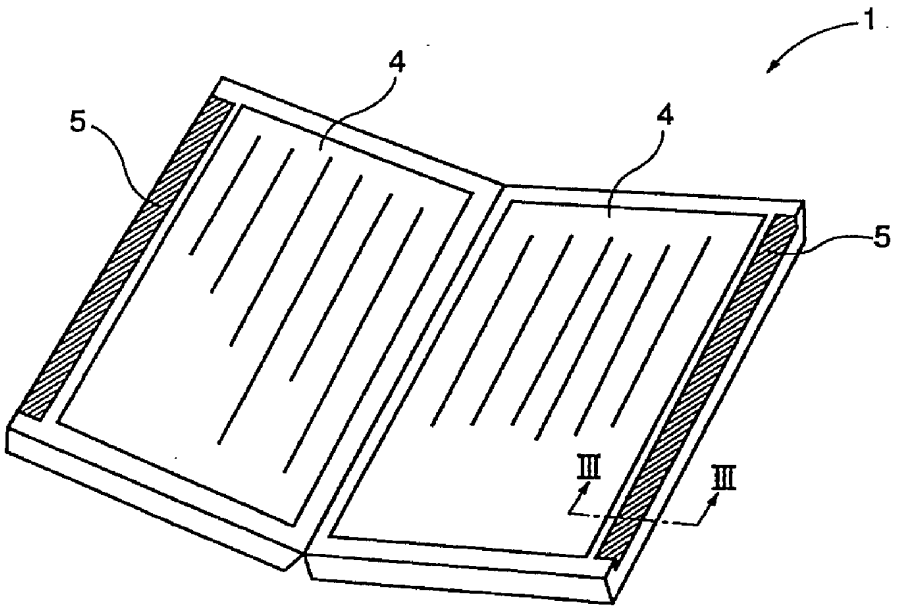


图 2

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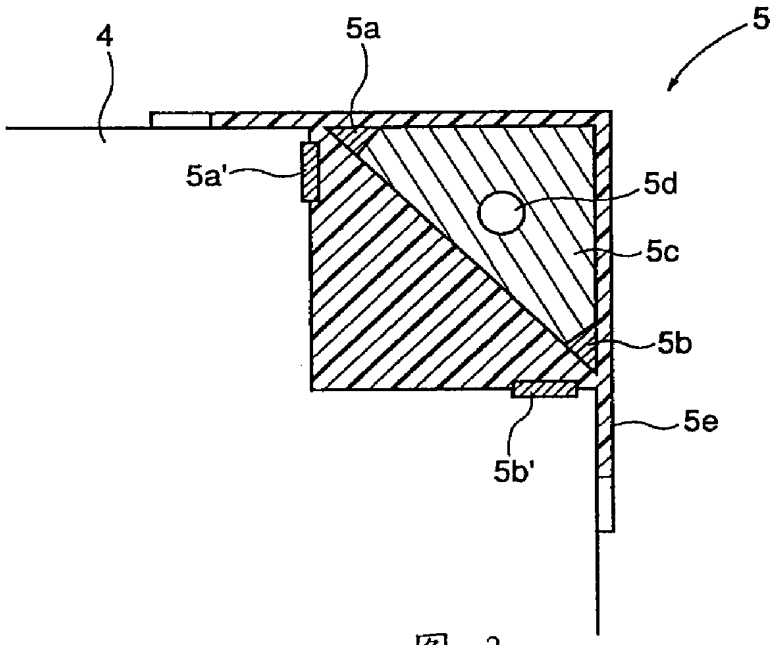


图 3

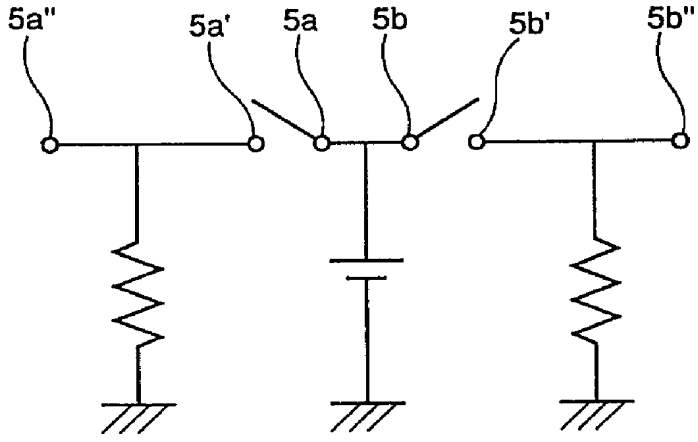


图 4

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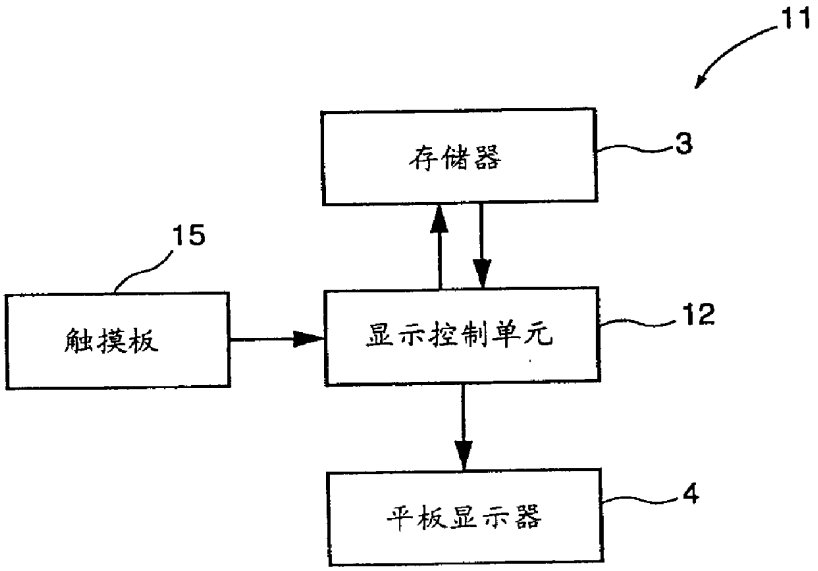


图 5

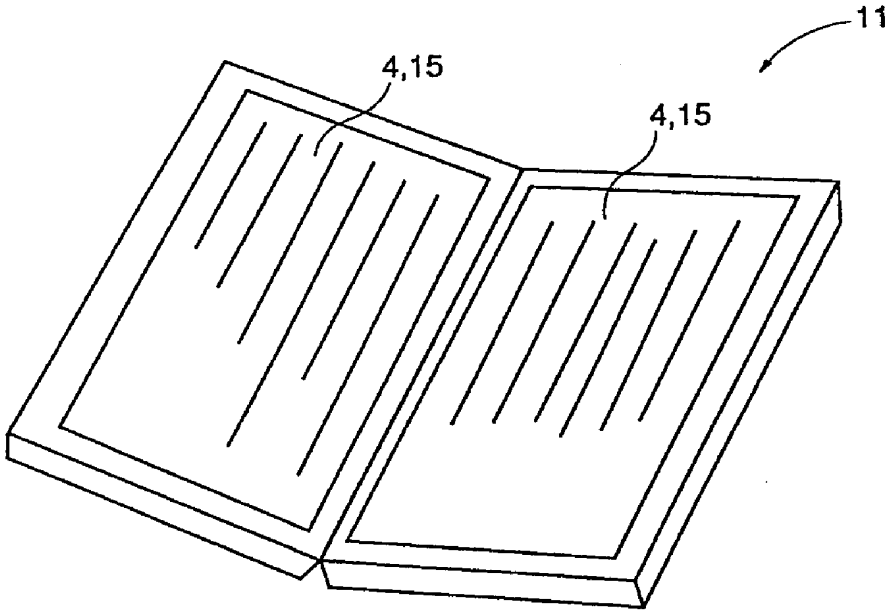


图 6

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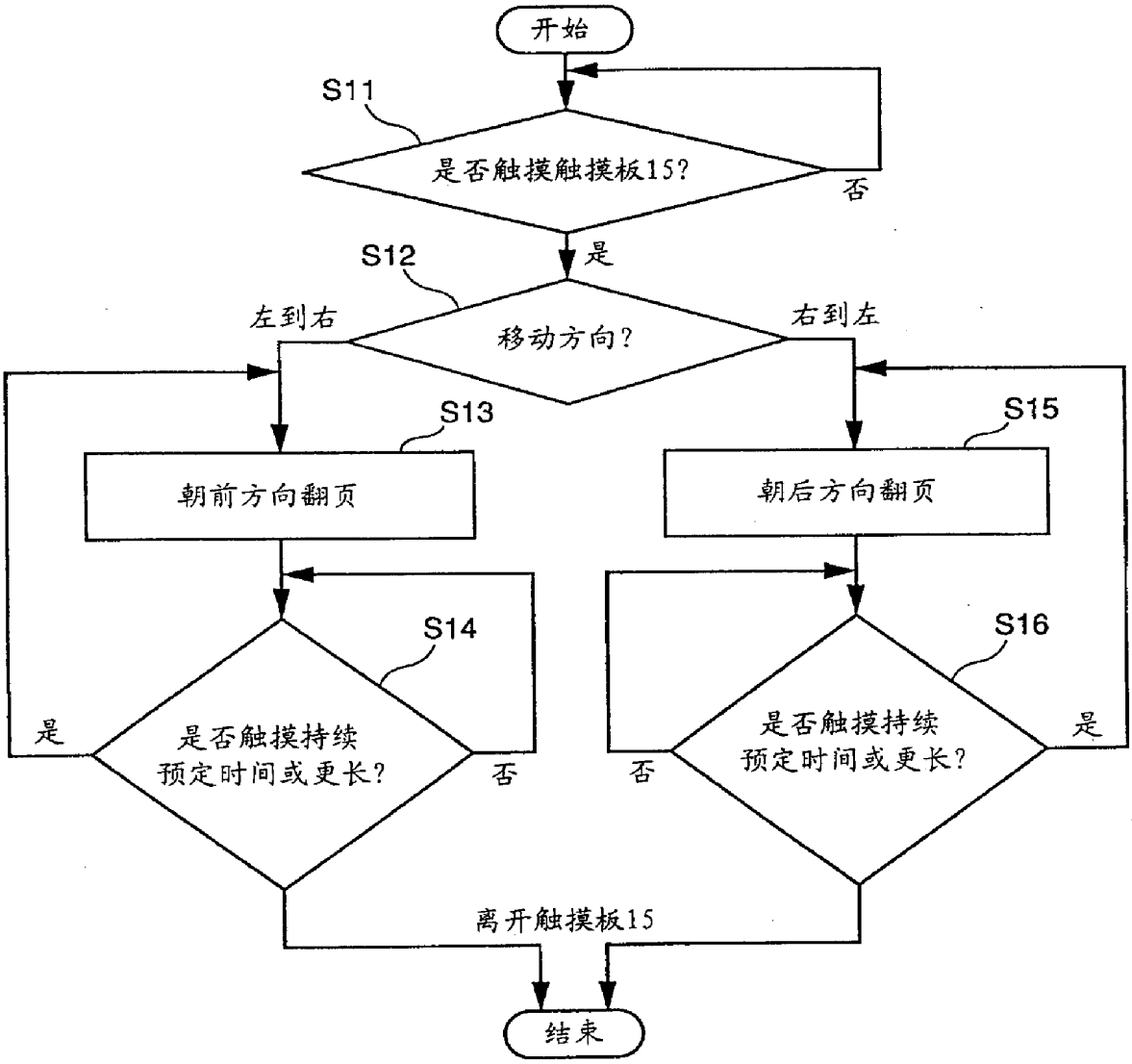


图 7

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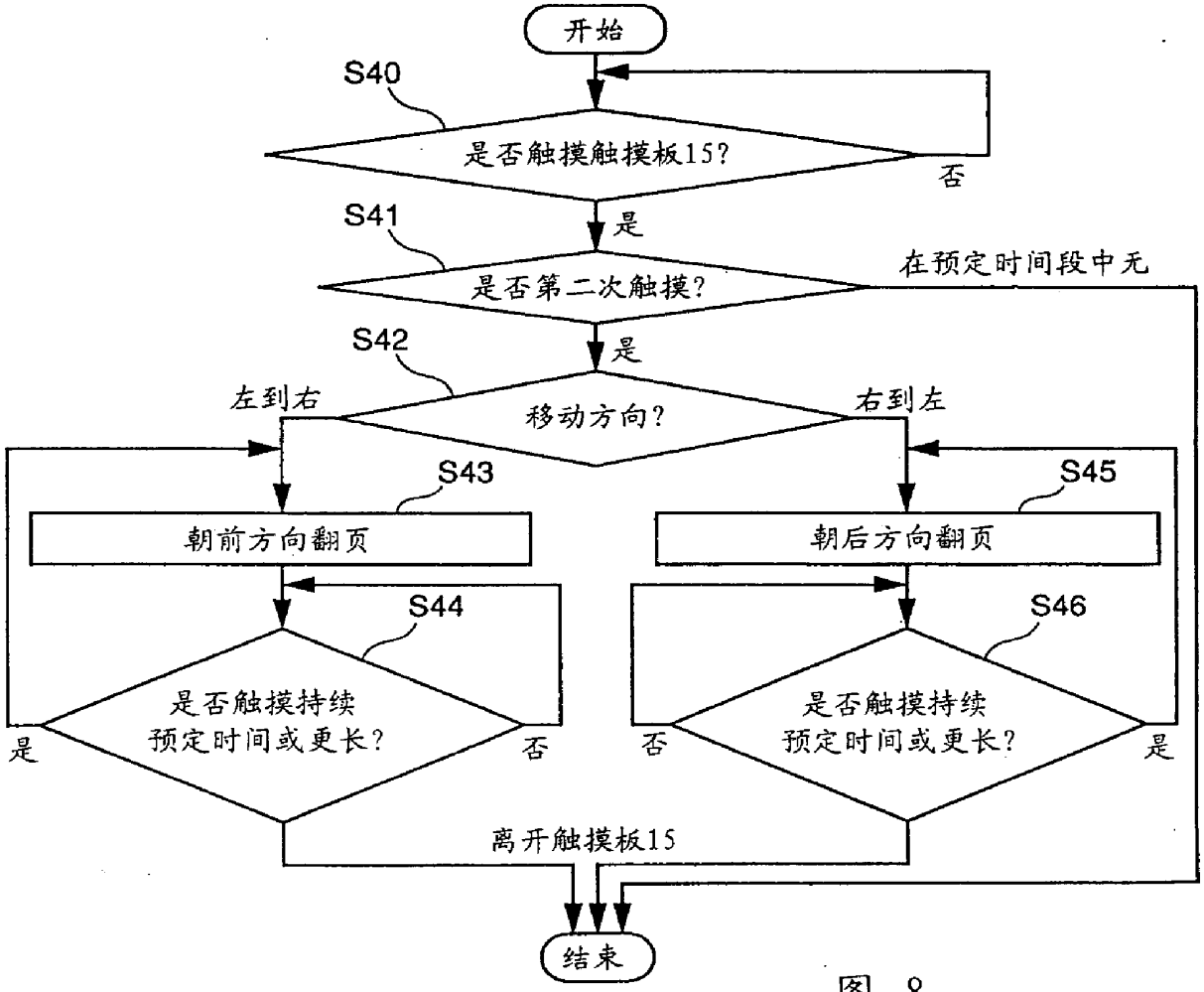
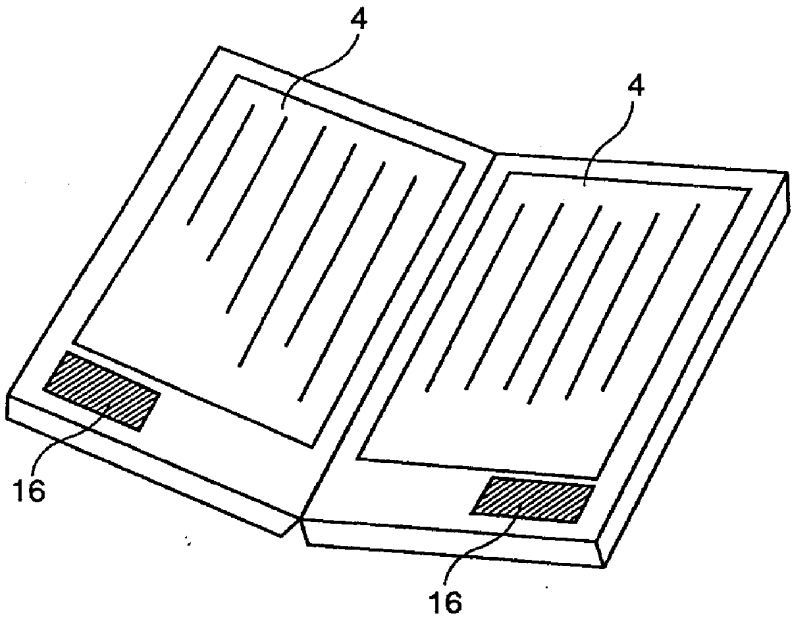


图 8

图 9



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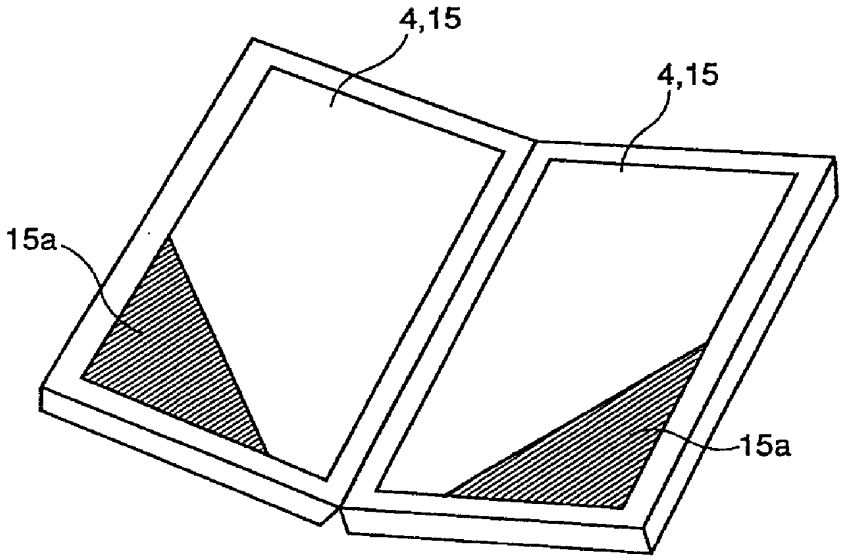


图 10

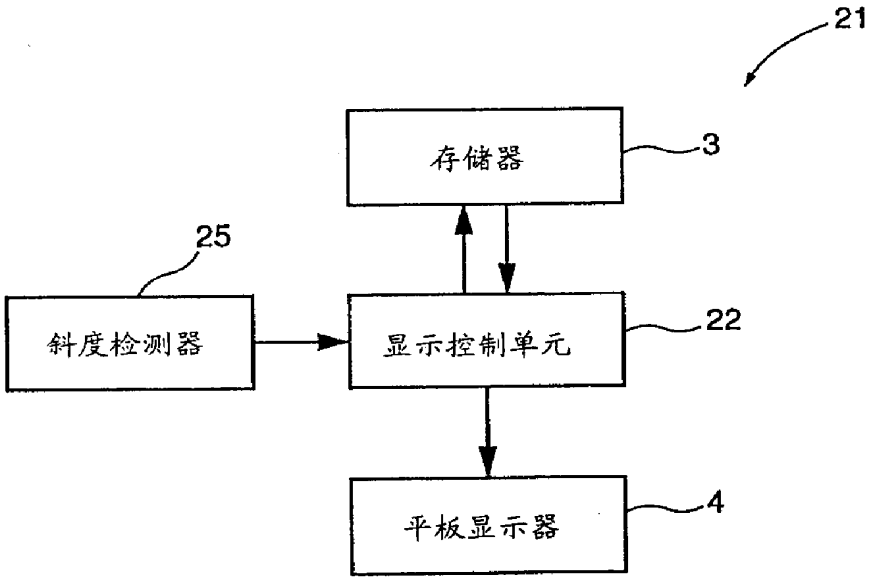


图 11

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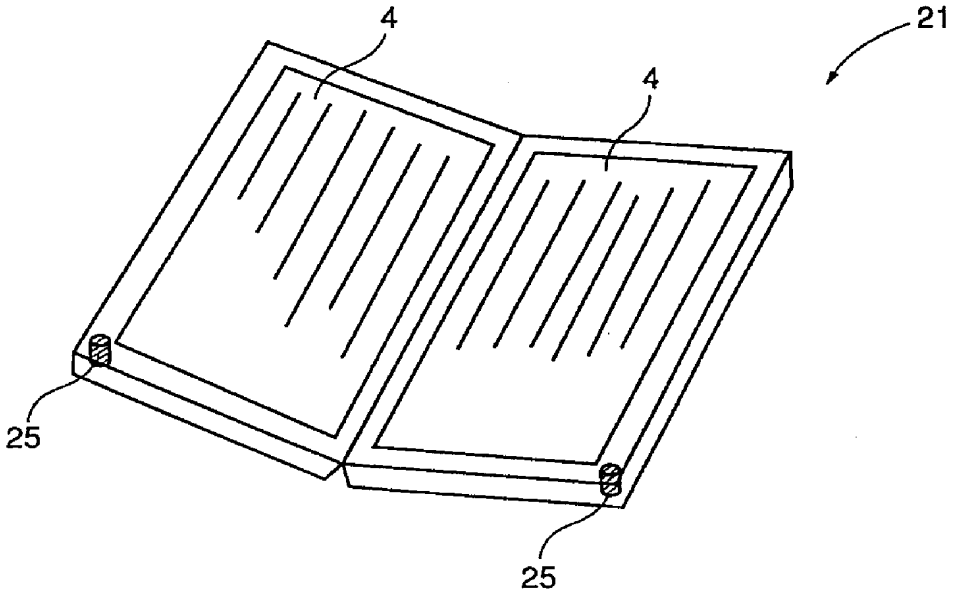


图 12

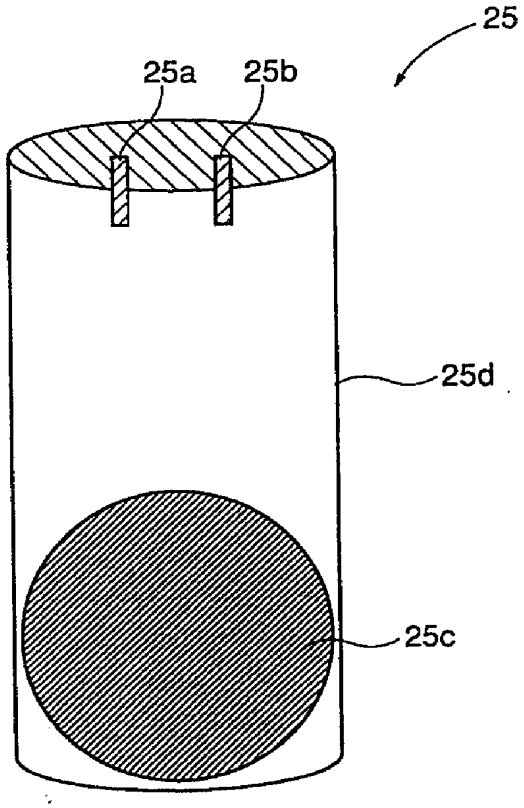


图 13

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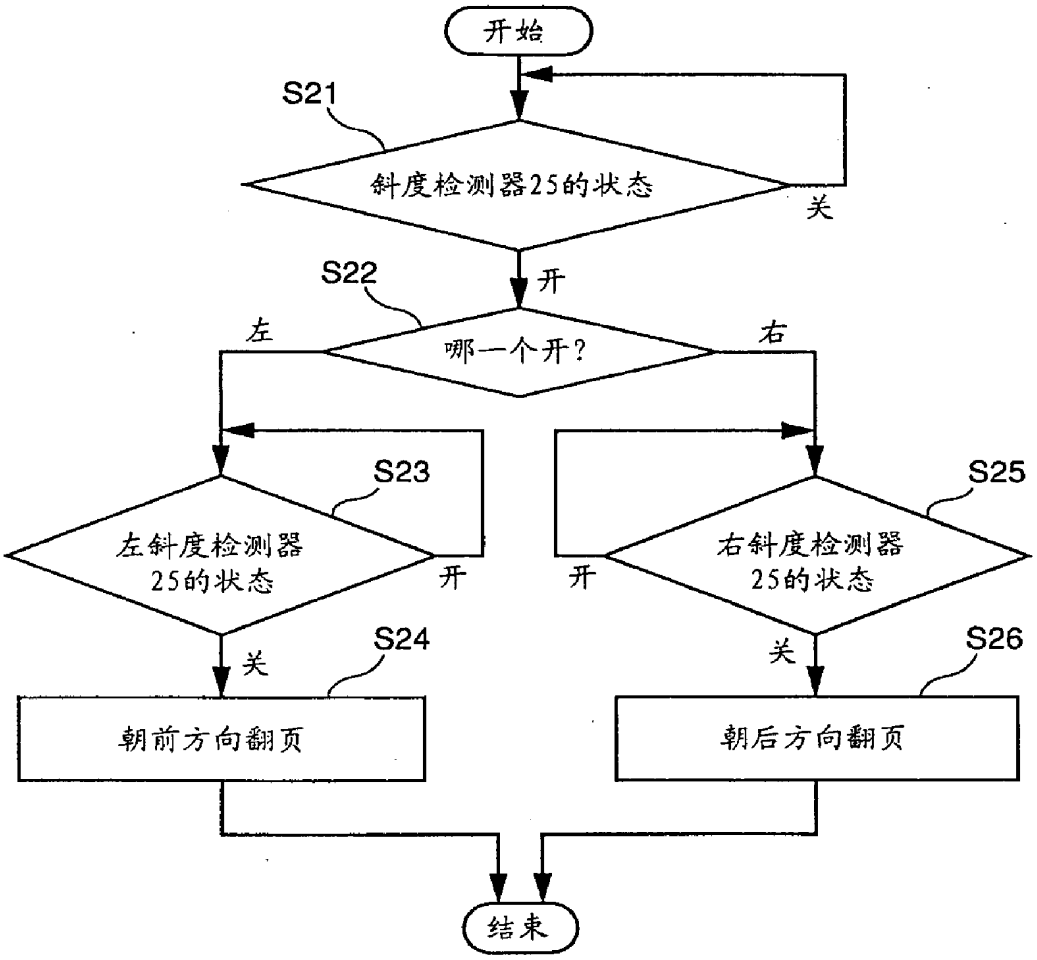


图 14

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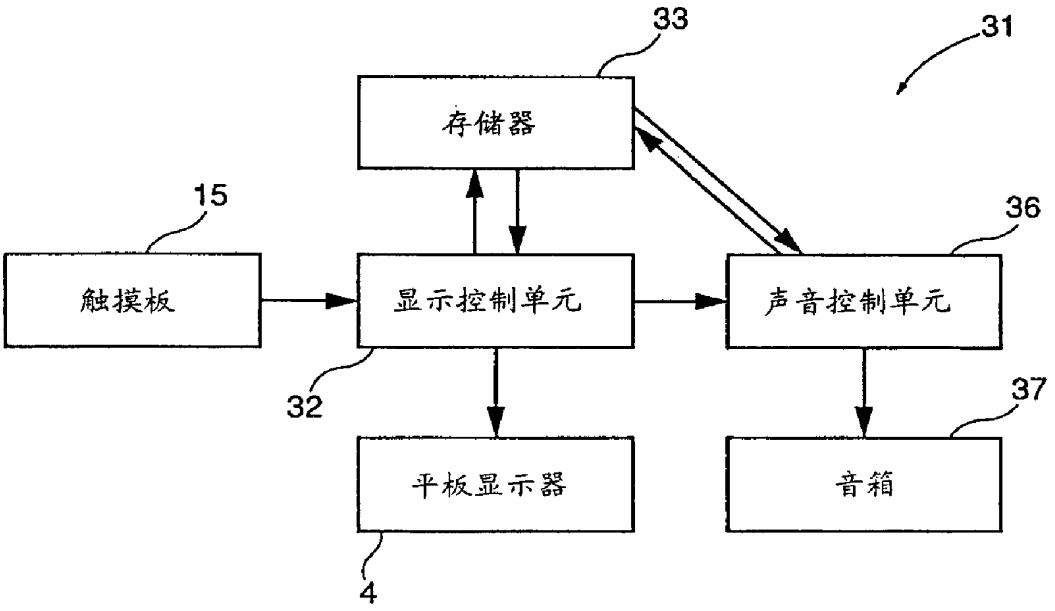


图 15

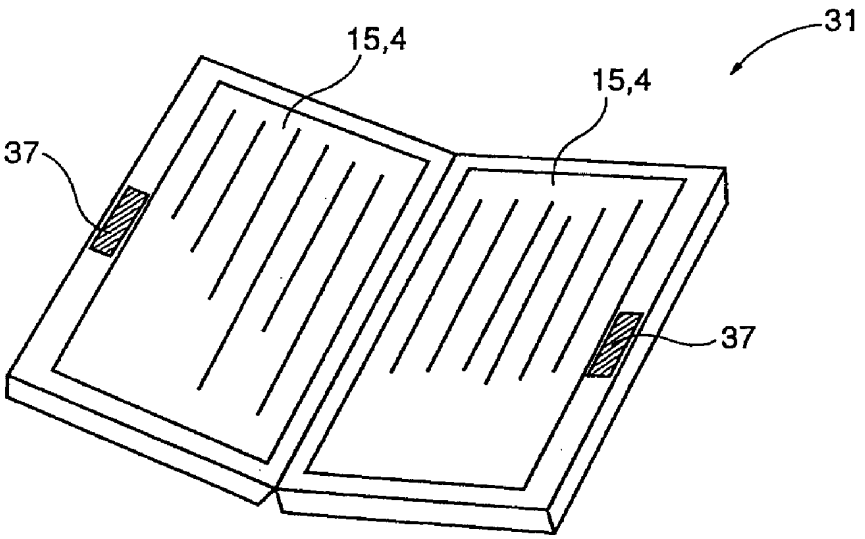


图 16

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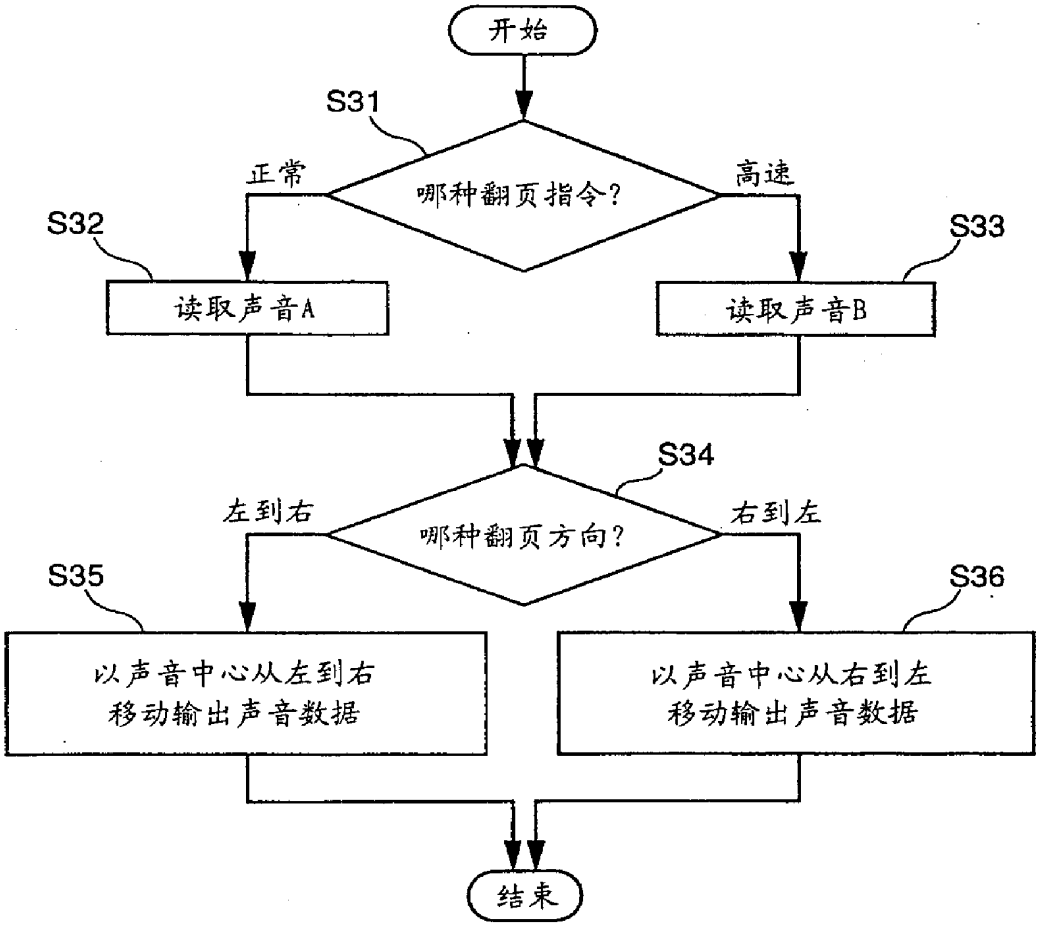


图 17

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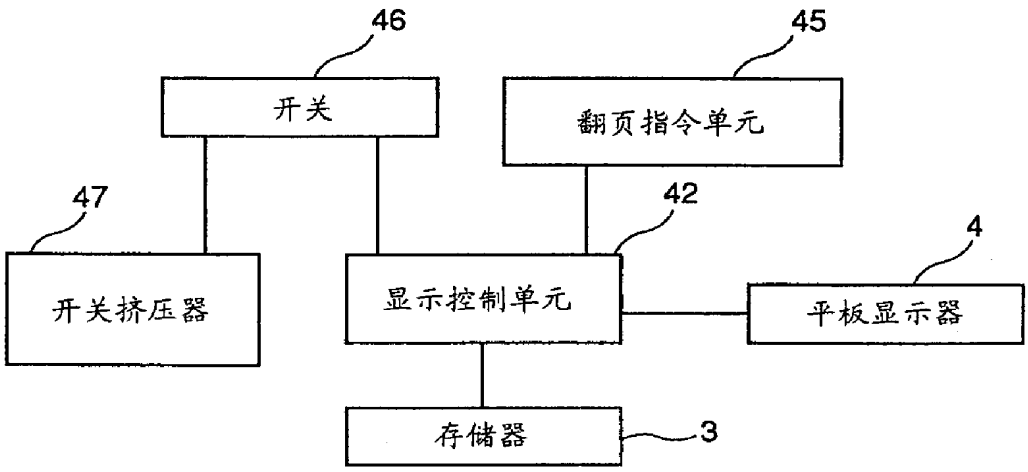


图 18

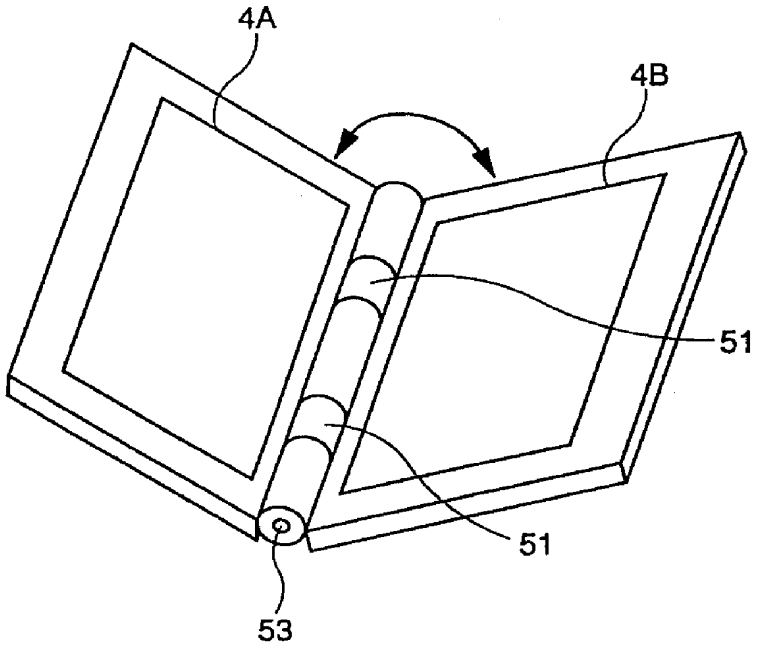


图 19

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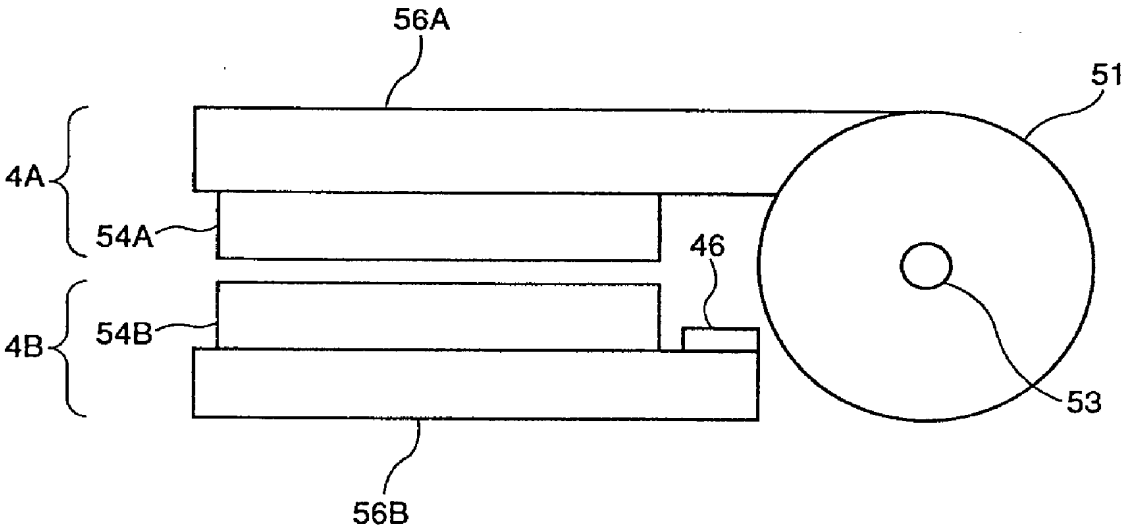


图 20

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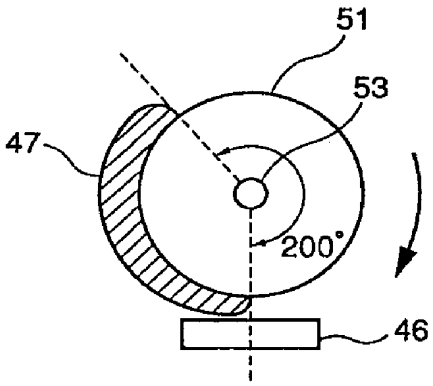


图 21

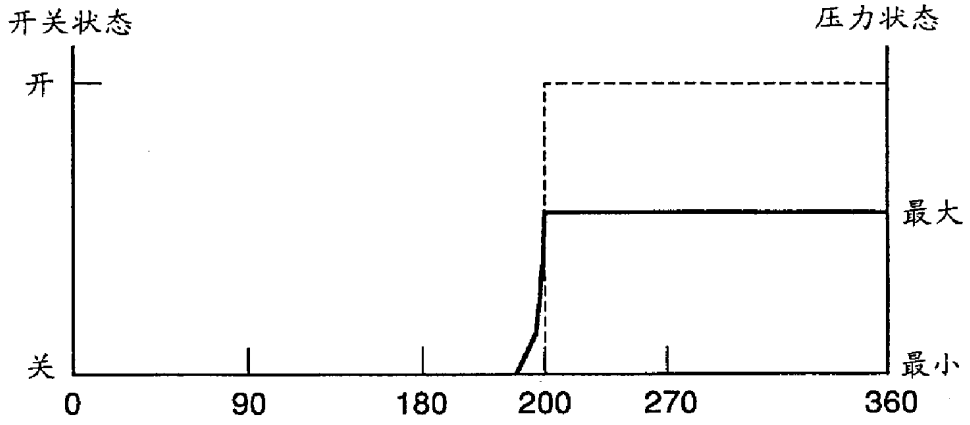


图 22

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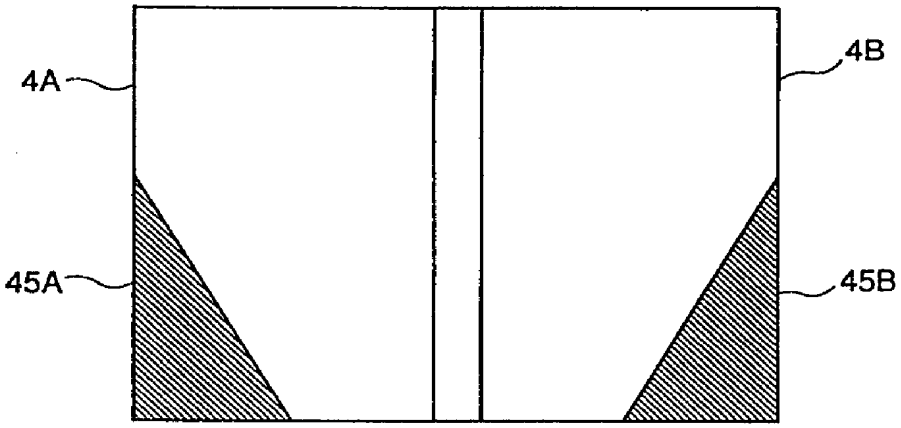


图 23

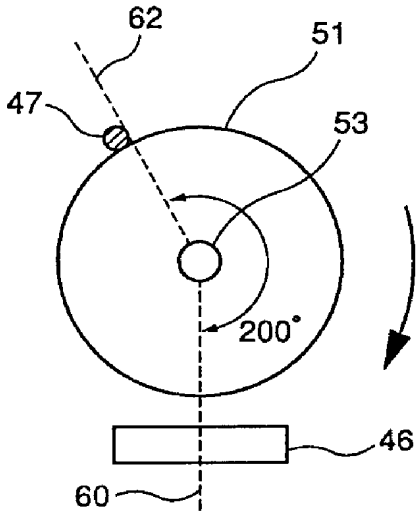


图 24

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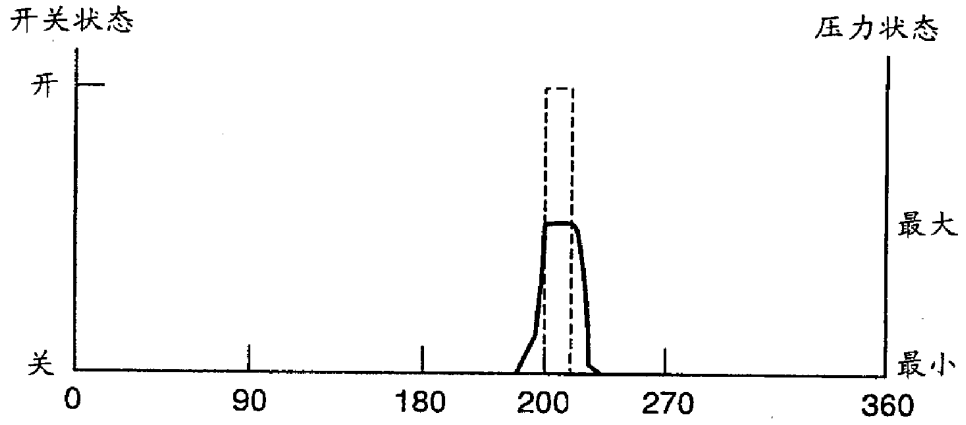


图 25

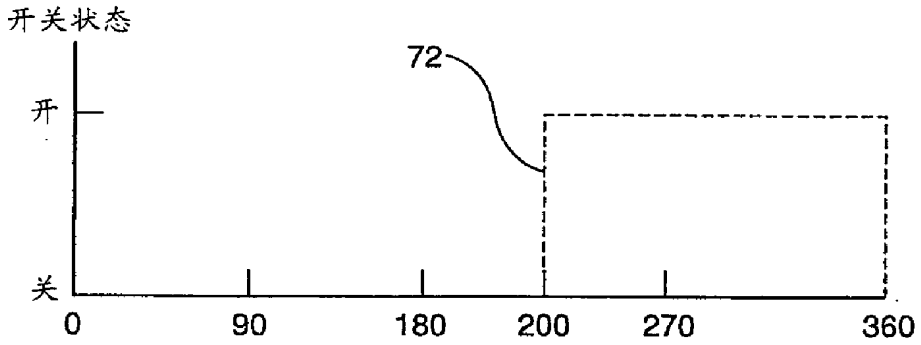


图 26

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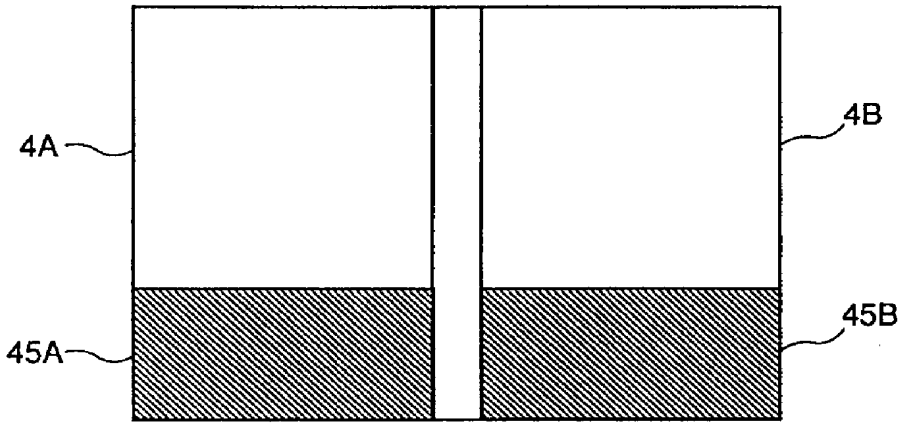


图 27

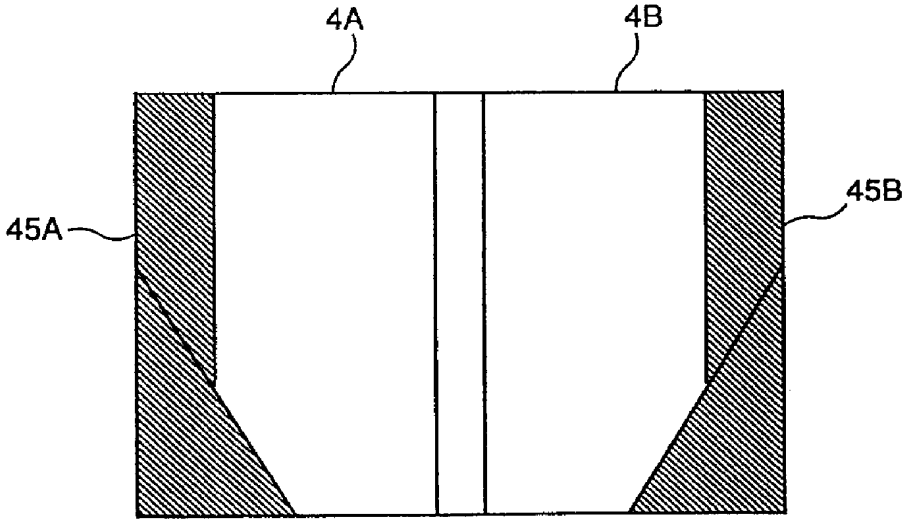


图 28

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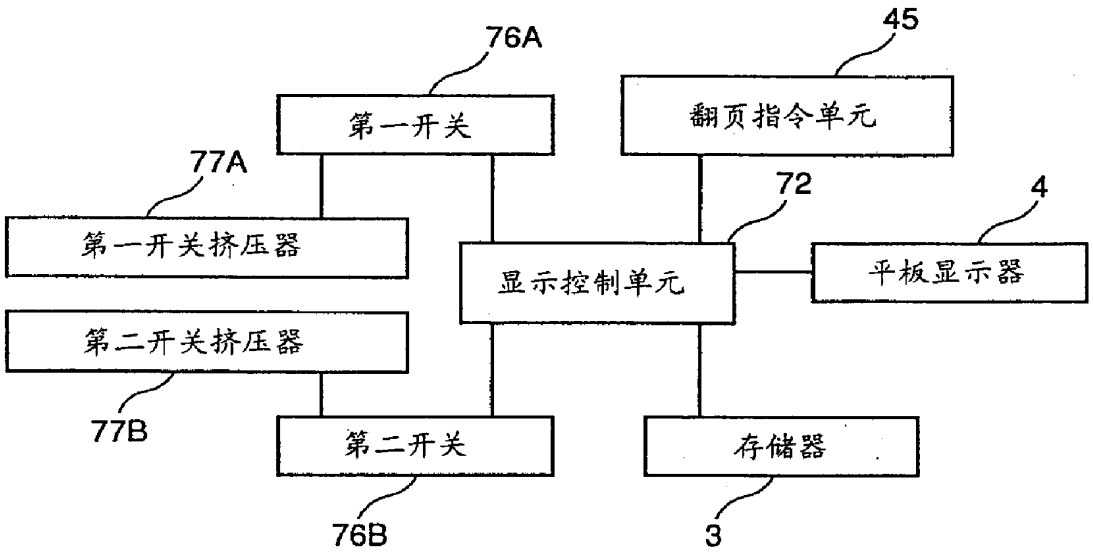


图 29

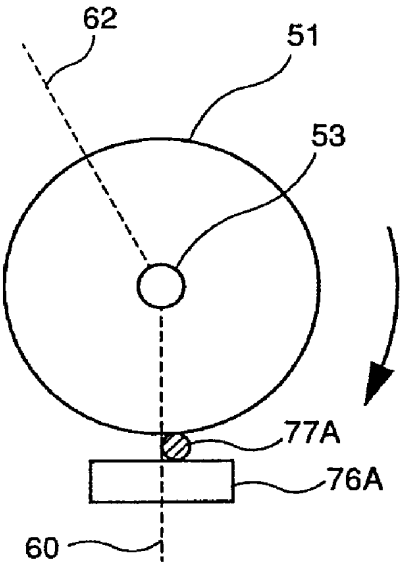


图 30

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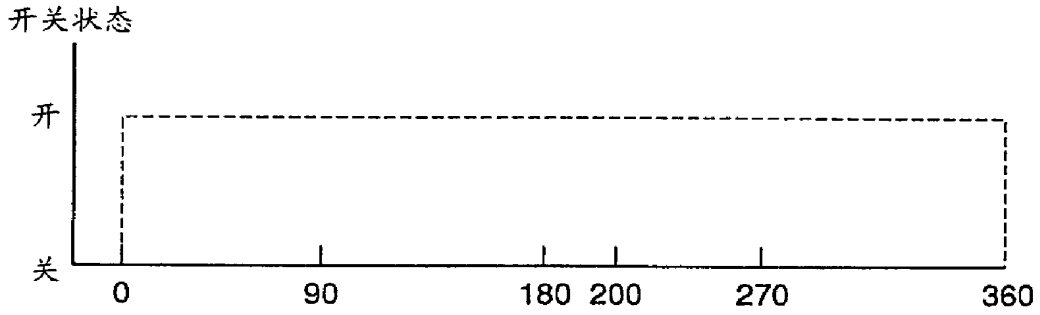


图 31A

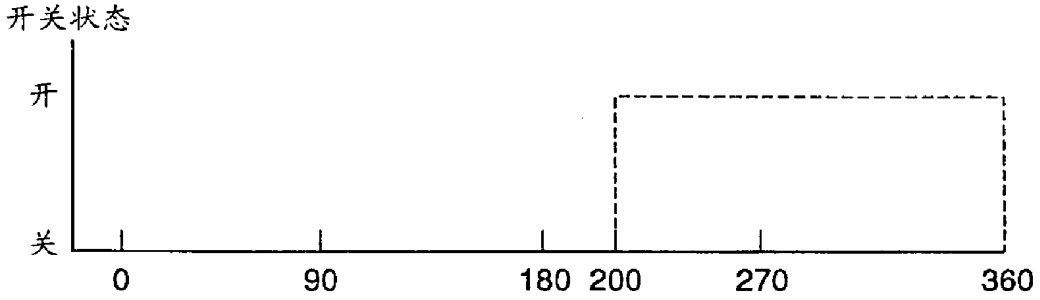


图 31B

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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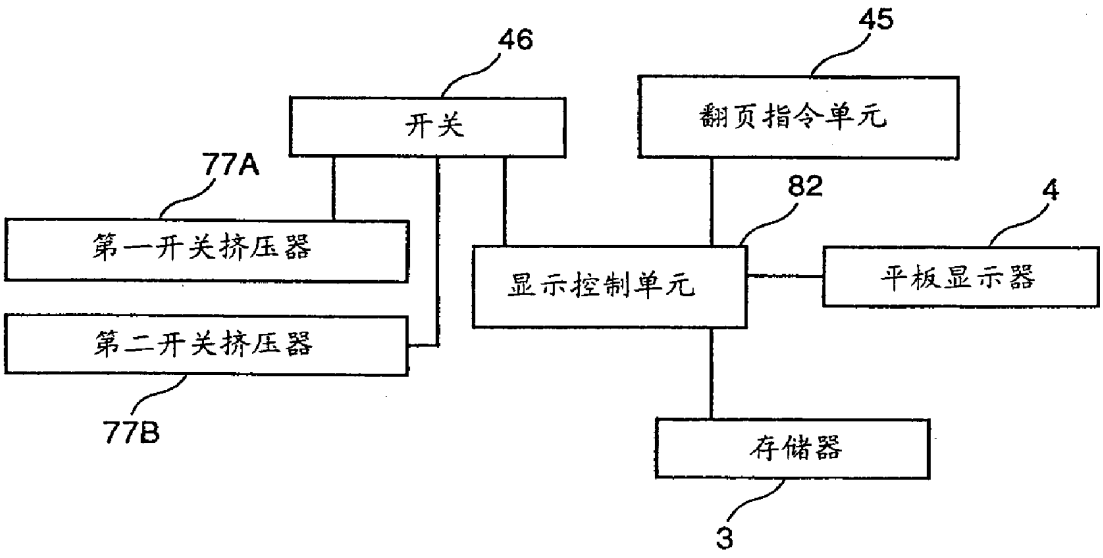


