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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/015,035	05/24/2022	8289688	L2039.70001US12	2668
23628	7590	12/28/2022		
WOLF GREENFIELD & SACKS, P.C.			EXAMINER	
600 ATLANTIC AVENUE			DEB, ANJAN K	
BOSTON, MA 02210-2206				
			ART UNIT	PAPER NUMBER
			3992	
			MAIL DATE	DELIVERY MODE
			12/28/2022	PAPER

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.



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***EX PARTE* REEXAMINATION COMMUNICATION TRANSMITTAL FORM**

REEXAMINATION CONTROL NO. 90/015,035.

PATENT UNDER REEXAMINATION 8289688.

ART UNIT 3992.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	Control No. 90/015,035	Patent Under Reexamination 8289688	
	Examiner ANJAN K DEB	Art Unit 3992	AIA (FITF) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

- a. ☒ Responsive to the communication(s) filed on 24 May 2022.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☐ This action is made FINAL.

c. ☐ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter.
Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c)**.
If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. ☒ Notice of References Cited by Examiner, PTO-892. | 3. ☐ Interview Summary, PTO-474. |
| 2. ☐ Information Disclosure Statement, PTO/SB/08. | 4. ☐ _____. |

Part II SUMMARY OF ACTION

- 1a. ☒ Claims 11-22,24-28 and 30-32 are subject to reexamination.
- 1b. ☒ Claims 1-10,23 and 29 are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☒ Claims 11-22,24-28 and 30-32 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the certified copies have
1 ☐ been received.
2 ☐ not been received.
3 ☐ been filed in Application No. _____.
4 ☐ been filed in reexamination Control No. _____.
5 ☐ been received by the International Bureau in PCT application No. _____.
* See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

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DETAILED ACTION

1.0 SUMMARY

A substantial new question of patentability affecting claims 11-22 and 24-32 of U.S. Patent No. 8,289,688 ("the '688 Patent") issued to Behar *et al.* on October 16, 2012 from Application Number 12/170,939 filed on July 10, 2008, is raised by the request for *ex parte* reexamination Control Number 90/015,035 ("the '035 request") filed on 5/24/2022 by Third Party Requester.

An order was mailed 1/14/2022, granting the Request and ordering reexamination for requested claims 11-22 and 24-32 of the '688 patent. No patent owner statement has been received. The '688 patent was filed before March 16, 2013, and is being examined under the pre-AIA first to invent regime.

1.1 Priority Date of '688 Patent

The earliest priority date of the '688 patent is the filing date of the provisional application No. 61/041,365 filed on April 1, 2008.

1.2 Related Proceedings

IPR2021-00681.

The '688 Patent was the subject of a request for *inter partes* review, in IPR2021-00681. The Board denied institution of the IPR based on procedural defects in the petition and the Board therefore did not address the merits of the presented prior art. In particular, the Board determined that the petition lacked sufficient clarity and sufficient explanation of its arguments to meet the requirements of 35 U.S.C. § 312(a)(3), 37 C.F.R. § 42.22(a)(2), and 37 C.F.R. § 42.104(b)(4)-(5).

Litigation

The '688 Patent is also asserted in district court litigation captioned *LiTL LLC v. Lenovo (United States), Inc.*, Case No. 20-cv-00689 (D. Del.), which has not reached a final holding of invalidity as to any claims of the '688 Patent. None of the prior art references or issues presented in this Request have been litigated to a verdict in any district court case.

2.0 STATUS OF CLAIMS

Claims 1-10, and 23 are not subject to reexamination.

Claim 29 was disclaimed during prosecution of application number 12/170,939 that led to the '688 patent as per the Statutory Disclaimer filed on 6/17/2021. Therefore claim 29 is not reexamined.

Claims 11-22, 24-28, and 30-32 are subject to reexamination.

Claims 11-22, 24-28, and 30-32 are rejected.

3.0 REFERENCES CITED AS RAISING SNQS

The examiner considers a substantial new question of patentability has been raised by at least the following prior art references¹:

Lane (WO 95/24007) published September 8, 1995

Kamikakai (US 6,154,359) issued November 28, 2000

Ruijiang (CN 2627170Y, English Translation) issued July 21, 2004

Shimura (JP H06-242853, English Translation) published September 2, 1994

¹ Each of the cited references is a prior art as each having a priority date earlier than the priority date of the '688 patent.