图 33

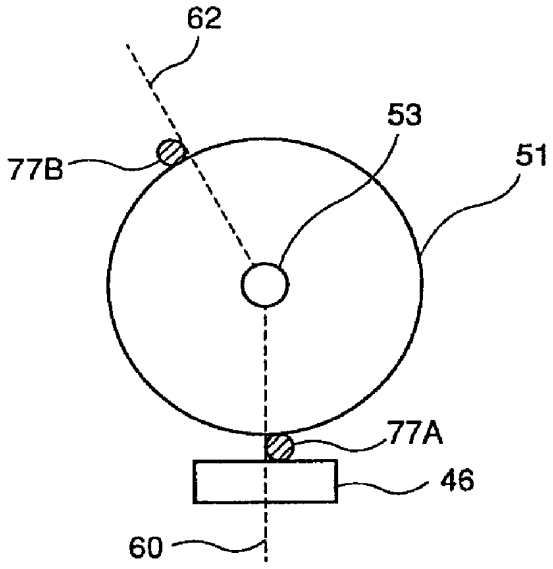


图 34

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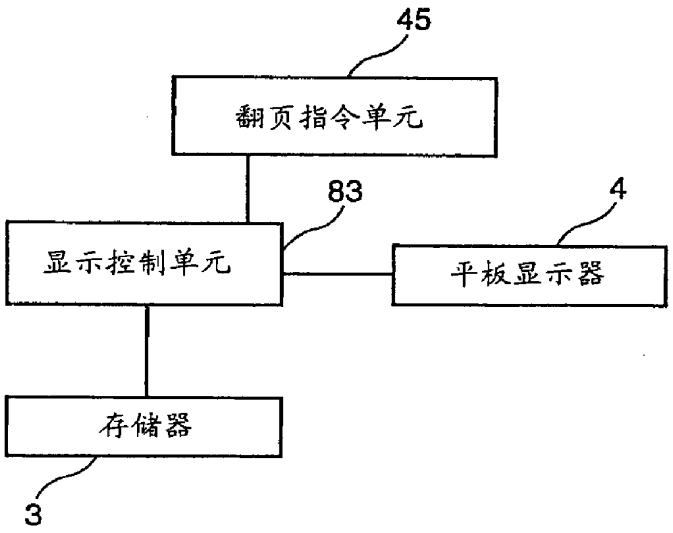


图 35

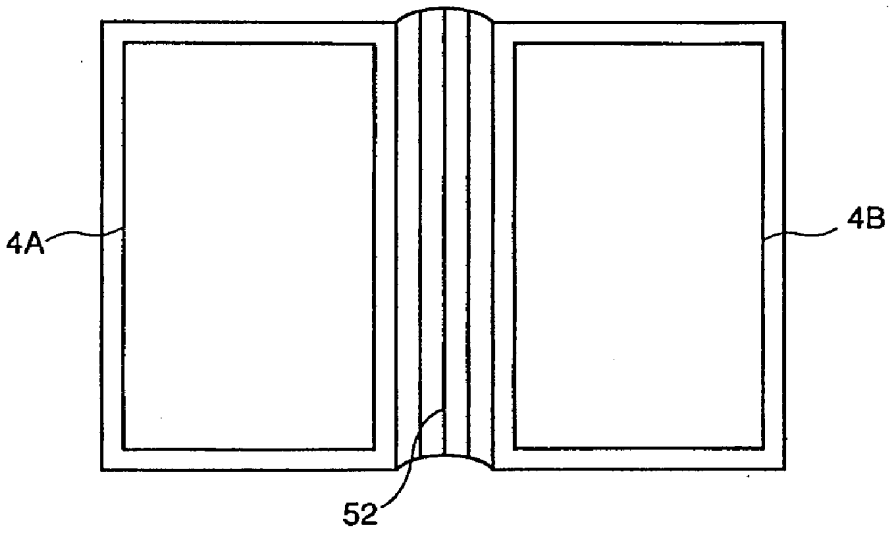


图 36

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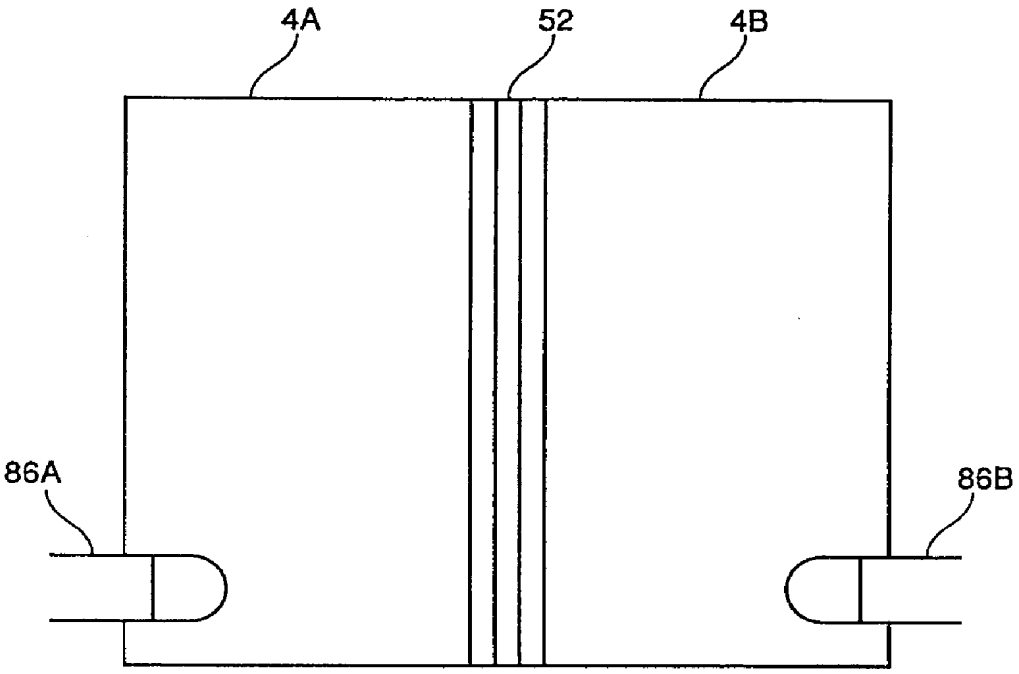


图 37A

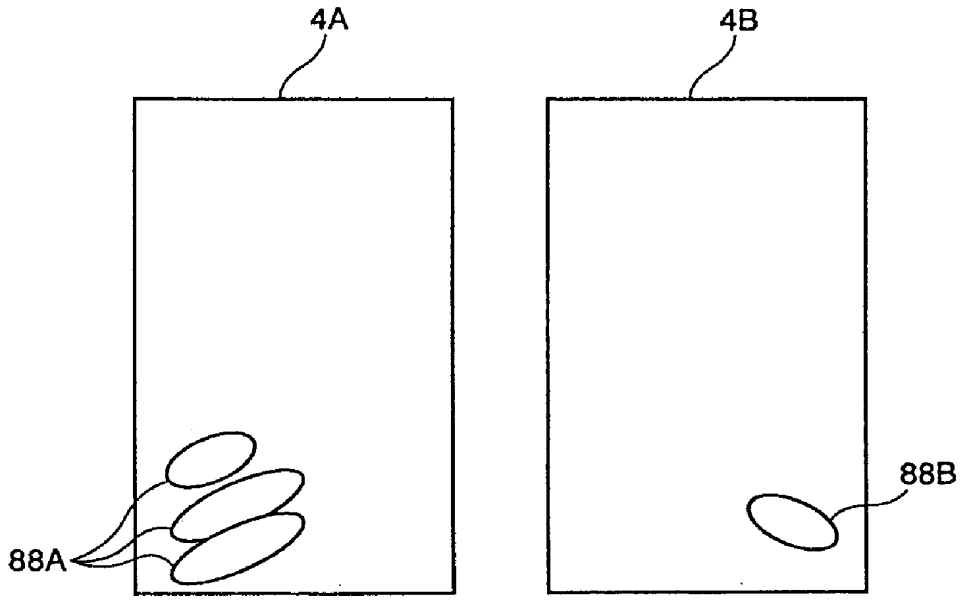


图 37B

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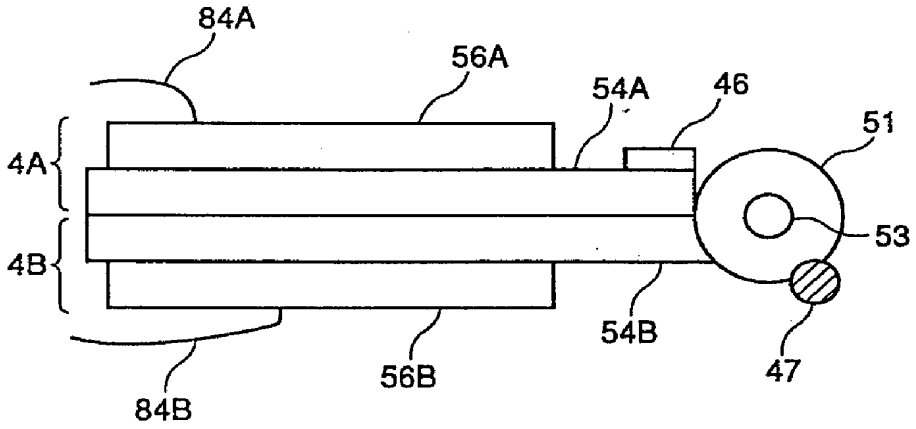


图 38

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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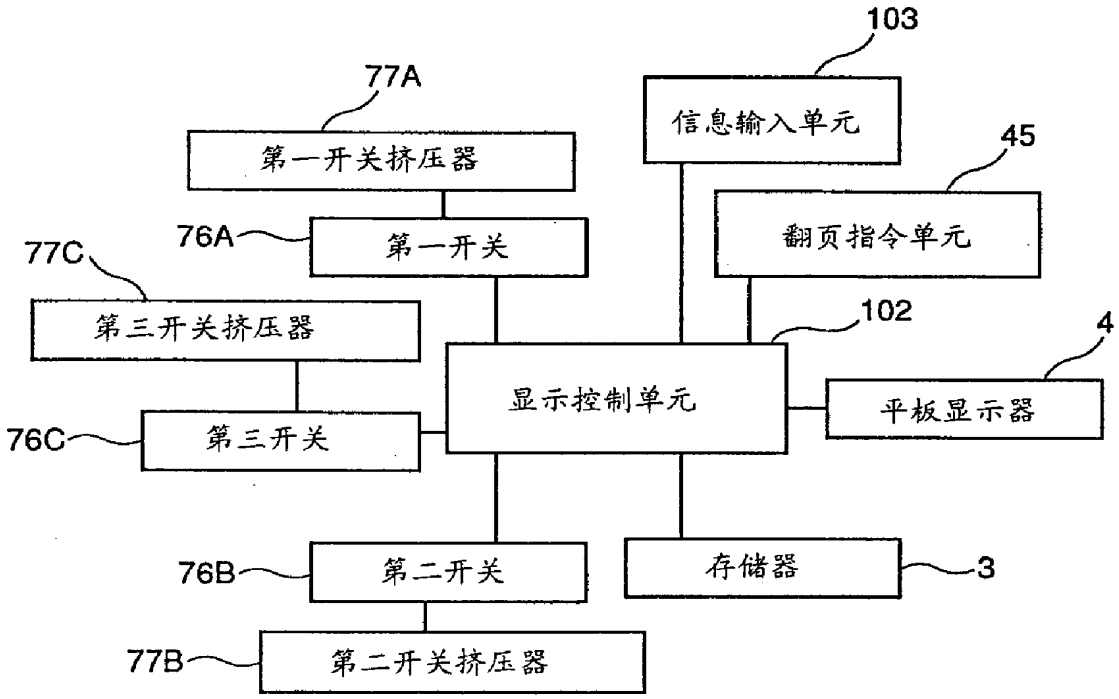


图 40

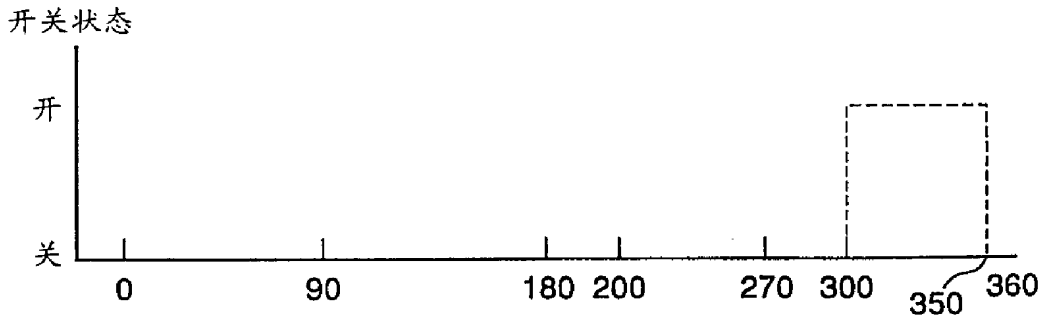


图 41

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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

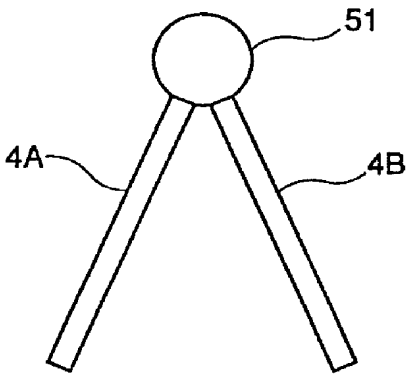


图 43

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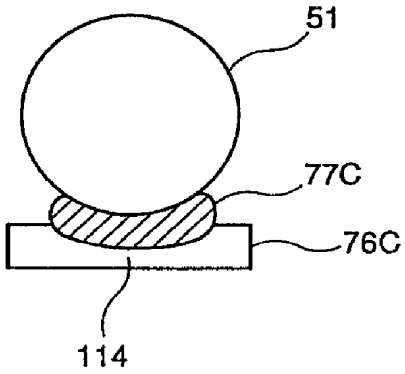


图 44

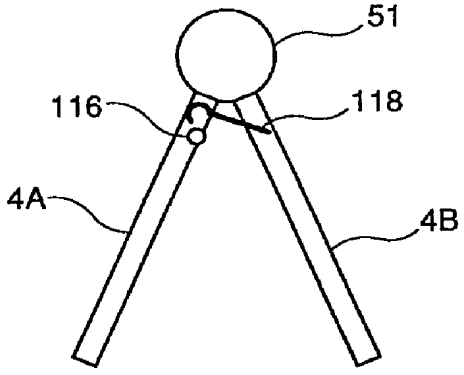


图 45

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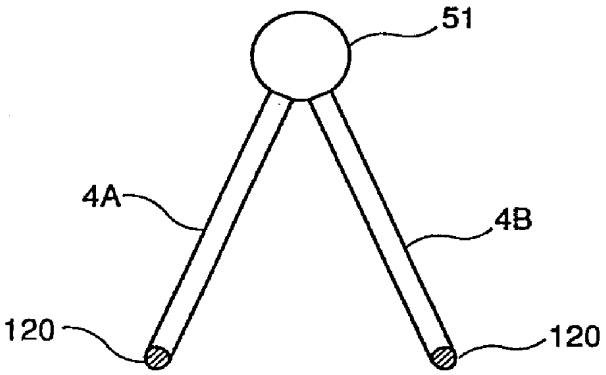


图 46

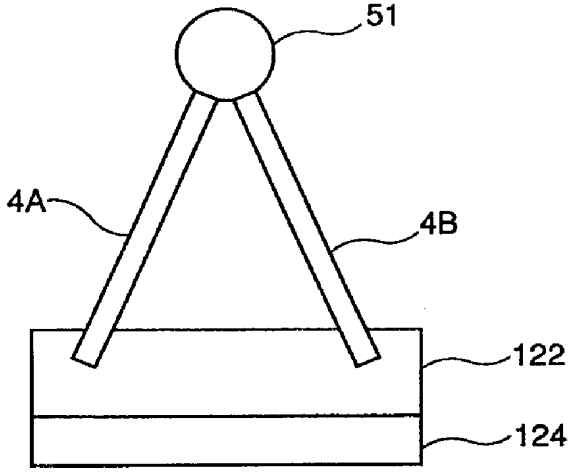


图 47

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00.08.23

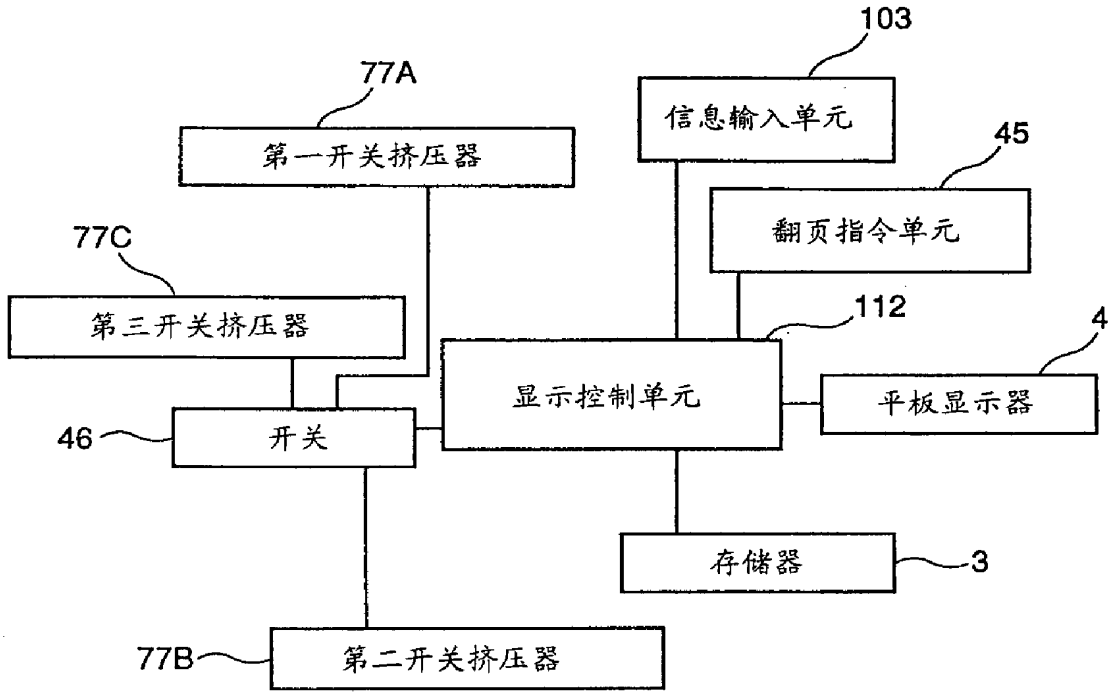


图 48

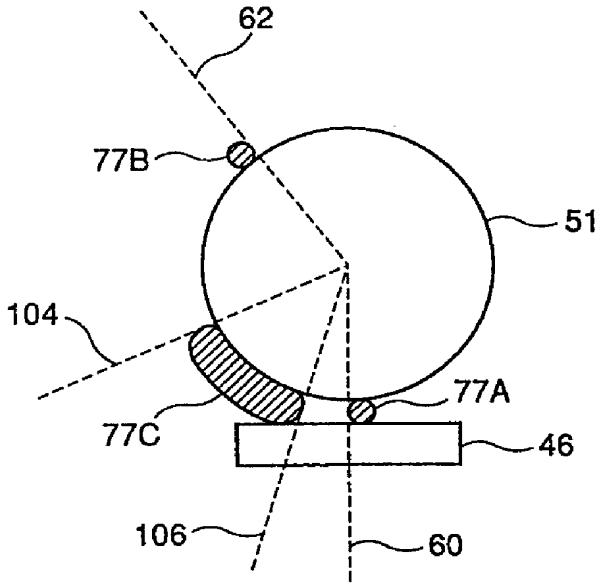


图 49

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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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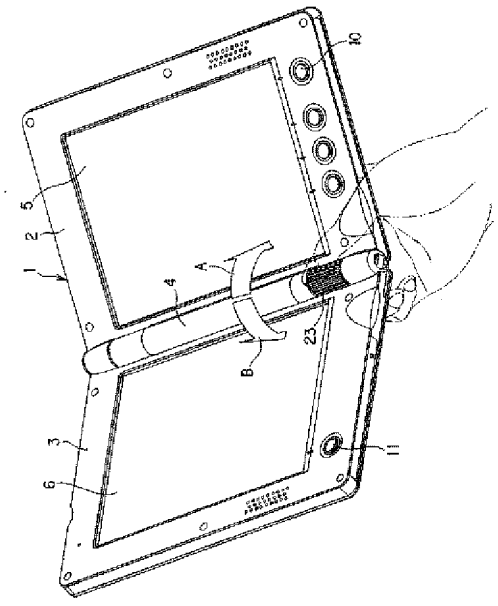
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最終頁に続く

(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。

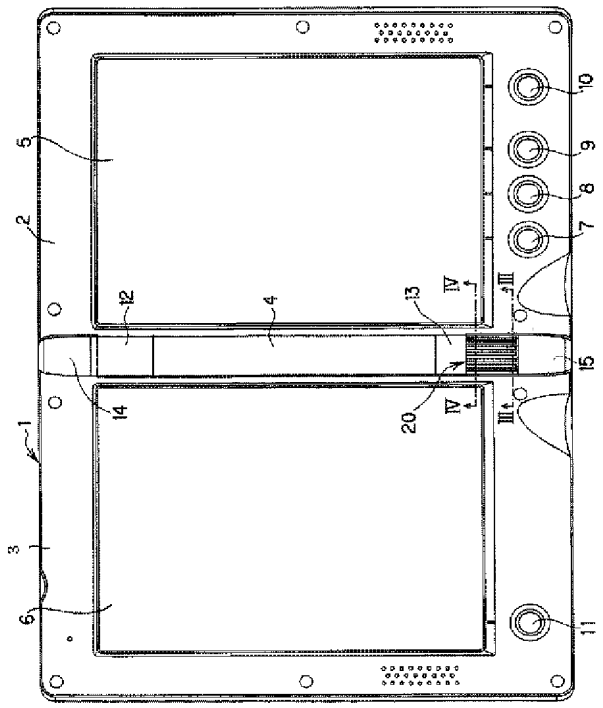
【0036】

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。

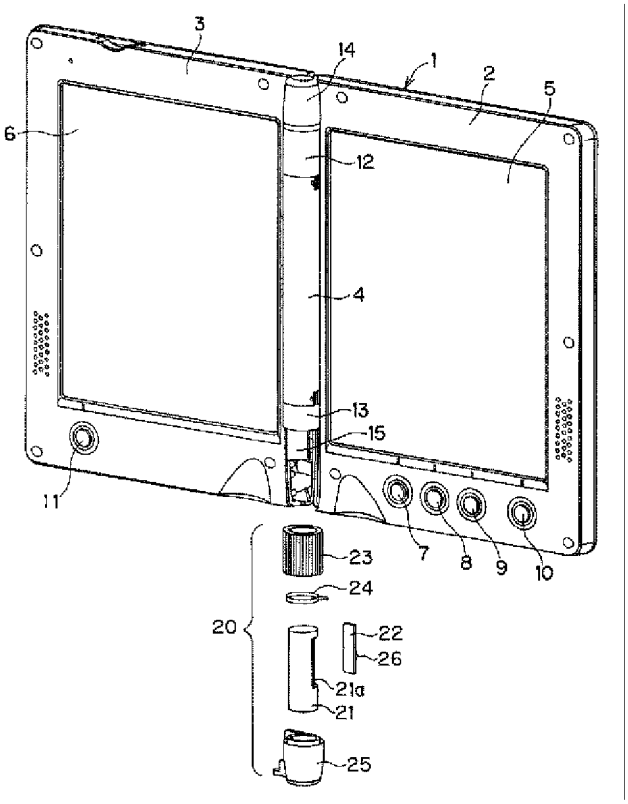
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【産業上の利用可能性】
【0037】
本発明は、片手で保持し且つ片手操作によって容易に頁更新操作ができるという効果を奏し、電子書籍に適用すると有用である。
【図面の簡単な説明】
【0038】
【図1】本発明の一実施形態に係る折畳型の電子書籍を１８０°開いた状態の正面図
【図2】本発明の一実施形態に係る電子書籍のうちジョグダイヤル機構部分を分解した分解図
【図3】本発明の一実施形態に係る電子書籍の要部断面図であり、　（ａ）は図１のIII—III線位置の断面図　（ｂ）はジョグダイヤルを時計方向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

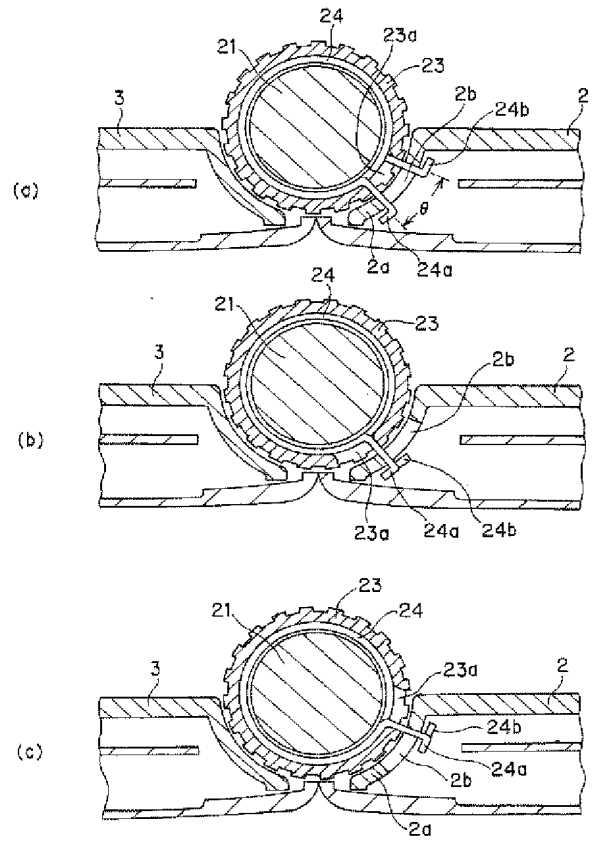
【図1】


1
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3
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11
12
13
14
15
20
III
IV

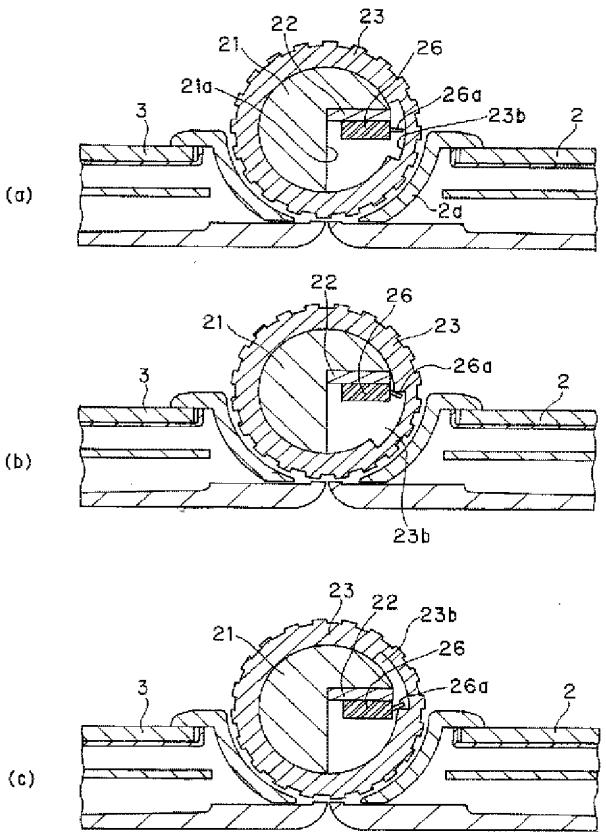
【図2】


1
2
3
4
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8
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10
11
12
13
14
15
20
21
21a
22
23
24
25
26

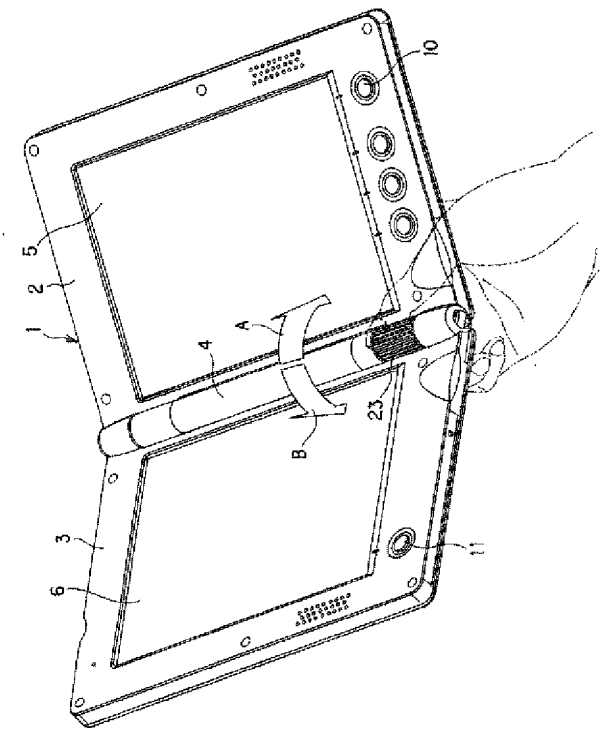
【図3】


(a)
(b)
(c)
2
2a
2b
3
21
23
23a
24
24a
24b
θ

【図4】


(a)
(b)
(c)
2
2a
3
21
21a
22
23
23b
26
26a

【図5】



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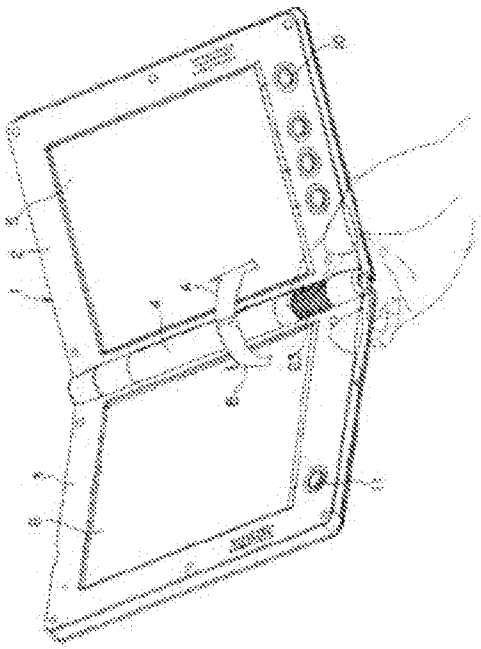
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G06F 3/00
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(54) **ELECTRONIC BOOK**

(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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2.**** shows the word which can not be translated.
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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.

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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.]

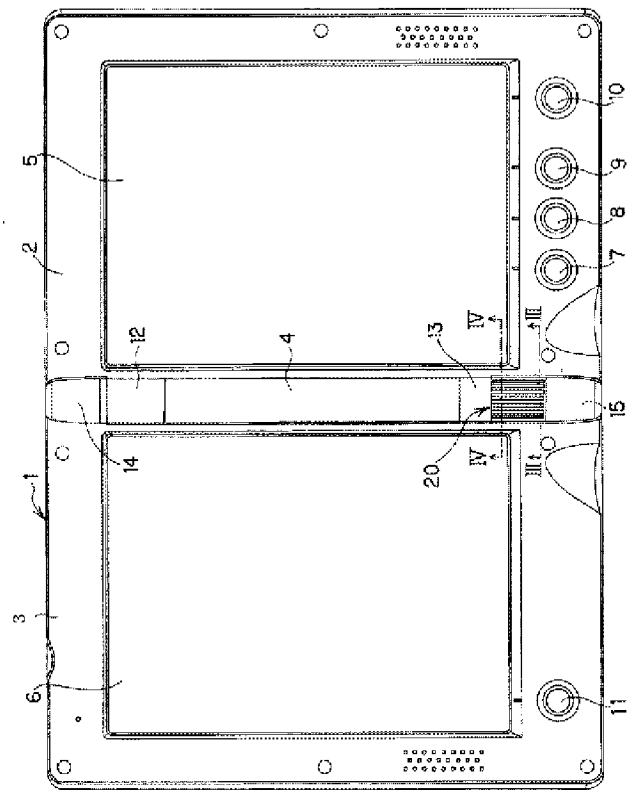
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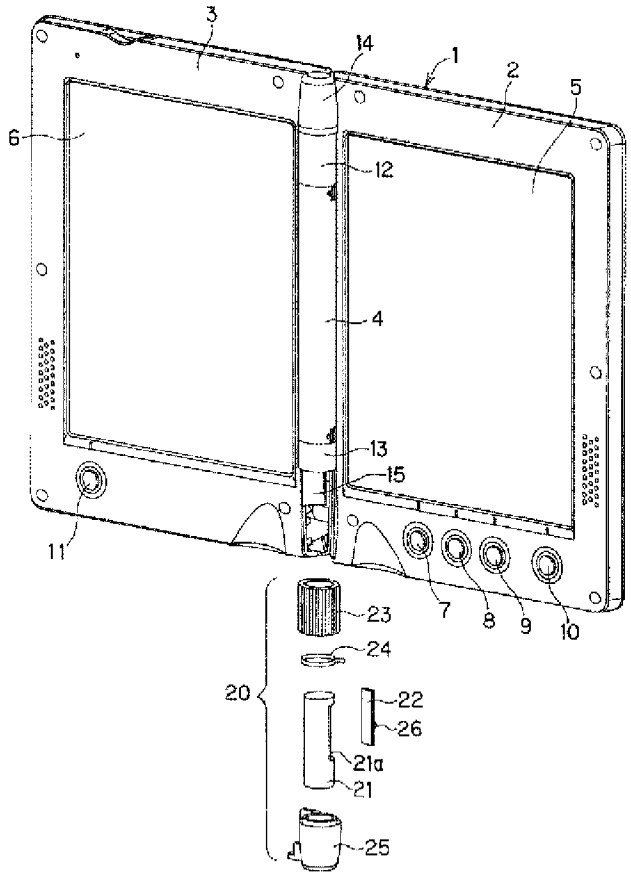
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DRAWINGS

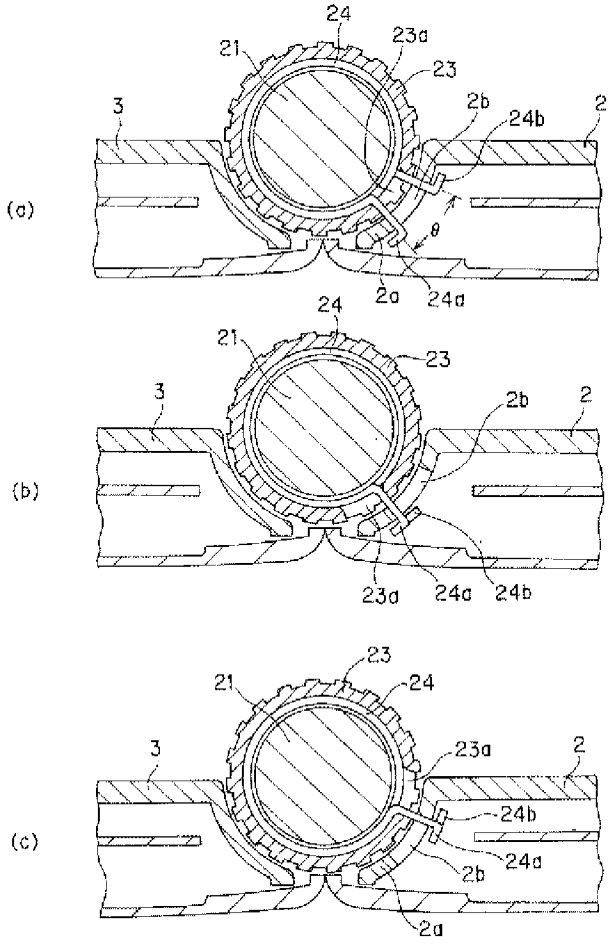
[Drawing 1]



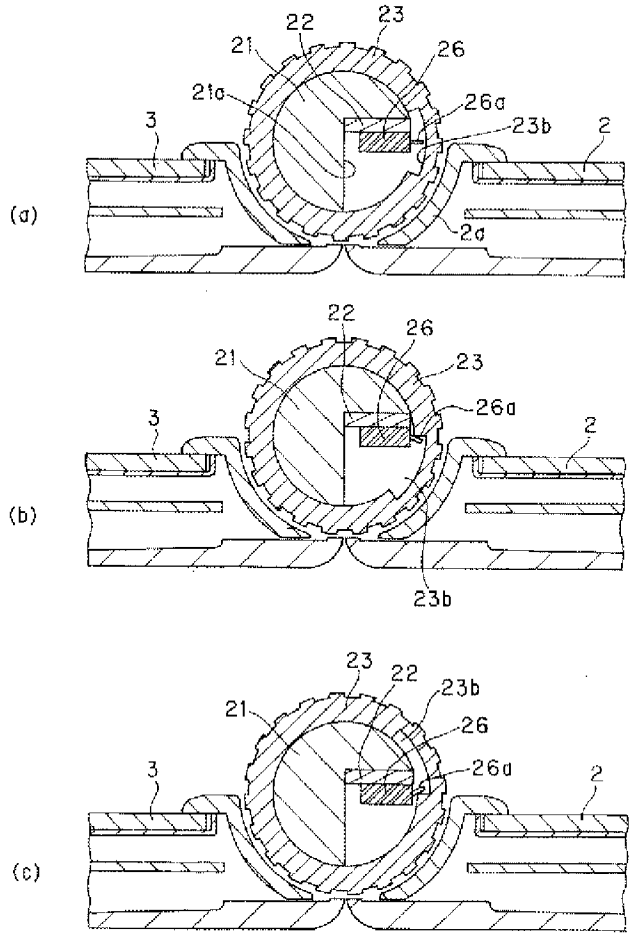
[Drawing 2]



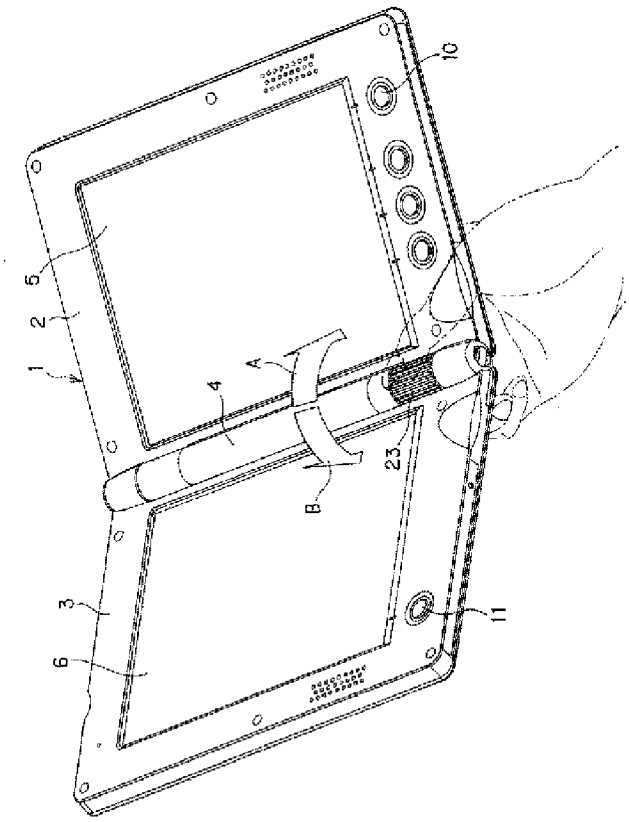
[Drawing 3]


(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.]

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Ｇ０６Ｋ　17/00		Ｃ０６Ｆ　15/30	３５０Ｚ	３Ｅ０４４
Ｇ０７Ｆ　19/00		Ｇ０７Ｄ　9/00	４７６	５Ｂ０５５
7/08		Ｇ０７Ｆ　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)

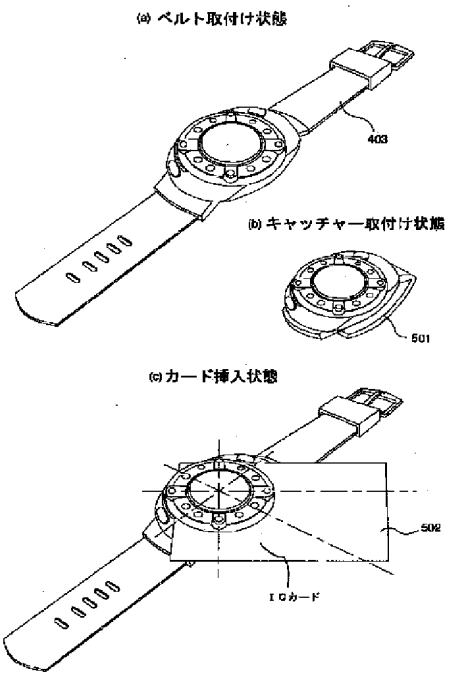
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最終頁に続く

(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



HP Inc. - Exhibit 1003 - Page 371

【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

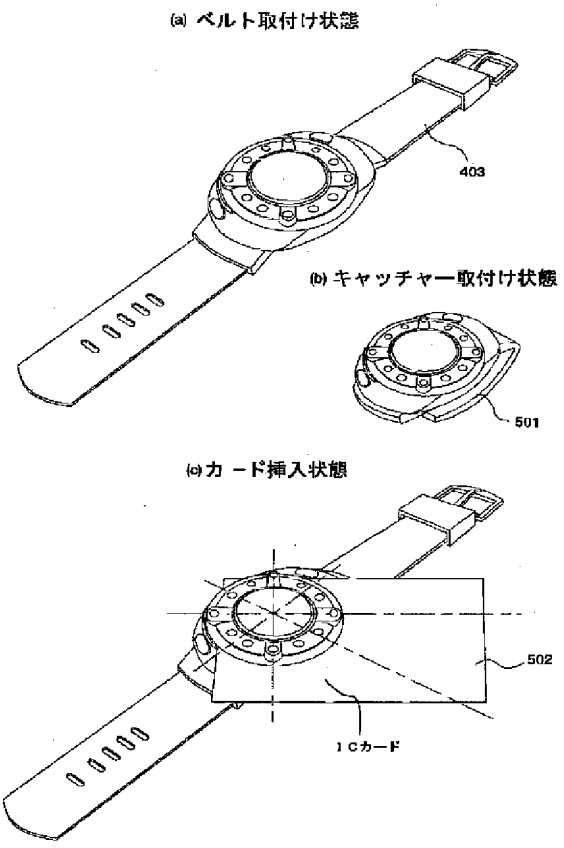
ついて説明する図である。
【図１０】ＩＣカードの挿入方向の他の例について説明する図である。
【図１１】本発明の第１の実施形態の変形例を説明する図である。
【図１２】本発明の第１の実施形態によるＩＣカード用端末の操作処理について説明するフローチャートである。
【図１３】処理の途中で表示される表示画面例を説明する図である。
【図１４】本発明の第１の実施形態の変形例によるＩＣカード用端末の操作処理について説明するフローチャートである。
【図１５】本発明の第２の実施形態によるＩＣカード用端末の外観を示す斜視図である。
【図１６】第２の実施形態によるＩＣカード端末の外観を示す４面図である。
【図１７】第２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

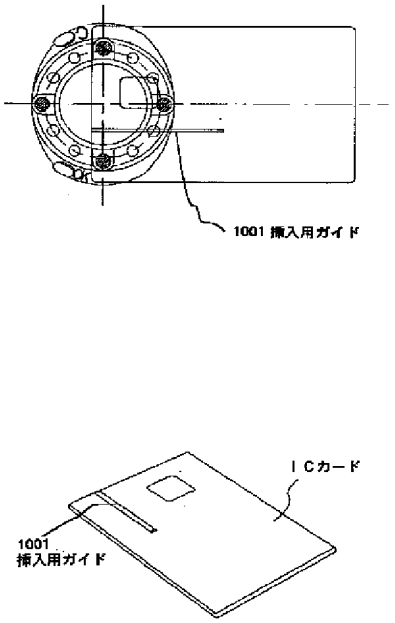
【図５】

図５



【図１０】

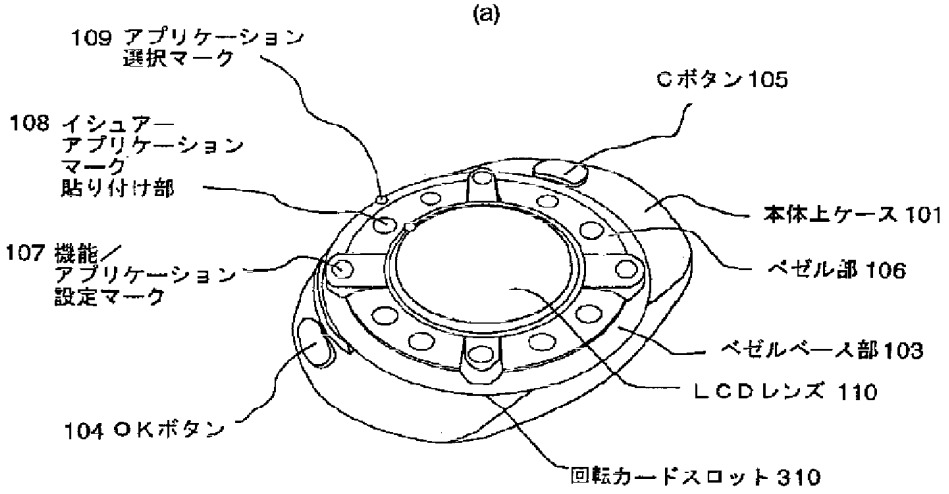
図１０



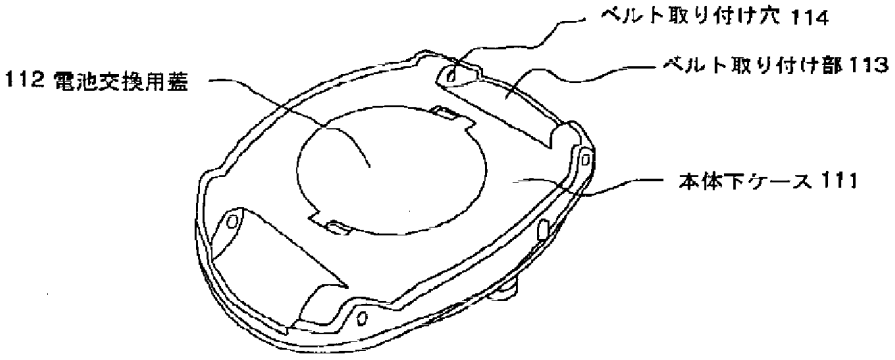
【図１】

図１

(a)

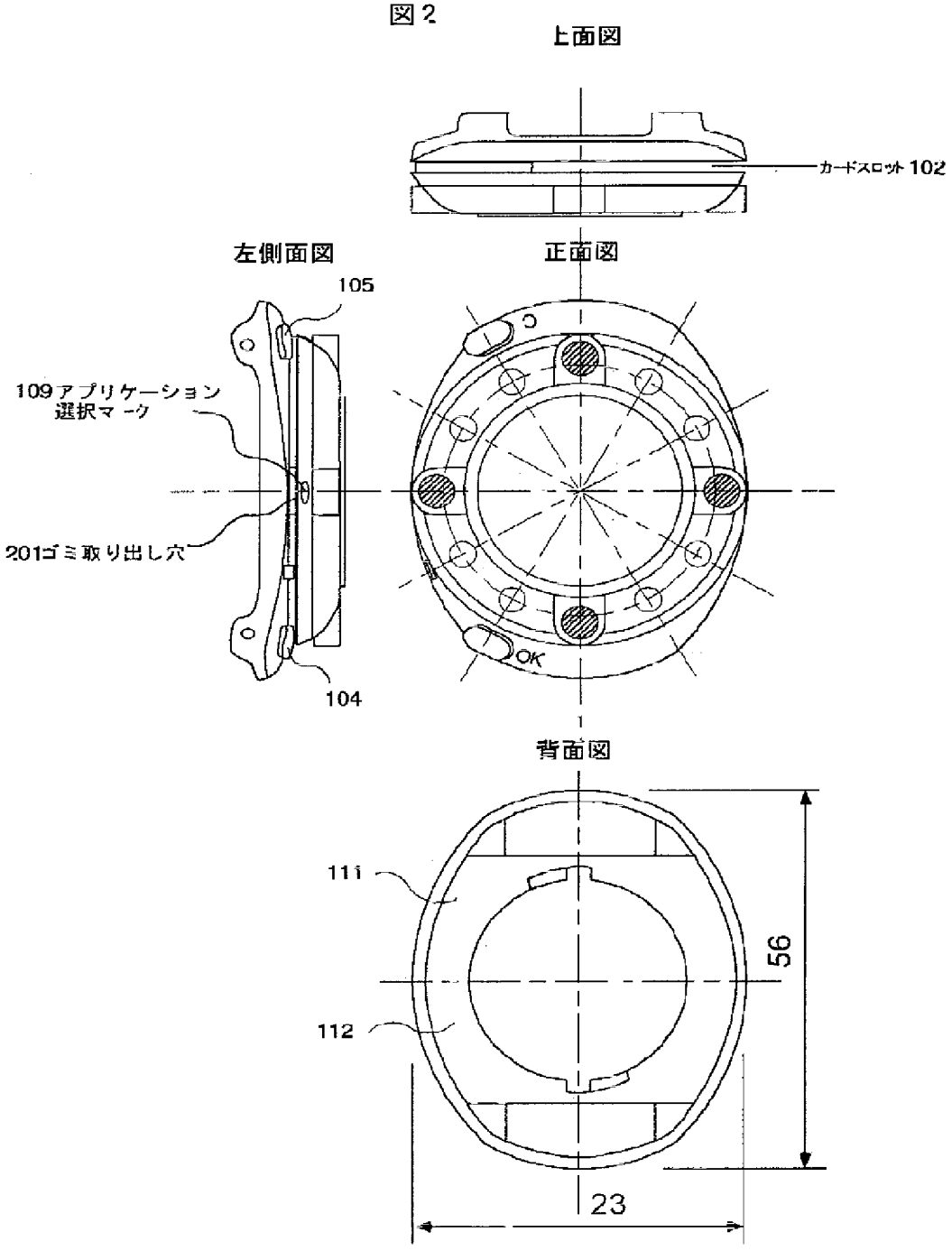

109 アプリケーション
選択マーク
Cボタン105
108 イシュアー
アプリケーション
マーク
貼り付け部
本体上ケース 101
107 機能／
アプリケーション
設定マーク
ベゼル部 106
ベゼルベース部103
LCDレンズ 110
104 OKボタン
回転カードスロット 310

(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

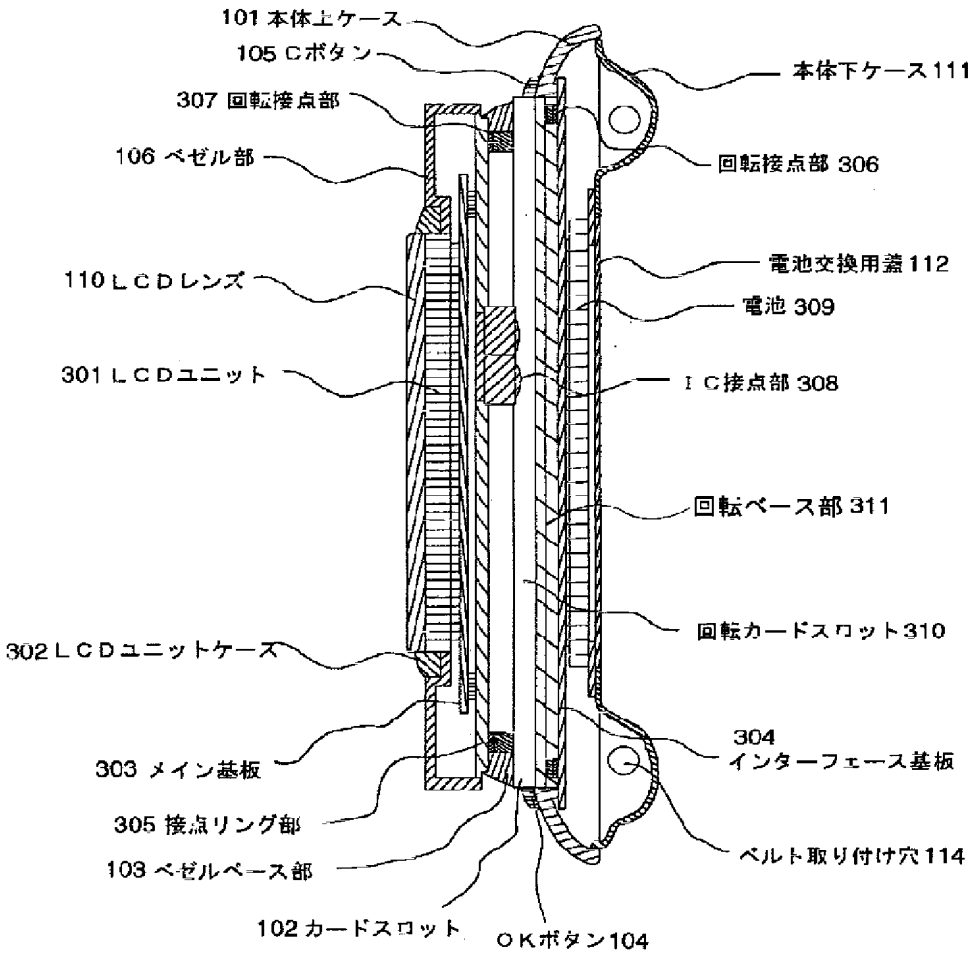
【図2】

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

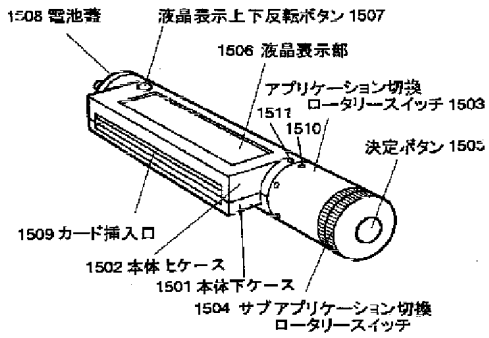
【図3】

図3



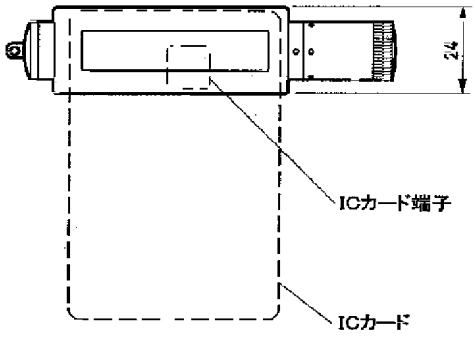
【図15】

図15



【図20】

図20



【図4】

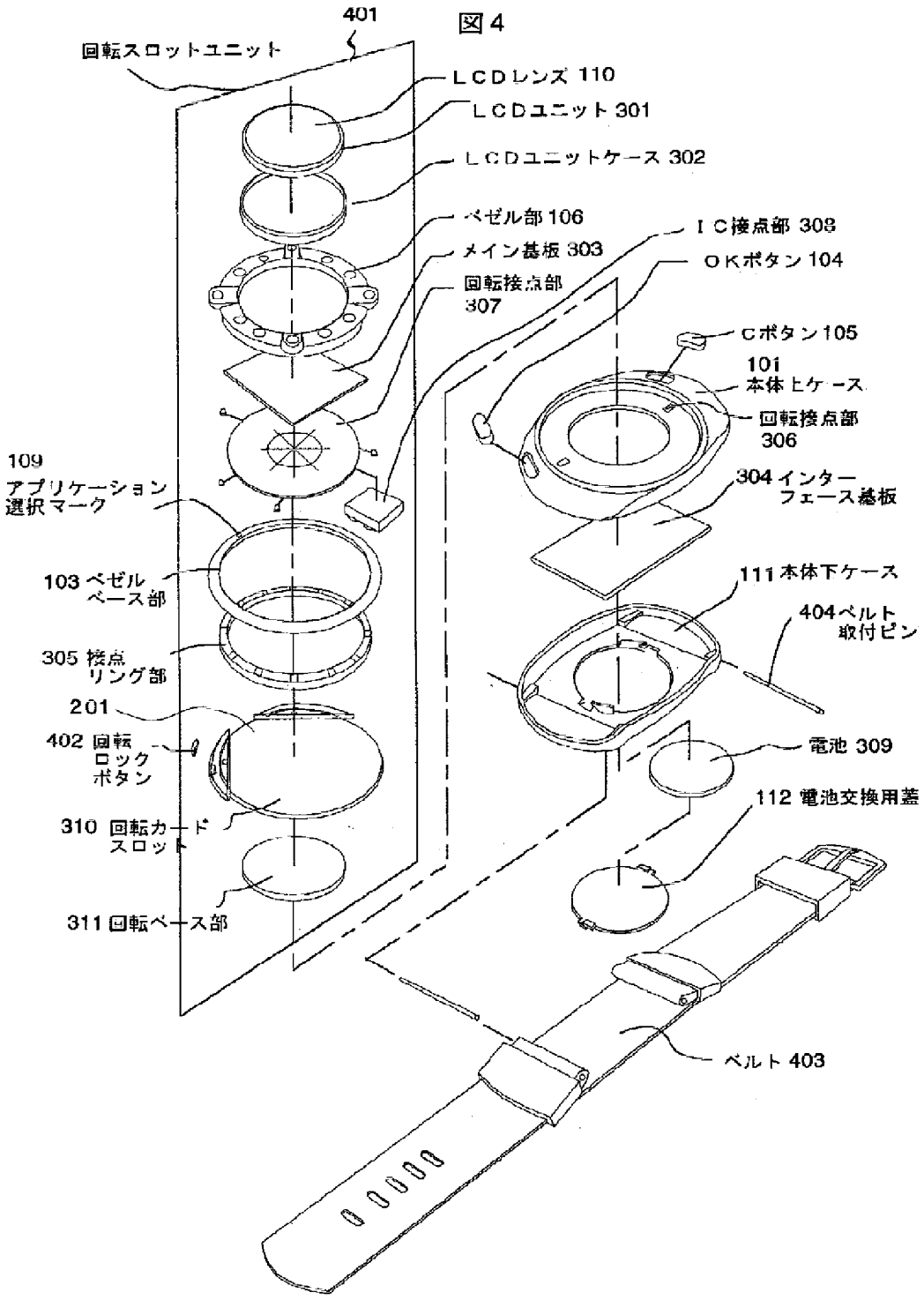
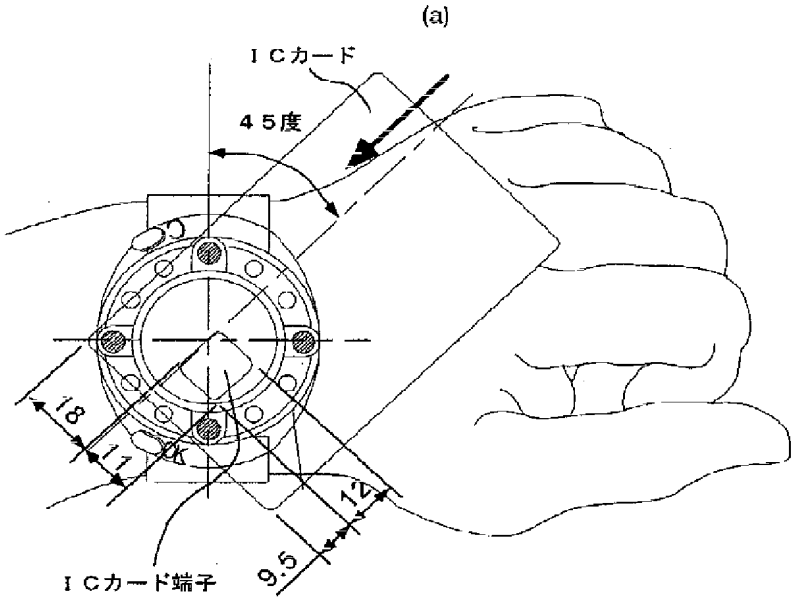

401
回転スロットユニット
LCDレンズ 110
LCDユニット 301
LCDユニットケース 302
ベゼル部 106
メイン基板 303
回転接点部 307
IC接点部 308
OKボタン 104
Cボタン 105
101 本体上ケース
回転接点部 306
304 インターフェース基板
109 アプリケーション選択マーク
103 ベゼルベース部
111 本体下ケース
404 ベルト取付ピン
305 接点リング部
201
402 回転ロックボタン
電池 309
112 電池交換用蓋
310 回転カードスロット
311 回転ベース部
ベルト 403

図4

【図6】

図6



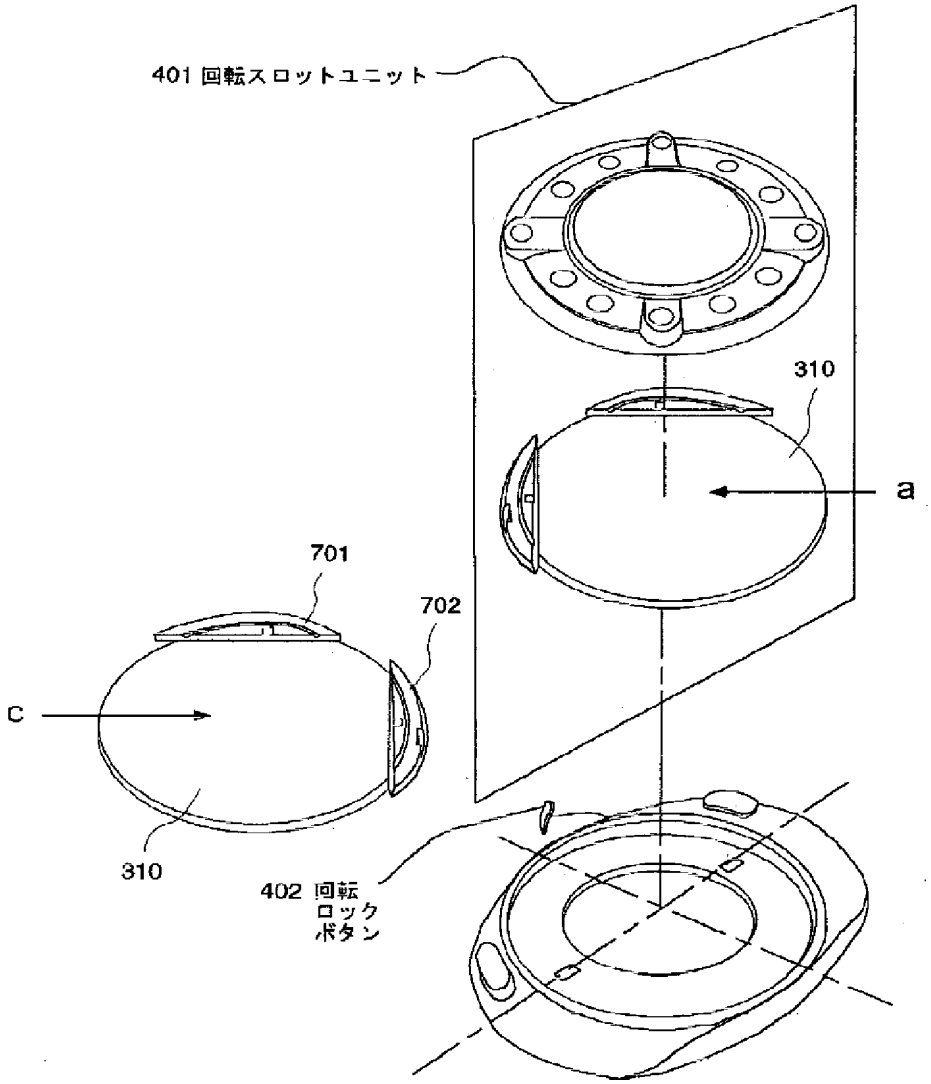
【図32】

図32



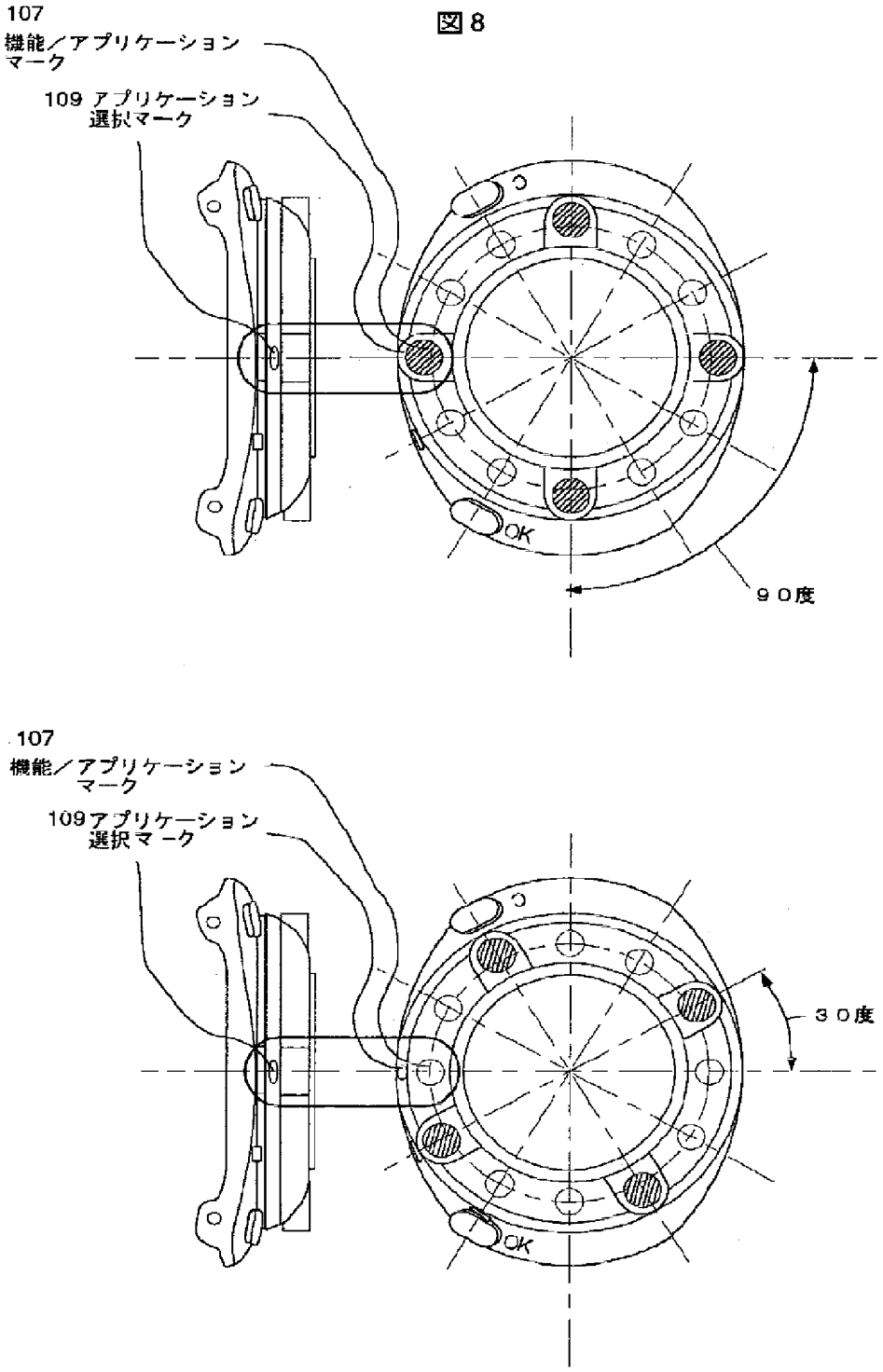
【図7】

図7



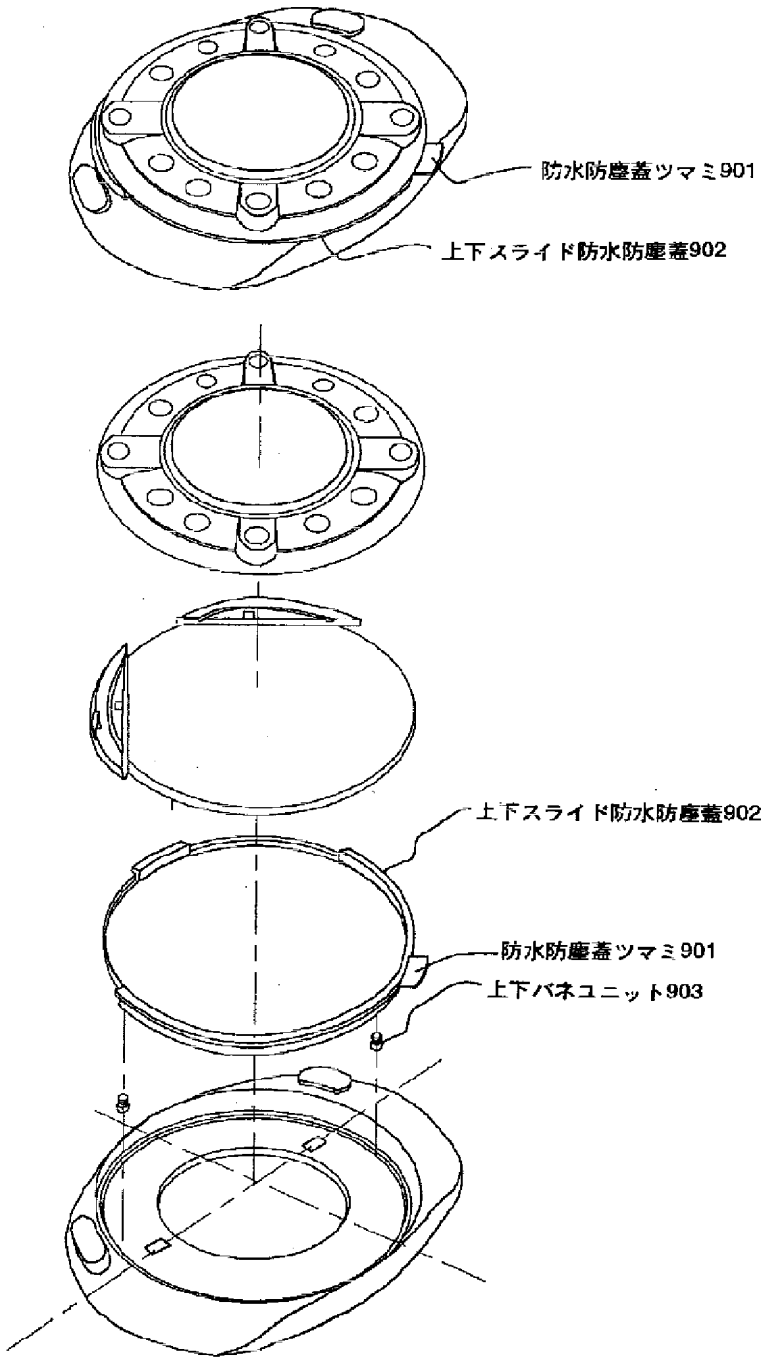
【図8】

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

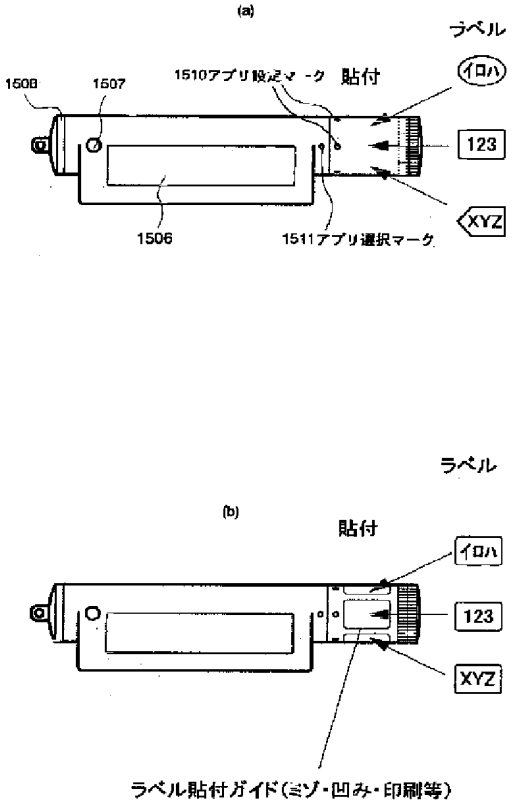
【図9】

図9



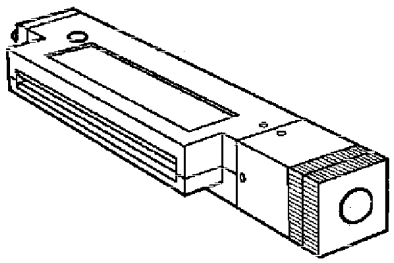
【図18】

図18



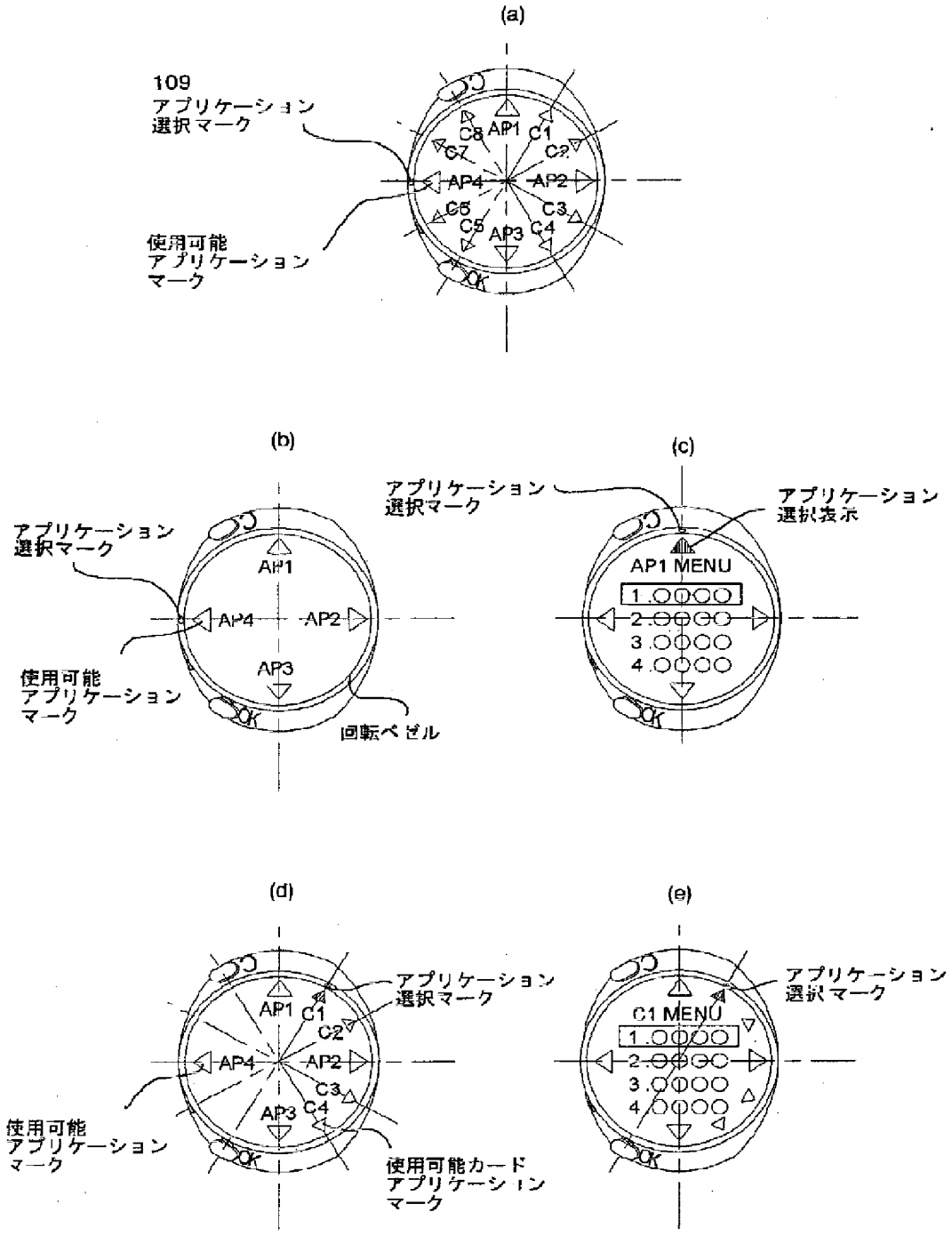
【図21】

図21



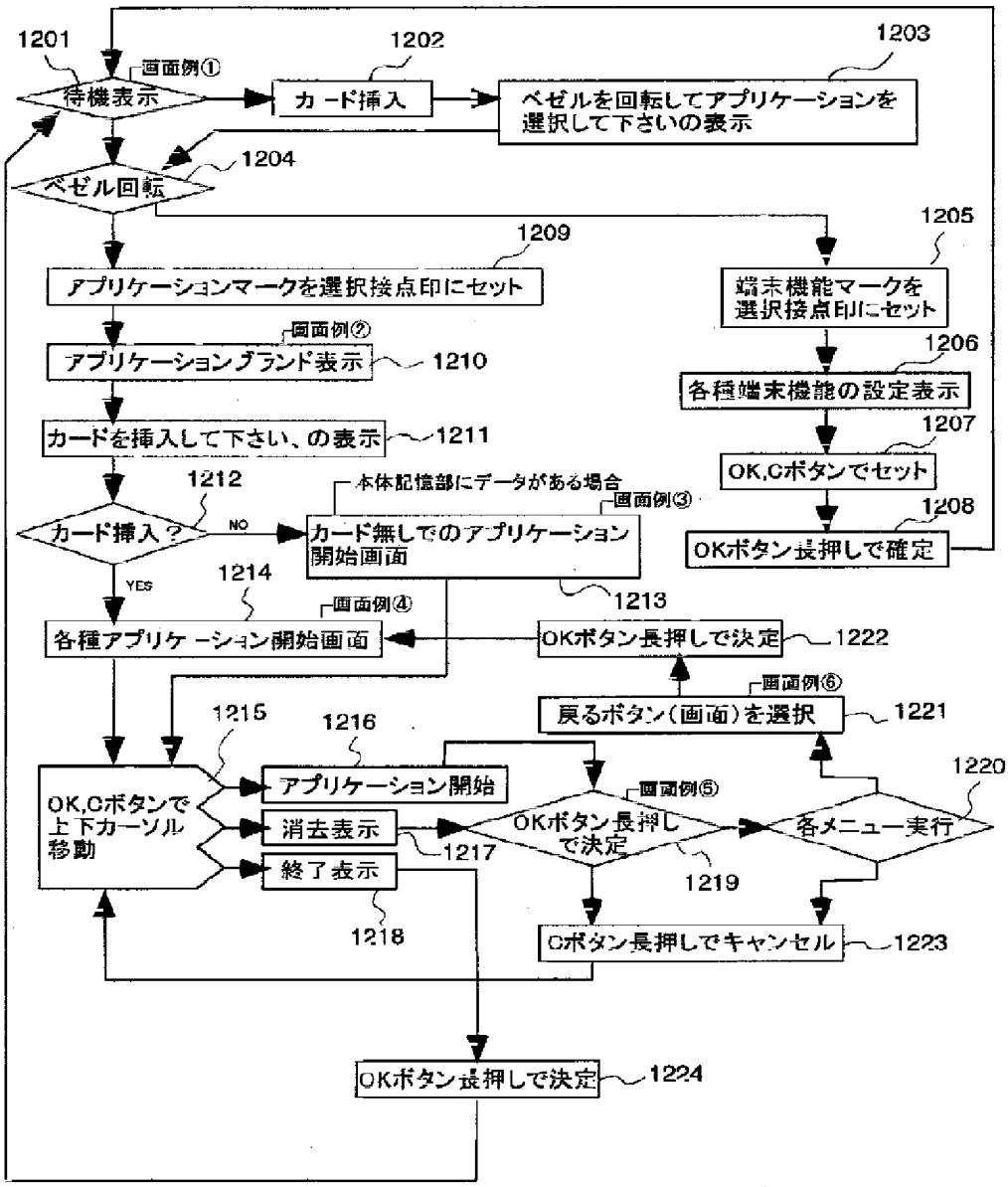
【図11】

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

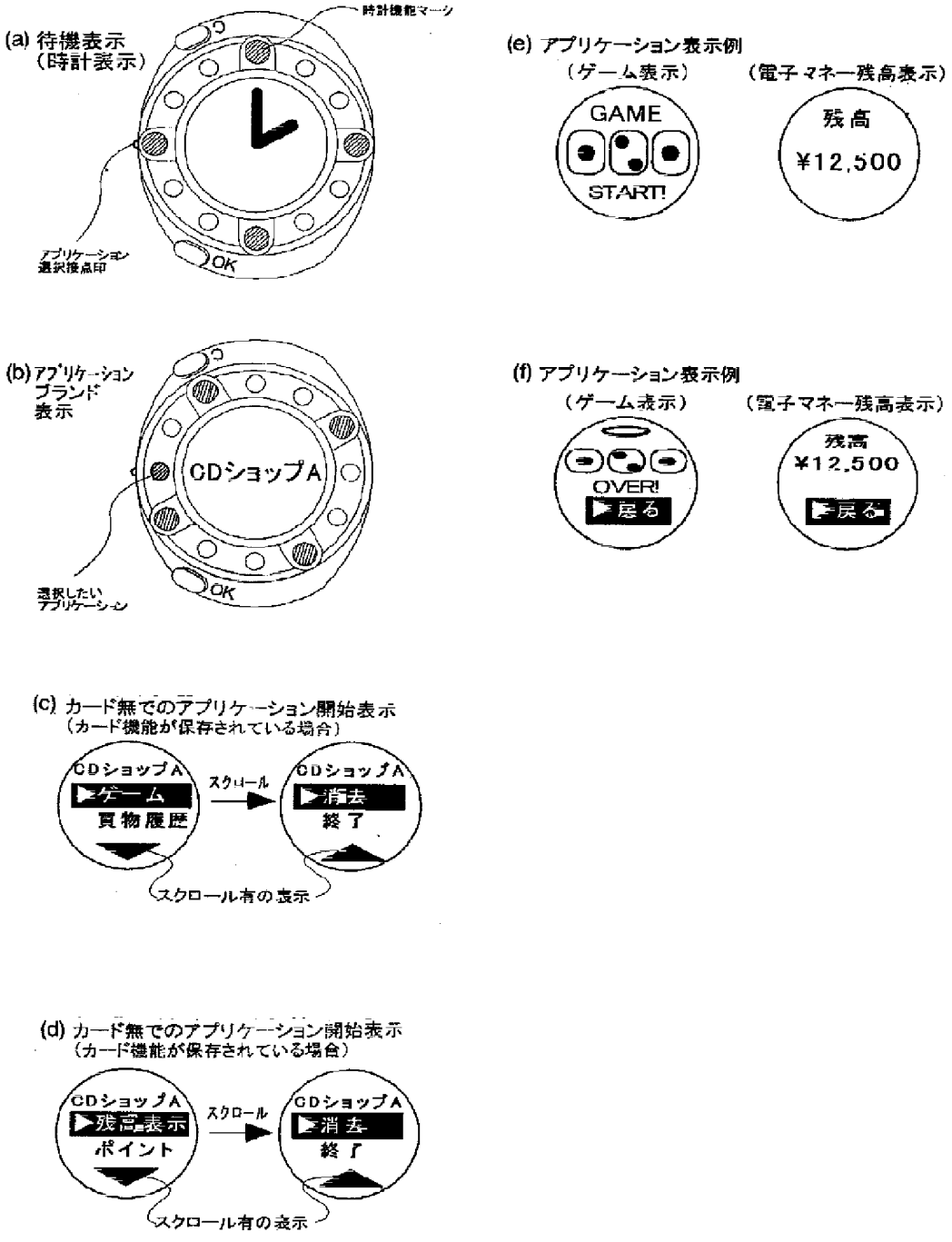
【図12】

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
終了表示
1219
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

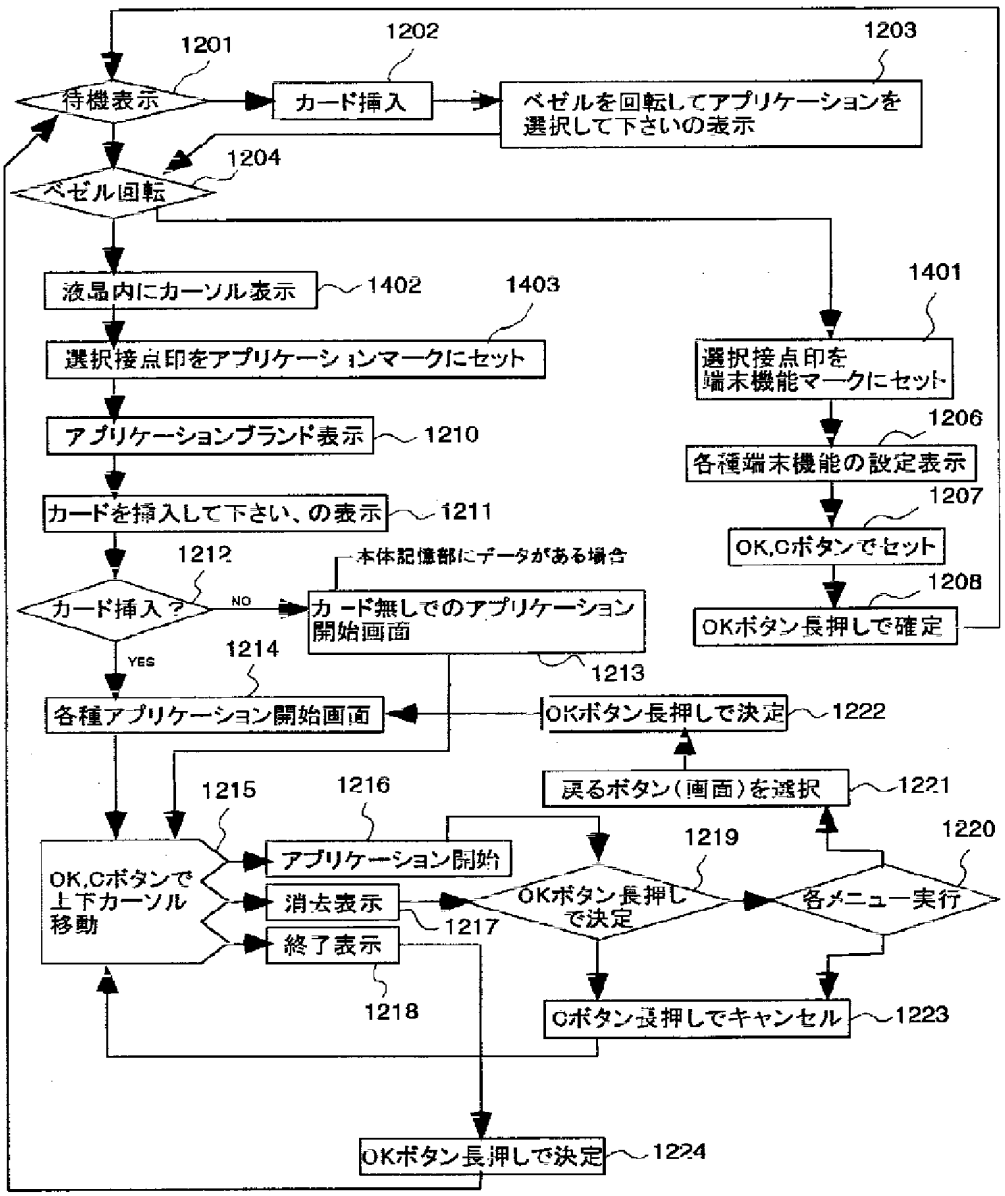
【図13】

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
選択接点印
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

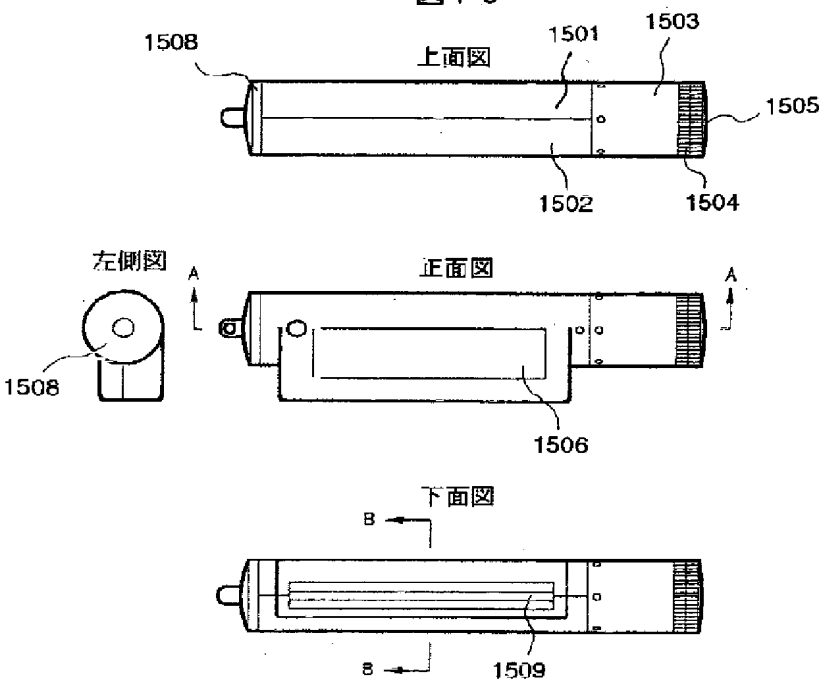
【図14】

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

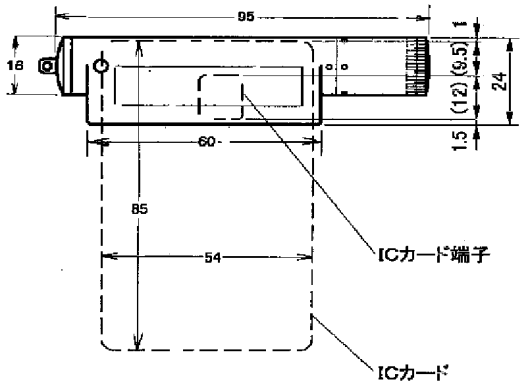
【図16】

図16



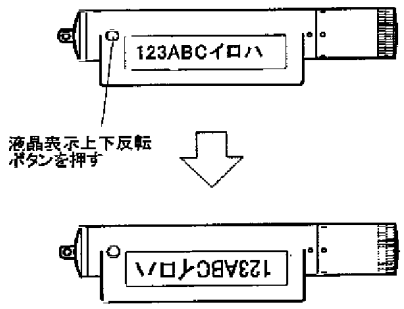
【図19】

図19



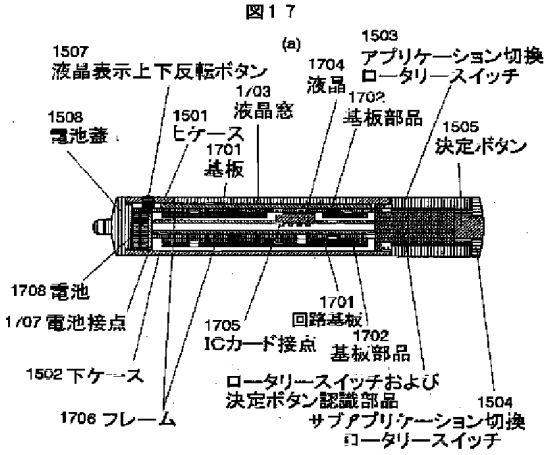
【図22】

図22



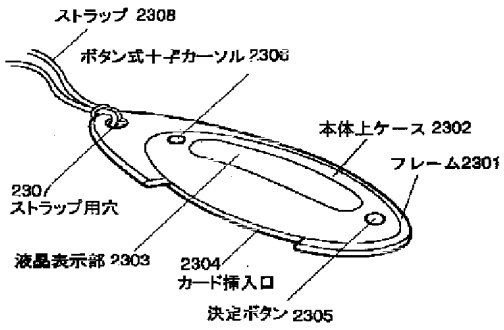
【図17】

図17



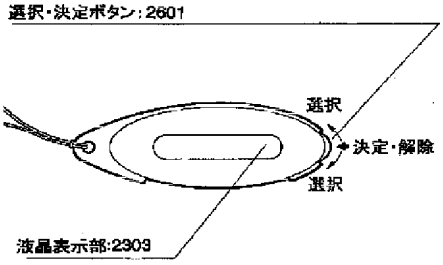
【図23】

図23



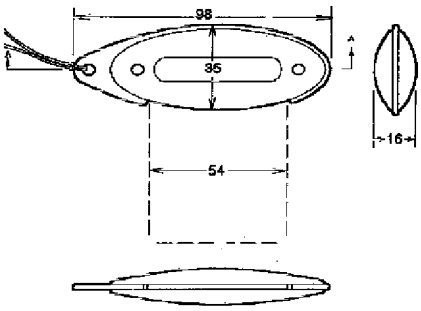
【図26】

図26



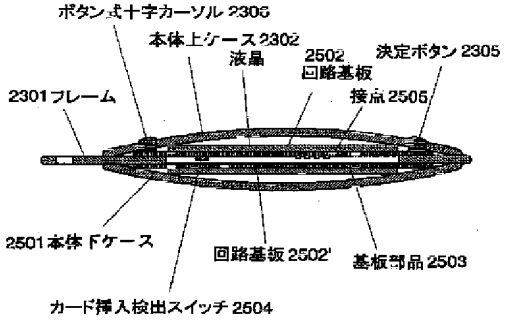
【図24】

図24



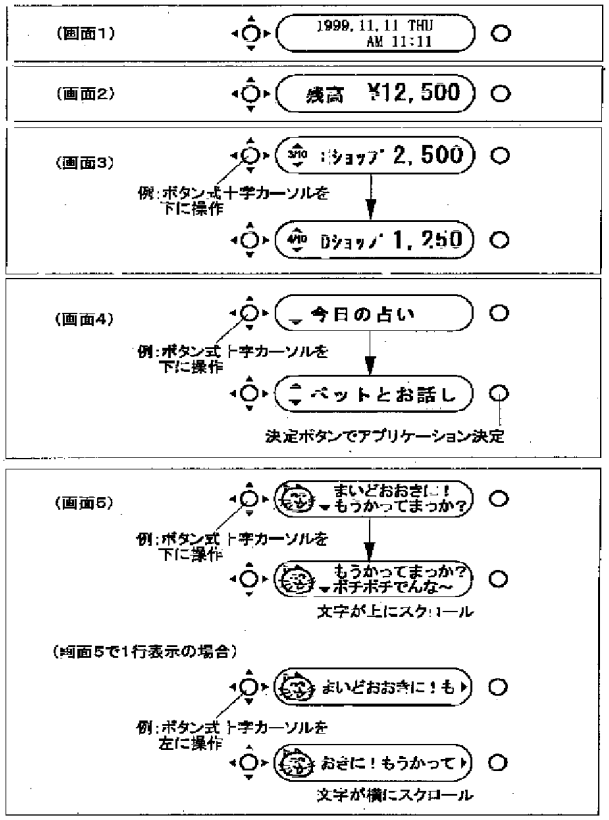
【図25】

図25



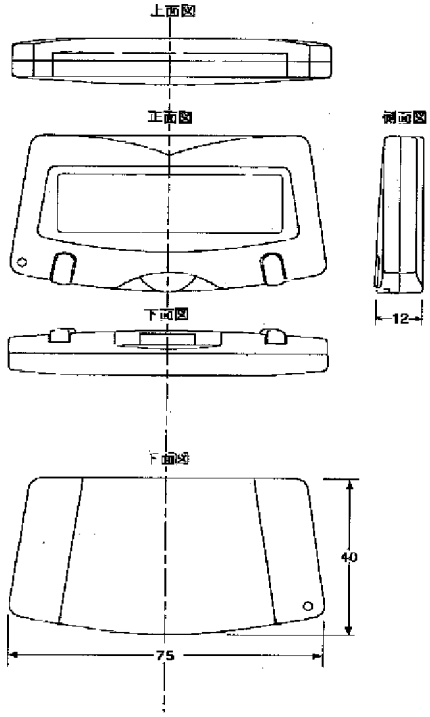
【図27】

図27



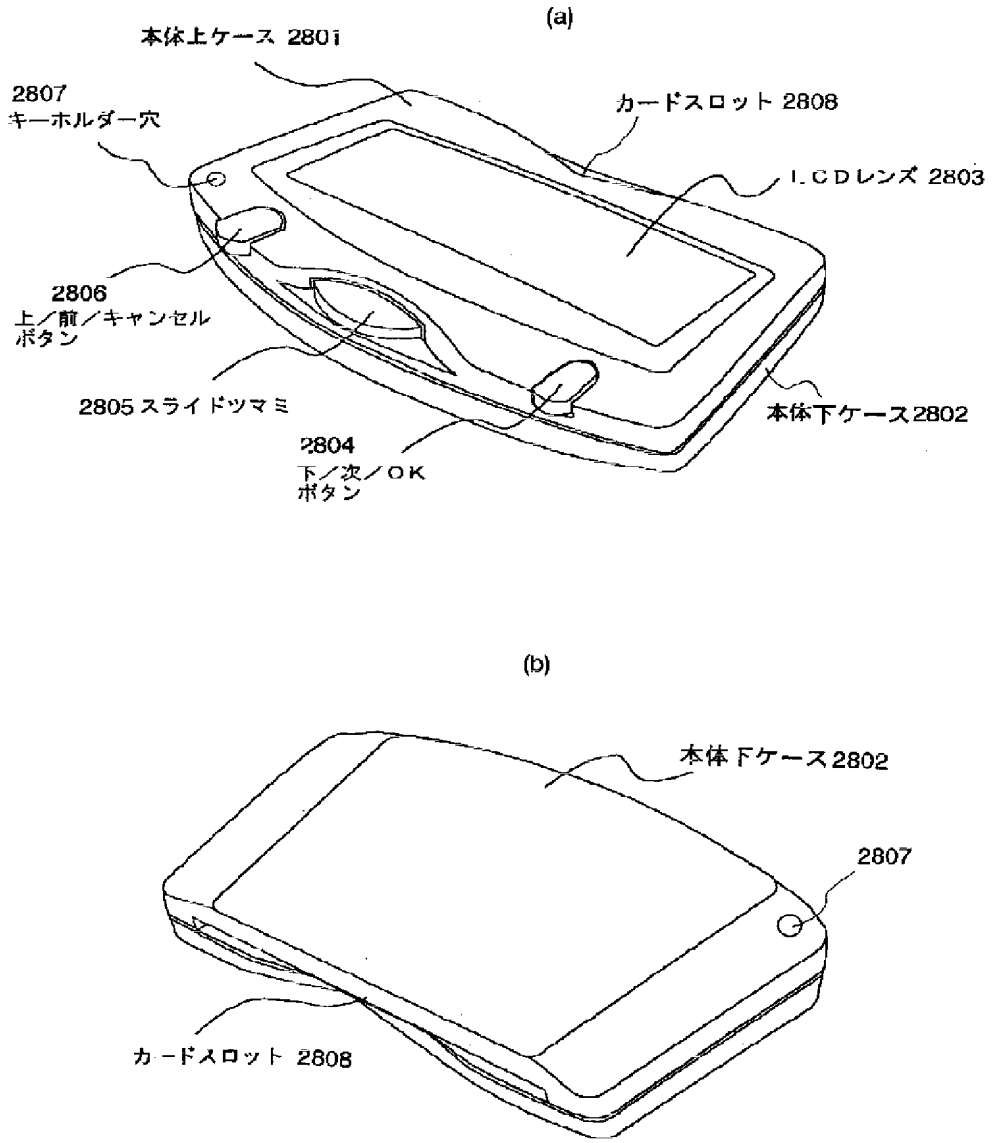
【図29】

図29



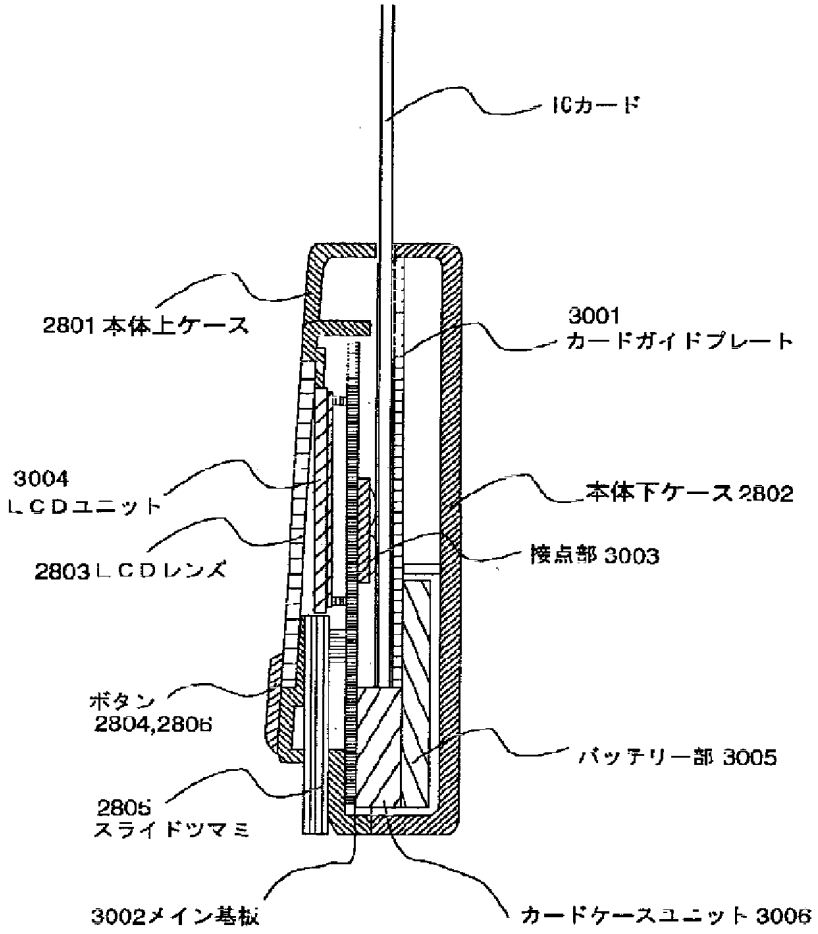
【図28】

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

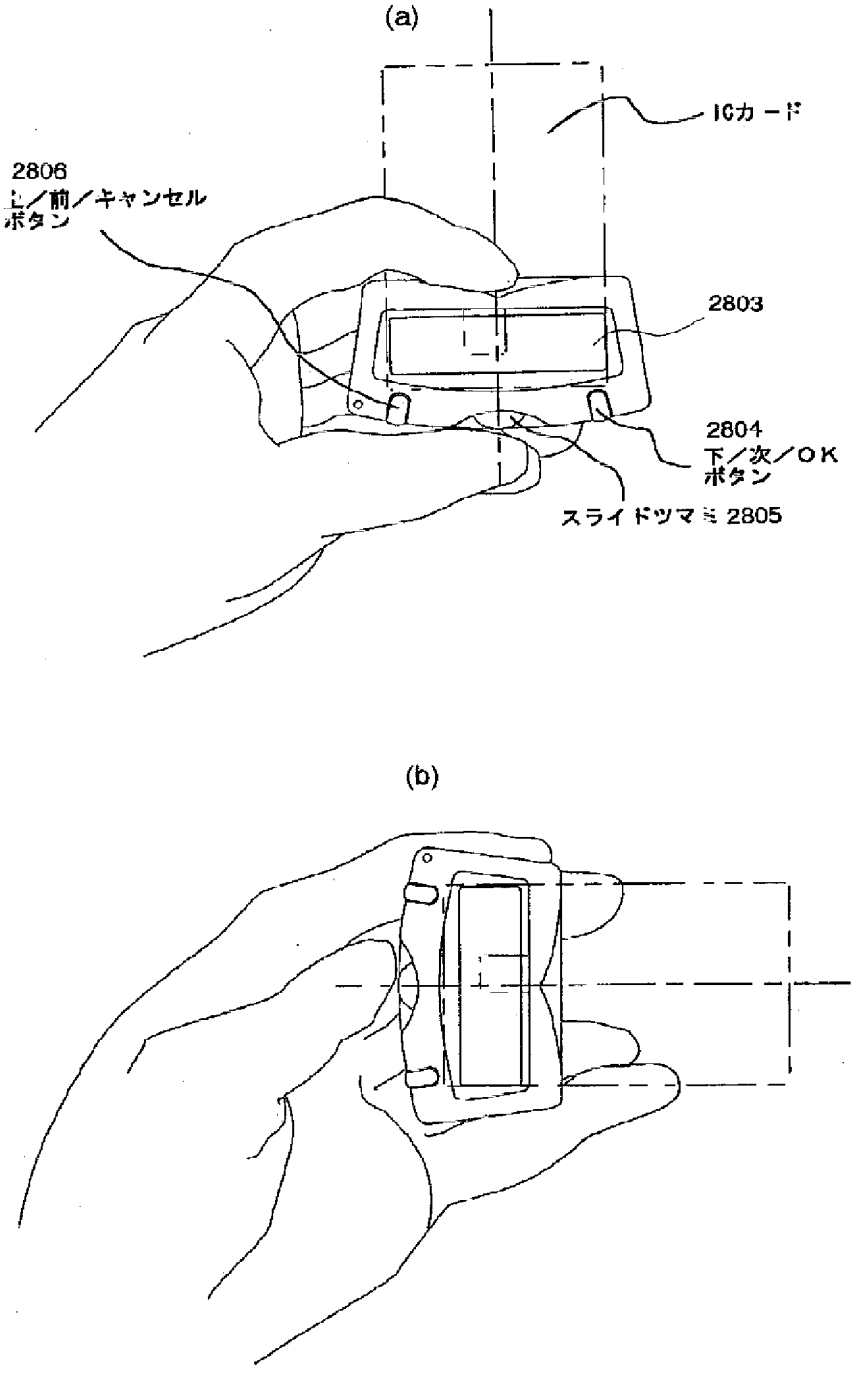
【図30】

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

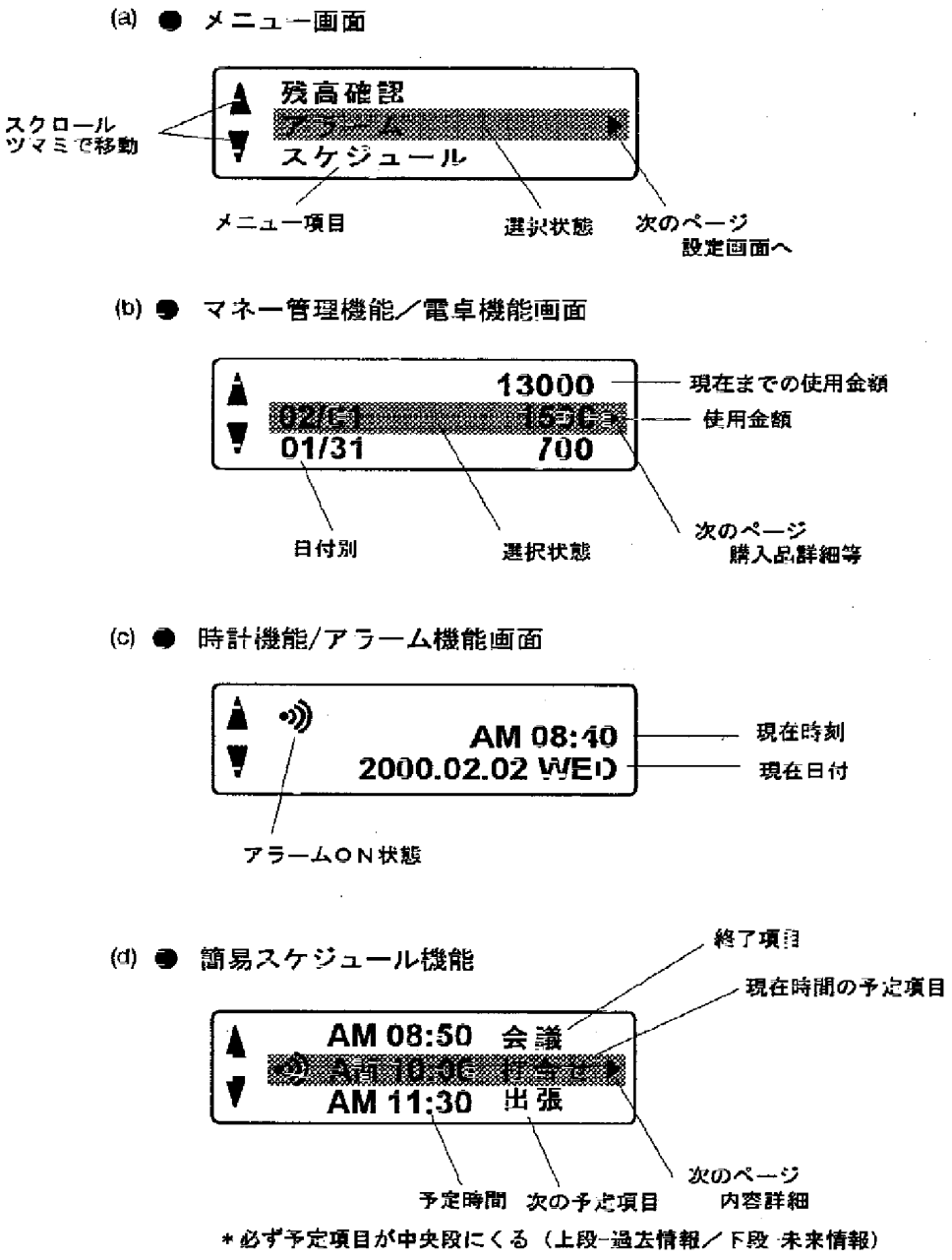
【図３１】

図３１



【図33】

図33



フロントページの続き

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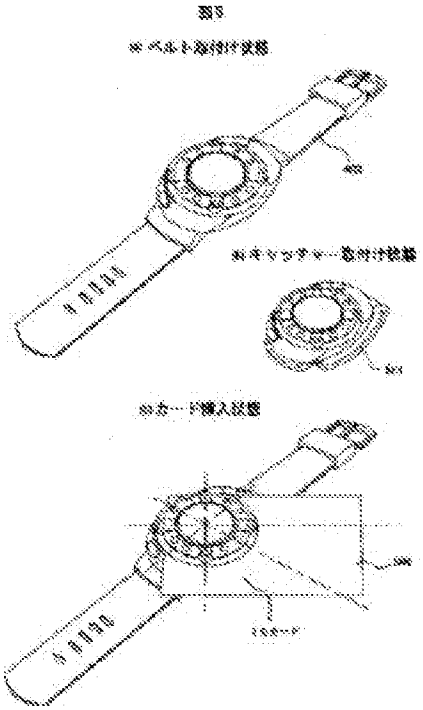
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(54) **TERMINAL FOR IC CARD**

(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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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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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.