Hisano (US 2006/0034042) February 16, 2006

Shigeo (JP H08-179851, English Translation) published July 12, 1996

Choi (US 6,918,159) issued July 19, 2005

Misawa (US 2005/0134717) published June 23, 2005

Clapper (US 6,704,007) issued March 9, 2004

4.0 ISSUES RAISED IN THE REQUEST

A total of nine references have been asserted in the EP Request as providing teachings relevant to the claim of the '688 Patent. In view of the Order mailed 1/14/2022, nine references raised a substantial new question of patentability. The issues raised are as follows:

Issue 1

Claims 12-14, 16, 19-20, 24-26, and 30-32 in view of Lane

Claims 12-14, 16-22, and 24-28, 30-32 in view of Lane and Hisano

Claim 11 in view of Lane, Hisano, and Choi

Issue 2

Claims 12-14, 16-22, and 24-28, 30-32 in view of Kamikakai, Shimura, and Hisano

Claim 11 in view of Kamikakai, Shimura, Hisano, and Choi

Issue 3

Claim 11 in view of CN '170, Misawa, and Shigeo

5.0 CLAIM INTERPRETATION

The following is a quotation of 35 U.S.C. 112(f):

(f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claims in this application are given their broadest reasonable interpretation using the plain meaning of the claim language in light of the specification as it would be understood by one of ordinary skill in the art. The broadest reasonable interpretation of a claim element (also commonly referred to as a claim limitation) is limited by the description in the specification when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is invoked.

As explained in MPEP § 2181, subsection I, claim limitations that meet the following three-prong test will be interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph:

- (A) the claim limitation uses the term “means” or “step” or a term used as a substitute for “means” that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;
- (B) the term “means” or “step” or the generic placeholder is modified by functional language, typically, but not always linked by the transition word “for” (e.g., “means for”) or another linking word or phrase, such as “configured to” or “so that”; and
- (C) the term “means” or “step” or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

Use of the word “means” (or “step”) in a claim with functional language creates a rebuttable presumption that the claim limitation is to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when

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the claim limitation recites sufficient structure, material, or acts to entirely perform the recited function.

Absence of the word “means” (or “step”) in a claim creates a rebuttable presumption that the claim limitation is not to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is not interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites function without reciting sufficient structure, material or acts to entirely perform the recited function.

Claim limitations in this application that use the word “means” (or “step”) are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action. Conversely, claim limitations in this application that do not use the word “means” (or “step”) are not being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action.

This application includes one or more claim limitations that do not use the word “means,” but are nonetheless being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, because the claim limitation(s) uses a generic placeholder that is coupled with functional language without reciting sufficient structure to perform the recited function and the generic placeholder is not preceded by a structural modifier. Such claim limitation(s) is/are:

I. **"display orientation module ... " (Claims 11, 13, 14, 16, 19, 25)**

The term "display orientation module" is recited in claims 11, 13, 14, 15, 19, and 25 of the '688 patent followed by functional language performed by the display orientation module, as demonstrated below:

Claim 11 - "a *display orientation module configured to* automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode, wherein the display orientation module is further configured to orient the content displayed between a first display orientation and a second display orientation "

Claim 13 - "a *display orientation module configured to* control an orientation of the content displayed on the display screen... , "

Claim 14 - "wherein when *display orientation module is configured to* automatically display the content in the first orientation when the portable computer is configured into the laptop mode and in the second orientation when the portable computer is configured into the easel mode."

Claim 16 - "wherein the *display orientation module is configured to* automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor."

Claim 19 - "a *display orientation module which* orients the content displayed on the single display screen responsive to the physical orientation detected by the orientation sensor between at least a first content display orientation and a second content display orientation... wherein the *display orientation module is further configured to* detect a change between a laptop mode, an easel mode, and a frame mode based on the detected physical orientation of the single display unit relative to the base unit, and wherein the *display orientation module is further configured to:* trigger a display inversion..."

Claim 25 - "wherein when *display orientation module is configured to* display the content in the first orientation when the portable computer is configured into the laptop mode and frame

mode and in the second orientation when the portable computer is configured into the easel mode."

While the term does not recite a "means" or "step" for performing the recited functionality, the "*display orientation module*" is just a generic placeholder for the term and the term does not convey any particular or sufficiently definite structure. The term 'display orientation module' is not modified by sufficient structure, material, or acts for performing the claimed function.

In view of the above findings three prongs test (A)-(C) is met and interpretation of the term "display orientation module" under 35 U.S.C. §112 (6th ¶) is INVOKED.

Because this/these claim limitation(s) is/are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, it/they is/are being interpreted to cover the corresponding structure described in the specification as performing the claimed function.