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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.

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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.]

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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.]

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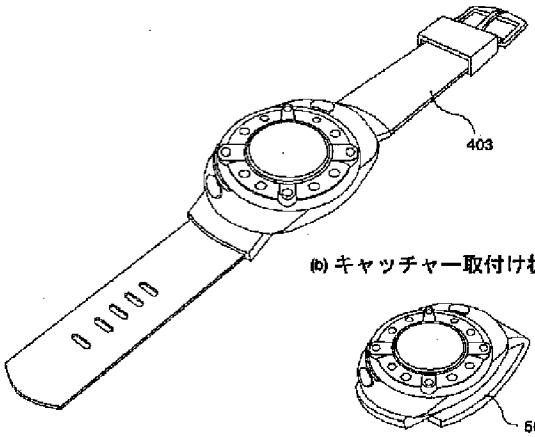
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3.In the drawings, any words are not translated.

DRAWINGS

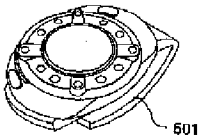
[Drawing 5]

図5

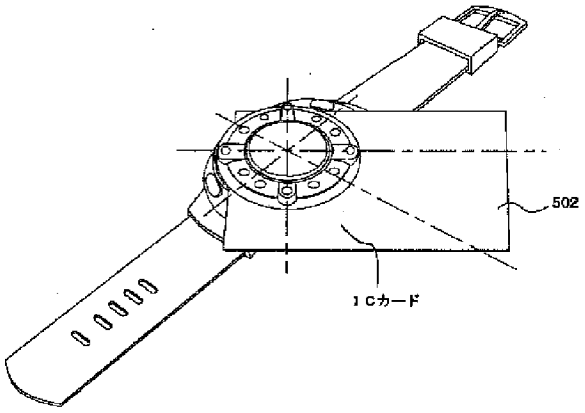
(a) ベルト取付け状態



(b) キャッチャー取付け状態

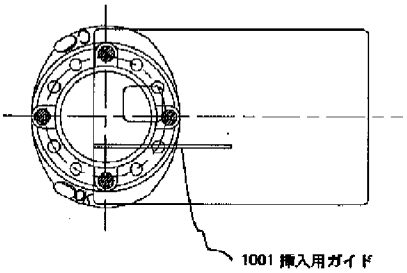


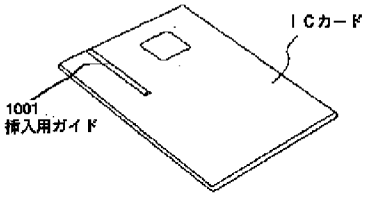
(c) カード挿入状態



[Drawing 10]

図１０

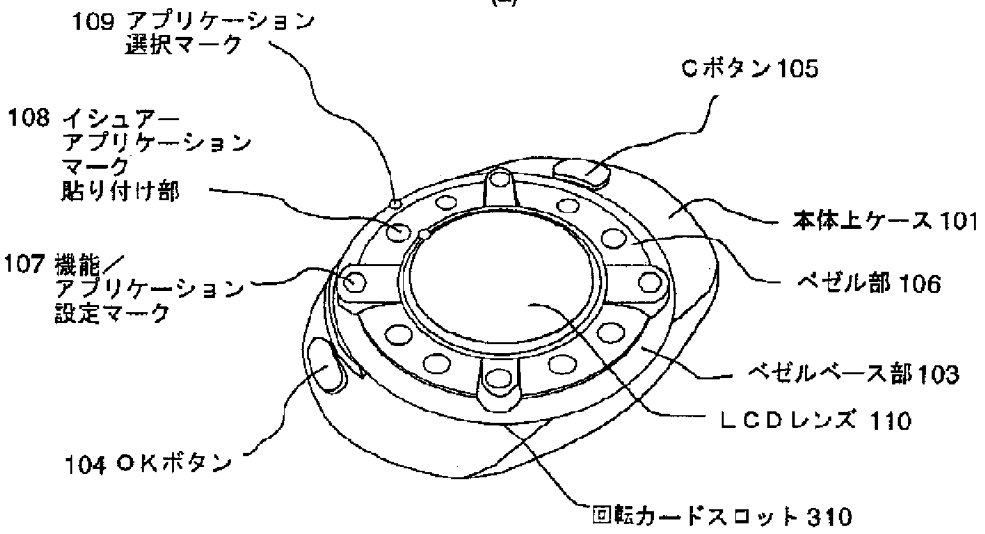




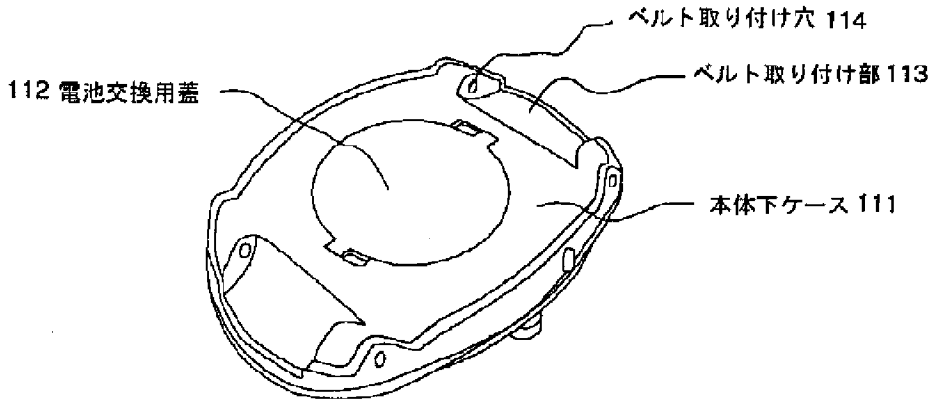
[Drawing 1]

図1

(a)

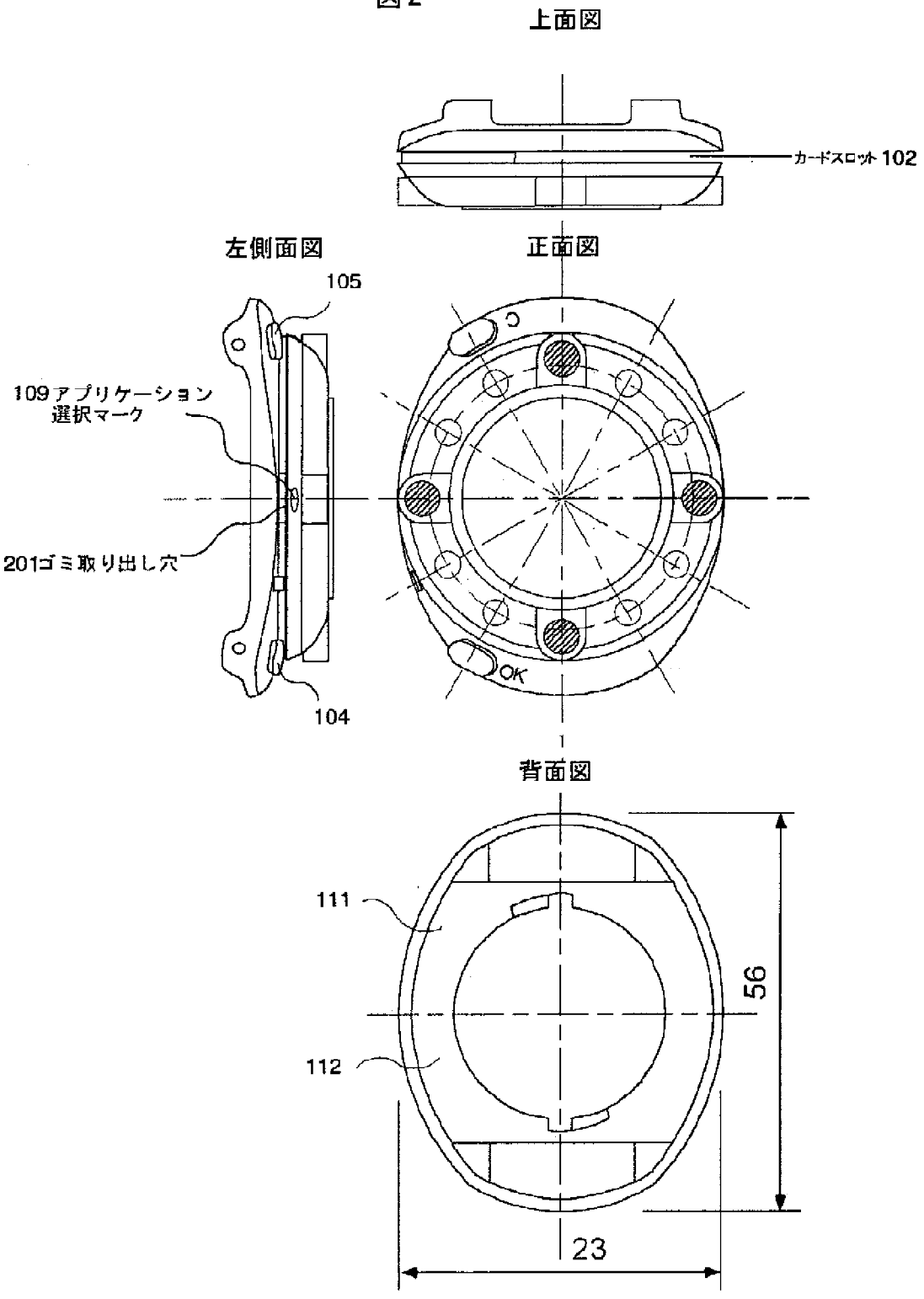


(b)



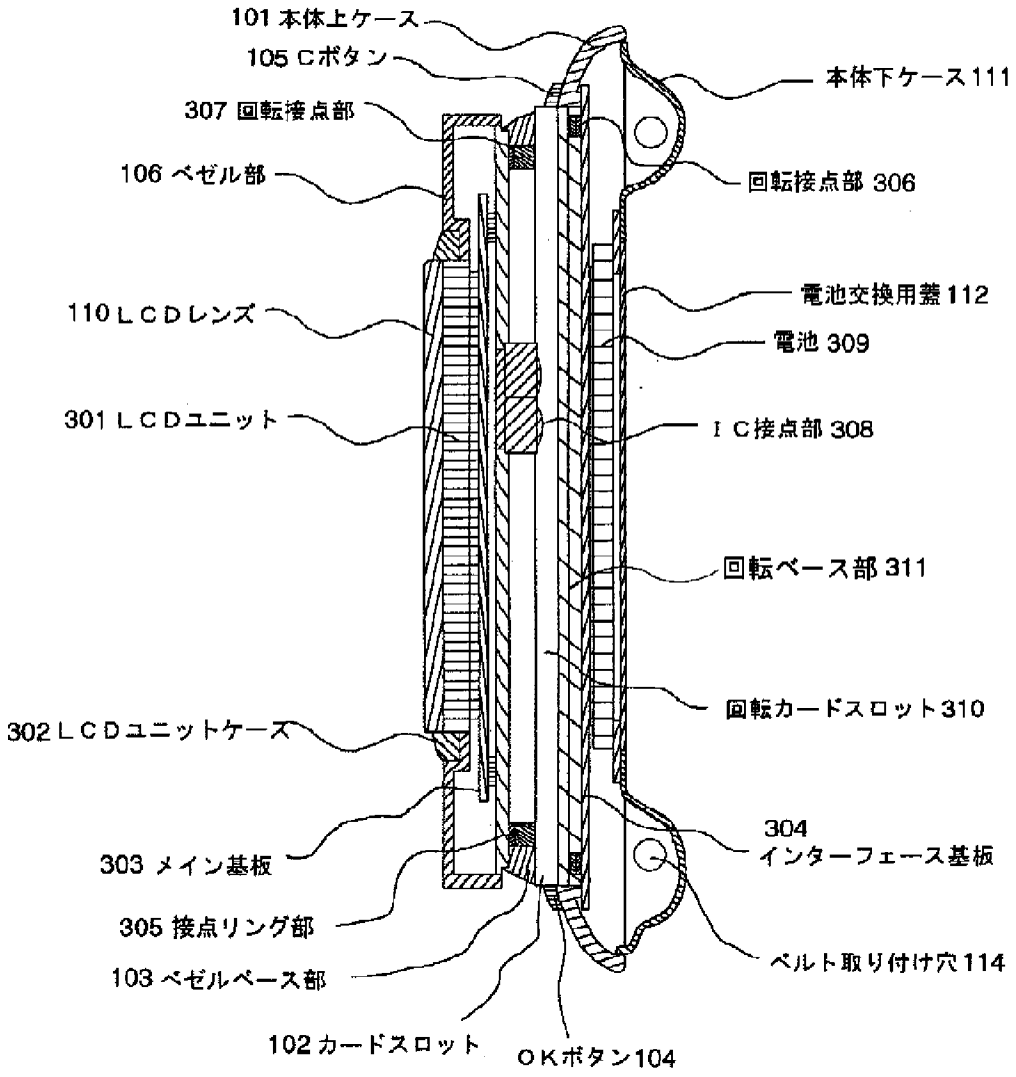
[Drawing 2]

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

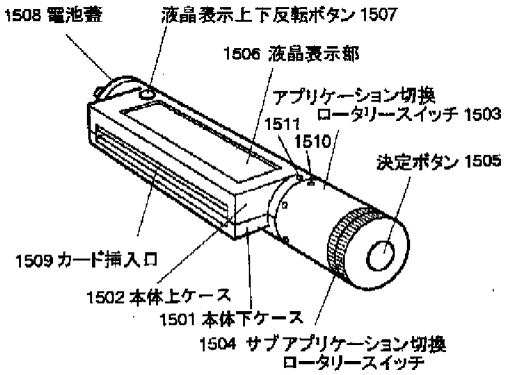
[Drawing 3]

図３



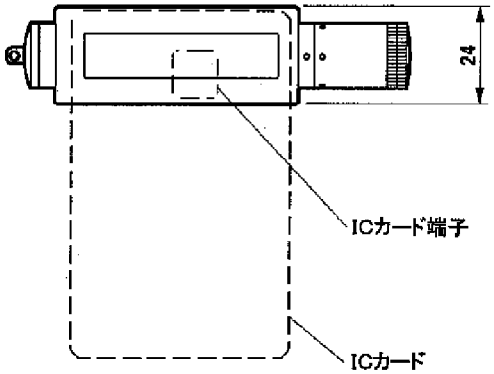
[Drawing 15]

図１５



[Drawing 20]

図２０



[Drawing 4]

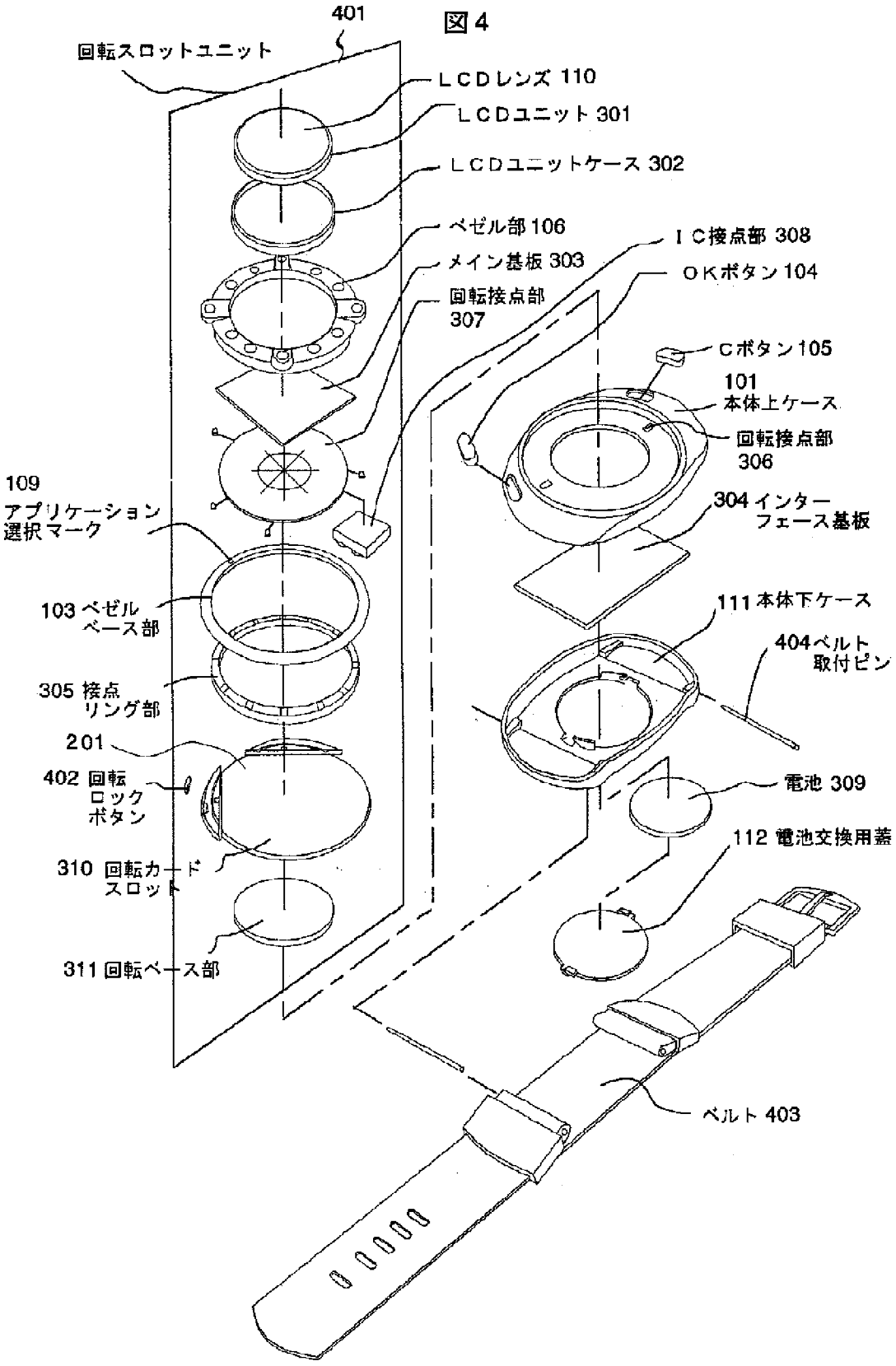
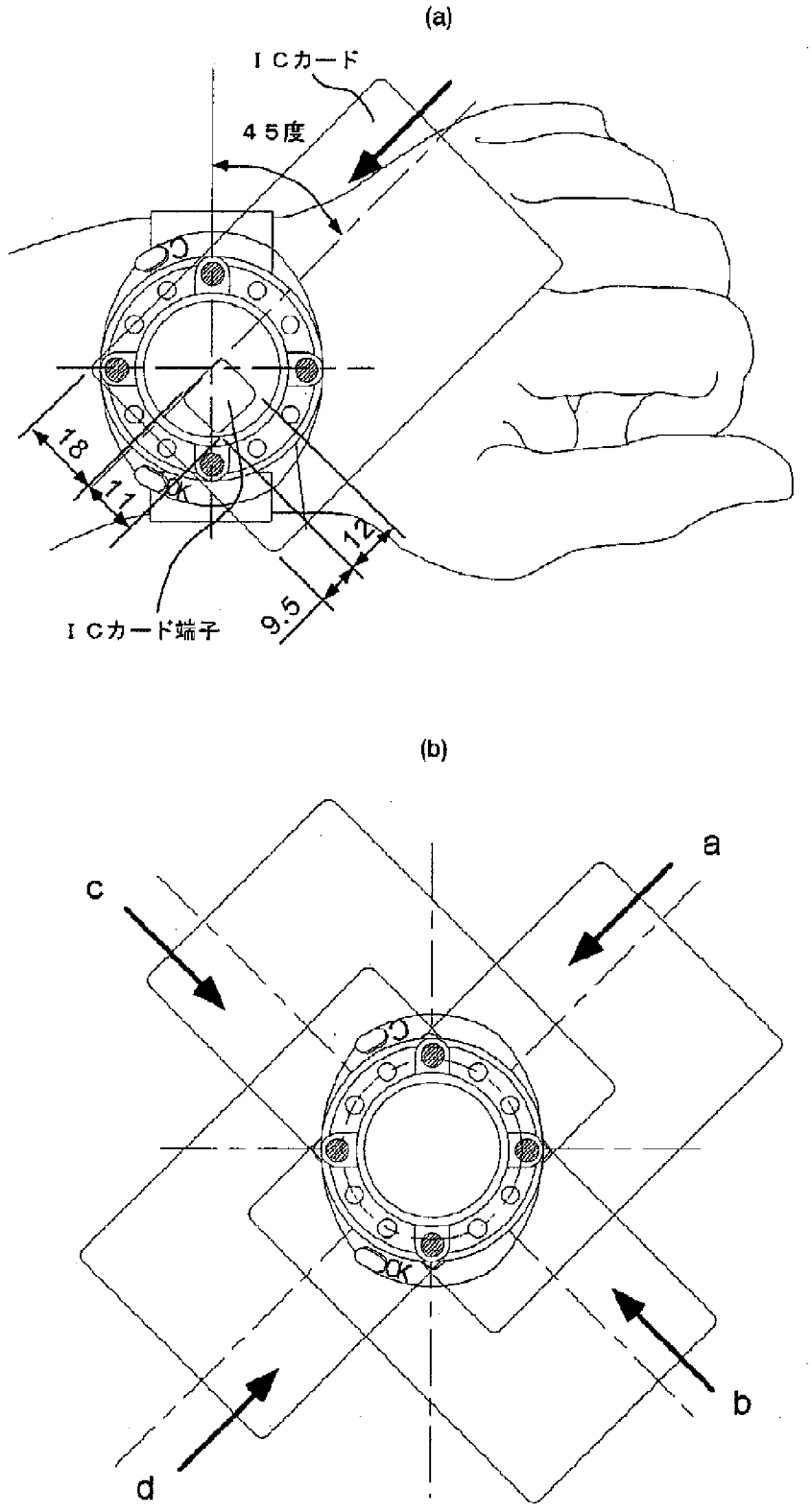

401
回転スロットユニット
LCDレンズ 110
LCDユニット 301
LCDユニットケース 302
ベゼル部 106
メイン基板 303
回転接点部 307
IC接点部 308
OKボタン 104
Cボタン 105
101 本体上ケース
回転接点部 306
304 インターフェース基板
109 アプリケーション選択マーク
103 ベゼルベース部
111 本体下ケース
404 ベルト取付ピン
305 接点リング部
201
402 回転ロックボタン
電池 309
112 電池交換用蓋
310 回転カードスロット
311 回転ベース部
ベルト 403

図4

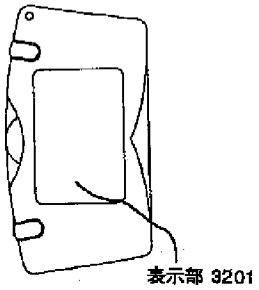
[Drawing 6]

図６



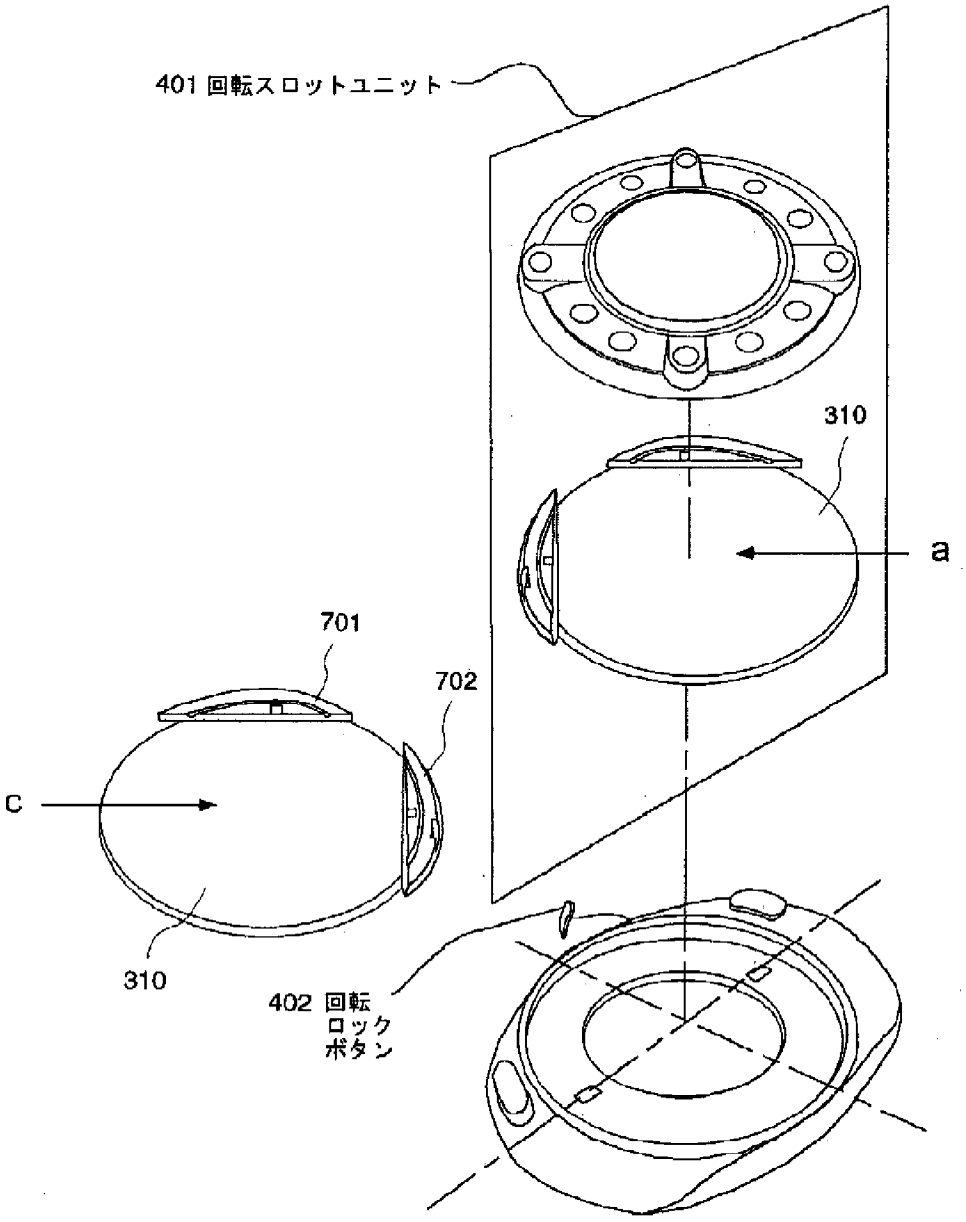
[Drawing 32]

図３２



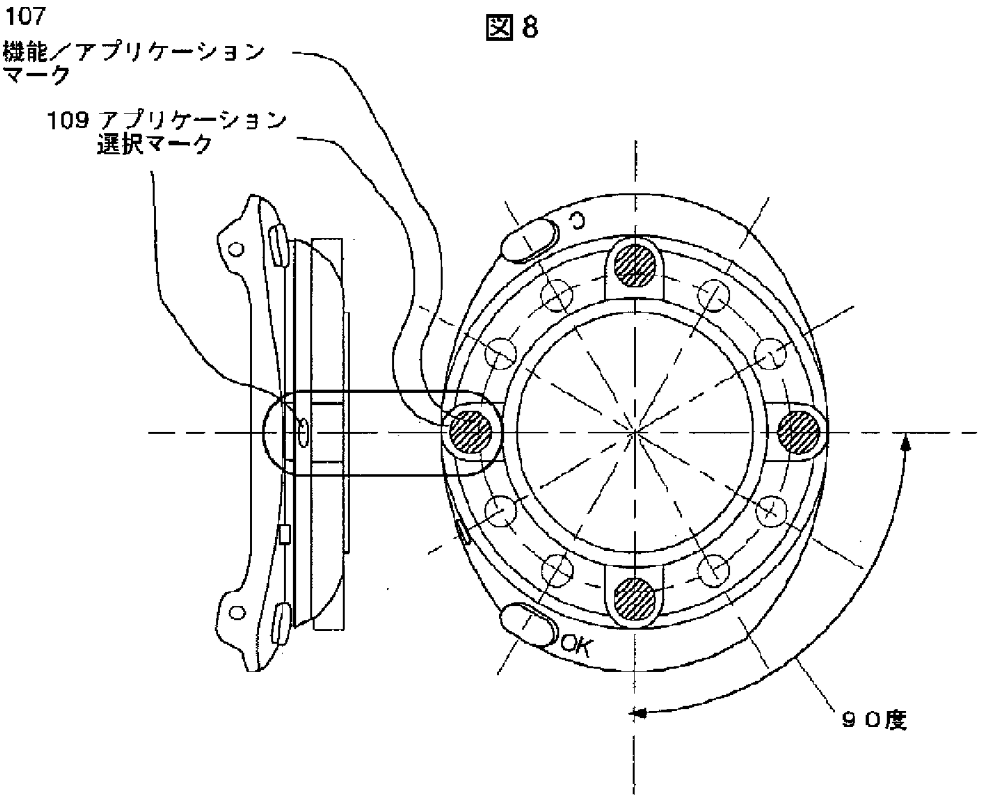
[Drawing 7]

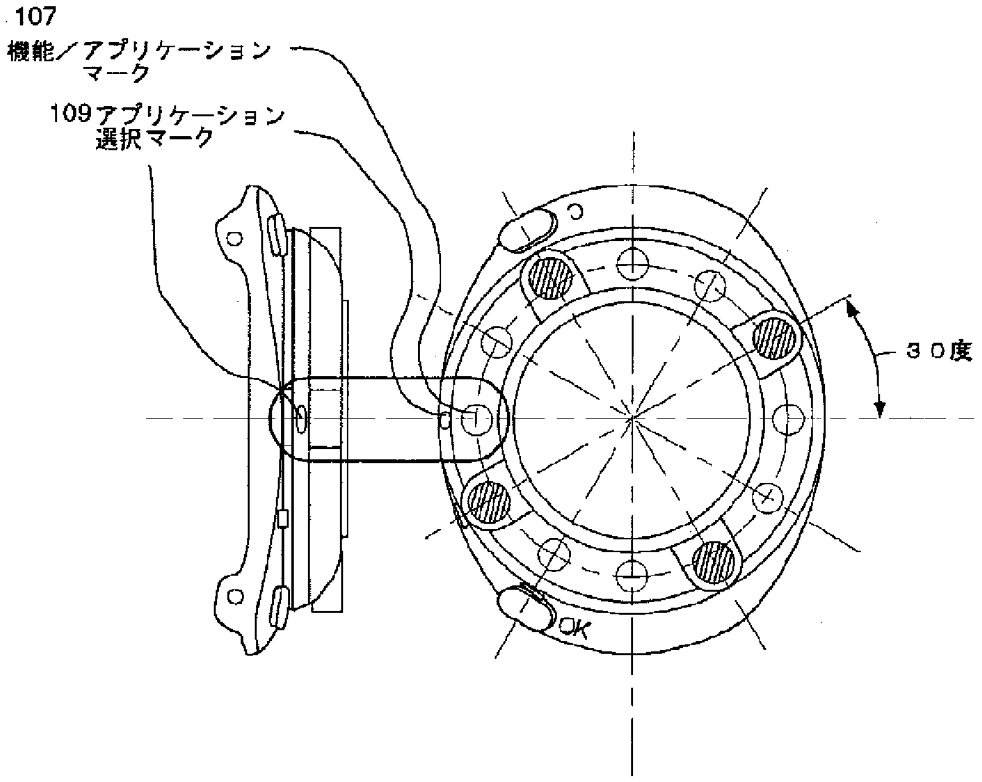
図7



[Drawing 8]

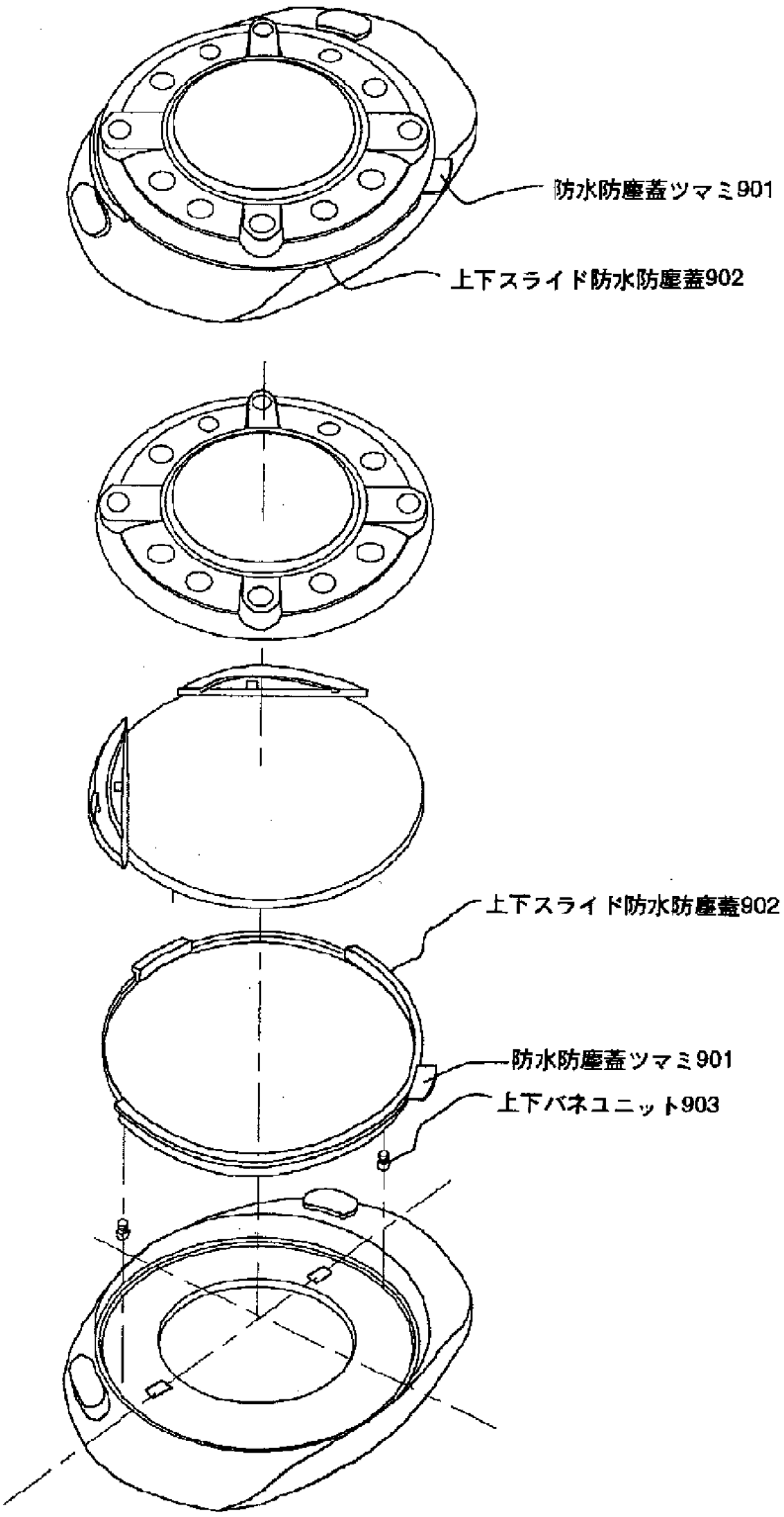
図８


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

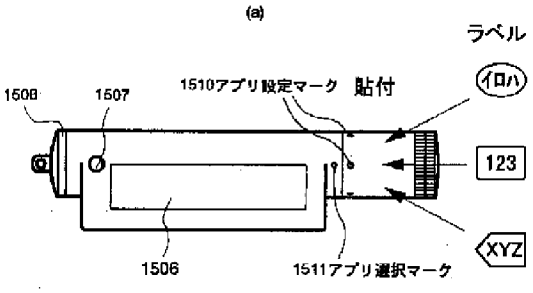
[Drawing 9]

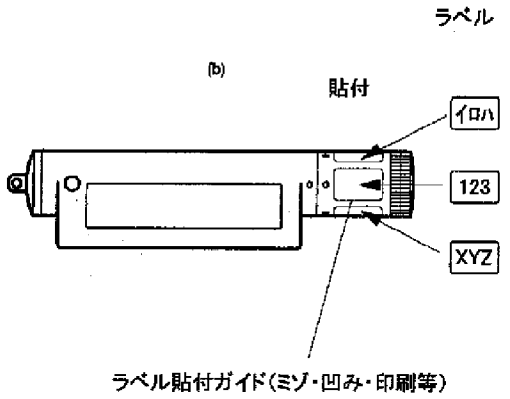
図 9



[Drawing 18]

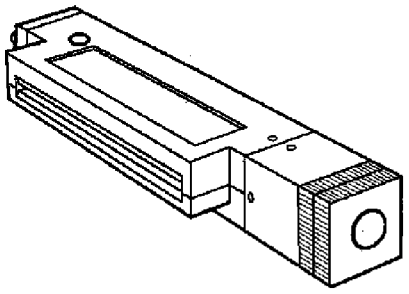
図１８





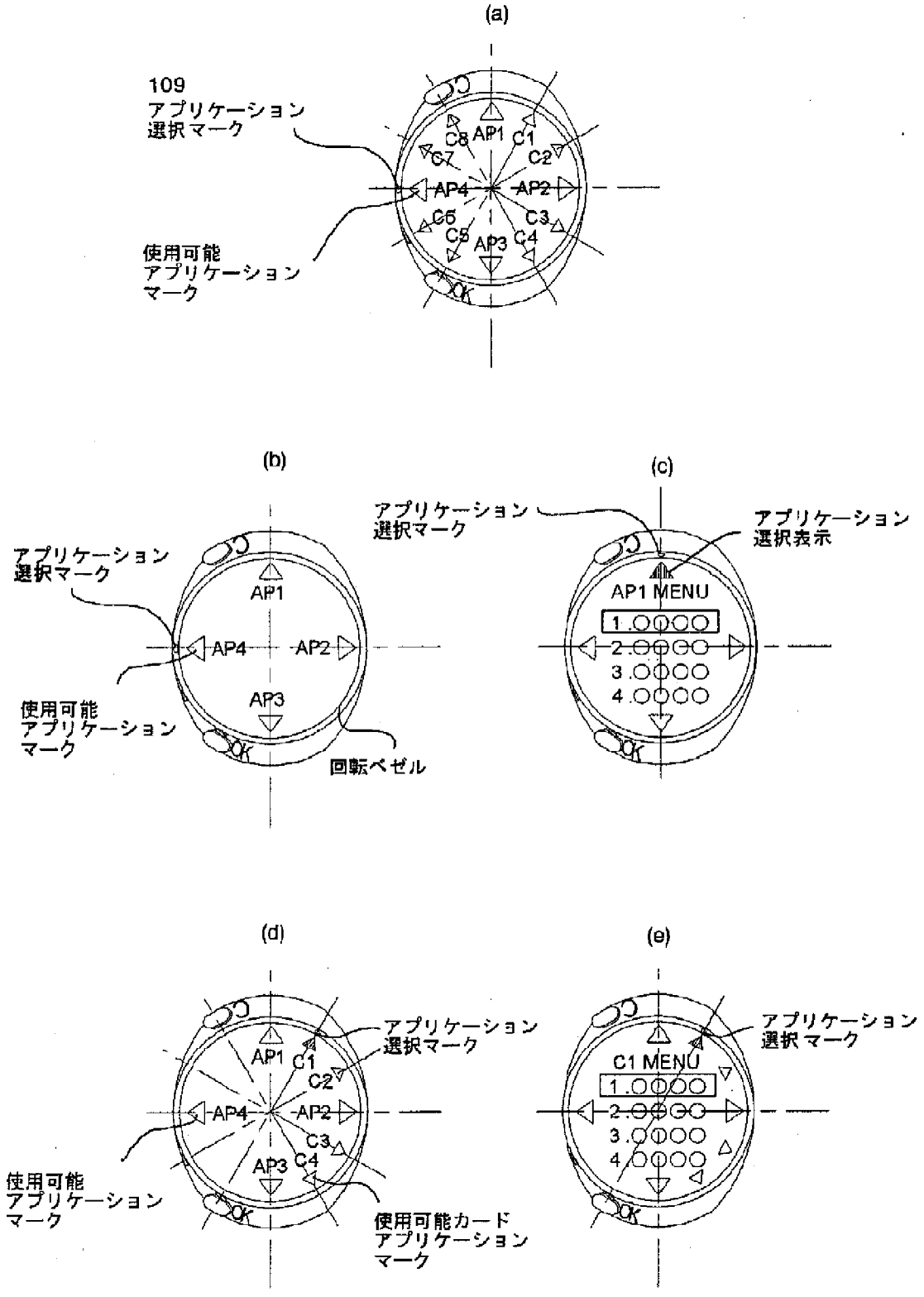
[Drawing 21]

図２１



[Drawing 11]

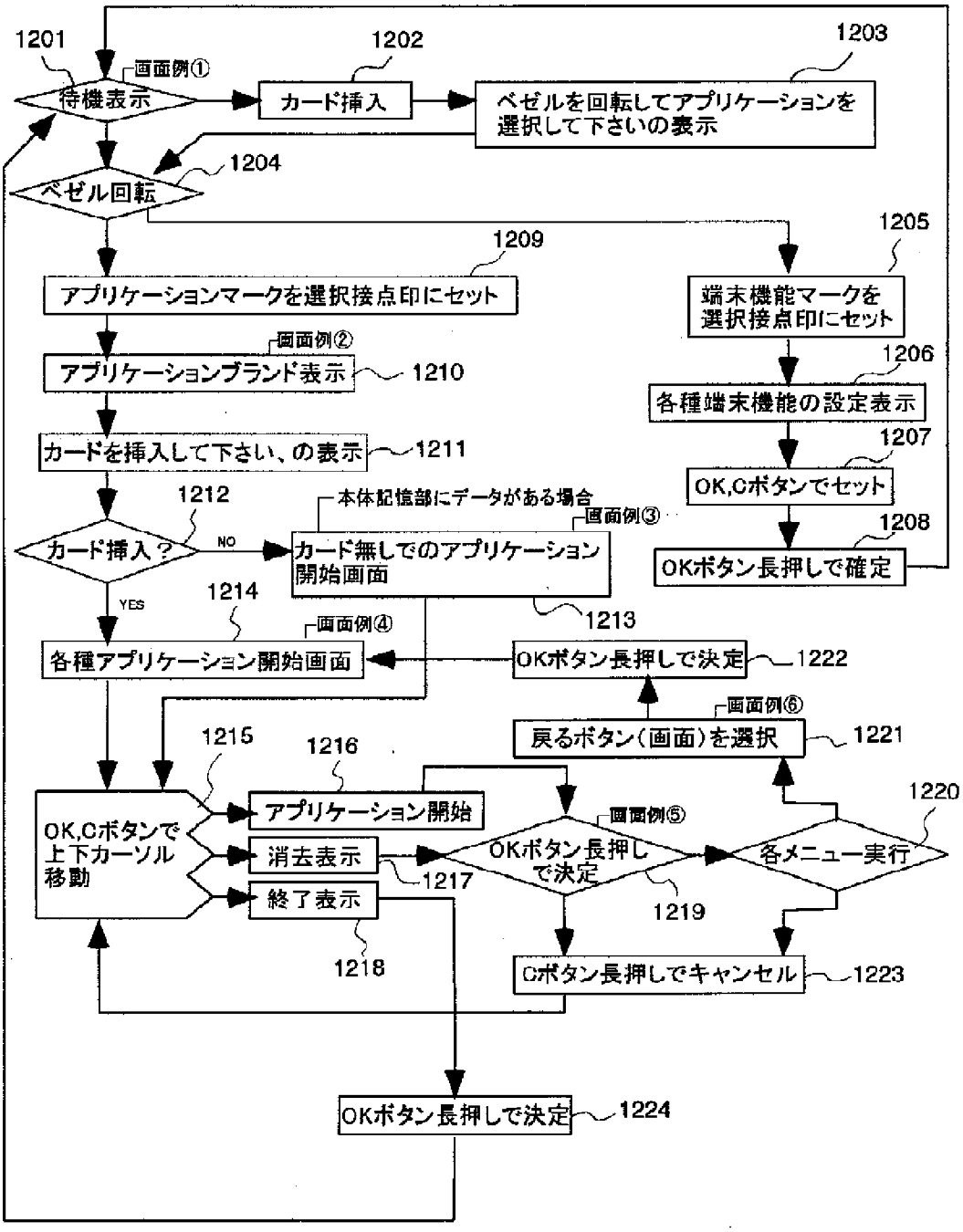
図１１



[Drawing 12]

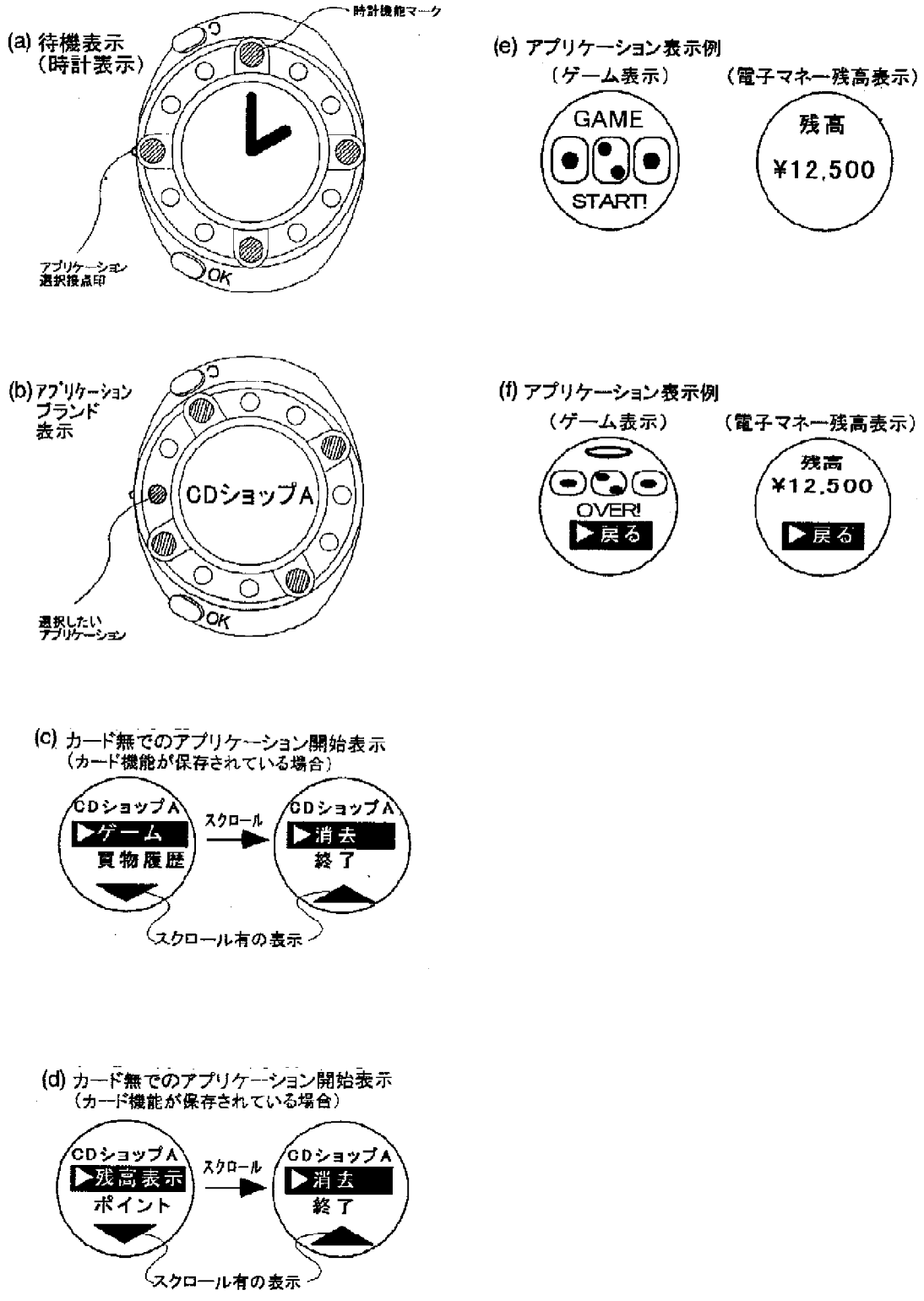
図１２

ベゼル部にアプリケーションマークを表示



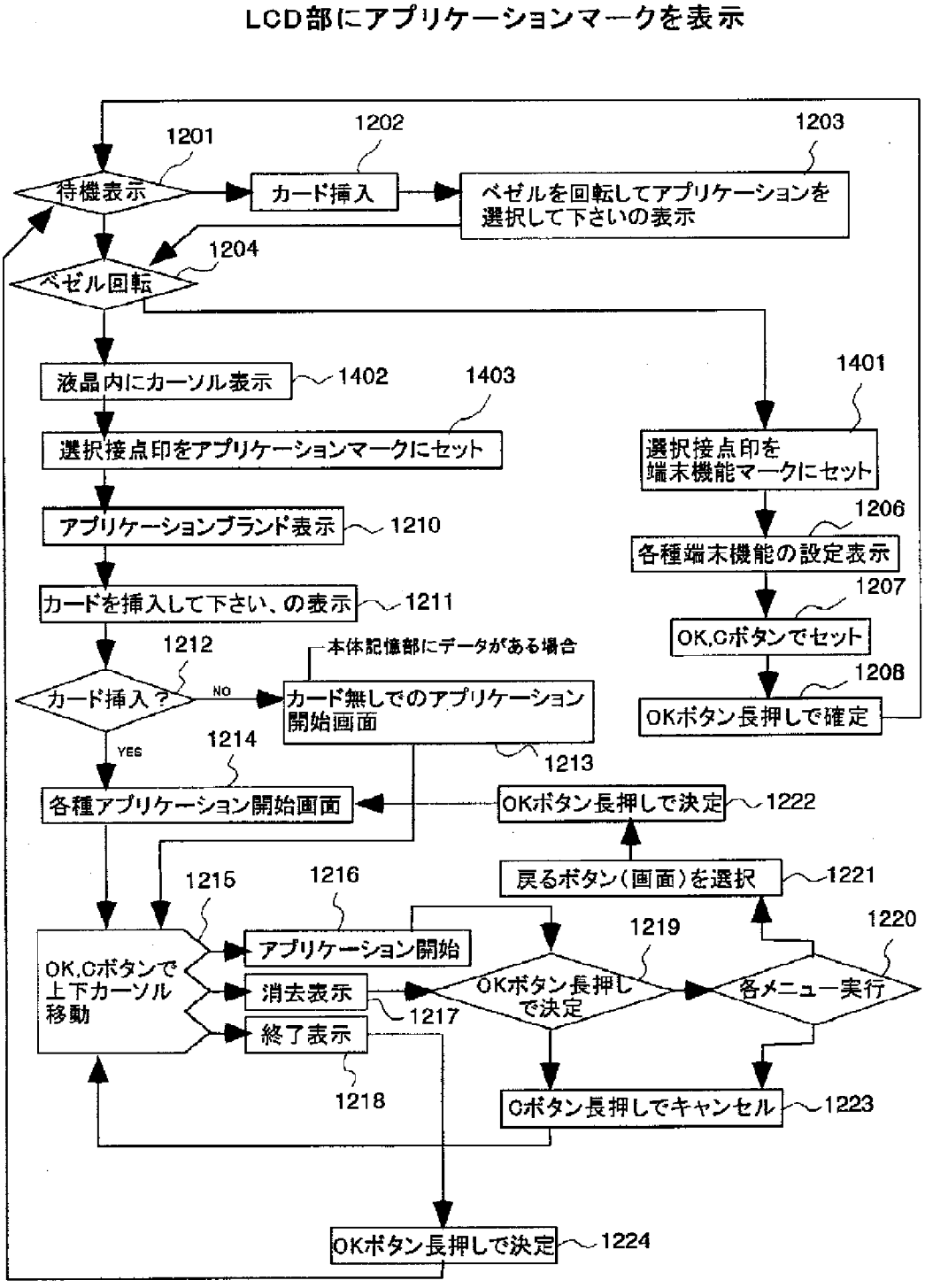
[Drawing 13]

図１３



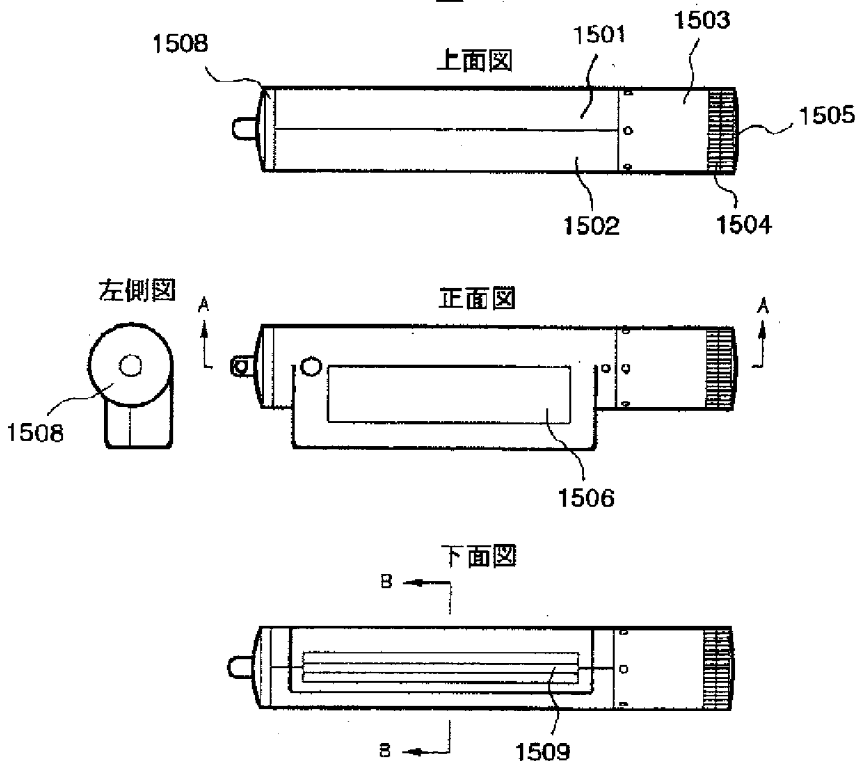
[Drawing 14]

図１４



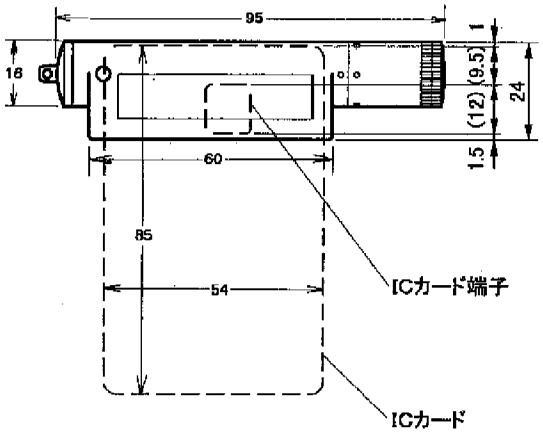
[Drawing 16]

図１６



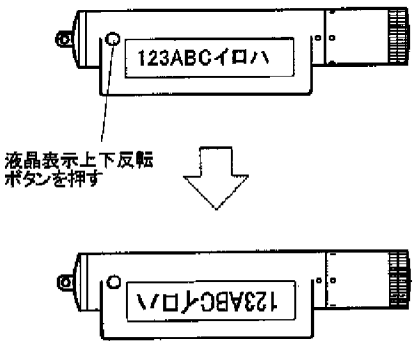
[Drawing 19]

図１９



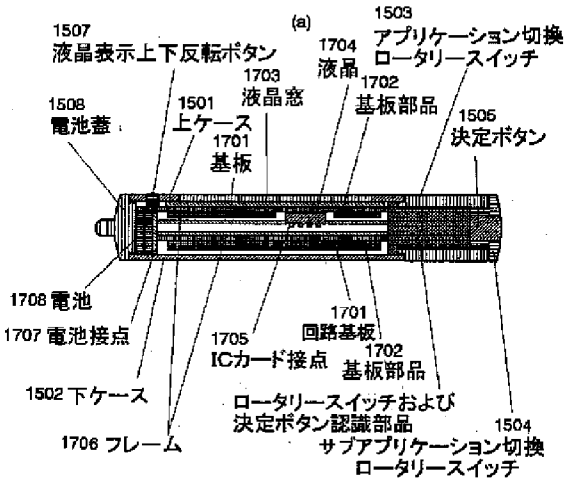
[Drawing 22]

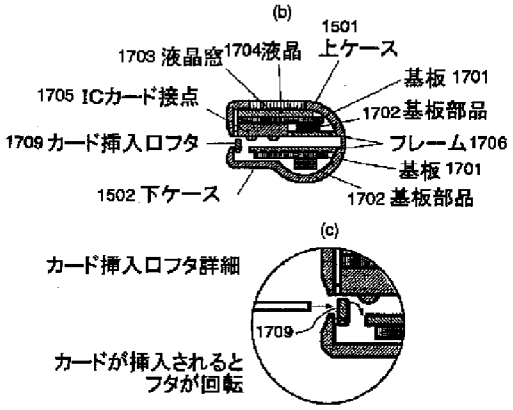
図２２



[Drawing 17]

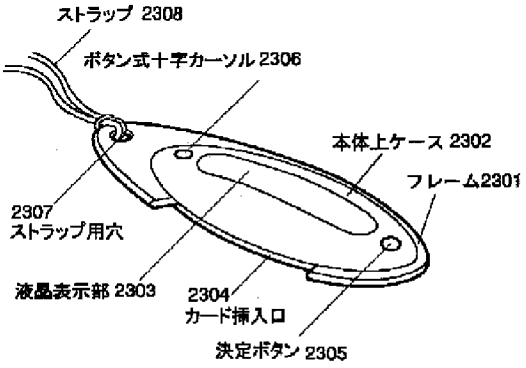
図１７





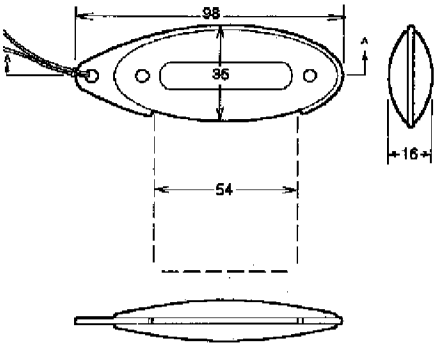
[Drawing 23]

図２３



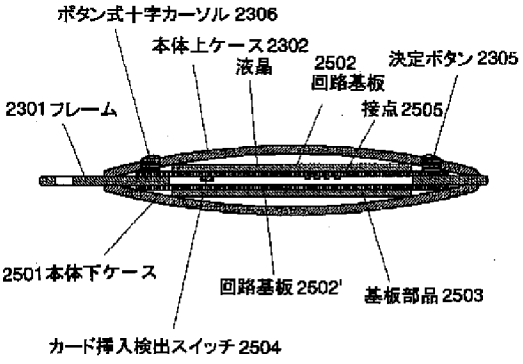
[Drawing 24]

図２４



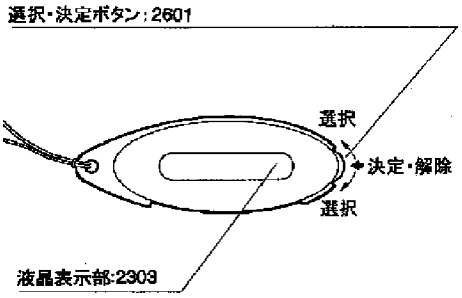
[Drawing 25]

図２５



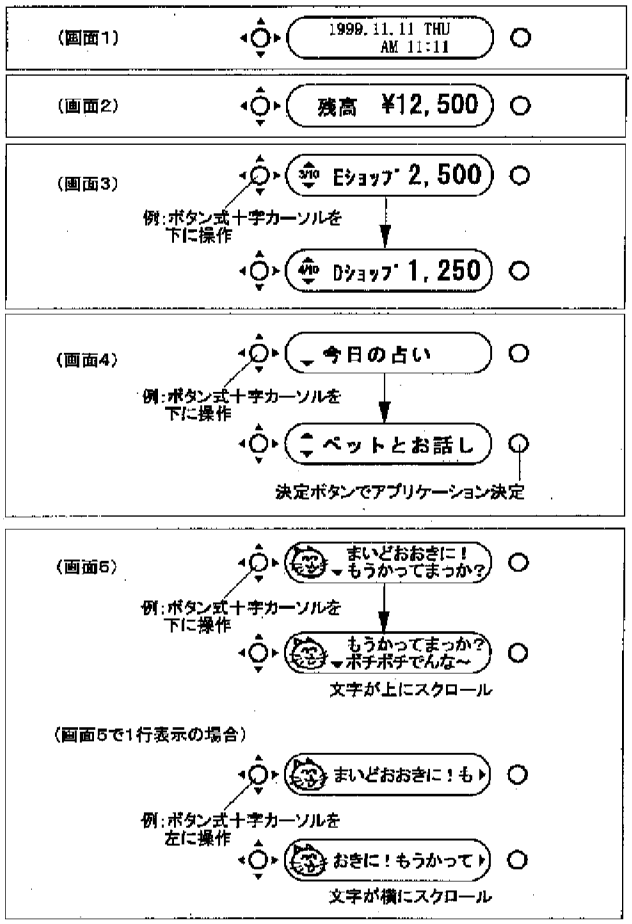
[Drawing 26]

図２６



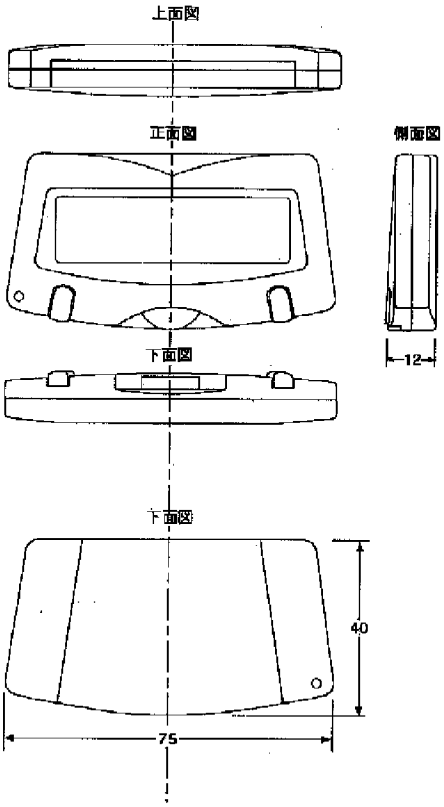
[Drawing 27]

図２７



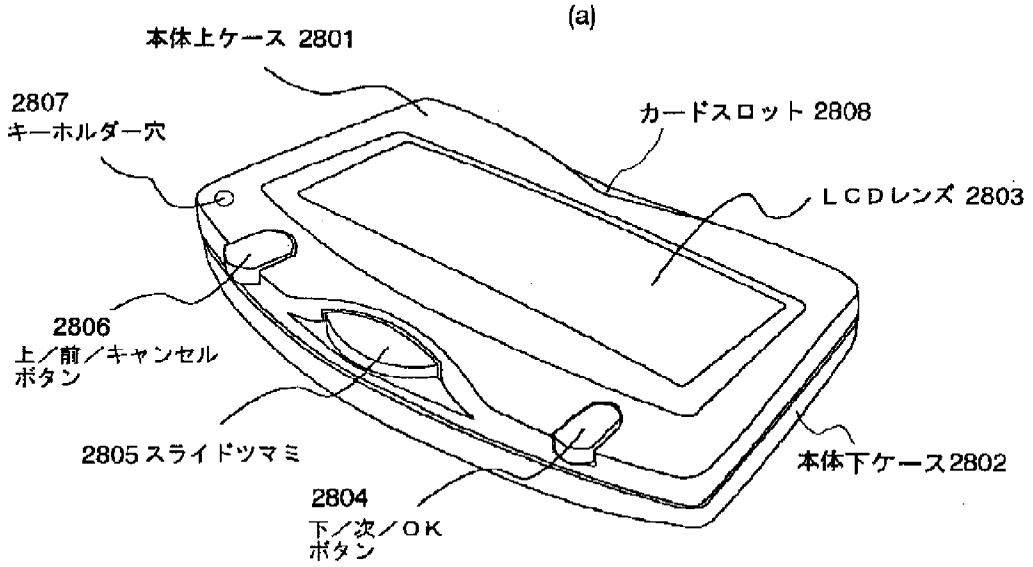
[Drawing 29]

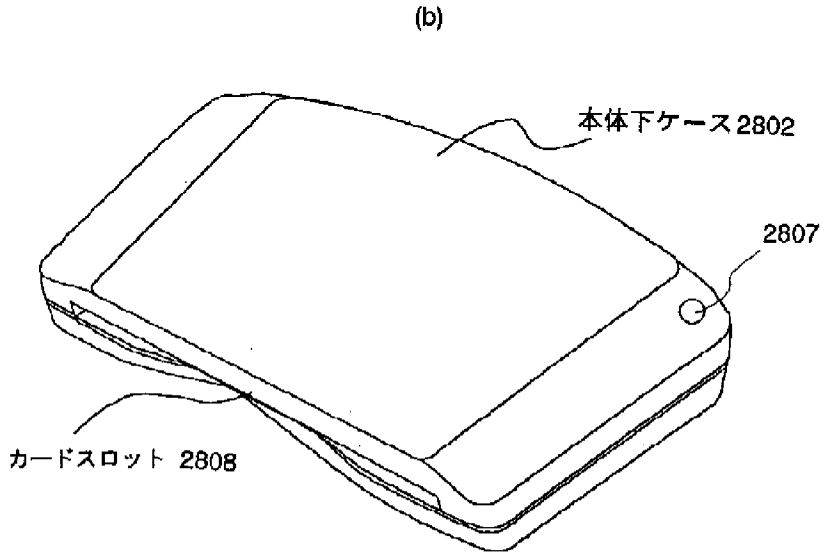
図２９



[Drawing 28]

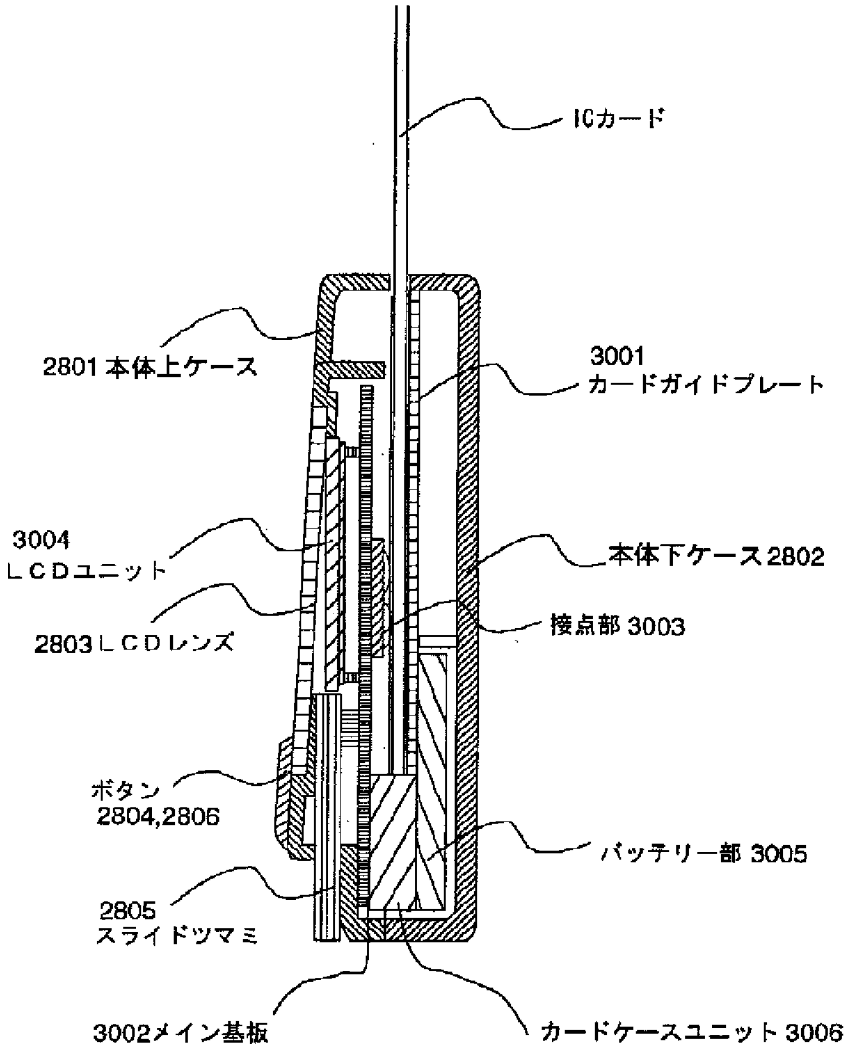
図２８





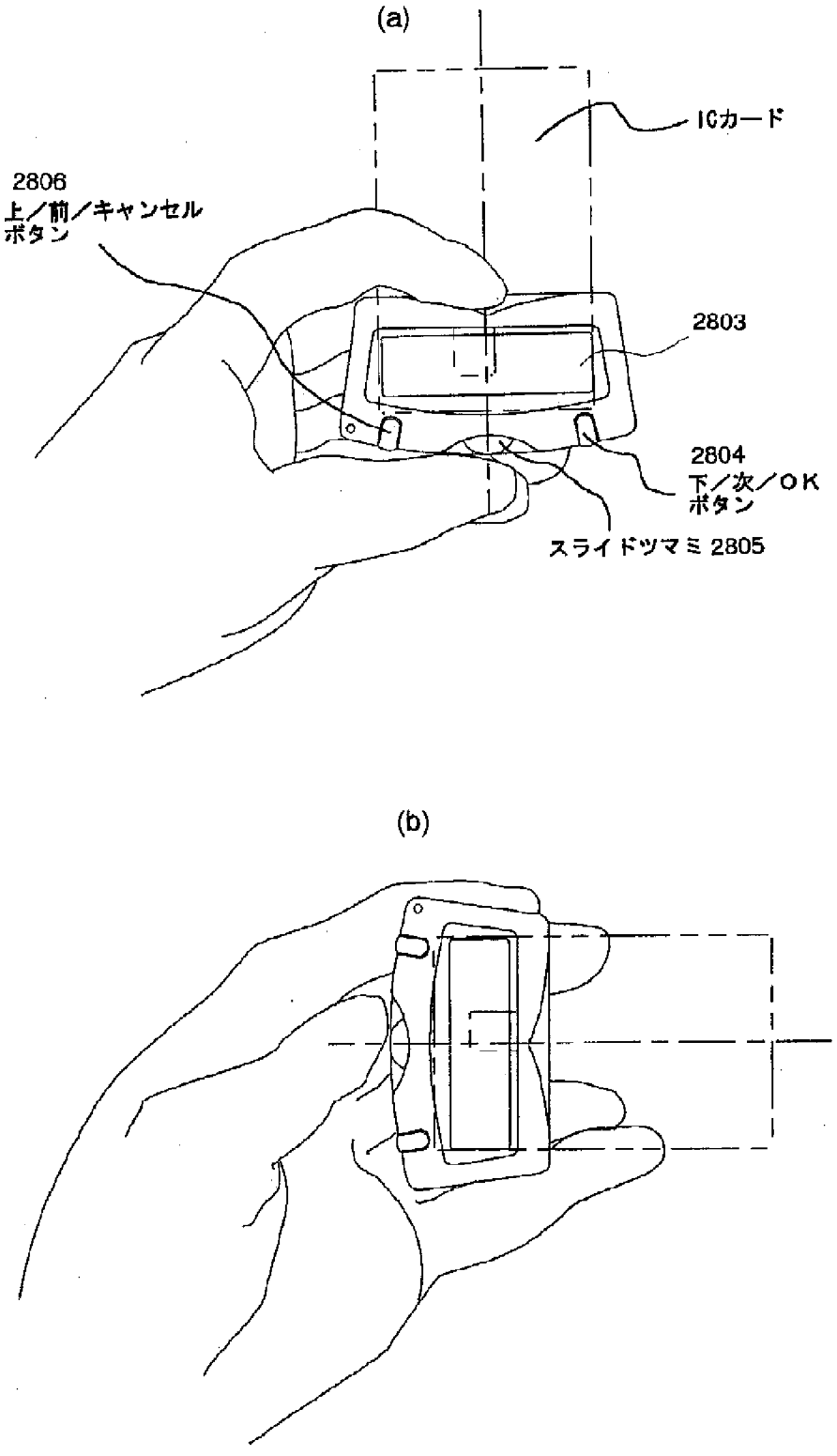
[Drawing 30]

図３０



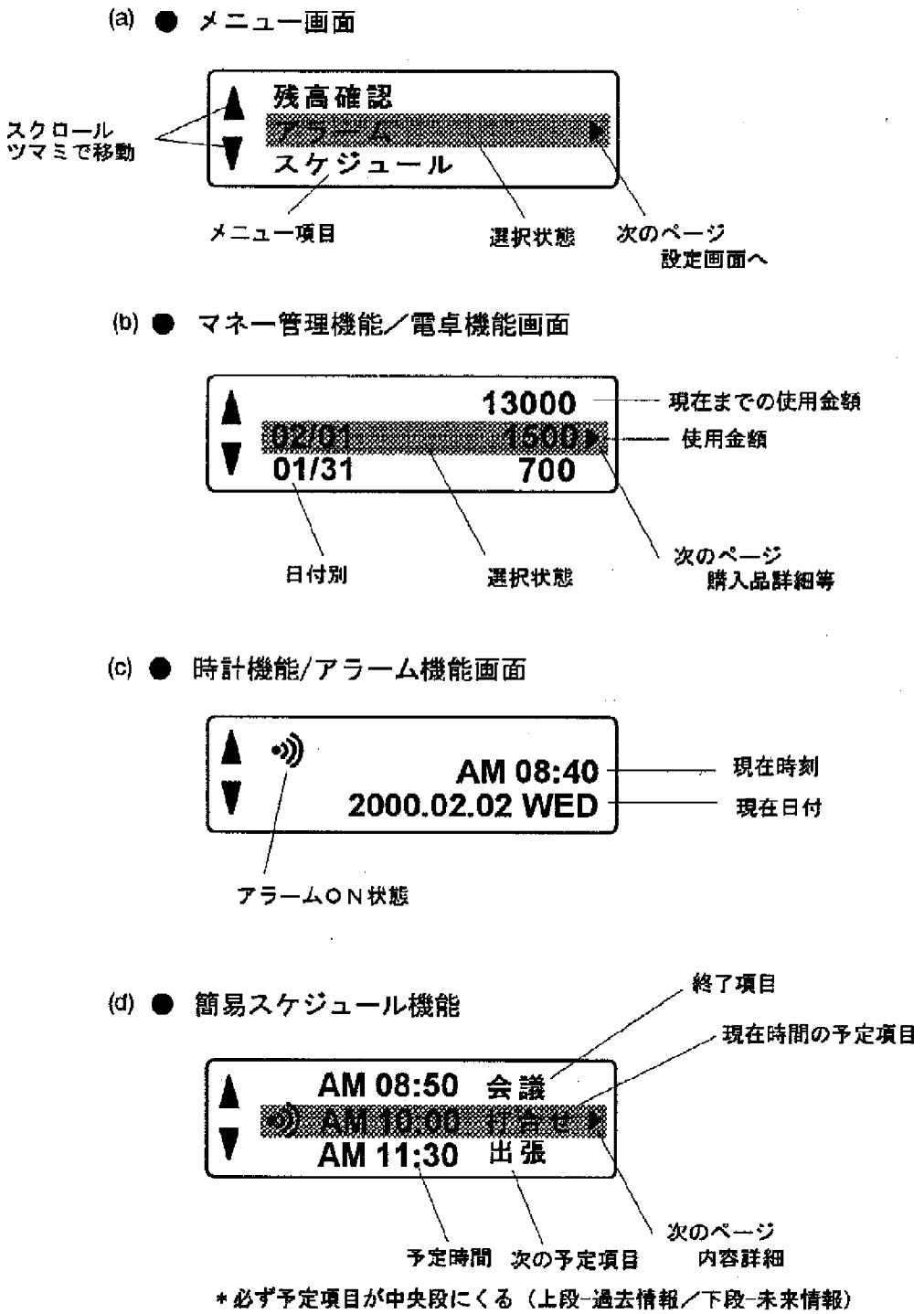
[Drawing 31]

図３１



[Drawing 33]

図３３



[Translation done.]

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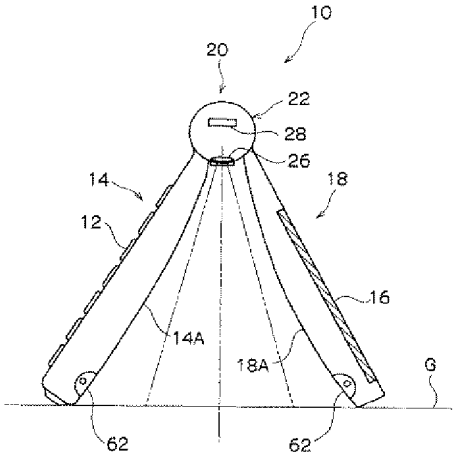
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(54)【発明の名称】カメラ付携帯機器

(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



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【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。

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【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。

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【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。

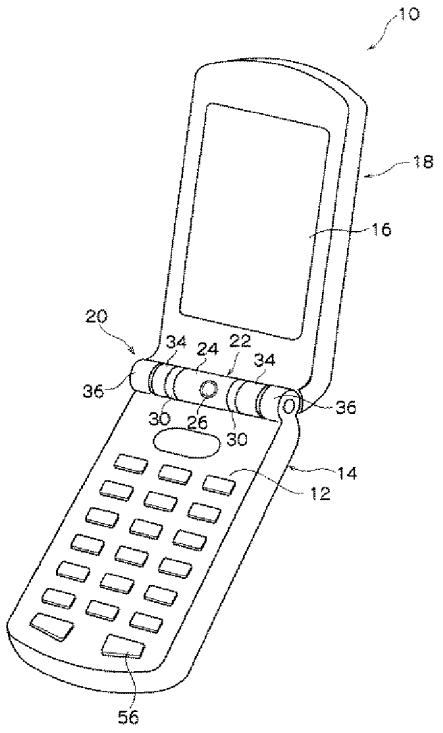
【符号の説明】

【0074】

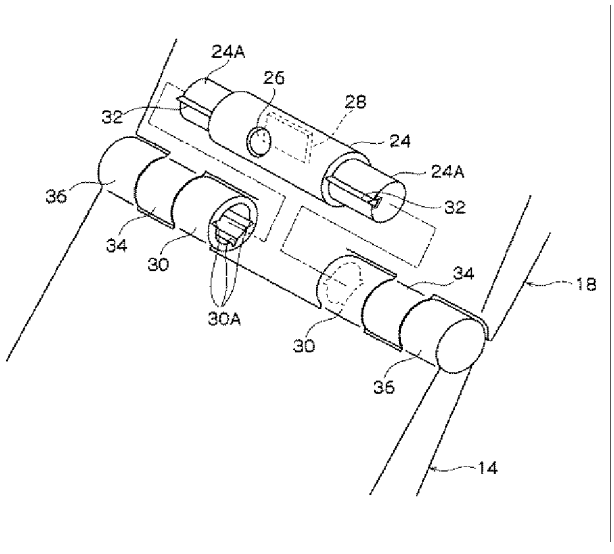
１０　カメラ付携帯電話（カメラ付携帯機器）
１２　操作部
１４　第１筐体
１６　モニタ
１８　第２筐体
２０　ヒンジ部

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）

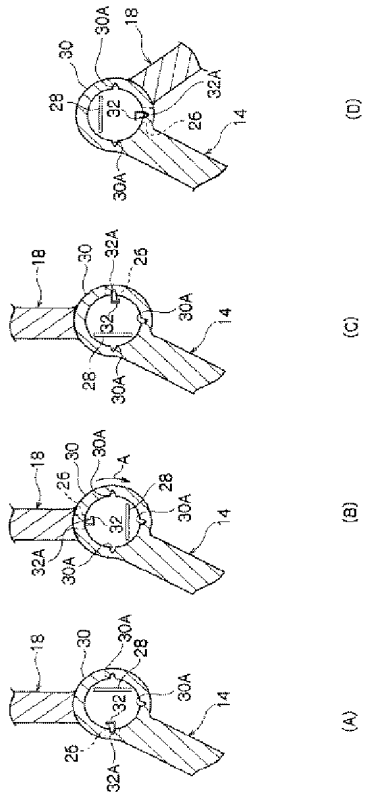
【図1】



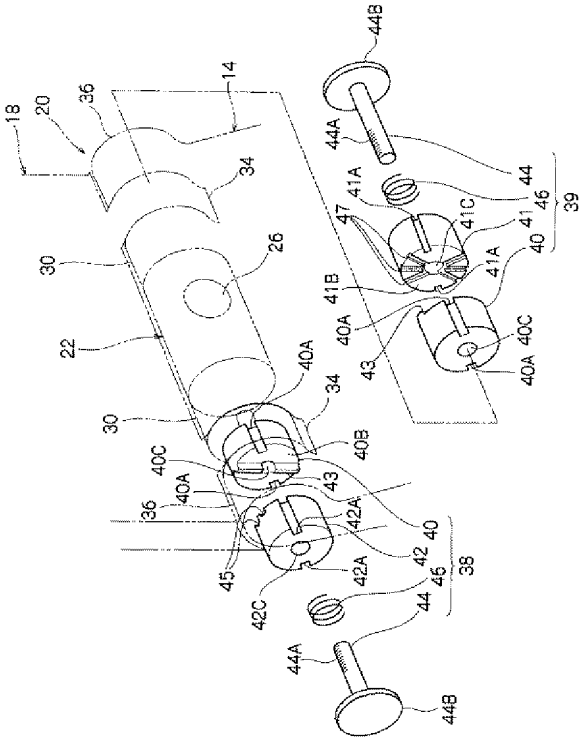
【図2】



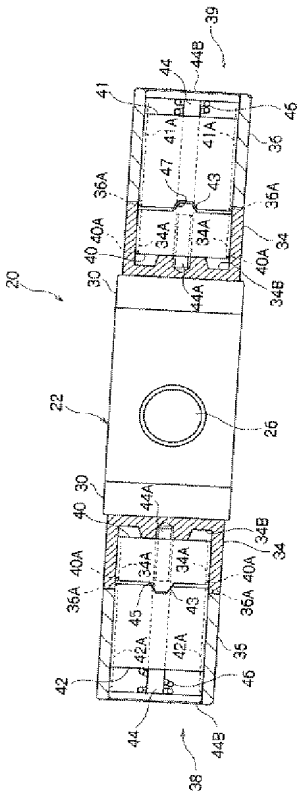
【図3】



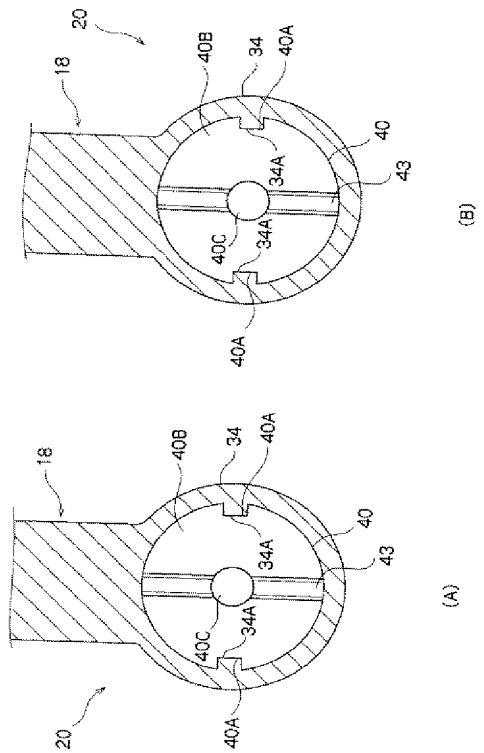
【図4】



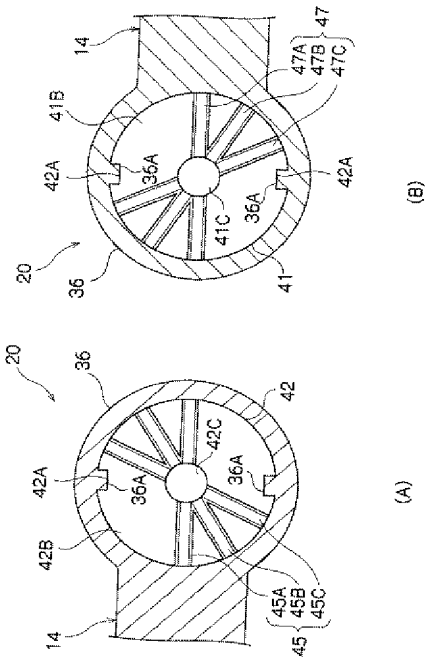
【図5】



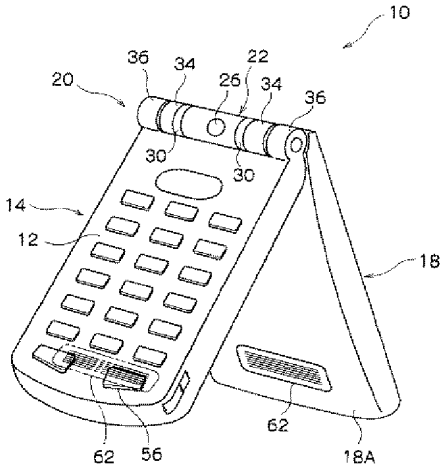
【図6】



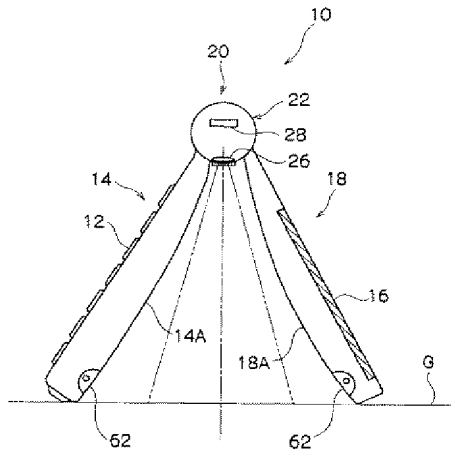
【図7】


14
47
47A
47B
47C
41B
42A
36A
41C
36A
42A
20
36
41
(B)
20
36
42
42C
42A
36A
36A
42B
45A
45B
45C
14
45
(A)

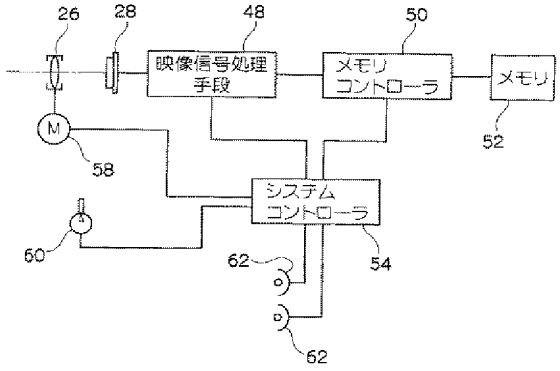
【図8】


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56
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18A

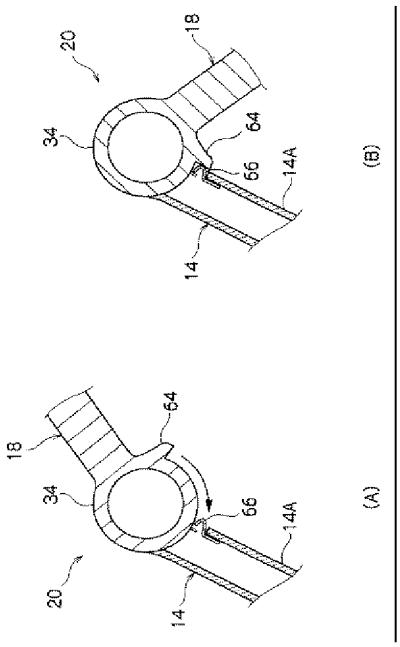
【図9】


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18A
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62

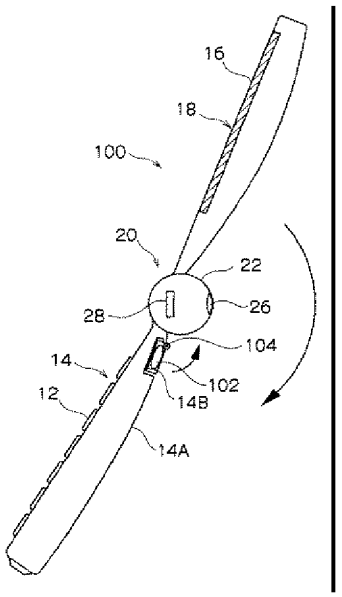
【図10】


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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

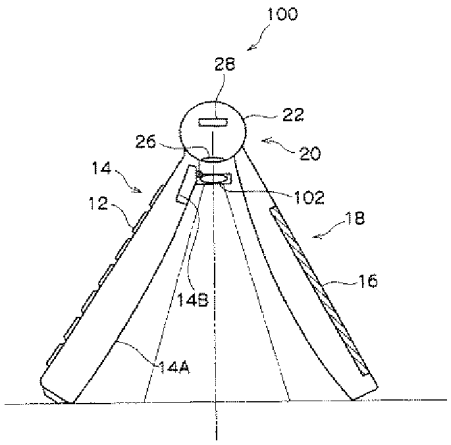
【図11】



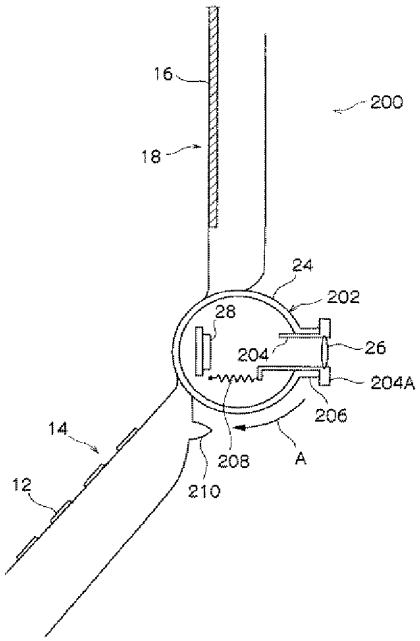
【図12】



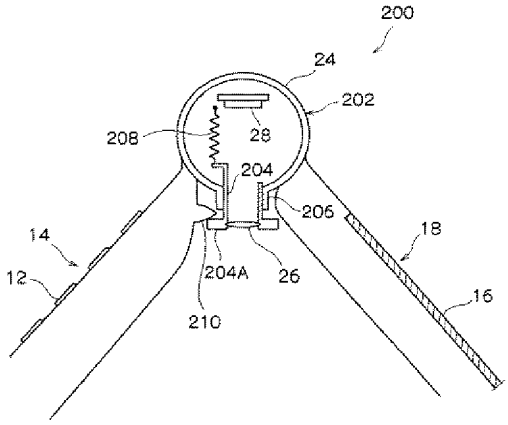
【図13】



【図14】



【図15】



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Misawa (43) **Pub. Date: Jun. 23, 2005**

(54) **PORTABLE DEVICE WITH CAMERA**

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(30) **Foreign Application Priority Data**

Nov. 26, 2003 (JP) 2003-395738

Publication Classification

(51) **Int. Cl.**[7] **H04N 5/222**

(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.

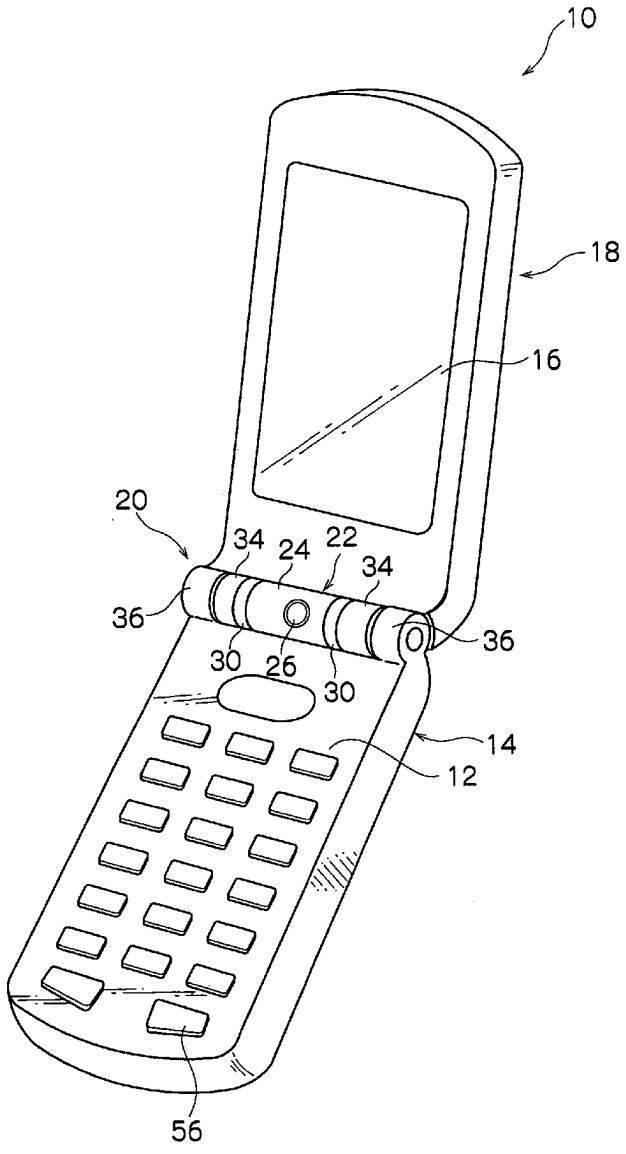


FIG.1

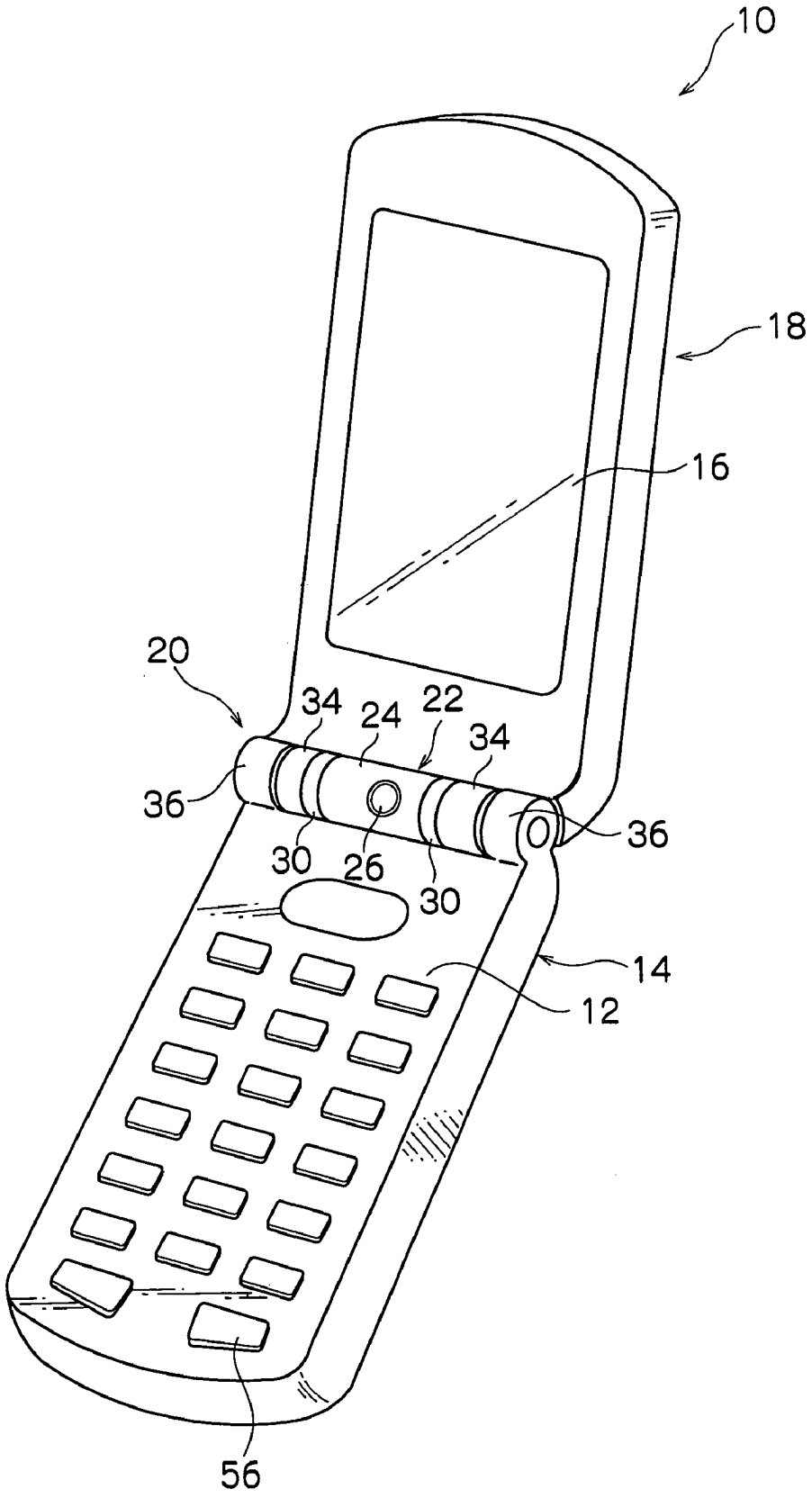


FIG.2

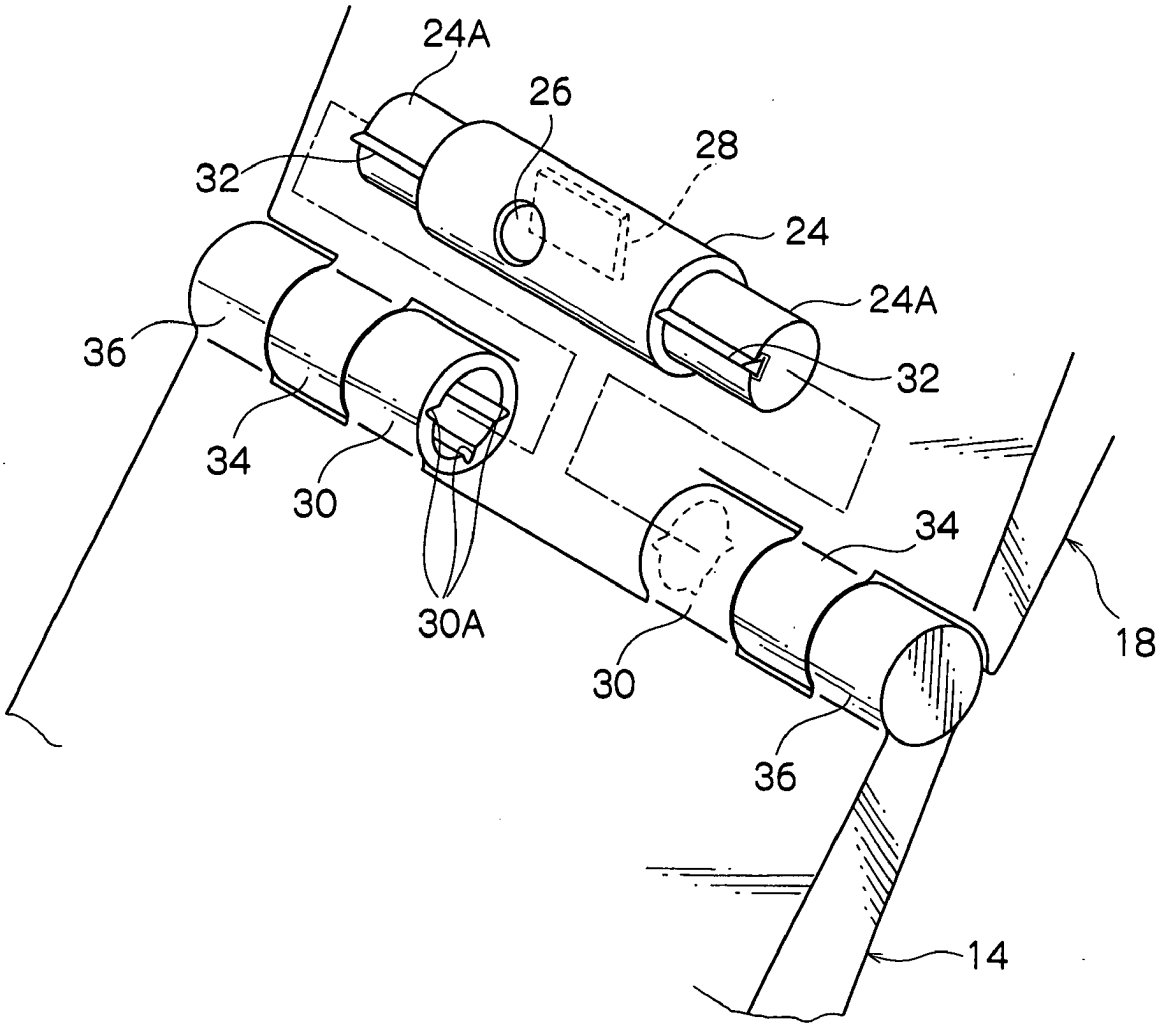


FIG.3D

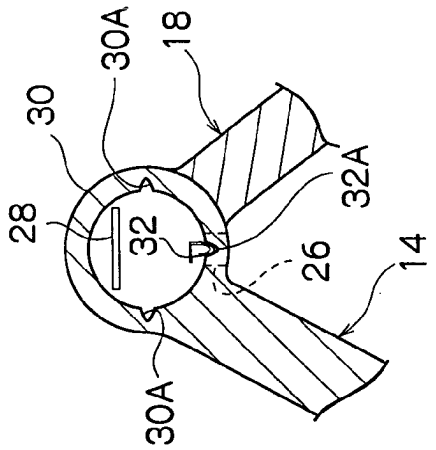


FIG.3C

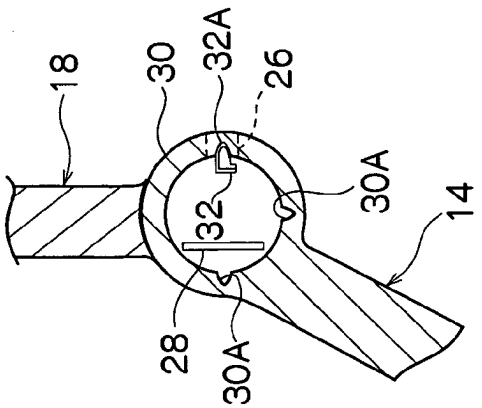


FIG.3B

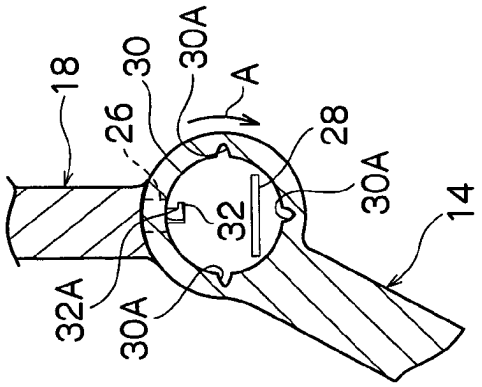
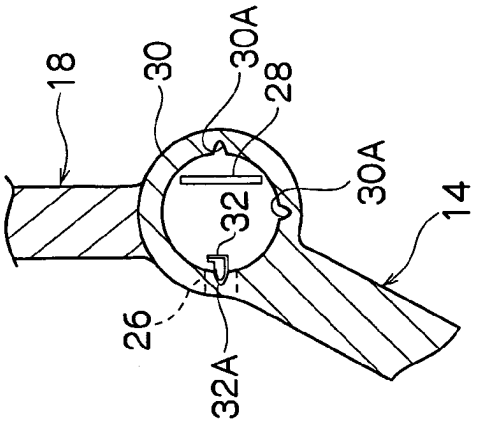


FIG.3A



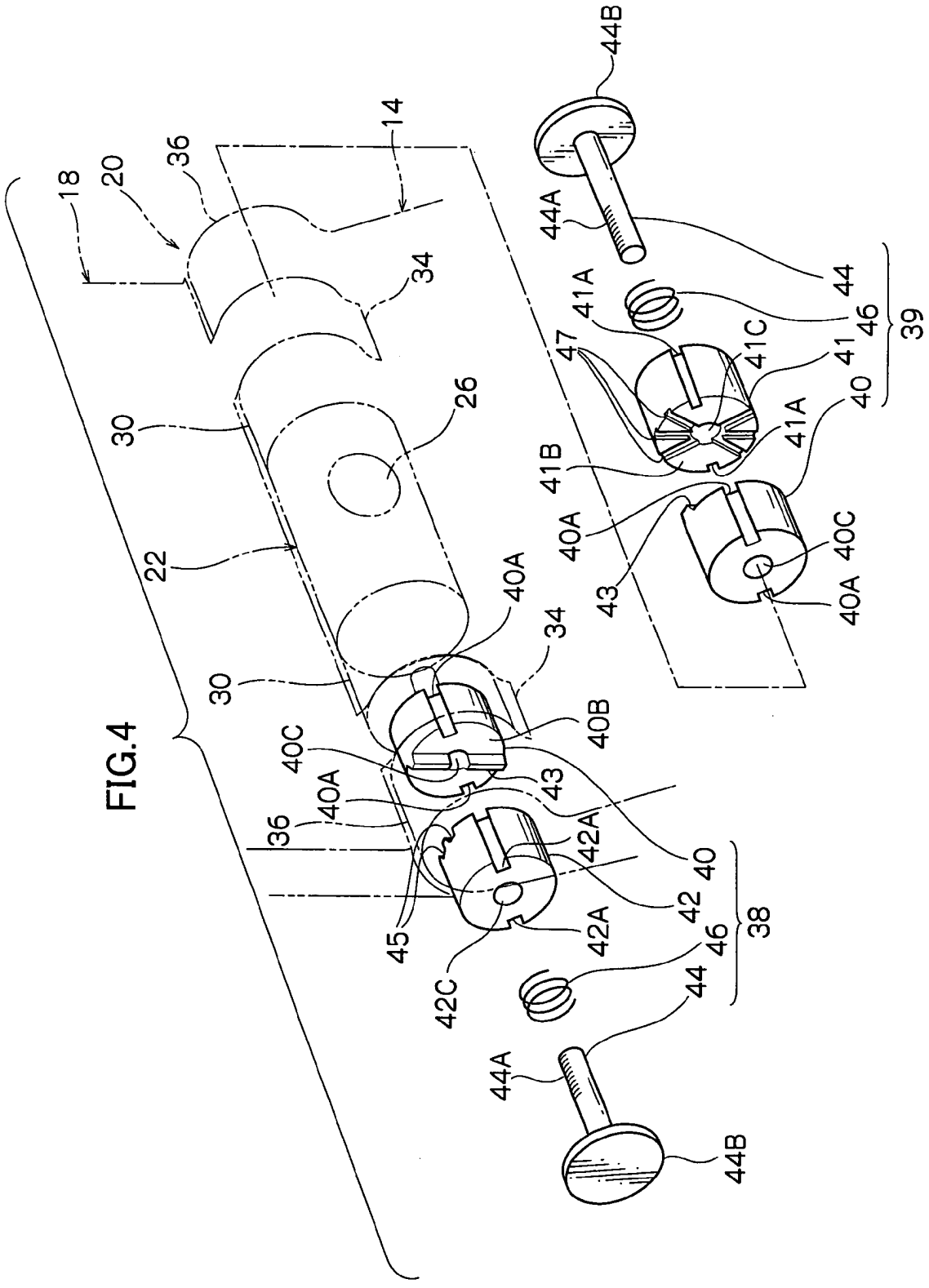

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42C
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44A
44B
44B
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41A
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41C
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41A
41B
40A
43
40C
40A

FIG.4

FIG.5

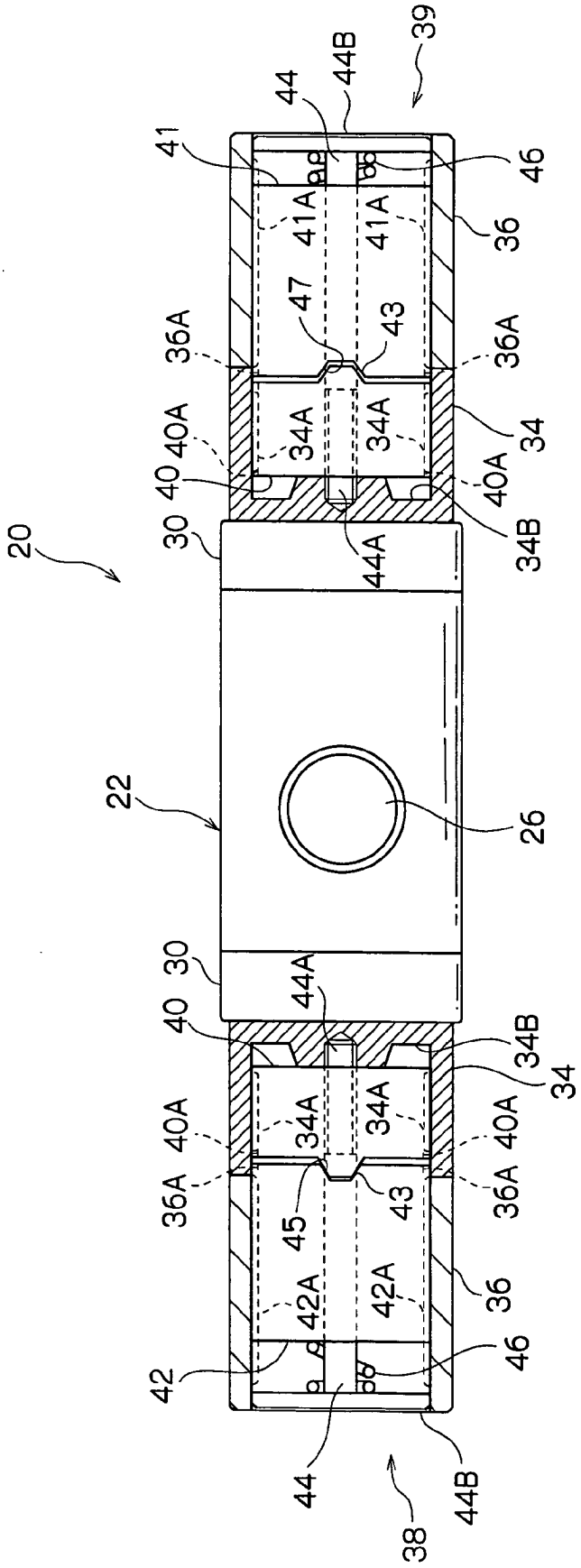

39
44B
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41A
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36A
36A
34A
34A
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40A
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40A
34B
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44A
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26
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44A
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34B
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42A
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44B
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FIG.6B

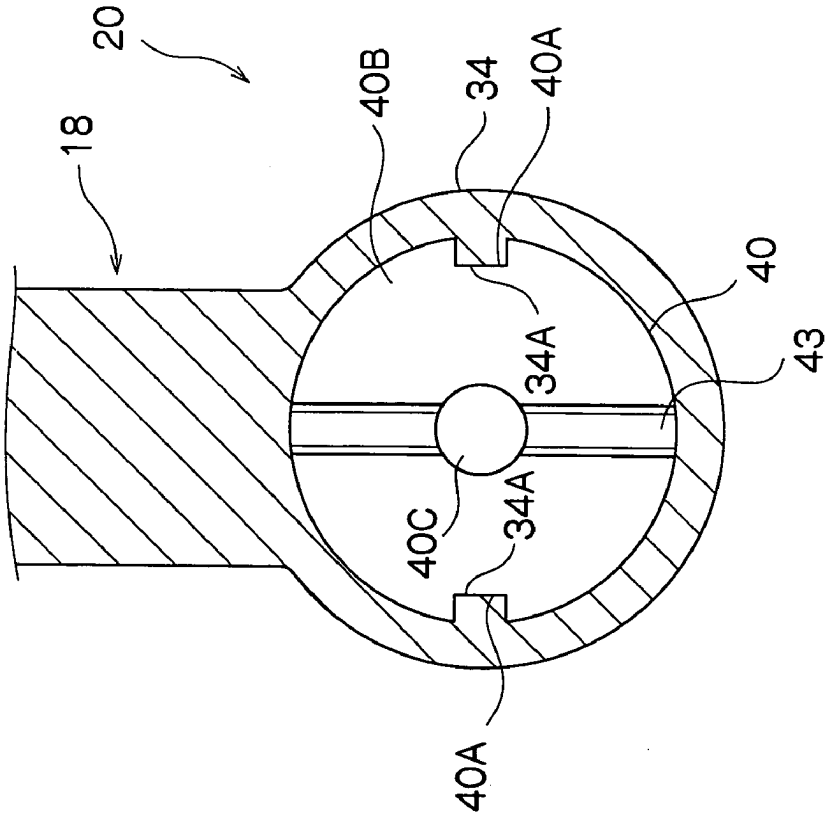

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18
40B
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40A
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43
34A
40C
34A
40A

FIG.6A

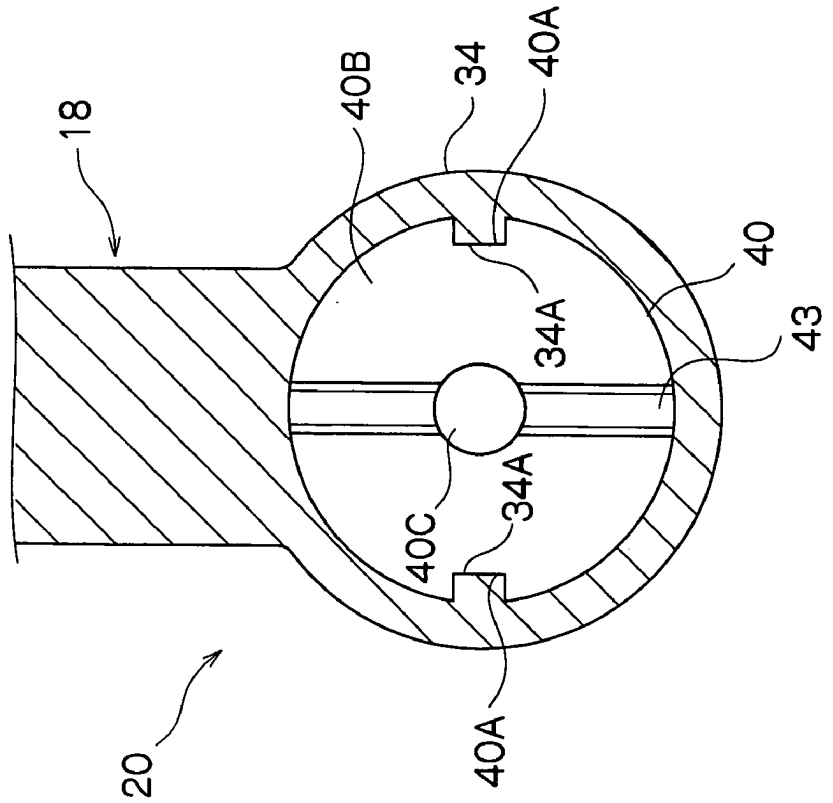

18
40B
34
40A
40
43
34A
40C
34A
40A
20

FIG.7B

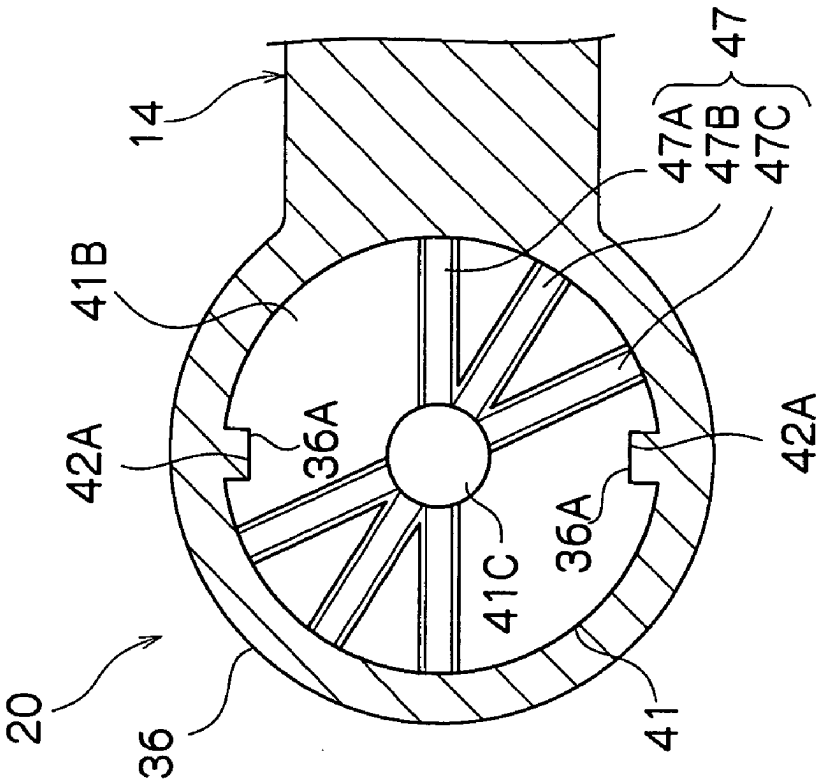

14
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47A
47B
47C
41B
42A
36A
41C
36A
42A
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36
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FIG.7A

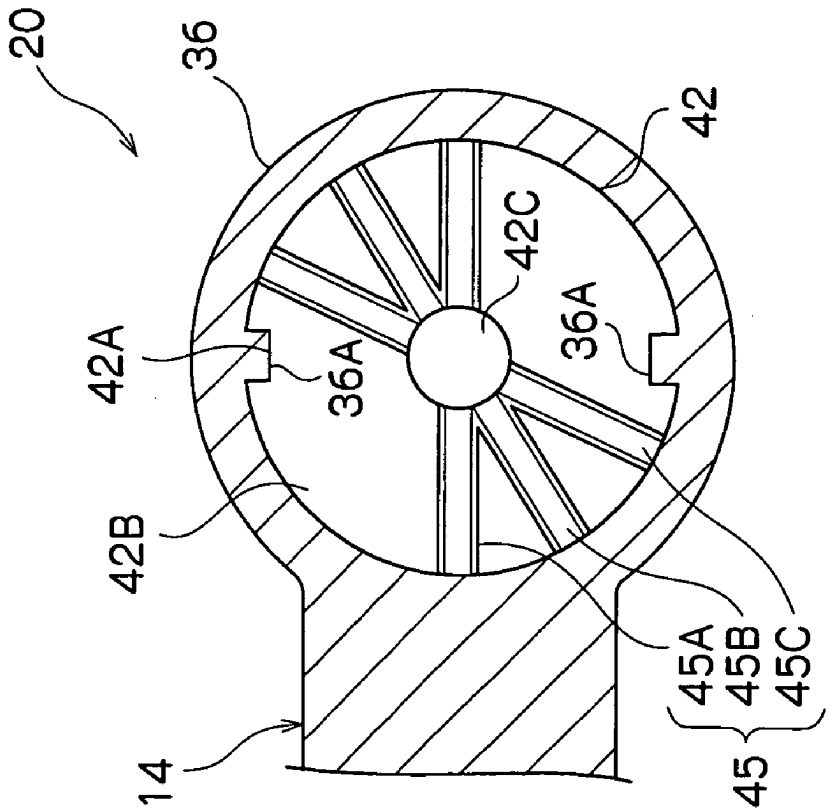

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36
42
42C
42A
36A
36A
42B
45A
45B
45C
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FIG.8

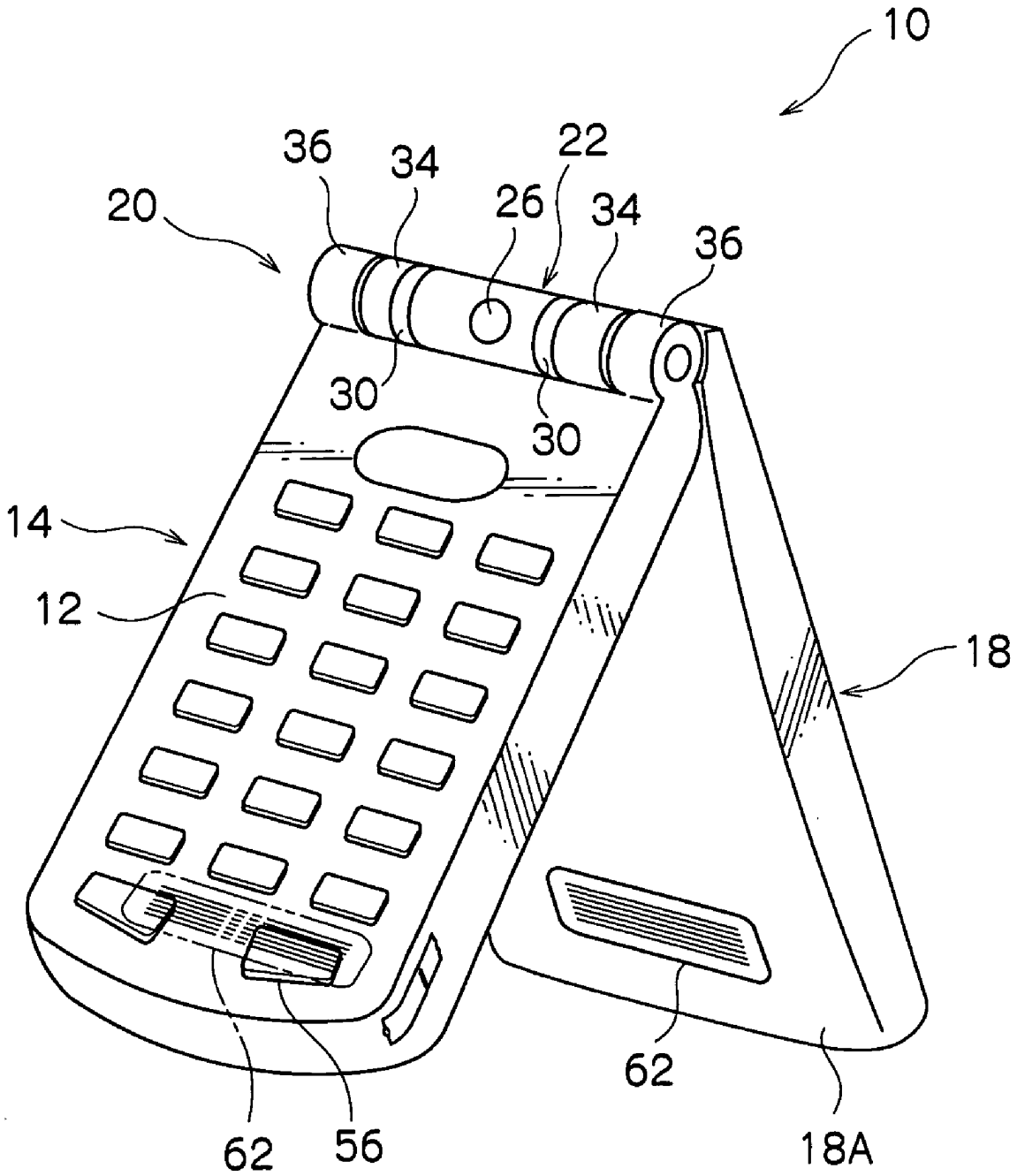


FIG.9

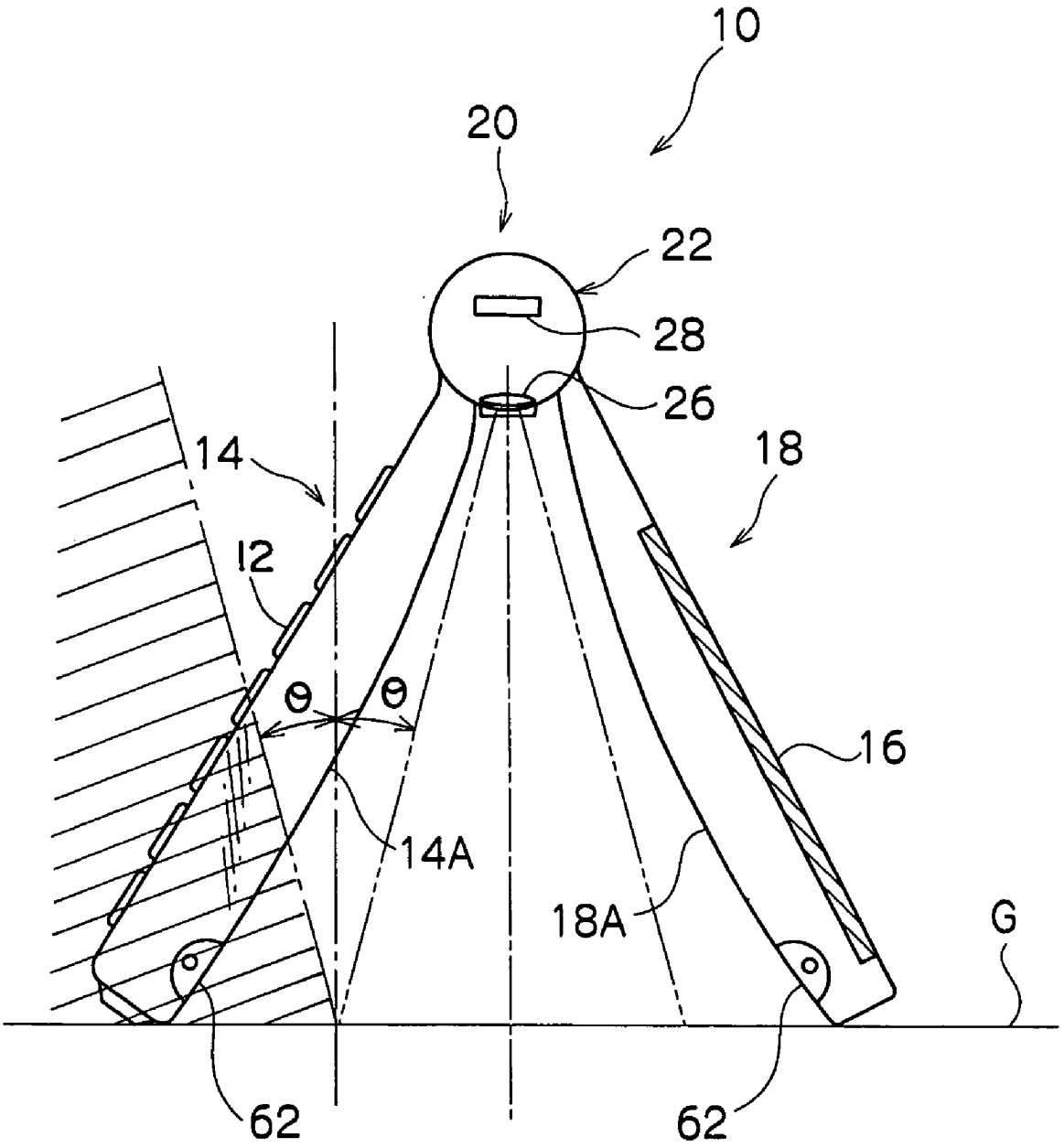


FIG.10

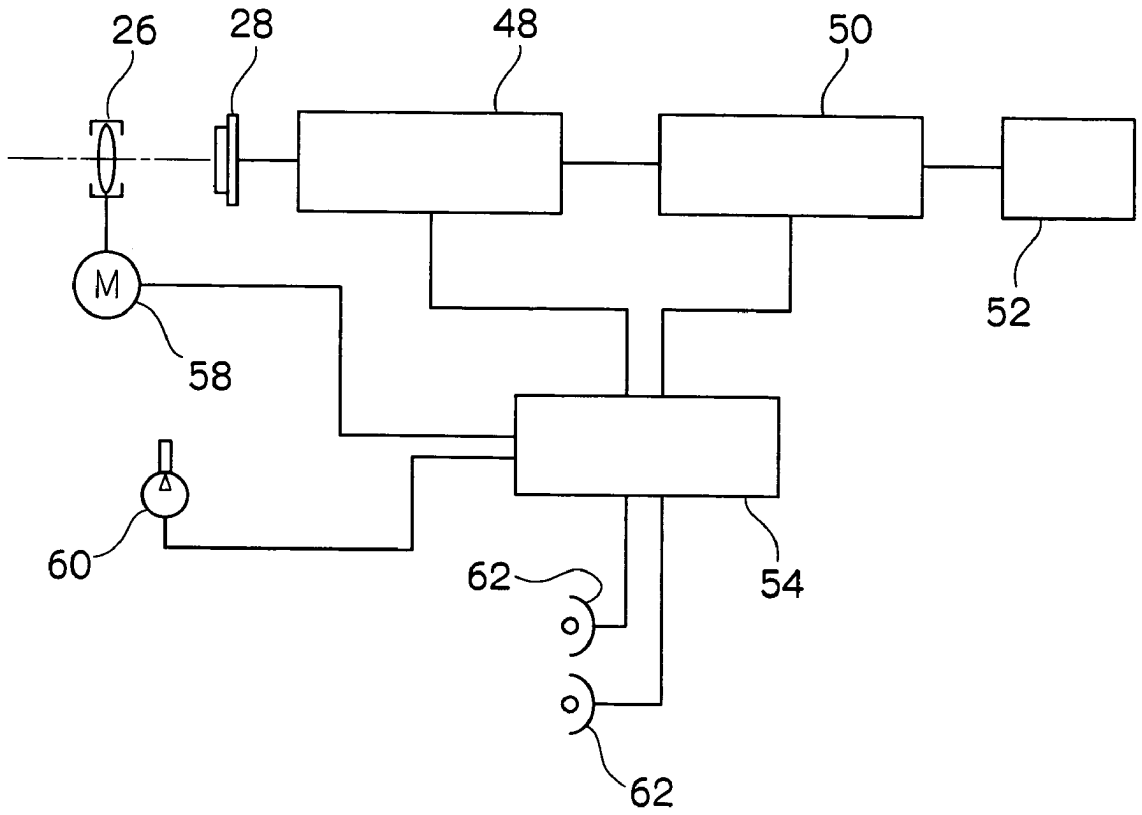


FIG.11B

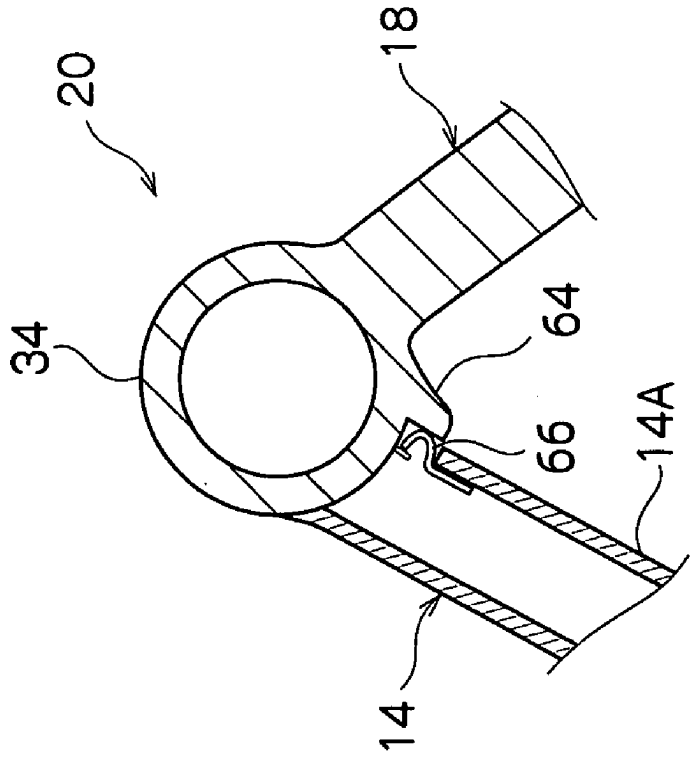


FIG.11A

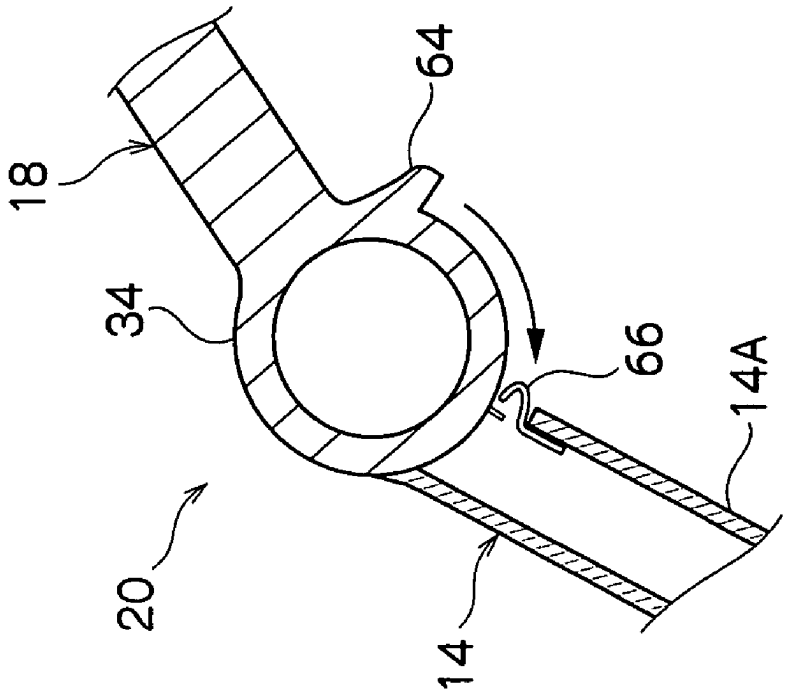


FIG.12

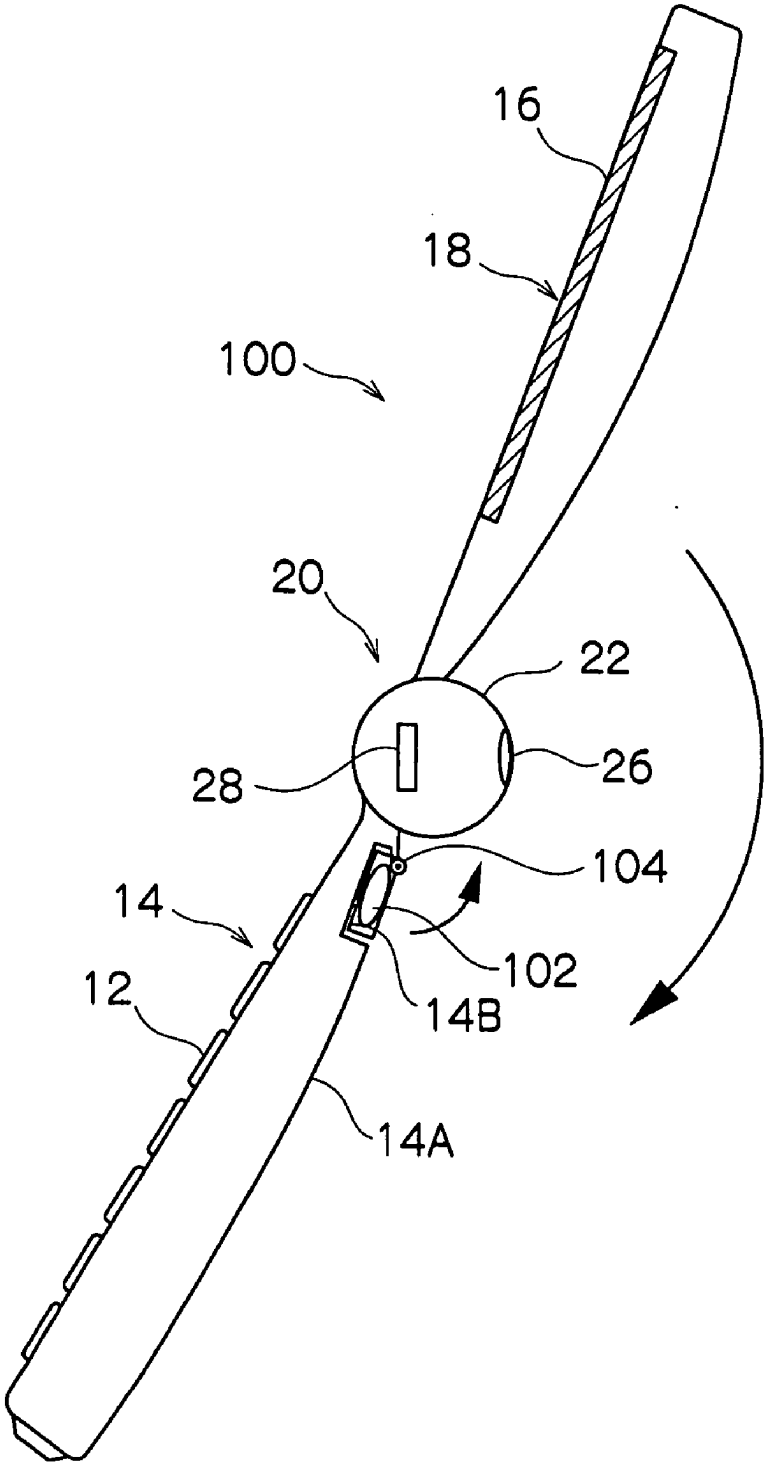


FIG.13

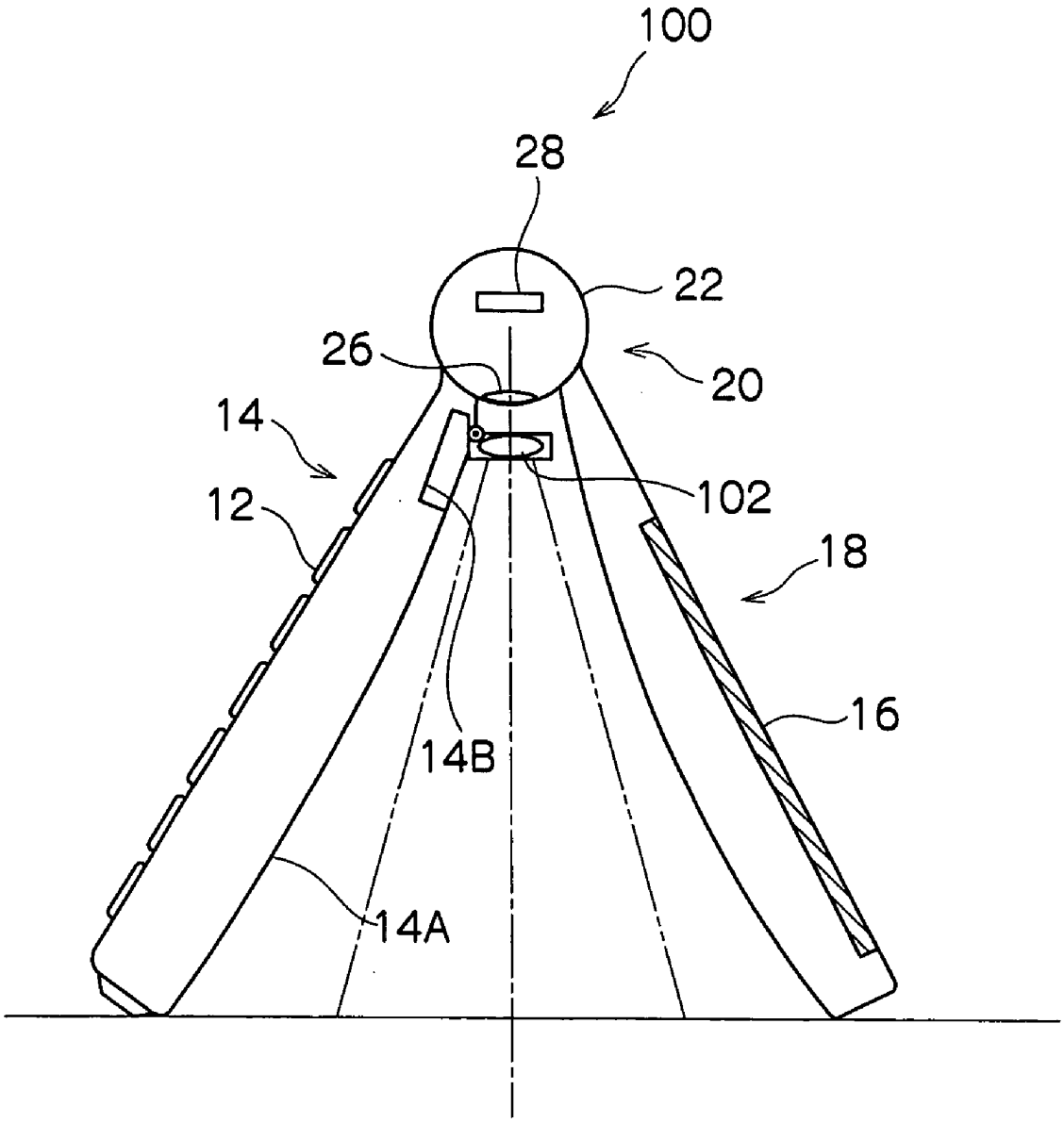


FIG.14

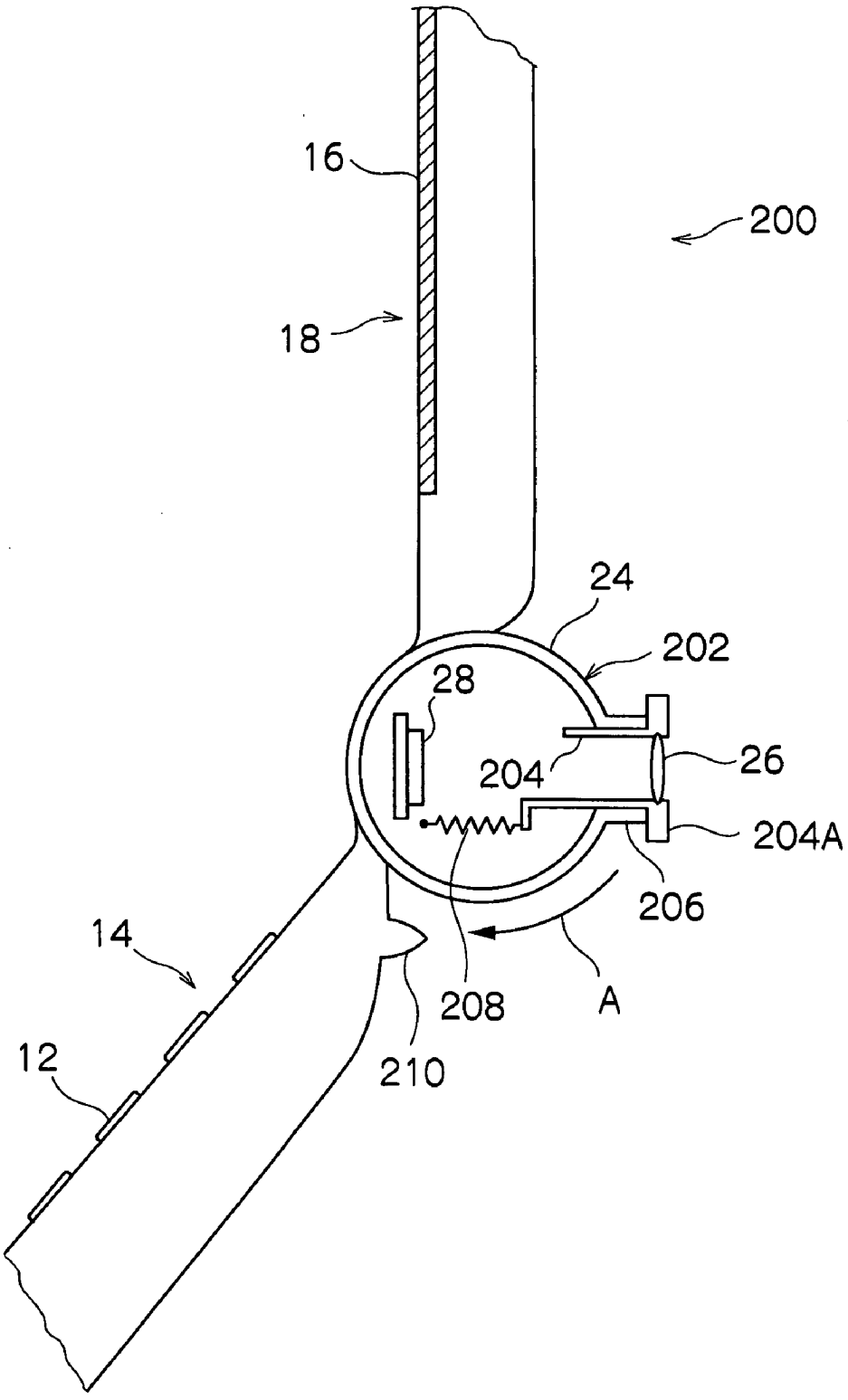
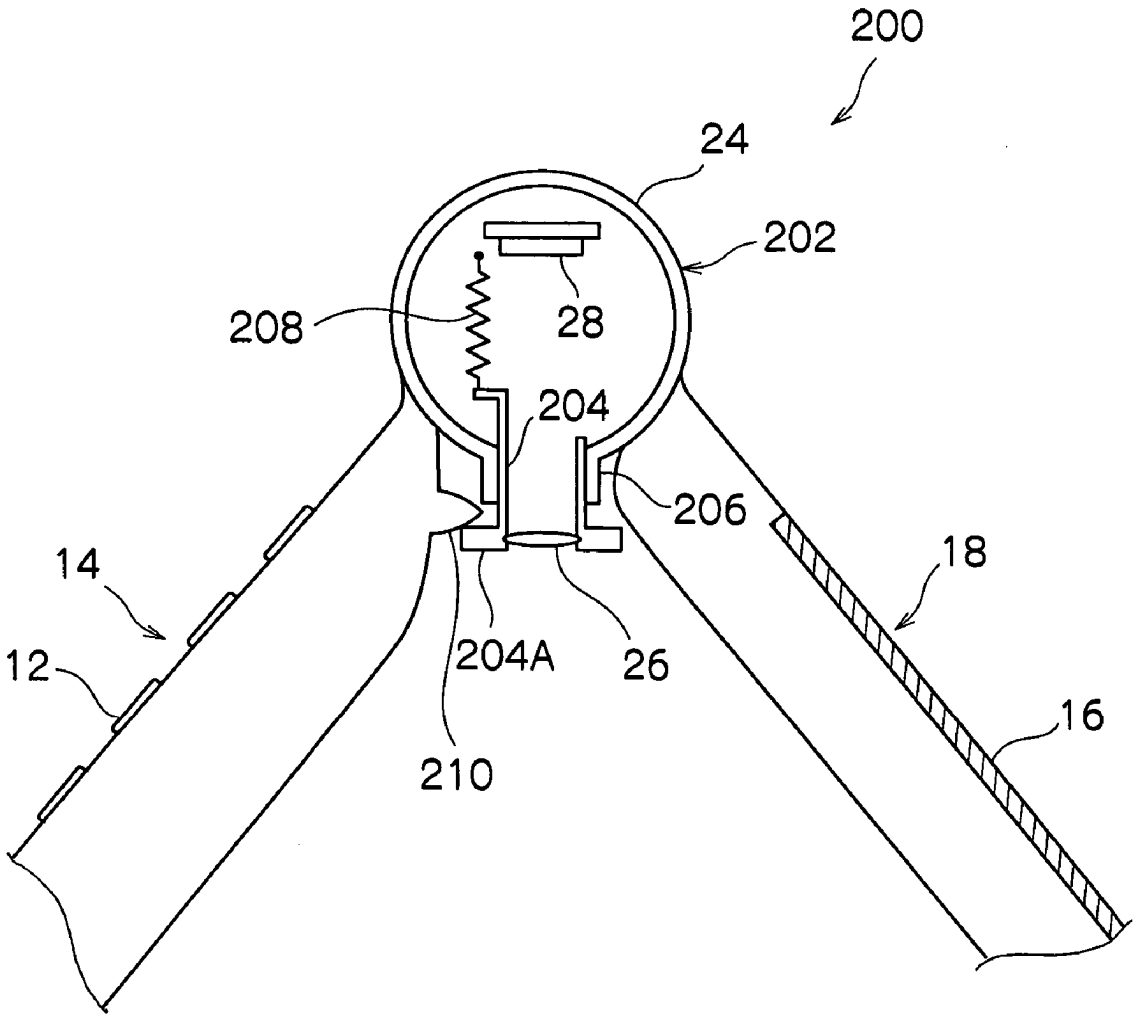


FIG.15



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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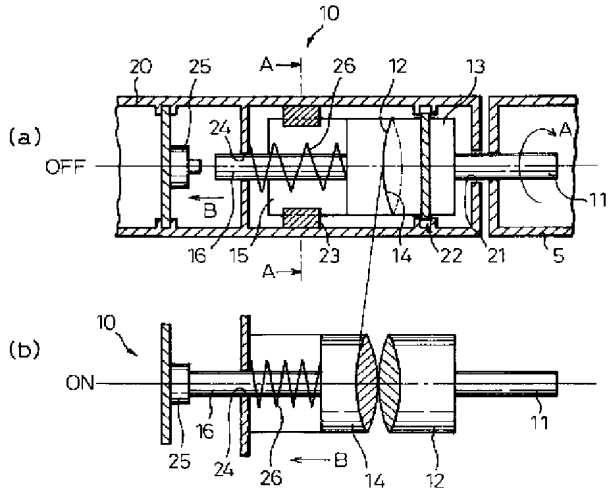
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(54)【発明の名称】　小型携帯用情報処理装置

(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

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【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

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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

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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

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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。

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【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。

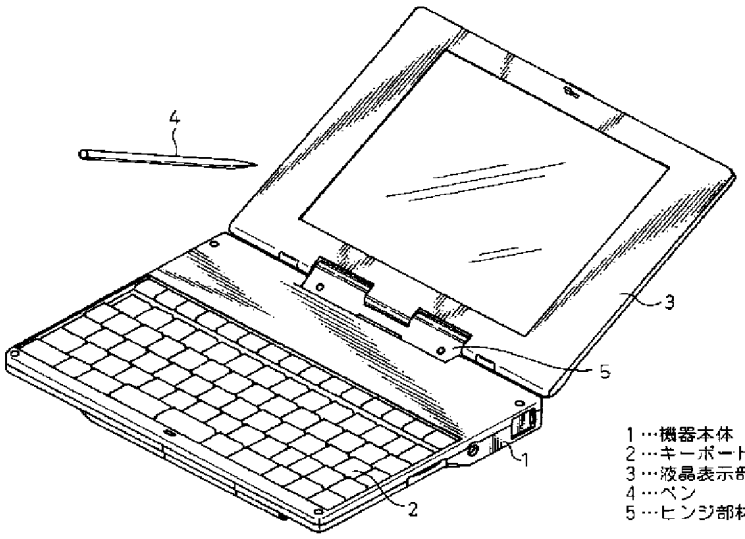
【図１７】液晶表示部の画面を９０°回転させる前（ａ）及び後（ｂ）の状態を示す。

【符号の説明】

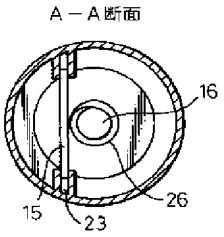
１…機器本体
２…キーボード部
３…液晶表示部
４…ペン
５…ヒンジ部材
１０…スイッチ機構
１１…軸
１２…カム
１３…フランジ
１４…カム受け
１５…ガイド板
１６…軸
２０…スイッチ本体
２１…軸受部
２２…環状ガイド溝
２３…軸方向ガイド溝
２４…軸受部
２５…スイッチ素子
２６…スプリング
３０…センサスイッチ
３１…接触部
３２…突起部

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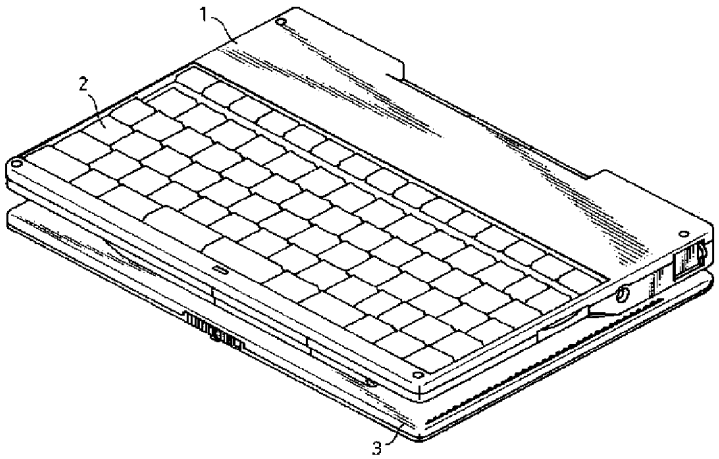
【図１】



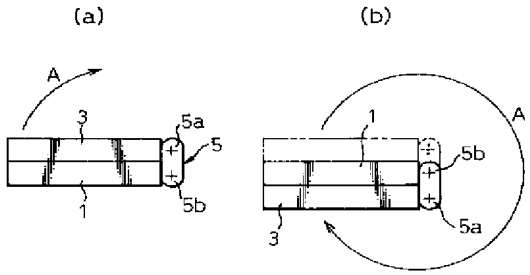
【図５】



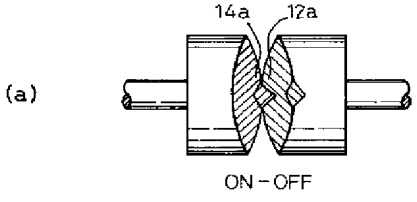
【図２】



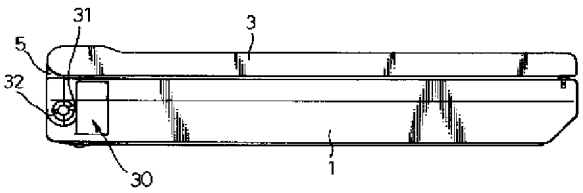
【図３】



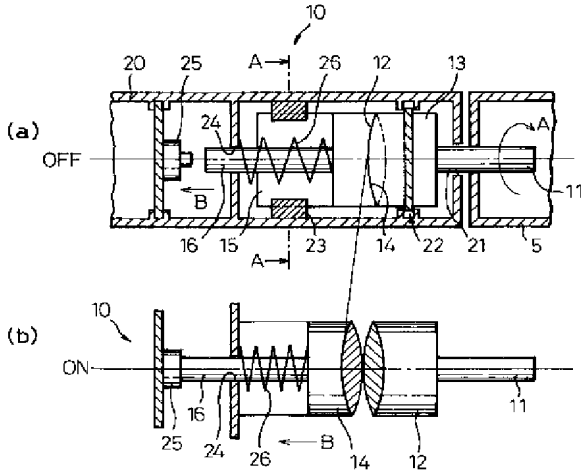
【図６】



【図１０】

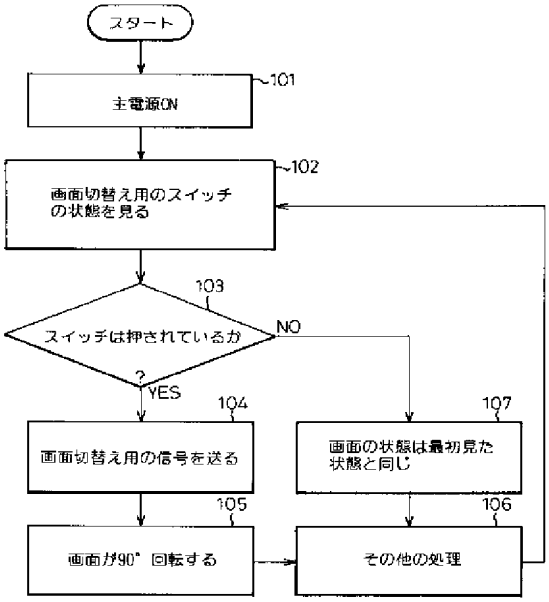


【図４】



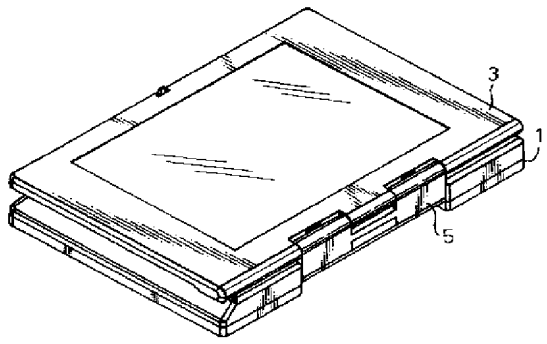
3…液晶表示部　16…軸
5…ヒンジ部材　20…スイッチ本体
10…スイッチ機構　21…軸受部
11…軸　22…環状ガイド溝
12…カム　23…軸方向ガイド溝
13…フランジ　24…軸受部
14…カム受け　25…スイッチ素子
15…ガイド板　26…スプリング

【図７】



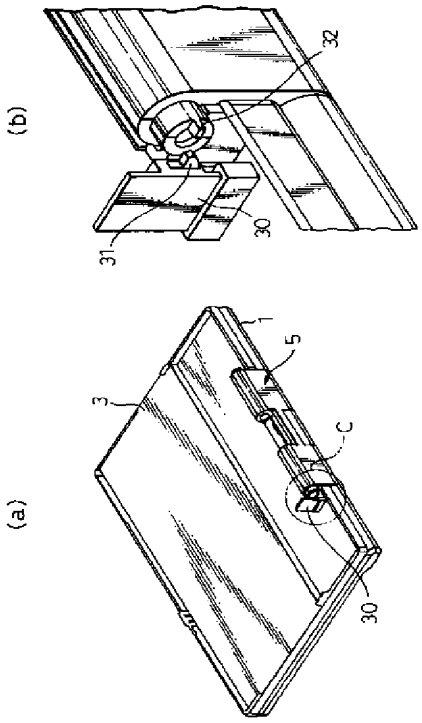
【図８】

液晶部を360°回転させた状態の使用例



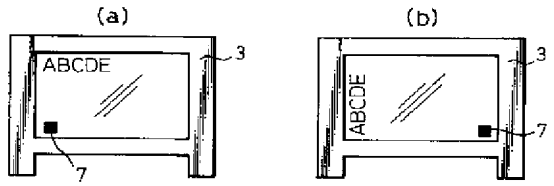
【図９】

液晶部を閉じた状態での突起物とセンサーの位置関係



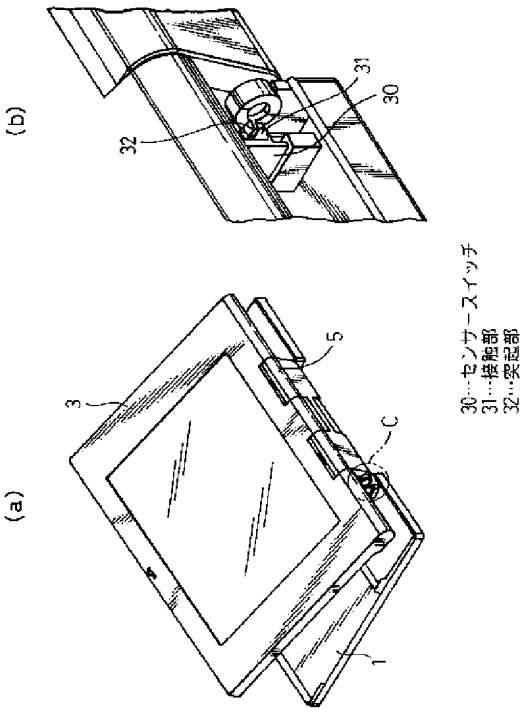
30…センサースイッチ
31…接触部
32…突起部

【図１７】

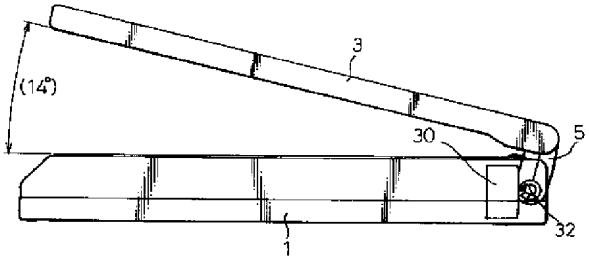


【図１１】

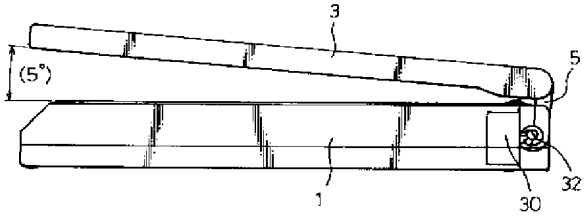
液晶部が回転してセンサーと接触した状態



【図１２】

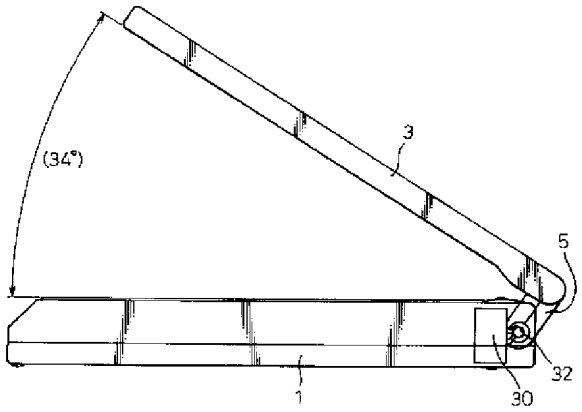


【図１３】

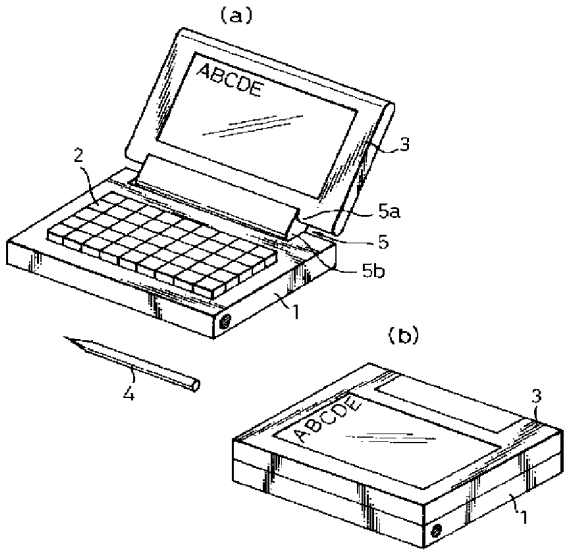


【図１４】

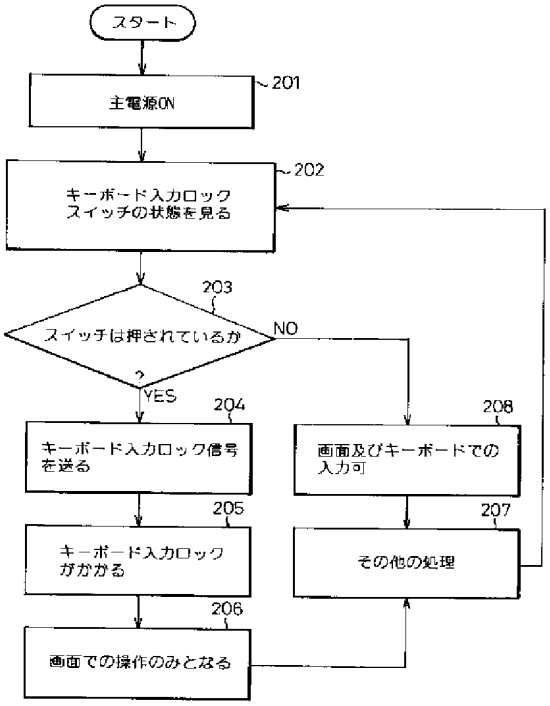
図13の状態から突起物の位置を変えた状態



【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

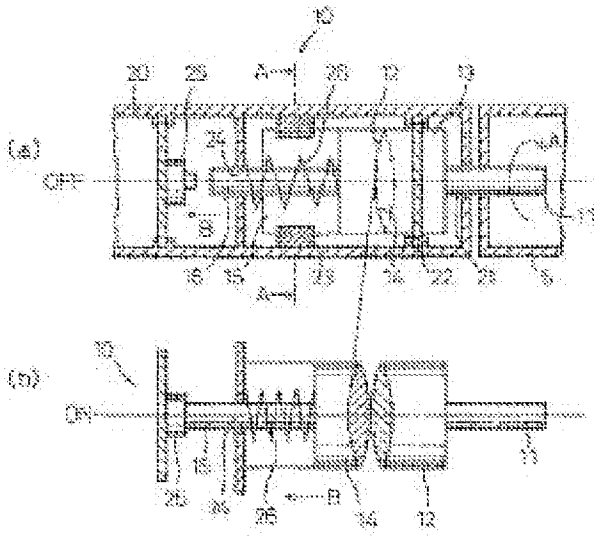
Priority number (s): JP19960267235 19961008

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.

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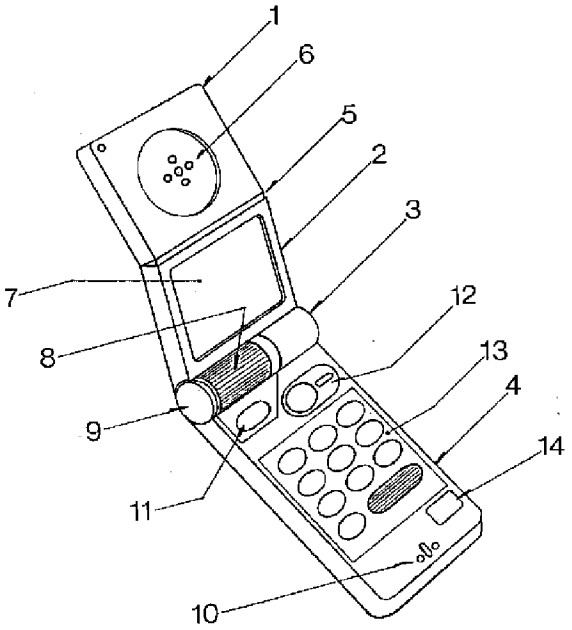
(22)出願日　平成４年(1992)９月８日

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(54)【発明の名称】　携帯用無線電話機

(57)【要約】
【目的】　それ自体が片手で把持されつつ、しかもその手の指で、特に無線通話を行う上で必要とされる各種操作を容易に行うこと。
【構成】　片手把持状態でその手の指から容易にアクセス可として、収納折畳み用のヒンジ部３に、無線通話状態では受信音声音量調整用として機能し、非無線通話状態では各種機を選択するためのものとして機能する機能選択ダイヤル８が縦方向に回動自在として、且つ内外両面からダイヤル操作可として具備せしめられる場合は、内外両面から機能選択を始めとして、無線通話状態での受信音声音量調整を行い得るものである。

［図１］



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【特許請求の範囲】

【請求項１】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルが、縦方向に回動自在として具備されてなる携帯用無線電話機。

【請求項２】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部に、無線通話状態では受信音声音量調整用として機能し、非無線通話状態では各種機を選択するためのものとして機能する機能選択ダイヤルが、縦方向に回動自在として、且つ内外両面からダイヤル操作可として具備されてなる携帯用無線電話機。

【請求項３】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルがカーソル位置をも制御可として、縦方向には回動自在として、且つヒンジ軸方向にはスライド自在として具備されてなる携帯用無線電話機。

【請求項４】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルが縦方向に回動自在として具備される一方、該機能選択ダイヤルのヒンジ軸方向近傍には、カーソル位置制御用ダイヤルが縦方向には回動自在として、且つヒンジ軸方向にはスライド自在として具備されてなる携帯用無線電話機。

【請求項５】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部の側端に収納折畳み制御機構が具備される一方、該ヒンジ部に各種機能選択用の機能選択ダイヤルが、縦方向に回動自在として具備されてなる携帯用無線電話機。

【請求項６】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルが縦方向に回動自在として具備される一方、片手で把持された状態では、親指の指リンク運動範囲内には各種操作釦が配列されてなる携帯用無線電話機。

【請求項７】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折畳み用のヒンジ部の側端に収納折畳み制御機構が具備される一方、収納折畳み用のヒンジ部に、無線通話状態では受信音声音量調整用として機能し、非無線通話状態では各種機を選択するためのものとして機能する機能選択ダイヤルが、縦方向に回動自在として、且つ内外両面からダイヤル操作可として具備されてなる携帯用無線電話機。

【請求項８】　無線通話機能および電子手帳機能を少なくとも具備してなる携帯用無線電話機であって、収納折

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畳み用のヒンジ部の側端に収納折畳み制御機構が具備される一方、収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルがカーソル位置をも制御可として、縦方向には回動自在として、且つヒンジ軸方向にはスライド自在として具備され、片手で把持された状態では、親指の指リンク運動範囲内には各種操作釦が配列されてなる携帯用無線電話機。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、無線通話機能、電子手帳機能等が具備されてなる携帯用無線電話機に係わり、特に収納折畳み用のヒンジ部に、収納折畳み制御機構や、各種機能選択用の機能選択ダイヤルが縦方向に回動自在として具備されるなど、使用状態での片手操作が容易とされた携帯用無線電話機に関するものである。

【０００２】

【従来の技術】これまでの携帯用無線電話機（以下、単に電話機と称す）では、送受信時に、例えばそれ自体が衣服のポケット等より取り出された上、必要な操作が行われ後は情報交換（具体的には音声による通話等）が行われるようになっており、その後、相手側との情報交換が終了した場合には、再びポケット等に収納されるものとなっている。ところで、これまでの電話機一般は無線通話機能を始めとして、電子手帳機能等、多機能なものとして構成されており、必要とされる機能を実際に機能せしめるためには、複雑な操作を所定順に行わなければならないものとなっている。例えば相手側を呼び出して無線通話を行う場合を想定すれば、電話機自体はポケット等から取り出され、必要とされる一連の呼出し操作が行われた後は、通話可能状態となるべく必要に応じ持ち変えられた上、それ自体が送受話器、あるいはハンドセットであるかの如く、口や耳付近に移動される必要があるものとなっている。その際、受信音声の音量を必要に応じ調整するには、通話は一旦中断された上、この中断状態で音量調整用の釦が操作される必要があるものとなっている。また、複数ある機能のうち、何れかを選択する場合や、表示画面上に、予め記憶されている所望の相手先電話番号を呼び出して表示する場合には、必要な釦操作や画面表示の目視確認、所望のものが選択、あるいは表示された場合での確認釦操作等、各種の釦操作が所定順に行われる必要があるものである。なお、この種の機器に関するものとしては、雑誌「ＤＩＭＥ」（１９９１年１０月１７日、小学館発行、頁８２，８３）に記載のもの（折り畳み式のものを含む）が知られている。

【０００３】

【発明が解決しようとする課題】ところで、これまでの電話機一般では、特に無線通話が行われる際での片手操作がある程度は配慮されているにしても、それ自体が片手で把持されつつ、しかもその手の指で無線通話を行う上で必要とされる各種操作を容易に行い得るものは少な

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く、実際上、片手操作は困難となっているのが実情である。

【０００４】本発明の目的は、それ自体が片手で把持されつつ、しかもその手の指で、特に無線通話を行う上で必要とされる各種操作が容易に行われ得る電話機を供するにある。

【０００５】

【課題を解決するための手段】上記目的は、収納折畳み用のヒンジ部に、無線通話状態では受信音声音量調整用として機能し、非無線通話状態では各種機を選択するためのものとして機能する機能選択ダイヤルを、縦方向に回動自在として、且つ内外両面からダイヤル操作可として具備せしめたり、あるいは収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルをカーソル位置をも制御可として、縦方向には回動自在として、且つヒンジ軸方向にはスライド自在として具備せしめたり、あるいはまた、収納折畳み用のヒンジ部の側端に収納折畳み制御機構を具備せしめる一方、該ヒンジ部に各種機能選択用の機能選択ダイヤルを縦方向に回動自在として具備せしめたり、収納折畳み用のヒンジ部に、各種機能選択用の機能選択ダイヤルを縦方向に回動自在として具備せしめる一方、片手で把持された状態では、親指の指リンク運動範囲内に各種操作釦を配列せしめるべく構成することで達成される。

【０００６】

【作用】片手把持状態でその手の指から容易にアクセス可として、収納折畳み用のヒンジ部に、無線通話状態では受信音声音量調整用として機能し、非無線通話状態では各種機を選択するためのものとして機能する機能選択ダイヤルが縦方向に回動自在として、且つ内外両面からダイヤル操作可として具備せしめられる場合は、内外両面から機能選択を始めとして、無線通話状態での受信音声音量調整を行い得るものである。また、機能選択ダイヤルがカーソル位置をも制御可として、縦方向には回動自在として、且つヒンジ軸方向にはスライド自在として具備せしめるか、あるいは片手把持状態でその手の指から容易にアクセス可として、収納折畳み用のヒンジ部に、カーソル位置制御用ダイヤルが縦方向には回動自在として、且つヒンジ軸方向にはスライド自在として具備される場合には、表示画面上でのカーソル位置制御を容易に行い得るものである。更に、収納折畳み用のヒンジ部の側端に収納折畳み制御機構を具備せしめられる場合には、片手把持状態でその手の指で収納折畳みを容易に制御し得るものである。更にまた、親指の指リンク運動範囲内に各種操作釦を配列せしめられる場合は、片手把持状態でその手の指から容易にそれら各種操作釦を容易に操作し得るものである。

【０００７】

【実施例】以下、本発明を図１から図８により説明する。先ず本発明による電話機の使用状態での外観につい

て説明すれば、図１はその一例での外観斜視状態を示したものである。図示のように、電話機本体がその収納折り畳み状態からその折畳み状態が解除され、使用状態におかれた場合での全体外観斜視状態が示されたものとなっている。これによる場合、レシーバ部１と表示部２はヒンジ５を介し自在に屈曲係合された上、これらはまた、収納折り畳み回動用のジョイント部３を介し操作部４と係合されるべく構成されたものとなっている。さて、レシーバ部１の中央部にはレシーバ（受信音声出力用スピーカ）６が具備された上、無線通話時にこれに耳が当てられことで、通話相手からの音声が聴取され得るものである。その無線通話状態では、ヒンジ５は図示の如くにくの字状に屈曲されることで、操作性や使い勝手性が向上せしめられているものである。また、ジョイント部３は電話機本体の折畳み収納状態から回動展開された状態、即ち、使用状態を維持するとともに、機能選択操作用のダイヤル８や、回動操作用機構およびプッシュボタン９が具備せしめられるものとなっている。更に、操作部４には情報の記憶／検索や入出力操作用のセットボタン１１や通話開始用の発信（再発信）ボタン１２、テンキー部１３、通話終了用等の終了ボタン１４が具備された上、その先端部にはマイクロフォン１０が内蔵されるようになっている。以上の構成によりダイヤル８によって無線通話機能が選択された場合には、恰も通常の電話機一般におけるハンドセットの如く、耳にレシーバ６を当て、マイクロフォン１０には口を接近せしめた状態で、相手側との間で無線通話を行い得るものである。なお、表示部２中央部に具備されている液晶表示画面７上にはキー入力された情報や、記憶されている情報のうちから、必要が情報が呼び出し表示されるものとなっている。

【０００８】図２はまた、片手（本例では左手）で把持された状態でのその電話機の使用状態を示したものである。電話機本体が折畳み収納状態にある場合に、ジョイント部３の左右両端部を親指ａと人指差指ｂで挟み持ち、親指ａでプッシュボタン９を押圧操作すれば、ジョイント部３を介し表示部２およびレシーバ部１が回動され、安定な使用状態に移行されるものとなっている。さて、電話機本体は基本的には親親球ｃと残り３つの指ｄで把持されることから、親指ａや人指指ｂを電話機本体より離しても、電話機本体が手から落下する、といった不都合は生じないものである。したがって、そのように電話機本体が把持されている状態では、液晶表示画面７上での表示を確認しつつ、親指ａでダイヤル８や操作部４上の各種操作ボタンを操作し得るものである。

【０００９】図３は無線通話状態にある電話機本体を外面（背面）側よりみた使用斜視状態を示したものである。図示のように、レシーバ６に耳が当てられ、マイクロフォン１０には口を接近させた状態での電話機を、電話機を把持している片手の背後よりみた状態として示し

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たものである。図示のように、人指指ｂはジョイント部３の一端部より離され、その人指指ｂによりダイヤル８が操作されているが、このことは、ダイヤル８は内面側からは親指ａによって、その外面側からは人指指ｂによって操作可能であることを示唆したものとなっている。したがって、ダイヤル８が非無線通話状態では各種機能（具体的には、送信／受信、電話番号、シークレット、入力、出力、記憶、計算、時刻、リモコン、スケジュール、コール（呼出し）、クリヤー、カレンダー、辞書、地図、文字、数字等）を選択するためのものとして、また、無線通話状態では受信音声音量調整用として機能すべく、縦方向に回動自在として、且つ内外両面からダイヤル操作可としてジョイント部３に具備されている場合には、無線通話状態での受信音声の音量調整が通話を中断することなく行い得るものである。

【００１０】図４は電話機が片手で把持されている状態での片手操作方法を示したものである。図示のように、電話機本体は操作部４のその左右両側端が親指球ｃと３つの指ｄで挟持された状態で、親指ａがプッシュボタン９を押圧操作すれば、それまで折り畳み収納状態にあった本電話機本体は、レシーバ部１および表示部２はジョイント部３を介し回動されることで、安定な使用状態に移行されるものとなっている。この使用状態で、例えば無線通話が行われるものとしてその操作を説明すれば、先ずダイヤル８が親指位置ｆで操作されれば、液晶表示画面７には予め入力記録されている氏名とその電話番号が検索表示されるものとなっている。その後、相手先電話番号を確認し親指位置ｇでセットボタン１１を押圧操作した上、親指位置ｈで発信(再発信)ボタン１２を操作すれば、公知の技術により無線通話が開始されるものとなっている。やがて、無線通話が終了すると、親指位置ｉで終了ボタン１４が押圧操作されることで、無線通話に必要とされる一連の操作は完了されるものである。即ち、液晶表示画面７の視認とダイヤル８や発信(再発信)ボタン１２、終了ボタン１４に対する親指ａの操作運動域範囲は、図に示す破線Ａ，Ｂで囲まれている範囲とされ、その範囲内では親指ａは必要な操作を容易に行い得るものであり、その範囲は、とりもなおさず親指ａの生体指骨構成の付け根を中心とした間接ｅでの複合した回転や回動、進退屈曲運動による範囲でもある。したがって、破線Ａ，Ｂで囲まれている範囲に、無線通話を行う上で必要とされるダイヤル８や各種ボタンが配置される場合には、片手操作でそれらダイヤル８や各種ボタンが操作され得、片手操作性が向上され得るものである。

【００１１】図５は本発明に係るジョイント部３の一例での部分断面を示したものである。これによる場合、ジョイント部３を構成しているケース１５とボタン軸１９は操作部４に固定されており、ケース１５の中心端面部に形成されているボス軸１６には回動自在に中空フランジ１８が係合されるものとなっている。ボタン軸１９に

形成されているスリーブ軸２２にも回動自在にスリーブフランジ２０が係合されるものとなっている。回動自在な中空フランジ１８とスリーブフランジ２０はシャシ１７で固定されており、シャシ１７は表示部２の内部で安定に固着されようになっている。したがって、操作部４と表示部２はジョイント部３を介し相互に折畳み可として自在に係合されているものである。

【００１２】また、ボタン軸１９の端面からはプッシュボタン９が進退自在に挿入されるが、プッシュボタン９に形成されているシャンク２３はスリーブ軸２２内側に摺動可能に嵌合係合されるものとなっている。そのシャンク２３にはまた、ストッパーピース２４が具備された上、スリーブ軸２２とスリーブフランジ２０の端面に形成された切欠き２５、２６各々に係合されるようになっている。これにより、スリーブフランジ２０の回動は停止され、したがって、表示部２の回動も安定に停止安定され得るものである。なお、スリーブ軸２２の切欠き２６はプッシュボタン９の軸方向の最大ストロークに対してもストッパーピース２４が係合を解除することはない。それに対し、スリーブフランジ２０の切欠き２５は係合が解除され自由に回動し得るものである。このスリーブフランジ２０の切欠き２５は電話機が使用状態にある場合での開位置と、収納折畳み状態にある場合での収納位置（図示せず）とに形成されているものである。

【００１３】更に、ケース１５内部にはねじりコイルバネ２１が具備されており、その一端はケース１５に結合固定され、他端はケース１５より突出されて中空フランジ１８に形成されたバネ穴に係合されている。これにより、プッシュボタン９が押圧操作されれば、ストッパーピース２４が収納時切欠き２５(図示せず)での停止を開放し、ねじりコイルバネ２１の弾性力が開放される結果、中空フランジ１８が回動され、したがって、レシーバ部１および表示部２が回動され使用状態に至らしめられるものである。その使用状態での組込結合でも、ねじりコイルバネ２１にはまだ残留弾性力が残されていることから、引続き開方向への回動力が与えられたものとなっている。このことは、電話機が使用状態にある場合での不要ながたつきがその回動力により防止されていることを示唆している。

【００１４】更に、ダイヤル８が係合されているダイヤル軸２８がその機械的位置読取り上、その軸方向に移動可とされる場合には、シャンク２３の端面がストッパとしてのストロークの停止位置となり、シャンク２３とシャフト２７との圧入結合は、ダイヤル軸２８に作用する操作力程度では解除されないものとなっている。ダイヤル軸２８とシャフト２７は同一軸上で軸方向スライドとその軸周りに回動可とされているが、シャフト２７はダイヤル軸２８内部で摺動、且つ回動自在な状態として支持された上、その他端はジョイスティック２９に至らしめられるものとなっている。そのジョイスティック２９

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内にはシャフト２７に連動する電源スイッチ（図示せず）が具備されており、外部よりプッシュボタン９が操作されることによって、電話機が収納折畳み状態から使用状態へと移行せしめられるとともに、電話機には電源が投入され得るものである。また、ジョイスティック２９内部にはボリューム（受信音声音量調整用等）やセンサ（機能選択用等）が具備された上、ダイヤル軸２８の動きに応じて感応動作せしめられるものとなっている。ダイヤル軸２８はジョイント部３の中央付近まで延ばされた上、先端部分にダイヤル８が圧入固定されているが、ダイヤル８は他の部品に接触することなく円滑に軸方向でのスライド、その軸周りでの回動が可能とされているものである。また、ジョイスティック２９内部のセンサは操作部４の各種の機能ボタンの操作によっても、必要な機能が切替えにより選択されるものとなっている。このようにして選択された機能はコードＥを介し表示処理回路(図示せず)に至らしめられた上、その機能が実行される上で必要とされる各種表示が行われるものである。なお、本例でのダイヤル８はカーソル位置制御用としても機能するが、ダイヤル８とは別にその近傍にカーソル位置制御専用ダイヤルを具備せしめるようにしてもよいものである。

【００１５】図６はまた、ジョイント部３やレシーバ部１および表示部２を含む部分断面を示したものである。図示のように、操作部４に固定されたジョイント部３の一部としての摺動リング３０に沿って表示部２が回動可とされているが、その表示部２の内部には細いスライドピン３１の一端が摺動リング３０に絶えず押しつけられるべく状態で組み込まれたものとなっている。そのスライドピン３１の他端はまた、表示部２、レシーバ部１間を屈曲可能としたヒンジ５に連動するヒンジピース３２に回動自在に系合されたものとなっている。そのヒンジピース３２には伸縮可能なバネ３３が固定され他端はレシーバ部１内部に形成されたバネ座３４に固定されるようになっている。電話機の使用状態では、図示の如くに、レシーバ部１はバネ３３の作用により実線表示の屈曲位置で安定しているが、レシーバ部１に対し不要な力が作用した場合には、レシーバ部１は破線表示の如くに回動されることで、電話機自体が保護されるばかりか、無線通話状態では、レシーバ部１は耳に弾力性を以て接触されることから、接触状態良好にして受信音声を聴取し得るものである。また、電話機の収納折り畳み状態時には、ジョイント部３に介し破線表示の如くに、レシーバ部１と表示部２は折畳まれるが、その際、スライドピン３１が摺動リング３０の電話機収納位置に形成されている切欠き３５に係合されるから、安定した状態でレシーバ部１と表示部２は折畳まれるものとなっている。その折畳の際には、スライドピン３１に連動したヒンジピース３２が表示部２内部に引き込まれ、したがって、それまで表示部２に対し屈曲状態にあったレシーバ部１は、表示部２に沿うべく直線状に伸ばされた状態で折畳まれるものとなっている。

【００１６】図７は同じく電話機が収納折り畳み状態にある場合での部分断面斜視状態を示したものである。図示のように、収納折畳み状態では、ジョイント部（摺動リング３０と同等）３の外周の一部に形成されている切欠き３５には、表示部２内部に組み込まれているスライドピン３１が係合されることで、収納折畳み状態は安定化されたものとなっている。この収納折畳み状態で、プッシュボタン９が操作されれば、使用状態に移行すべくレシーバ部１および表示部２は回動され、スライドピン３１は切欠き３５よりスライド離脱されることで、レシーバ部１は表示部２に対し屈曲した状態におかれるものである。

【００１７】最後に、ダイヤル８によるカーソル位置制御について説明すれば、図８はその際でのダイヤル操作方法を示したものである。図示のように、ジョイント部３に具備されているダイヤル８は液晶表示７画面上での着目表示位置、即ち、カーソル３７位置を更新するのに用いられており、その更新の際には、親指ａがダイヤル８上の任意位置ｊに接触せしめられた状態で、親指ａがＡ矢視の左右方向か、Ｂ矢視の上下方向に任意に操作されるものとなっている。即ち、ダイヤル８が自由状態にある場合には、ダイヤル８は左右方向にそれぞれ同一大きさのクリアランス３６ｂ，３６ａを維持して安定しているが、Ａ矢視方向への親指ａによる操作は、それらクリアランス３６ａ，３６ｂの大きさを変更するもので、この変更はジョイスティック２９内のセンサによって感知されることで、例えばダイヤル８が右方向へ操作されれば、液晶表示画面７上でカーソル３７は右方向位置に移動されるものである。親指ａをダイヤル８より開放すれば、ダイヤル８は自動的に中央位置に復元されるものである。また、ダイヤル８の親指ａによる上下方向操作はダイヤル８を上下方向に回転せしめるが、その際での回転方向および回転量はジョイスティック２９内のボリューム、あるいははセンサによって感知されることで、カーソル３７は液晶表示画面７上で上下方向に移動可とされているものである。ダイヤル８とは別にその近傍にカーソル位置制御専用ダイヤルが具備せしめられている場合には、そのカーソル位置制御専用ダイヤルが同様に操作されることで、カーソル３７の位置が制御され得るものである。

【００１８】したがって、例えば液晶表示画面７上に必要な文字や数字、記号等を全て表示せしめた状態で、カーソル３７を所望の位置に順次移動せしめるようにすれば、移動位置での文字等が入力対象として順次選択された上、入力処理され得るものである。また、例えばカーソル３７を所望文字位置に移動させた状態で、操作部４上でセットボタン１１が操作される場合には、液晶表示画面７上段には、例えば氏名および電話番号の部分覧が

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表示され得るものである。これまでにあっては、専ら必要回数に亘るテンキー操作によって所望の文字列等が組立てられる、といった具合に、煩雑、且つ複雑で、しかも操作回数が多いキー処理が要されていたが、以上の如くに表示処理等が行われる場合は、そのような不具合は軽減化され得るものである。

【００１９】

【発明の効果】以上、説明したように、請求項１～８による場合には、それ自体が片手で把持されつつ、しかもその手の指で、特に無線通話を行う上で必要とされる各種操作が容易に行われ得るものとなっている。

【図面の簡単な説明】

【図１】図１は、本発明による電話機の一例での外観斜視状態を示す図

【図２】図２は、片手で把持された状態でのその電話機の使用状態を示す図

【図３】図３は、無線通話状態にあるその電話機を外面

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（背面）側よりみた使用斜視状態を示す図

【図４】図４は、その電話機が片手で把持されている状態での片手操作方法を説明するための図

【図５】図５は、本発明に係るジョイント部の部分断面を示す図

【図６】図６は、そのジョイント部やレシーバ部および表示部を含む部分断面を示す図

【図７】図７は、同じく電話機が収納折り畳み状態にある場合での部分断面斜視状態を示す図

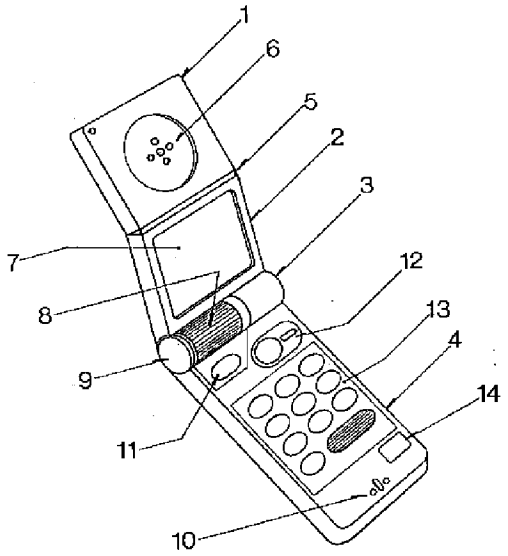
10 【図８】図８は、本発明に係るダイヤル操作によるカーソル位置制御方法を示す図

【符号の説明】

１…レシーバ部、２…表示部、３…ジョイント部、４…操作部、５…ヒンジ、６…レシーバ、７…液晶表示画面、８…ダイヤル、９…プッシュボタン、１０…マイクロフォン、１１…セットボタン、１２…発信(再発信)ボタン、１３…テンキー部、１４…終了ボタン

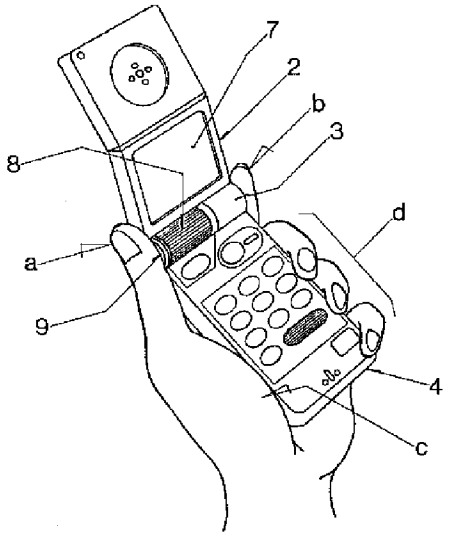
【図１】

［図１］



【図２】

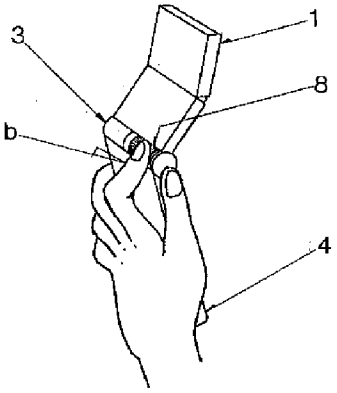
［図２］



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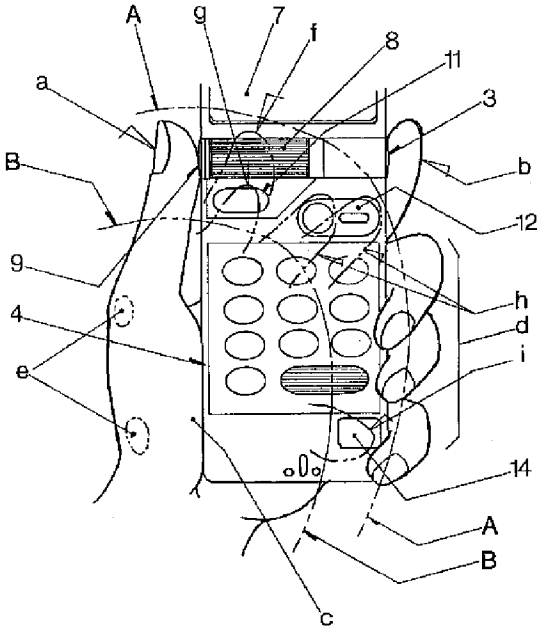
【図３】

［図３］



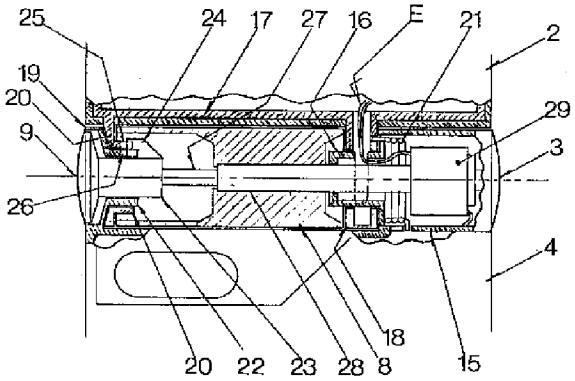
【図４】

［図４］



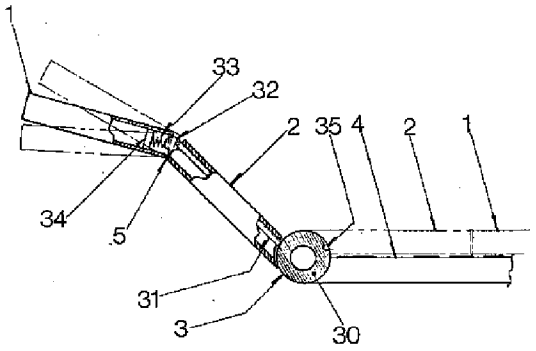
【図５】

［図５］



【図６】

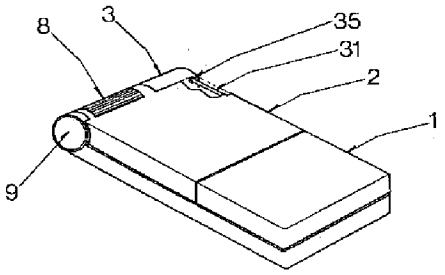
［図６］



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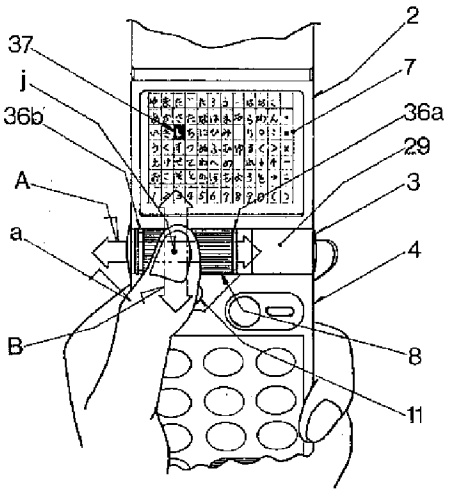
【図７】

［図７］



【図８】

［図８］



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【公報種別】特許法第１７条の２の規定による補正の掲載
【部門区分】第７部門第３区分
【発行日】平成１２年１１月３０日（２０００．１１．３０）

【公開番号】特開平６－９０２００
【公開日】平成６年３月２９日（１９９４．３．２９）
【年通号数】公開特許公報６－９０２
【出願番号】特願平４－２３９７３５
【国際特許分類第７版】
HO4B　7/26
HO4M　1/03
【ＦＩ】
HO4M　1/03　　A

【手続補正書】
【提出日】平成１１年８月１２日（１９９９．８．１２）
【手続補正１】
【補正対象書類名】明細書
【補正対象項目名】発明の名称
【補正方法】変更
【補正内容】
【発明の名称】　電話機
【手続補正２】
【補正対象書類名】明細書
【補正対象項目名】特許請求の範囲
【補正方法】変更
【補正内容】
【特許請求の範囲】
【請求項１】　収納折畳み用のヒンジ部を備える電話機において、前記電話機の各種機能を選択するための選択手段を前記ヒンジ部に備えることを特徴とする電話機。
【請求項２】　収納折畳み用のヒンジ部を備える電話機において、通話の際には受信音声音量調整用として機能し、非通話の際には各種機能を選択するための選択手段として機能する手段を前記ヒンジ部に備えることを特徴とする電話機。
【請求項３】　収納折畳み用のヒンジ部を備える電話機において、前記電話機の有する各種機能を選択するための選択手段と、前記選択手段を支持する軸と、を備え、前記選択手段は、前記軸周りの第１の運動と、前記軸に沿った第２の運動とにより前記機能の選択をすることを特徴とする電話機。
【請求項４】　請求項１乃至３のいずれかに記載の電話機において、前記収納折畳み用のヒンジ部の側端に収納折畳み機構を備えることを特徴とする電話機。
【請求項５】　請求項１乃至３のいずれかに記載の電話機において、前記電話機を把持する手の親指の指リンク運動範囲内に、各種操作釦を配列することを特徴とする電話機。
【請求項６】　請求項１乃至３のいずれかに記載の電話機において、前記選択手段を前記電話機の両面から操作可能なように配置したことを特徴とする電話機。
【請求項７】　請求項１乃至３のいずれかに記載の電話機において、前記選択手段で選択する機能を表示する表示装置を備えることを特徴とする電話機。
【請求項８】　請求項３に記載の電話機において、前記第２の運動において前記選択手段の前記軸上における位置に応じて該選択手段で選択する機能を表示する表示装置を備えることを特徴とする電話機。
【請求項９】　請求項１乃至３のいずれかに記載の電話機において、さらに、カーソルを表示する表示装置を備え、前記表示装置は、前記選択手段の操作量に連動してカーソルの表示位置を変更することを特徴とする電話機。
【請求項１０】　収納折畳み用のヒンジ部を備える電話機において、
発信すべき相手の候補となる氏名を予め入力記憶する記憶手段と、
前記記憶手段に予め入力記憶されている氏名を表示する表示装置と、
前記ヒンジ手段に設けられ前記表示装置に表示された氏名から発信すべき相手を選択する選択手段と、
を備えることを特徴とする電話機。
【請求項１１】　請求項１０に記載の電話機において、前記表示装置は氏名とともに該氏名に対応する電話番号を表示することを特徴とする電話機。
【手続補正３】
【補正対象書類名】明細書
【補正対象項目名】０００１
【補正方法】変更
【補正内容】
【０００１】
【産業上の利用分野】本発明は、操作性に優れた電話機に係わり、特に、収納折畳み用のヒンジ部に、各種機能

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選択用の機能選択手段を備えるなど、片手把持状態における操作性に優れた携帯用無線電話機に関するものである。

【手続補正４】
【補正対象書類名】明細書
【補正対象項目名】０００４
【補正方法】変更
【補正内容】
【０００４】本発明の目的は、それ自体が片手で把持されつつ、しかもその手の指で、特に通話を行う上で必要とされる機能選択等の各種操作を容易に行い得る操作性に優れた電話機を提供することにある。

【手続補正５】
【補正対象書類名】明細書
【補正対象項目名】０００５
【補正方法】変更
【補正内容】
【０００５】
【課題を解決するための手段】上記目的を達成するため、本発明に係る電話機は、収納折畳み用のヒンジ部を備える電話機において、前記電話機の各種機能を選択するための選択手段を前記ヒンジ部に備えることを第１の特徴としている。また、本発明に係る電話機は、収納折畳み用のヒンジ部を備える電話機において、通話の際には受信音声音量調整用として機能し、非通話の際には各種機能を選択するための選択手段として機能する手段を前記ヒンジ部に備えることを第２の特徴としている。また、本発明に係る電話機は、収納折畳み用のヒンジ部を備える電話機において、前記電話機の有する各種機能を選択するための選択手段と、前記選択手段を支持する軸とを備え、前記選択手段は、前記軸周りの第１の運動と、前記軸に沿った第２の運動とにより前記機能の選択をすることを第３の特徴としている。また、本発明に係る電話機は、前記第１～第３のいずれかの特徴を有する電話機において、前記収納折畳み用のヒンジ部の側端に収納折畳み機構を備えることを特徴としている。また、本発明に係る電話機は、前記第１～第３のいずれかの特徴を有する電話機において、前記電話機を把持する手の親指の指リンク運動範囲内に、各種操作釦を配列することを特徴としている。また、本発明に係る電話機は、前記第１～第３のいずれかの特徴を有する電話機において、前記選択手段を前記電話機の両面から操作可能なように配置したことを特徴としている。また、本発明に係る電話機は、前記第１から第３のいずれかの特徴を有する電話機において、前記選択手段で選択する機能を表示する表示装置を備えることを特徴としている。また、本発明に係る電話機は、前記第３の特徴を有する電話機において、前記第２の運動において前記選択手段の前記軸上における位置に応じて該選択手段で選択する機能を表示する表示装置を備えることを特徴としている。また、本発明に係る電話機は、前記第１～第３のいずれかの特徴を有する電話機において、さらに、カーソルを表示する表示装置を備え、前記表示装置は、前記選択手段の操作量に連動してカーソルの表示位置を変更することを特徴としている。また、本発明に係る電話機は、収納折畳み用のヒンジ部を備える電話機において、発信すべき相手の候補となる氏名を予め入力記憶する記憶手段と、前記記憶手段に予め入力記憶されている氏名を表示する表示装置と、前記ヒンジ手段に設けられ前記表示装置に表示された氏名から発信すべき相手を選択する選択手段とを備えることを第４の特徴としている。また、本発明に係る電話機は、前記第４の特徴を有する電話機において、前記表示装置は氏名とともに該氏名に対応する電話番号を表示することを特徴としている。

【手続補正６】
【補正対象書類名】明細書
【補正対象項目名】０００６
【補正方法】変更
【補正内容】
【０００６】
【作用】本発明に係る電話機においては、収納折畳み用のヒンジ部に電話機の各種機能を選択する選択手段を備えており、片手把持状態でその手の指から各種機能選択を容易に行い得る。また、本発明に係る電話機においては、通話の際には音量調整手段として、非通話の際には機能選択手段として機能する選択手段を収納折り畳み用のヒンジ部において操作できるので、通話状態における音量調節操作又は非通話状態における各種機能選択操作を、片手把持状態でその手の指から容易に行い得る。また、本発明に係る電話機においては、軸支された選択手段を、その軸周りの第１の運動とその軸に沿った第２の運動とで操作することにより、前記機能の選択操作を容易に行い得る。また、本発明に係る電話機においては、ヒンジ部の側端の収納折畳み機構により収納折畳みができるため、片手把持状態でその手の指で収納折畳みを容易に制御し得る。また、本発明に係る電話機においては、各種操作釦の操作は、当該電話機を把持する手の親指の指リンク運動範囲内に配列されており、片手把持状態でその手の指からそれら各種操作釦を容易に操作し得るものである。また、本発明に係る電話機においては、前記電話機の両面から前記選択手段を操作し得る。また、本発明に係る電話機においては、前記選択手段により選択する機能を、前記表示装置で表示することにより、これを視認して容易に選択操作し得る。また、本発明に係る電話機においては、軸支された前記選択手段のその軸に沿った前記第２の運動において、前記選択手段のその軸上における位置に応じて該選択手段により選択する機能を、前記表示装置で表示することにより、これを視認して容易に選択操作し得る。また、本発明に係る電話機においては、表示装置で表示されるカーソルの表

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示位置を、前記選択手段を操作してその操作量により容易に変更し得る。また、本発明に係る電話機においては、記憶手段に入力記憶した発信すべき相手の候補となる氏名を、前記表示装置で表示し、これを視認して発信すべき相手を前記選択手段で選択操作することで、選択した当該相手に対して容易に発信し得る。また、本発明に係る電話機においては、前記氏名とともにこれに対応する電話番号も前記表示装置に表示し得るので、視認する情報が増えて操作の確実性を高め得る。

【手続補正７】
【補正対象書類名】明細書
【補正対象項目名】０００７
【補正方法】変更
【補正内容】
【０００７】
【実施例】以下、本発明を図１から図８により説明する。先ず本発明による電話機の使用状態での外観について説明すれば、図１はその一例での外観斜視状態を示したものである。図示のように、電話機本体がその収納折り畳み状態からその折畳み状態が解除され、使用状態におかれた場合での全体外観斜視状態が示されたものとなっている。これによる場合、レシーバ部１と表示部２はヒンジ５を介し自在に屈曲係合された上、これらはまた、収納折り畳み回動用のジョイント部３を介し操作部４と係合されるべく構成されたものとなっている。さて、レシーバ部１の中央部にはレシーバ（受信音声出力用スピーカ）６が具備された上、無線通話時にこれに耳が当てられることで、通話相手からの音声が聴取され得るものである。その無線通話状態では、ヒンジ５は図示の如くにくの字状に屈曲されることで、操作性や使い勝手性が向上せしめられているものである。また、ジョイント部３は電話機本体の折畳み収納状態から回動展開された状態、即ち、使用状態を維持するとともに、機能選択操作用のダイヤル８や、回動操作用機構およびプッシュボタン９が具備せしめられるものとなっている。更に、操作部４には情報の記憶／検索や入出力操作用のセットボタン１１や通話開始用の発信(再発信)ボタン１２、テンキー部１３、通話終了用等の終了ボタン１４が具備された上、その先端部にはマイクロフォン１０が内蔵されるようになっている。以上の構成によりダイヤル８によって無線通話機能が選択された場合には、恰も通常の電話機一般におけるハンドセットの如く、耳にレシーバ６を当て、マイクロフォン１０には口を接近せしめた状態で、相手側との間で無線通話を行い得るものである。なお、表示部２中央部に具備されている液晶表示画面７上にはキー入力された情報や、記憶されている情報のうちから、必要な情報が呼び出し表示されるものとなっている。

【手続補正８】
【補正対象書類名】明細書
【補正対象項目名】０００８
【補正方法】変更
【補正内容】
【０００８】図２はまた、片手（本例では左手）で把持された状態でのその電話機の使用状態を示したものである。電話機本体が折畳み収納状態にある場合に、ジョイント部３の左右両端部を親指ａと人指し指ｂで挟み持ち、親指ａでプッシュボタン９を押圧操作すれば、ジョイント部３を介し表示部２およびレシーバ部１が回動され、安定な使用状態に移行されるものとなっている。さて、電話機本体は基本的には親指球ｃと残り３つの指ｄで把持されることから、親指ａや人指し指ｂを電話機本体より離しても、電話機本体が手から落下する、といった不都合は生じないものである。したがって、そのように電話機本体が把持されている状態では、液晶表示画面７上での表示を確認しつつ、親指ａでダイヤル８や操作部４上の各種操作ボタンを操作し得るものである。

【手続補正９】
【補正対象書類名】明細書
【補正対象項目名】０００９
【補正方法】変更
【補正内容】
【０００９】図３は無線通話状態にある電話機本体を外面（背面）側よりみた使用斜視状態を示したものである。図示のように、レシーバ６に耳が当てられ、マイクロフォン１０には口を接近させた状態での電話機を、電話機を把持している片手の背後よりみた状態として示したものである。図示のように、人指し指ｂはジョイント部３の一端部より離され、その人指し指ｂによりダイヤル８が操作されているが、このことは、ダイヤル８は内面側からは親指ａによって、その外面側からは人指し指ｂによって操作可能であることを示唆したものとなっている。したがって、ダイヤル８が非無線通話状態では各種機能（具体的には、送信／受信、電話番号、シークレット、入力、出力、記憶、計算、時刻、リモコン、スケジュール、コール（呼出し）、クリヤー、カレンダー、辞書、地図、文字、数字等）を選択するための手段として、また、無線通話状態では受信音声音量調整手段として機能すべく、縦方向に回動自在として、且つ内外両面からダイヤル操作可としてジョイント部３に具備されている場合には、無線通話状態での受信音声の音量調整が通話を中断することなく行い得るものである。

【手続補正１０】
【補正対象書類名】明細書
【補正対象項目名】００１７
【補正方法】変更
【補正内容】
【００１７】最後に、ダイヤル８によるカーソル位置制御について説明すれば、図８はその際でのダイヤル操作方法を示したものである。図示のように、ジョイント部

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３に具備されているダイヤル８は液晶表示７画面上での着目表示位置、即ち、カーソル３７位置を更新するのに用いられており、その更新の際には、親指ａがダイヤル８上の任意位置ｊに接触せしめられた状態で、親指ａがＡ矢視の左右方向か、Ｂ矢視の上下方向に任意に操作されるものとなっている。即ち、ダイヤル８が自由状態にある場合には、ダイヤル８は左右方向にそれぞれ同一大きさのクリアランス３６ｂ，３６ａを維持して安定しているが、Ａ矢視方向への親指ａによる操作は、それらクリアランス３６ａ，３６ｂの大きさを変更するもので、この変更はジョイスティック２９内のセンサによって感知されることで、例えばダイヤル８が右方向へ操作されれば、液晶表示画面７上でカーソル３７は右方向位置に移動されるものである。親指ａをダイヤル８より開放すれば、ダイヤル８は自動的に中央位置に復元されるものである。また、ダイヤル８の親指ａによる上下方向操作はダイヤル８を上下方向に回転せしめるが、その際での回転方向および回転量はジョイスティック２９内のボリューム、あるいはセンサによって感知されることで、カーソル３７は液晶表示画面７上で上下方向に移動可とされているものである。ダイヤル８とは別にその近傍にカーソル位置制御専用ダイヤルが具備せしめられている場合には、そのカーソル位置制御専用ダイヤルが同様に操作されることで、カーソル３７の位置が制御され得るものである。

【手続補正１１】
【補正対象書類名】明細書
【補正対象項目名】００１９
【補正方法】変更
【補正内容】
【００１９】
【発明の効果】以上、説明したように、本発明に係る電話機は、それ自体が片手で把持されつつ、しかもその手の指で、特に無線通話を行う上で必要とされる各種操作が容易に行われ得るものとなっており、操作性に優れている。

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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

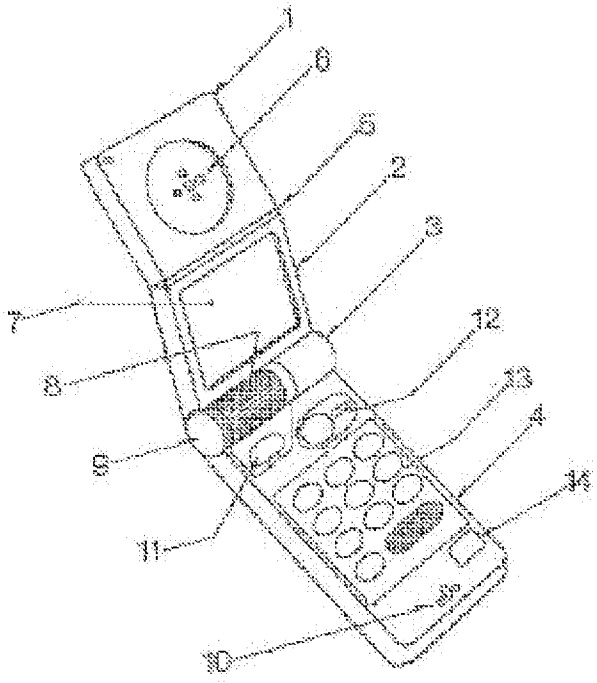
Priority number(s): JP19920239735 19920908

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
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審査請求 未請求　請求項の数 22　ＯＬ　（全 16 頁）　最終頁に続く

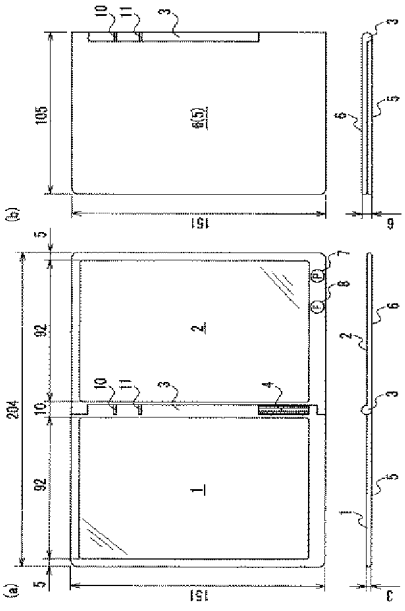
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最終頁に続く

(54)【発明の名称】携帯情報機器及び画像表示方法

(57)【要約】
【課題】活字品質の高精細表示を行う表示デバイスを用い、かつ、人間工学を意識したコンポーネント配置を行うことにより、操作性の改善と使い勝手の向上を図った携帯情報機器及び画像表示方法を提供する。
【解決手段】携帯情報機器において、活字品質の高精細表示を行うメインディスプレイ１、２を持つ表示デバイスが実装されているフレーム５、６は、結合部３において開閉自在に軸支されている。結合部３は、ヒンジ機構で構成され、結合部３を支点にメインディスプレイ１、２を見開き状態に設定して使用し、結合部３を支点にメインディスプレイ１、２を重ねて二つ折りに閉じて携帯できる。ジョグダイヤル４の回転によって、メインディスプレイ１、２に表示される画像を変更できる。フレーム６端部に、必要なスイッチ類である電源スイッチ７及びファンクションスイッチ８が実装される。
【選択図】　図１



【特許請求の範囲】
【請求項1】
２つの表示デバイスと、
前記２つの表示デバイスをそれぞれ実装する２つのフレームと、
それらのフレームを結合する結合部とを有し、
それぞれの前記表示デバイスは、階調のない画像表示を行う場合は１２７μｍ以下の画素サイズの画像表示を行う表示面を有し、
前記２つのフレームは、前記結合部によって開閉自在に軸支され、
前記２つのフレームを閉じたとき、前記結合部を支点に２つの表示部が重なって二つ折り状態になり、開いたとき、前記結合部を支点に２つの表示面が見開き状態になることを特徴とする携帯情報機器。
【請求項2】
２つの表示デバイスと、
前記２つの表示デバイスをそれぞれ実装する２つのフレームと、
それらのフレームを結合する結合部とを有し、
それぞれの前記表示デバイスは、階調のある画像表示を行う場合は８４．７μｍ以下の画素サイズの画像表示を行う表示面を有し、
前記２つのフレームは、前記結合部によって開閉自在に軸支され、
前記２つのフレームを閉じたとき、前記結合部を支点に２つの表示部が重なって二つ折り状態になり、開いたとき、前記結合部を支点に２つの表示面が見開き状態になることを特徴とする携帯情報機器。
【請求項3】
２つの表示デバイスと、
前記２つの表示デバイスをそれぞれ実装する２つのフレームと、
それらのフレームを結合する結合部とを有し、
それぞれの前記表示デバイスは、４２．３μｍ以下の画素サイズの画像表示を行う表示面を有し、
前記２つのフレームは、前記結合部によって開閉自在に軸支され、
前記２つのフレームを閉じたとき、前記結合部を支点に２つの表示部が重なって二つ折り状態になり、開いたとき、前記結合部を支点に２つの表示面が見開き状態になることを特徴とする携帯情報機器。
【請求項4】
前記結合部は、前記表示面に電子書籍を表示した場合、前記電子書籍の頁をめくる頁めくり機能を有することを特徴とする請求項１乃至請求項３のいずれか１項に記載の携帯情報機器。
【請求項5】
前記結合部の長手方向、下部に横回転する回転部を有することを特徴とする請求項１乃至請求項３のいずれか１項に記載の携帯情報機器。
【請求項6】
２つの表示デバイスと、
前記２つの表示デバイスをそれぞれ実装する２つのフレームと、
それらのフレームを結合する結合部とを有し、
それぞれの前記表示デバイスは表示面を有し、
前記結合部は長手方向、下部に横回転する回転部を有し、
前記２つのフレームは、前記結合部によって開閉自在に軸支され、
前記２つのフレームを閉じたとき、前記結合部を支点に２つの表示部が重なって二つ折り状態になり、開いたとき、前記結合部を支点に２つの表示面が見開き状態になることを特徴とする携帯情報機器。
【請求項7】
前記回転部は、結合部の長手方向、中央下部に横回転する縦長の回転部であり、

前記回転部の回転によって、前記表示面に表示される画像が変更されることを特徴とする請求項５又は請求項６に記載の携帯情報機器。
【請求項8】
前記２つのフレームのいずれか一方の端部に、前記携帯情報機器を操作するために必要なスイッチを有することを特徴とする請求項５又は請求項６に記載の携帯情報機器。
【請求項9】
２つの前記表示面を重ねて二つ折りに収納した状態で、前記スイッチが実装されない他方のフレームの、前記スイッチが実装されるフレームと重なる位置に、サブディスプレイを有することを特徴とする請求項８に記載の携帯情報機器。
【請求項10】
前記結合部は、電源の状態を表示するインジケータを有し、
前記インジケータは、前記２つの表示面を重ねて二つ折りに収納した状態であっても外部から視認できることを特徴とする請求項１乃至請求項３のいずれか１項に記載の携帯情報機器。
【請求項11】
２つの表示デバイスと、
前記２つの表示デバイスをそれぞれ実装する２つのフレームと、
それらのフレームを結合する結合部とを有し、
前記２つの表示デバイスは、所定の解像度の画像表示を行う第１の表示面と、前記第１の表示面より高い解像度で活字表示を行う第２の表示面とを有し、
前記２つのフレームは、前記結合部によって開閉自在に軸支され、
前記２つのフレームを閉じたとき、前記結合部を支点に前記第１の表示面と前記第２の表示面が重なって二つ折り状態になり、開いたとき、前記結合部を支点に前記第１の表示面と前記第２の表示面とが見開き状態になることを特徴とする携帯情報機器。
【請求項12】
前記第１の表示面を有する表示デバイスが実装されるフレームの一部に太陽電池を有することを特徴とする請求項１１に記載の携帯情報機器。
【請求項13】
表示面を有する表示デバイスが実装されるフレームと、
前記表示デバイスの表示面を保護する蓋と、
前記フレームと前記蓋を結合する結合部とを有し、
前記表示デバイスは、８４．７μｍ以下の画素サイズで画像表示可能な表示面を有し、
前記フレームと前記蓋とは、前記結合部によって開閉自在に軸支され、
前記蓋が前記フレームを保護するとき、前記結合部を支点に前記蓋を回転させて前記フレーム内の前記表示面を覆い、前記フレーム内の表示面を視認するとき、前記結合部を支点に前記蓋を回転させて表示面を露出することを特徴とする携帯情報機器。
【請求項14】
前記表示面に表示する情報を無線通信により受信可能な通信部と、
前記表示面に表示された情報を操作するためのペンを格納する格納部と、
前記表示面に表示された情報を操作するためのスイッチと、
を有することを特徴とする請求項１３に記載の携帯情報機器。
【請求項15】
前記表示面に表示された画像を横長又は縦長に変更可能な手段を有することを特徴とする請求項１３に記載の携帯情報機器。
【請求項16】
前記フレームの長手方向の長さは、前記蓋の長手方向の長さより大きいことを特徴とする請求項１３に記載の携帯情報機器。
【請求項17】
前記蓋と前記フレームとが閉じた状態において、前記蓋で覆われていない前記フレームの一部にサブディスプレイを有することを特徴とする請求項１６に記載の携帯情報機器。

【請求項18】
前記蓋と前記フレームとが閉じた状態において、前記蓋で覆われていない前記フレームの一部に太陽電池を有することを特徴とする請求項１６に記載の携帯情報機器。
【請求項19】
請求項５に記載の携帯情報機器における画像表示方法であって、
前記見開き状態の前記２つの表示面に電子書籍を表示し、前記回転部を操作することで前記電子書籍の頁めくりを行うことを特徴とする画像表示方法。
【請求項20】
請求項９に記載の携帯情報機器における画像表示方法であって、
前記見開き状態の前記２つの表示面に電子書籍を表示し、前記回転部を操作することで前記電子書籍の頁めくりを行い、前記頁めくりに対応して前記表示面に表示された電子書籍の頁位置を含む書誌情報を前記サブディスプレイに表示することを特徴とする画像表示方法。
【請求項21】
請求項１１に記載の携帯情報機器における画像表示方法であって、
前記第１の表示面にＷｅｂ画面を表示し、前記第２の表示面に電子書籍を表示することを特徴とする画像表示方法。
【請求項22】
請求項１７に記載の携帯情報機器における画像表示方法であって、
前記サブディスプレイに、前記表示面に表示されている画像の内容を示唆する情報を表示することを特徴とする画像表示方法。

【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
本発明は、携帯情報機器及びその携帯情報機器における画像表示方法に関する。
【０００２】
【従来の技術】
書籍等の印刷メディアから得られる画像情報の品質を損なわず、書籍が持つ特性である携帯性も兼ね備えた見開き表示のブック型ディスプレイが提案されている（特許文献１参照）。また、文庫本サイズの電子書籍において、表示品質を良くして見やすくするために、２つの液晶ディスプレイ（ＬＣＤ：Ｌｉｑｕｉｄ　Ｃｒｙｓｔａｌ　Ｄｉｓｐｌａｙ）パネルから構成され、見開き可能な、画素あるいは画素間ピッチを２００μｍ以下にした電子書籍のディスプレイも提案されている（特許文献２参照）。
【０００３】
【特許文献１】
特開平９－２６７６９号公報（段落［００２９］～［００３６］、図２～図４参照）
【特許文献２】
特開平６－１３８８３９号公報（段落［０００６］～［０００９］、図１参照）
【０００４】
【発明が解決しようとする課題】
しかしながら、前記従来の技術によれば、いずれも表示デバィスとしてＬＣＤが用いられており、解像度という観点から言えば、書籍に替わる役割を果たしていない。それは、現在のＬＣＤ技術における表示品質の限界が見えているためである。
また、従来の携帯情報機器には、本来携帯情報機器が持つべき機動性を意識したユーザインタフェースが備わっておらず、操作性や使い勝手の面で不都合があった。
【０００５】
本発明は、上記事情に鑑みてなされたものであり、活字品質の高精細表示を行う表示デバイスを用い、かつ、人間工学を意識したコンポーネント配置を行うことにより、操作性の改善と使い勝手の向上を図った携帯情報機器及び画像表示方法を提供することを目的とする。

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【０００６】
【課題を解決するための手段】
前記課題を解決するために本発明は、活字品質の高精細表示を行うデバイス（例えば、電気泳動技術を用いた電子ペーパ）を表示デバイスとして用い、その表示デバイスに、カードメディアに保存された電子書籍や、Ｗｅｂ（Ｗｏｒｌｄ　Ｗｉｄｅ　Ｗｅｂ）画面や、無線インタフェースを介して入手される新聞やカタログを表示し、かつ、人間工学を意識したスイッチ等のコンポーネント配置を行うことにより、操作性の改善と使い勝手の向上を図った携帯情報機器及び画像表示方法を提供することができる。
なお、請求項における表示面の画素サイズによる記載内容は、発明の実施の形態においては、表示面の解像度により記載するものとする。以下に、その画素サイズと解像度との関係について示す。
・画素サイズ１２７．０μｍ以下　→　解像度２００ｐｐｉ以上
・画素サイズ　８４．７μｍ以下　→　解像度３００ｐｐｉ以上
・画素サイズ　４２．３μｍ以下　→　解像度６００ｐｐｉ以上
【０００７】
【発明の実施の形態】
以下、図面を参照しながら本発明の実施の形態について説明する。
【０００８】
≪第１の実施の形態≫
図１は、本発明の第１の実施の形態に係る携帯情報機器を示す図であり、携帯情報機器の表示面を開閉したときのそれぞれの正面図と平面図が示されている。
図１に示す携帯情報機器によれば、活字品質の高精細画像表示を行う表示面（以下、「メインディスプレイ１、２」という）を持つ表示デバイスが実装されているフレーム５、６は、結合部３において開閉自在に軸支されている。結合部３は、ヒンジ機構（蝶番）で構成され、結合部３を支点にメインディスプレイ１、２を見開き状態にして使用し（図１（ａ）参照）、結合部３を支点にメインディスプレイ１、２を重ねて二つ折りに収納して閉じて、携帯することができる（図１（ｂ）参照）。なお、結合部３は、左側のフレーム５と右側のフレーム６とを接続する部分を含めて、左側のフレーム５と右側のフレーム６とが重なる部分を指す。
活字品質の高精細画像表示を行う表示面としては、階調のない２００ｐｐｉ以上の解像度を持つもの、階調のある３００ｐｐｉ以上の解像度を持つもの、又は、望ましくは６００ｐｐｉ以上の解像度を持つものがあげられる。その定義や根拠等については後記する。
【０００９】
図２に示すように、見開き状態にしたメインディスプレイ１、２に電子書籍が表示され、結合部３の長手方向、中央下部に、横回転する縦長、円筒形の回転部４が実装されており、回転部４の操作を頁めくりの操作と関連付けることによって、頁めくりが行われる。なお、回転部４は、例えば、ジョグダイヤル（Ｒ）等である。
回転部４の操作によって得られる機械的な変化は、基本的に２方向（左右）の回転、２方向（上下）の変位及び押し込み変位という要素からなるが、それ以外に、各方向での回転量やその回転量に基づく演算によって各回転方向での回転速度も得ることができる。これによれば、回転部４の操作に伴う変化を頁めくりの操作と関連付けることにより、使い勝手の向上を図ることができる。
【００１０】
このことにより、ユーザは、書籍の頁をめくる感覚と同じ横方向に回転部４を操作でき、また、回転部４は、ユーザが携帯情報機器を片手で持ったときに操作し易い縦長構造となっており、かつ、滑り止めの縦筋が入っているため、操作性が良い。更に言えば、回転部４の回転によって、メインディスプレイ１、２に表示される画像を変更することができるわけであり、その使い方には十分工夫の余地がある。
【００１１】
また、メインディスプレイ１、２を持つ表示デバイスは、それぞれフレーム５、６に実装

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され、メインディスプレイ２の表示デバイスが実装される一方のフレーム６端部の空き位置に、当該携帯情報機器を操作するために必要なスイッチ類である電源スイッチ７及びファンクションスイッチ８が実装される。これらのスイッチ類は、操作したときに、メインディスプレイ１、２に表示された内容の視認を妨げないような位置、図２では、画面下の中央右位置に実装される。
更に、メインディスプレイ１、２を重ねて二つ折りに収納した状態で、スイッチ類が実装されない他方のフレーム５の、スイッチ類が実装されるフレーム６と重なる位置に、書籍のタイトル、著者、頁位置を含む書誌情報を表示するサブディスプレイ９が実装される（図２参照）。
【００１２】
図２では、右利きのユーザは右手でスイッチ類を操作するため、スイッチ類を右下に配置し、サブディスプレイ９を左下に配置する例を示したが、左利きのユーザ向けには、スイッチ類を左下に配置し、サブディスプレイ９を右下に配置することも考えられる。このように、スイッチ類、サブディスプレイ９の配置を人間工学的な見地で決定することにより、操作性の一層の向上が図れる。
スイッチ類については、単独でオン、オフされる以外に、そのスイッチが押されている時間等を監視することにより、それらの組み合わせで多くの機能を定義できることとする。また、表示サイズを大きくするために、フレーム全体にメインディスプレイ１、２を実装し、その画面端部にタッチパネルを表示することによるソフトウエア・キーボード入力を行なってもよい。この場合、サブディスプレイ９はフレーム前面に実装される。なお、ソフトウエア・キーボード以外に、リモコンや携帯電話等を用いた無線（Ｂｌｕｅｔｏｏｔｈ（Ｒ）、赤外線等）によるキー入力も考えられる。
【００１３】
一方、結合部３には、ＬＥＤ（Ｌｉｇｈｔ　Ｅｍｉｔｔｉｎｇ　Ｄｉｏｄｅ）から構成され、電源のオン、オフ状態を表示する電源インジケータ１０及びアクセスインジケータ１１も実装されており、見開き状態においては勿論のこと、メインディスプレイ１、２を重ねて二つ折りに収納して閉じた状態においても外部からそれらのインジケータを視認することが可能になっている。
ちなみに、本発明の実施の形態に係る携帯情報機器については、その収納時は、１５１ｍｍ×１０５ｍｍ×６ｍｍの文庫本サイズ、その使用時は、１５１ｍｍ×２０４ｍｍ×３ｍｍのサイズでフレーム５、６が設計される。使用時、片手で持ち操作するためには厚さ３ｍｍが最適であり、重量２００ｇ未満が好適である。
なお、前記実施の形態によれば、見開き状態にしたメインディスプレイ１、２のそれぞれに電子書籍が表示されるとしたが、所定のスイッチ操作又はソフトウエア・キーボード入力により、一方のメインディスプレイ１（２）に電子辞書が表示されてもよい。また、電子書籍が表示された場合には、スイッチ類やサブディスプレイ９を利用した、付箋やしおりに代わるマーキングの機能が付加され、利用者に利便性を提供するための配慮がなされるものとする。
【００１４】
図３は、他の表示事例であり、メインディスプレイ１に、通常の精細度でＷｅｂ画面が表示され、メインディスプレイ２に、そのＷｅｂ画面とは異なる活字品質の精細度で電子書籍が表示されている。
ここでは、Ｗｅｂ画面をカラー２００ｐｐｉ（ｐｉｘｅｌ　ｐｅｒ　ｉｎｃｈ：１インチあたりの画素数）の解像度で、電子書籍を６００ｐｐｉの解像度で表示するものとする。メインディスプレイ１、２に、解像度が異なる別々の内容を表示するためには、表示コントローラ及び表示メモリをそれぞれに独立して持てば容易に制御できるが、ここでは、省電力上、共通の表示コントローラを用い、また、共通の表示メモリを区画割りして制御することとする。カラー画像を含むＷｅｂ画面をメインディスプレイ１に表示したり、文字情報である電子書籍をメインディスプレイ２に表示したりする、表示データの表示面への振り分けは、解像度に応じて自動的に行われるものとする。なお、省電力化を一層進める

ために、主メモリ中に表示メモリを割付け、ＣＰＵに表示コントローラの機能を実行させても良い。携帯情報機器の内部構成等の詳細は後記するものとする。
なお、Ｗｅｂ画面が表示されるメインディスプレイ１の表示デバイスが実装されるフレーム５の一部に太陽電池１２を実装することもできる。この場合、太陽電池１２は補助電源として使用し、主電源としては、リチウムイオン電池やポリマー電池を使用する。
前記実施の形態では、１画面にＷｅｂ画面を表示する例について示したが、Ｗｅｂ画面として左右２画面を割り当ててもよく、一方に専用サイトを表示し、他方にコンテンツを表示する左右非対称型と、左右交互に見たいコンテンツを表示する左右対称型が考えられる。特に、左右対称型については、画面分割し、左画面に表示された内容の続きを右画面に表示させる等のバリエーションも可能である。また、２画面を上下に配置して使用し、上下にスクロールさせることも考えられる。なお、いずれも画面のスクロールは２画面間で連動して行われるものとする。また、前記実施の形態ではメインディスプレイが２つある構成を説明したが、これは３つ以上のメインディスプレイを持つ構成でもよく、例えば、ヒンジ機構にて構成される結合部を２つ設けて３つのメインディスプレイを結合し、三つ折で収納するような構成でもよい。
【００１５】
図４は、更に他の表示事例であり、メインディスプレイ１、２に、通信部（図示せず）を介してネットワークから送信されてきたコンテンツ、ここでは電子新聞が表示されている。メインディスプレイ１には２００ｐｐｉで見出しが表示され、見出しを選択し、例えば、後記する入力ペンを用いてクリックすることにより、本文を入手することができ、その本文がメインディスプレイ２に６００ｐｐｉの解像度で白黒表示がなされる。
【００１６】
≪表示デバイスの表示原理≫
ここで、本発明の実施の形態に係る携帯情報機器に使用される表示デバイスについて簡単に説明する。ここでは、溶媒中の電荷を帯びた粒子が電界によって移動する電気泳動技術を用いたシートディスプレイが表示デバイスとして使用される。
図８に、その基本構造が示されている。すなわち、今、軟らかな透明カプセルを縦横密に並べて薄い透明フィルムとパネル基板で挟んだ状態を仮定する。このように並んだカプセルの内部は、滑らかなオイルで満たされ、そこに黒と白の微粒子が大量に入っている。本実施の形態では、透明フィルム側の電極は一定（例えば、０Ｖ）とし、対向するパネル基板側電極の電圧をプラス又はマイナスに変動させることによって粒子を移動させる。例えば、黒い粒はマイナス、白い粒はプラスの電荷を帯びている場合、スイッチを入れるとパネルに電流が流れ、ある場所にはプラス、別の場所にはマイナスの電圧が生じるようになっていて、次の瞬間、カプセル内の黒い粒と白い粒がオイルの中を泳ぐように透明フィルム面に引き寄せられる。プラスの場所に黒い粒が、マイナスの場所に白い粒が張り付く。これを透明フィルムの表側から見た状態（図中、目マーク）がシートディスプレイに刷られた文字とその余白ということになる。
【００１７】
ところで、電気を切っても静電気の働きで暫く文字は剥がれない。書替えるときのみ、また電圧を印加する必要がある。このことにより、微粒子群が一斉に剥がれ、オイルの中を再び泳ぐように移動して別の場所に張り付く。この働きを電気泳動という。
パネル基板は、アクティブマトリクスと称し、画素単位で細かに電圧が印加される仕組みになっている。基本的には液晶ディスプレイ等と同様にＴＦＴ（Ｔｈｉｎ　Ｆｉｌｍ　Ｔｒａｎｓｉｓｔｏｒ、薄膜トランジスタ）等で構成される。光が突き抜ける透過型ディスプレイと異なり、反射型であるため、バックライトが不要という利点があり、また、書替え時のみ駆動電力が必要となるため、バッテリ容量が少なくて済み、従って、携帯情報機器を薄く、軽く設計できる。また、カラーフィルタを重ねることによりカラー化が実現される。
【００１８】
≪第２の実施の形態≫

図５は、本発明の第２の実施の形態に係る携帯情報機器を示す図であり、携帯情報機器を開閉したときのそれぞれの正面図と断面図が示されている。
図１に示す第１の実施の形態との差異は、フレーム両面に表示デバイスが実装されることなく、メインディスプレイ１の表示デバイスのみ実装されている点と、そのサイズにある。ここでは、Ａ４サイズのメインディスプレイ１の表示デバイスが一方のフレームに実装され、他方のフレームは、携帯情報機器を携帯するときにメインディスプレイ１を覆って保護する蓋１４になっている。ちなみに、表示デバイスが実装されているフレーム５は、２９７ｍｍ×２３０ｍｍ×５ｍｍ（蓋無しのサイズ）で設計され、蓋１４付きの場合は厚さが６ｍｍになる。
図５に示す携帯情報機器によれば、活字品質の高精細表示を行うメインディスプレイ１を持つ表示デバイスが実装されるフレーム５は、その結合部３において蓋１４と回動自在に軸支されている。結合部３は、ヒンジ機構（蝶番）で構成され、結合部３を支点にメインディスプレイ１を見開き状態にして視認しながら使用し（図５（ａ）参照）、結合部３を支点にメインディスプレイ１と蓋１４を重ねて閉じて、フレーム５を保護した状態で携帯することができる（図５（ｂ）参照）。
【００１９】
また、メインディスプレイ１が実装されるフレーム５と、蓋１４の長手方向のサイズが、一方は２９７ｍｍであるのに対し、他方は２７５ｍｍとなっており、このサイズ差に相当するメインディスプレイ１のフレーム部分にサブディスプレイ９が収納され、外部から視認可能となっている。なお、サブディスプレイ９の代わりに図３における太陽電池１２が実装されてもよい。
このことにより、蓋１４が閉じられた状態であっても、サブディスプレイ９に表示された内容を確認することができ、また、太陽電池１２による充電が可能になる。
【００２０】
それぞれの実装例を図６に示す。図６（ａ）がサブディスプレイ９の実装例、図６（ｂ）が太陽電池１２の実装例である。ここでは、メインディスプレイ１に、例えば、無線ＬＡＮ（Ｌｏｃａｌ　Ａｒｅａ　Ｎｅｔｗｏｒｋ）を介して入手される新聞が表示される。図６（ａ）に示したサブディスプレイ９には、その新聞の見出しや現在の時刻が表示され、外部から視認可能となっている。これによれば、蓋１４が閉じられた状態であっても、サブディスプレイ９を見ることによって、そのときメインディスプレイ１に表示されているコンテンツの概要やその他の情報を知ることができる。また、図６（ｂ）に示す太陽電池１２は、蓋１４を閉じた状態にあっても外部に晒されるため、太陽光を取り込んで充電することが可能になり、補助電源として主電源のポリマ電池を補助することができる。
なお、メインディスプレイ１に表示されるコンテンツとしては、他に、展覧会や展示会において配布されるカタログ等も考えられる。この場合、例えば、ユーザは、展示会場の入口のゲートを通過すると、展示製品のカタログ類のデータが、近距離無線通信によってそのユーザが持っている携帯情報機器にダウンロードされるので、必要に応じてそのカタログ類のデータを閲覧することができる。
また、この携帯情報機器は、図１に示す携帯情報機器と同様に、回転部による頁めくり機能の実装を可能とし、その他に、表示の拡大縮小、コンテンツ蓄積、選択を行うためのユーザインタフェースを持つことができる。また、検索速度向上のために、お気に入りや履歴機能等、コンテンツのソート・ディレクトリ構造を作り込むために、リスト構造をパソコン等により編集した後、この携帯情報機器に転送することができる。
【００２１】
図５に説明を戻すと、メインディスプレイ１の表示デバイスが実装されるフレーム５の左端面には２５ｍｍ程度の空きスペースがあって、ここに、メインディスプレイ１に表示された内容を操作するために必要な入力ペン１３の収納スペースが確保される。また、電源スイッチ７やファンクションスイッチ８等のスイッチ類も実装されている。
入力ペン１３は、利き手に応じて、入力ペン１３を取りやすく収納し易い位置に、また、スイッチ類は、携帯情報機器を持ったときに操作しやすい位置に実装される。ここでは、

フレーム５の左端面は手持ち位置としても活用され、持ち歩き易いようにメインディスプレイ１に向かいスロープが施されている（図５の丸枠Ａ）。また、携帯するために蓋１４を閉めたときは、フレーム表面がフラットになるように（図５の丸枠Ｂ）、使用するために蓋１４を開いたときは、メインディスプレイ１の表示デバイスが実装されるフレーム５の背面にフラットフィットするように（図５の丸枠Ｃ）、蓋１４は結合部３を軸に３６０°回転する。
なお、ここでは右利き用の配置が示されており、左利きの場合は左右反転した位置となる。
【００２２】
図７は、いずれも資料ビューアとしての表示事例を示したものであり、図７（ａ）は、ＰｏｗｅｒＰｏｉｎｔ（登録商標）で作成した文書等の表示用である横長対応型の表示事例、図７（ｂ）は、ＰＤＦ（Ｐｏｒｔａｂｌｅ　Ｄｏｃｕｍｅｎｔ　Ｆｏｒｍａｔ）文書等の表示用である縦長対応型の表示事例を示す。
前者は、画面下のフレームに入力ペン１３及びスイッチ類が、また、画面左のフレームに太陽電池１２が実装されている。後者は、画面左のフレームに入力ペン１３及びスイッチ類が、また、画面上のフレームに太陽電池１２が実装されている。換言すれば、図７（ａ）と（ｂ）は、同じ携帯情報機器の図であるが、前者は、横長の文書を表示した状態、後者は、縦長の文書を表示した状態を示している。なお、同じ画像データを横長、縦長の両方の表示をすることができ、また、その表示切換を行うこともできるものとする。
ここで、入力装置について補足説明を行なう。前記実施の形態では、入力装置として、回転部４、スイッチ類、入力ペン１３が例示されているが、必要に応じて、タッチパネル、ローラ、タブレット等を付加することが考えられる。すなわち、タッチパネルによるＵＲＬ入力、ローラによる前後画面への移動やウィンドウ間の移動操作、タブレットによるポインティング等により入力操作を補助するものである。なお、回転部４については、電子書籍の頁めくり以外にリンクの順次選択用にも使用可能である。
【００２３】
≪携帯情報機器の内部構成と動作≫
図９は、本発明の実施の形態に係る携帯情報機器の内部構成を示すブロック図である。本発明の携帯情報機器は、ＣＰＵ２１、主メモリ２２、フラッシュメモリ２３、無線ＬＡＮコントローラ２４、描画／表示コントローラ２５、表示メモリ２６、認識ＬＳＩ２７、カードコントローラ２８、入出力コントローラ２９で構成され、それぞれアドレス、データ、コントロールのためのラインが複数本で構成される内部バス３０を介して接続される。
なお、主電源はポリマ電池とし、太陽電池を補助電源として用いる（図示せず）。また、図９において、図１～図７に示す符号と同一符号が付されたブロックは、図１～図７に示すものと同一とする。
【００２４】
まず、携帯情報機器に電子書籍を表示するために、ユーザは、電子書籍が格納されたカード５０をカードコントローラ２８に挿入する。ＣＰＵ２１は、主メモリ２２に記録されたプログラムに基づき、カードコントローラ２８、内部バス３０を介してその電子書籍を取り込み、主メモリ２２の作業領域に格納する。
次に、描画／表示コントローラ２５は、ＣＰＵ２１のコントロールの下、電子書籍を主メモリ２２から読み込んで表示メモリ２６に展開する。描画／表示コントローラ２５は、更に、表示メモリ２６に展開された電子書籍を表示デバイスの表示タイミングに従って読み出し、メインディスプレイ１、２に表示する。
なお、ここでは、簡単のために、表示メモリ２６は、２頁分の画面容量を持ち、メインディスプレイ１、２の画面にそれぞれ対応しているものとする。
本実施の形態は主メモリと表示メモリを個別に設けた構成であるが、これらはシートディスプレイが大型化する要因を持つ。これを避ける１つの手段としては、主メモリと表示メモリを統合したユニファイドメモリを備えることがある。この構成によって、小型化、薄型化が可能になるという効果を奏する。つまり、ＣＰＵが処理するプログラムと表示デー

タとを１つのメモリに格納するものである。このように１つに統合したメモリを用いる場合、このメモリに対するアクセスが競合しバスをどちらかで占有するという事態が生じることがあるが、これはバス調停機能を備えることによって解消することができる。

【００２５】

ユーザが回転部４を操作することにより頁めくりの指示があったとき、ＣＰＵ２１は、入出力コントローラ２９、内部バス３０を介してその指示を取り込む。そして、新たに表示する頁の内容を主メモリ２２から読み出して、描画／表示コントローラ２５を介して表示メモリ２６を更新し、その更新した内容をメインディスプレイ１、２に供給する。これにより、「頁めくり後」の頁がメインディスプレイ１、２に表示される。

回転部４を横回転させることによって、その回転量が計測され、その回転方向及び回転量により、現在メインディスプレイ１、２に表示されている頁を基準に、新たに表示すべき頁が特定されるように、回転部４の回転量と頁数との対応関係が予め定義されている。また、例えば、回転部４に回転抵抗を付与することによって頁をめくる臨場感を持たせてもよいし、スピーカーをフレーム５、６に付加することによって頁をめくるときに効果音が出るようにして臨場感を持たせてもよい。更に、頁めくり機能としては、左右に回転して頁をめくるジョグダイヤル（Ｒ）等の回転部の他に、マウスパッドを有し、その上を指で左右に動かすことで頁をめくるようなものであってもよい。

【００２６】

なお、スイッチ類のユーザ操作による指示についても、ＣＰＵ２１によって入出力コントローラ２９及び内部バス３０を介して取り込まれ、予めスイッチ類毎に定義されたプログラムの実行が行われる。

また、インジケータ表示については、ＣＰＵ２１が、主メモリ２２に記録されたプログラムに基づいて処理した結果によって、例えば、アクセスインジケータ１１をオンする命令を生成し、その命令を内部バス３０及び入出力コントローラ２９経由でアクセスインジケータ１１に出力することで、アクセスインジケータ１１を点灯させることができる。

【００２７】

一方、携帯情報機器にＷｅｂ画面を表示するために、ユーザは、ファンクションスイッチ８を押下することによりＷｅｂアクセスを指示する。このことにより、無線ＬＡＮコントローラ２４は、ＣＰＵ２１によるコントロールの下でサイトアクセスを実行し、そのサイトから必要なコンテンツを入手して主メモリ２２又はフラッシュメモリ２３に取り込む。ＣＰＵ２１は、主メモリ２２又はフラッシュメモリ２３からそのコンテンツを読み出し、Ｗｅｂ画面として生成して描画／表示コントローラ２５を起動する。描画／表示コントローラ２５は、主メモリ２２からＷｅｂ画面情報を読み込んで表示メモリ２６へ展開し、更に、表示メモリ２６に展開されたＷｅｂ画面情報を表示デバイスの表示タイミングに従って読み出し、メインディスプレイ１、２に供給し、表示する。

【００２８】

なお、ファンクションスイッチ８の押下によりサイト単位のアクセスメニュ一覧が表示され、ユーザがその中からアクセスすべきサイトを選択するものとする。また、図３に示す画面表示例では、異なる内容を、それぞれ解像度が異なる状態で表示しているが、これは、異なる解像度に対応する描画／表示コントローラ２５を別々に備えるか、又は、高解像度で描画及び表示可能なコントローラを用い、低い解像度で表示する画面を生成するときに内部で解像度を落とす処理を行うことにより実現される。

【００２９】

次に、入力ペン１３による操作指示があった場合の動作について、図４に示す画面を例示して説明する（適宜図９参照）。図４の携帯情報機器の左側の画面（メインディスプレイ２）には電子新聞が表示されている。一方の画面（メインディスプレイ１）には見出しが表示されており、ユーザは、この見出しの中から詳細を知りたい見出しを選択し、入力ペン１３でその見出しをポインティングすることにより、他方の画面（メインディスプレイ２）にその本文を表示することができる。

すなわち、入力ペン１３でポインティングされた座標は、認識ＬＳＩ２７が演算すること

により認識し、ＣＰＵ２１に通知される。ＣＰＵ２１で、その座標と表示内容との対応が調べられ、見出しに対応する本文がフラッシュメモリ２３又は無線ＬＡＮコントローラ２４経由で外部から取り込まれ、メインディスプレイ２に表示される。

【００３０】

≪その他の実施の形態≫

以上本発明について好適な実施の形態について示したが、本発明は前記実施の形態に限定されず、本発明の趣旨を逸脱しない範囲で適宜変更が可能である。例えば、図面において、サイズ（長さや厚さ等）を示している箇所があるが、本発明は、それらのサイズに限定されるものではなく、他のサイズであってもよい。

図２、図６に、サブディスプレイ９が示され、そのサブディスプレイ９には、タイトル、頁、時間等のデータが表示されているが、その内容は、予め電子書籍に格納されているものでもよいし、その都度ＣＰＵ２１が生成するものであってもよい。ここでは、サブディスプレイ９のための表示メモリ領域が主メモリ２２内に割り付けられてあるものとし、その領域にサブディスプレイ９の表示内容が書き込まれ、更に、その表示内容が読み出されてサブディスプレイ９に供給されるものとする。

【００３１】

メインディスプレイ１、２に表示される内容については、独立した表示メモリ２６を用意し、描画／表示コントローラ２５によって表示内容が書き込まれ、更に、読み出されて表示されるものとして説明したが、サブディスプレイ９同様、主メモリ２２の一部領域に表示メモリ領域を割り付け、ＣＰＵ１１が表示内容を書き込み、かつ、読み出してメインディスプレイ１、２へ供給するようにしてもよい。この場合、ＣＰＵ１１の負担は増えるが、軽薄短小化を目指す実装上の制限及び省電力化の観点からこの方が望ましい。

また、前記実施の形態によれば、表示デバイスとして、電気泳動技術を用いて高精細表示を行うシートディスプレイを示したが、これに制限されることなく、カラー表示で２００ｐｐｉ以上、白黒表示で３００ｐｐｉ以上、望ましくは白黒表示で６００ｐｐｉ以上の解像度を持ち、厚さがフレームも含めて３ｍｍ程度で実現できる表示デバイスであれば、液晶ディスプレイ、有機ＥＬ（Ｅｌｅｃｔｒｏｌｕｍｉｎｅｓｃｅｎｃｅ）等でも代用できる。

【００３２】

≪活字品質の高精細表示について≫

ここで、「活字品質の高精細表示」について定義付けを行うと共に、その解像度の根拠について説明する。

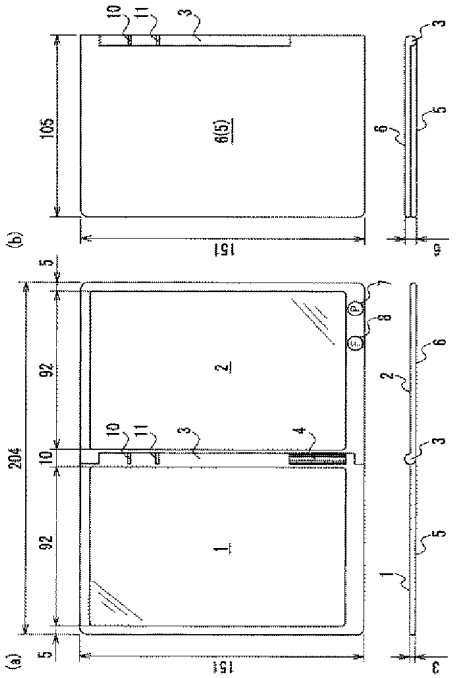
まず、図１０に、活字品質の高精細画像表示のための解像度を明らかにするために行った主観評価実験結果を示す。本実験では、文庫本を模擬して文字サイズ約３．５ｍｍの漢字かな混じりの和文を各種解像度により印刷し、その印刷物を評価したものである。図１０では、階調表示可能なディスプレイにおいて中間調を活用して視覚的に文字を滑らかに表示させる、いわゆるアンチエリアスを用いた表示（階調のある画像表示）を模擬した「８ｂｉｔ階調プリント」と、階調のない画像表示を模擬した「１ｂｉｔモノクロプリント」とを併記した。

主観評価の被験者は、１０人（男性８人、女性２人）で、いずれも画像デバイス研究に従事している研究者である。実験手法としては、二重刺激劣化尺度法という、参照画像を基準としてテスト画像に評価点数を付け画質の良さの程度を評価するものである。その評価を、画質の悪さに関して、「非常に気になる」、「気になる」、「やや気になる」、「判るが気にならない」及び「判らない」の５段階で行った。

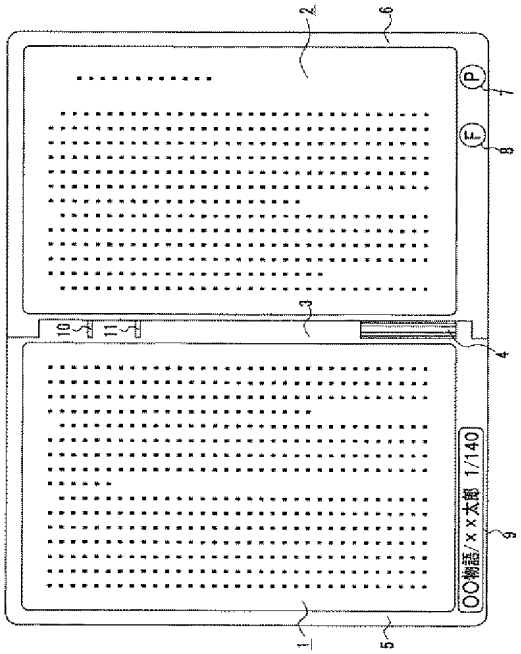
評価値が「判るが気にならない」と「やや気になる」との中間である活字品質に必要な解像度許容値は「８ｂｉｔ階調プリント」で２００ｐｐｉ、「１ｂｉｔモノクロプリント」で３００ｐｐｉとなっており、これ以上の解像度において活字品質の高精細画像表示となる。ここで、階調のない画像表示を行う場合、画像を保持するいわゆるメモリ性を付与することが容易となる。ディスプレイにおけるメモリ性は電気泳動、液晶等の表示部において持たせてもよいし、各画素回路部に容量、スイッチ等により付与することも可能である

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【００３３】
次に、活字がはっきり表示できる解像度について説明する。
低解像度で画数の多い難しい漢字を表示する場合、文字を省略しての表示が行われており、人間が正確な漢字を忘れてしまう問題がある。そのためにも省略されていない漢字表示が可能な高精細画像表示が必要となる。画数の多い文字としては、例えばＪＩＳ漢字コードの第二水準漢字の中にあるようなものがある。具体的には、図１１に示すように、「鬱」のＡＡ’及び「鸞」のＢＢ’の切線における横線及び斜め線の数は、それぞれ１１本及び１３本であり、これらの文字を省略なく表示するため線数の２倍＋１以上の画素数が必要となる。これを文庫本等で常用されている３．５ｍｍ程度の文字サイズで表示する場合、画素ピッチ１３０μｍ以下で概ね２００ｐｐｉ以上の解像度が必要である。さらに、図１１からも判るように文字表示において、黒線より白部が広い方が好ましく、このために白部を線数の倍とすると文字表示に必要な画素数は線数の３倍＋１以上となり、これを文庫本等で常用されている３．５ｍｍ程度の文字サイズで表示する場合、画素サイズ８４．７μｍ以下で概ね３００ｐｐｉ以上の解像度が必要となる。
つまり、表示デバイスの表示面を画素サイズが８４．７μｍ以下とする、または３００ｐｐｉ以上の解像度にすることで第二水準漢字にあるような画数の多い漢字を含んだ場合でもすべて省略せずに表示することができる。
【００３４】
【発明の効果】
以上の説明のように、本発明によれば、活字品質の高精細表示を行う表示デバイスを用い、かつ、人間工学を意識したコンポーネント配置を行うことにより、操作性の改善と使い勝手の向上を図った携帯情報機器及び画像表示方法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の実施の形態に係る携帯情報機器を示す図である。
【図２】図１の表示事例を示す図である。
【図３】図１の表示事例を示す図である。
【図４】図１の表示事例を示す図である。
【図５】本発明の第２の実施の形態に係る携帯情報機器を示す図である。
【図６】図５の表示事例を示す図である。
【図７】図５の表示事例を示す図である。
【図８】本発明の実施の形態に係るシートディスプレイの表示原理を示す図である。
【図９】本発明の実施の形態に係る携帯情報機器の内部構成を示すブロック図である。
【図１０】本発明の実施の形態に係る活字品質の高精細表示の解像度と主観評価の関係を示す図である。
【図１１】本発明の実施の形態に係る活字品質の高精細表示の解像度を説明する図である。
【符号の説明】
１、２…メインディスプレイ
３…結合部
４…回転部
５、６…フレーム
７…電源スイッチ
８…ファンクションスイッチ
９…サブディスプレイ
１０、１１…インジケータ（ＬＥＤ）
１２…太陽電池
１３…入力ペン
１４…蓋

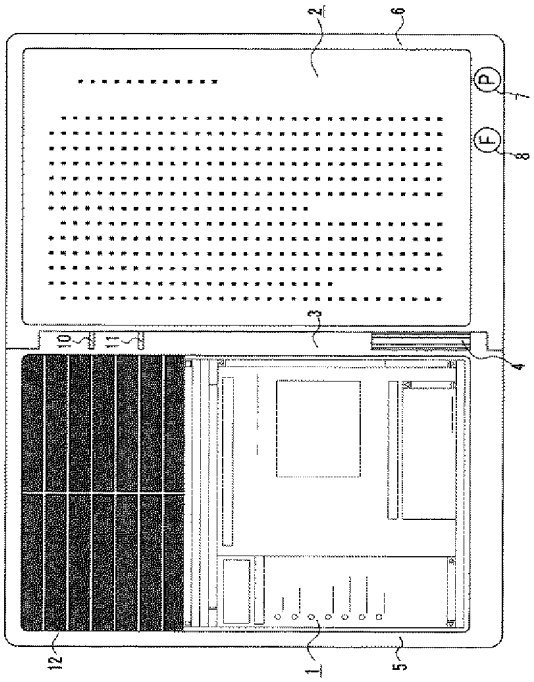
【図1】



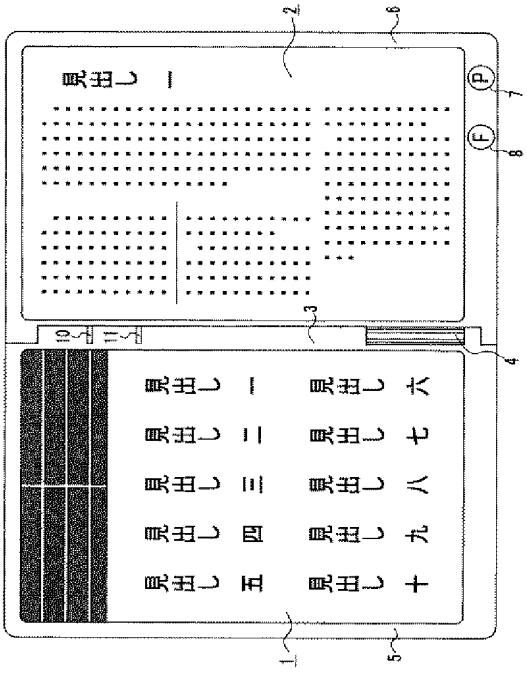
【図2】



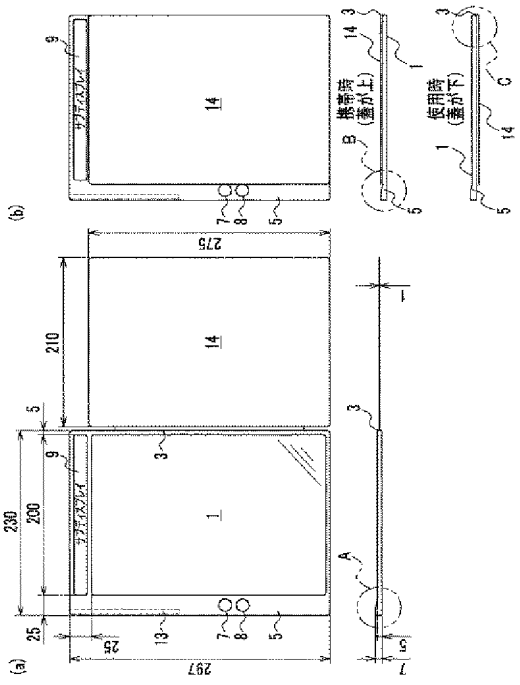
【図3】



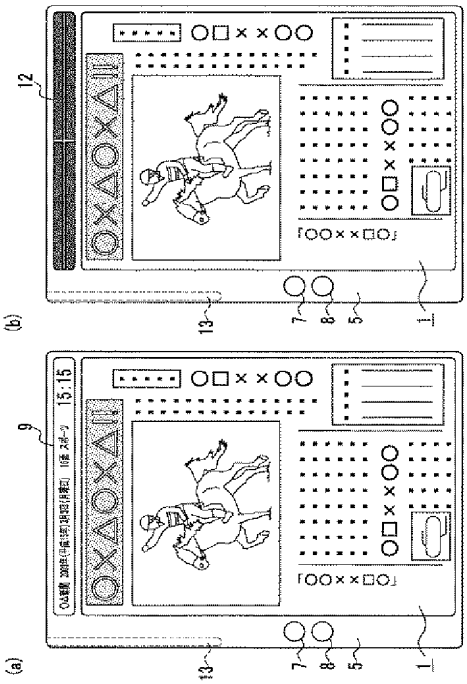
【図4】



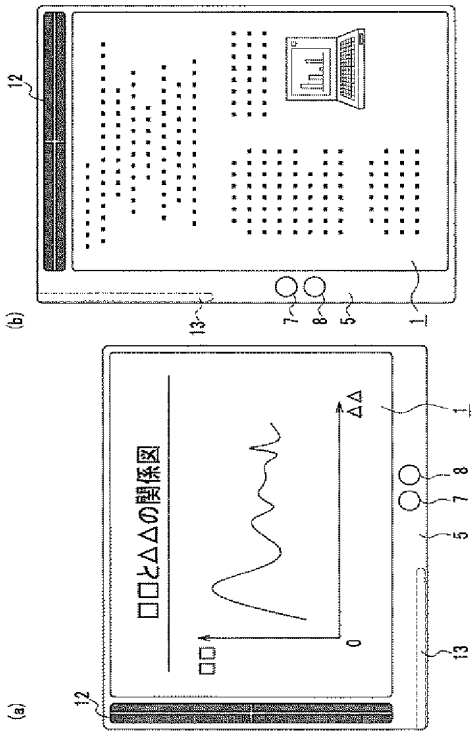
【図5】



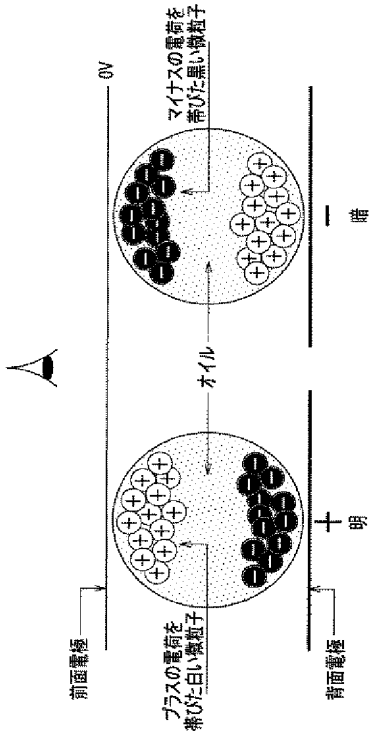
【図6】



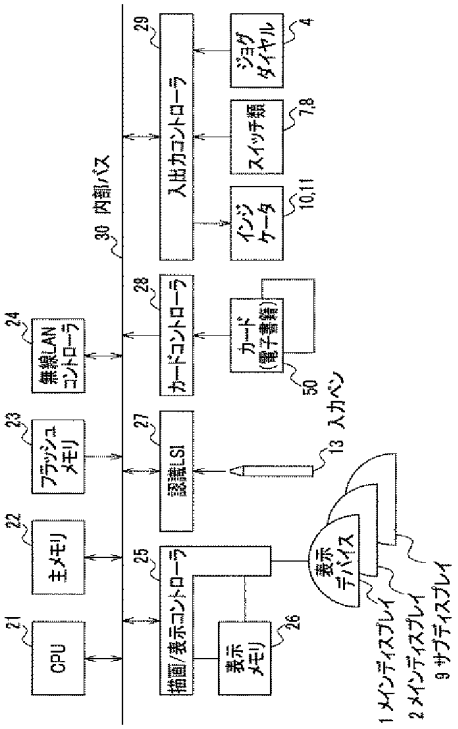
【図7】


□□と△△の関係図

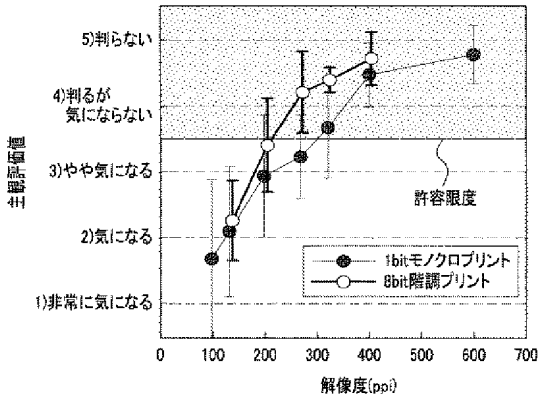
【図8】


0V
マイナスの電荷を帯びた黒い帯粒子
オイル
プラスの電荷を帯びた白い帯粒子
前面電極
背面電極
暗
明

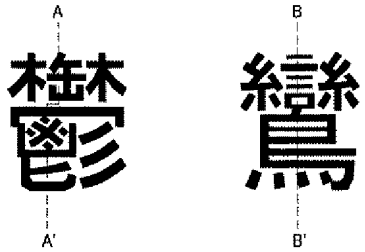
【図9】


29
入出力コントローラ
ジョグダイヤル
4
スイッチ類
7,8
インジケータ
10,11
30 内部バス
28
カードコントローラ
カード(電子書籍)
50
入力ペン
13
24
無線LANコントローラ
23
フラッシュメモリ
27
認識LSI
22
主メモリ
25
描画/表示コントローラ
表示デバイス
21
CPU
表示メモリ
26
1 メインディスプレイ
2 メインディスプレイ
9 サブディスプレイ

【図10】


5)判らない
4)判るが気にならない
3)やや気になる
2)気になる
1)非常に気になる
主観評価値
許容限度
1bitモノクロプリント
8bit階調プリント
0
100
200
300
400
500
600
700
解像度(ppi)

【図11】


A
A'
B
B'

(51)Int.Cl.[7]	FI			テーマコード（参考）
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	Ｇ０９Ｇ	3/20	６９１Ｃ	
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	Ｇ０９Ｇ	5/00	５３０Ｔ	

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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

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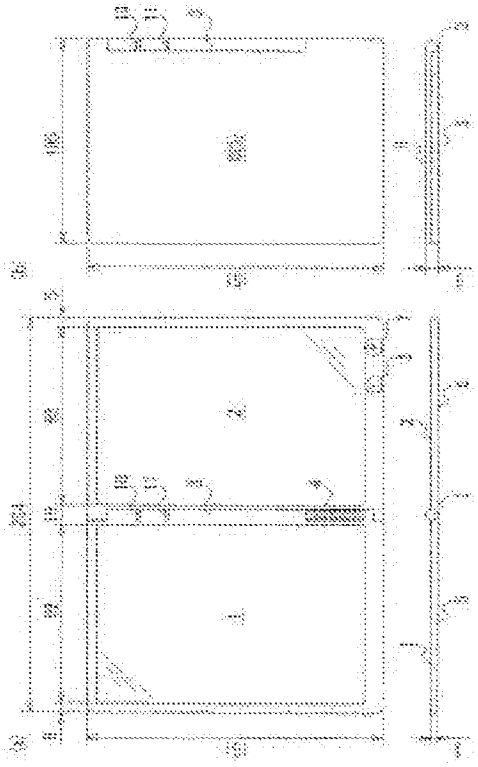
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Abstract of JP2004302179 (A)

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



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