Corresponding structure of the term '*display orientation module*'

Although the '688 patent does not expressly describe what components and/or algorithm perform the claimed functionality associated with the "display orientation module", the Examiner interprets the term as best understood. Thus, for the purpose of this examination the structure of term display orientation module is a processor programmed with an algorithm for carrying out the function recited in recited in claims 11, 13, 14, 15, 19, and 25 of the '688 patent.

If applicant does not intend to have this/these limitation(s) interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, applicant may: (1) amend the claim limitation(s) to avoid it/them being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph (e.g., by reciting sufficient structure to perform the claimed function); or (2) present a sufficient showing that the claim limitation(s) recite(s) sufficient structure to perform

the claimed function so as to avoid it/them being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph.

II. "protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode" (Claim 26)

The term "protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode" is recited in claim 26.

The term "protection module" as recited in claim 26 is followed by functional language performed by the protection module, namely the module is "configured to prevent keyboard operation when the portable computer is configured in the frame mode."

While the term does not recite a "means" or "step" for performing the recited functionality of preventing keyboard operation, the "protection module" is just a generic placeholder for the term. The "protection module" does not convey any particular or sufficiently definite structure. Indeed, a "module" does not connote any physical structure at all, and the "protection" prefix does not impart any structural limitations to this otherwise structureless "module" term. Moreover, as shown above, the term is followed by purely functional language and is never once mentioned in the '688 patent outside of the claims. The term 'protection module' is not modified by sufficient structure, material, or acts for performing the claimed function.

In view of the above findings three prongs test (A)-(C) is met and interpretation of the term 'protection module' under 35 U.S.C. §112 (6th ¶) is INVOKED.

Because this/these claim limitation(s) is/are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, it/they is/are being interpreted to cover the corresponding structure described in the specification as performing the claimed function.

Corresponding structure of the term '*protection module*'

Although the '688 patent does not expressly describe which components and/or algorithm perform the claimed functionality associated with the term '*protection module*', therefore the Examiner interprets the term as best understood. For the purpose of this examination the structure of term '*protection module*' is a processor programmed with an algorithm for carrying out the function recited in claim 26 of the '688 patent.

III. "means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode" (Claim 11).

The claim limitation uses the term "means" and the term "means for rotating" does not have a specific structural meaning for performing the claimed function. Examiner finds nothing in the specification, prosecution history or the prior art to construe the "means for rotating" in as the name of a sufficiently definite structure for performing the functions recited in claim 11. The term 'means for rotating' is not modified by sufficient structure, material, or acts for performing the claimed function.

In view of the above findings three prongs test (A)-(C) is met and interpretation of the term "means for rotating" under 35 U.S.C. §112 (6th) is INVOKED.

Because this/these claim limitation(s) is/are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, it/they is/are being interpreted to cover the corresponding structure described in the specification as performing the claimed function.

Corresponding structure of the term "means for rotating"

The Examiner determines that the corresponding structure of the term “means for rotating” for performing the claimed function is hinge assembly 138 and all associated parts including housing 142, shaft 154, springs 156, member 158, and bracket 140 as described in col. 10 lines 22-53 and Figures 7A-10 of the ‘688 patent.

IV. "means for detecting an orientation of the base relative to the display component" (Claim 11)

The claim limitation uses the term “means” and the term “means for detecting” does not have a specific structural meaning for performing the claimed function. Examiner finds nothing in the specification, prosecution history or the prior art to construe the “means for detecting” as the name of a sufficiently definite structure for performing the functions recited in claim 11. The term “means for detecting” is not modified by sufficient structure, material, or acts for performing the claimed function.

In view of the above findings three prongs test (A)-(C) is met and interpretation of the term “means for detecting” under 35 U.S.C. §112 (6th ¶) is INVOKED.

Because this/these claim limitation(s) is/are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, it/they is/are being interpreted to cover the corresponding structure described in the specification as performing the claimed function.

Corresponding structure of the term “means for detecting”

The Examiner determines that the corresponding structure of the term “means for detecting” for performing the claimed function is the orientation sensor or mode sensor described in the '688 Patent specification at 2:28-54, 3: 19-25, 8:7-61, 9: 19-45,10:46-53 and Fig. 29.

6.0 CLAIM REJECTIONS - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6.1 Lane (cl. 12-14, 16, 19, 20, 24-26, 30-32)

Claim 12-14, 16, 19, 20, 24-26, and 30-32 are rejected under 35 U.S.C 103 as being obvious over Lane (WO 95/24007).

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

Lane discloses portable computer that is configurable between a plurality of modes including a laptop mode and an easel mode (Lane 1:3-6, 3:5-14, 10:24-31)(Figs. 19, 20, 28).

a single display component;

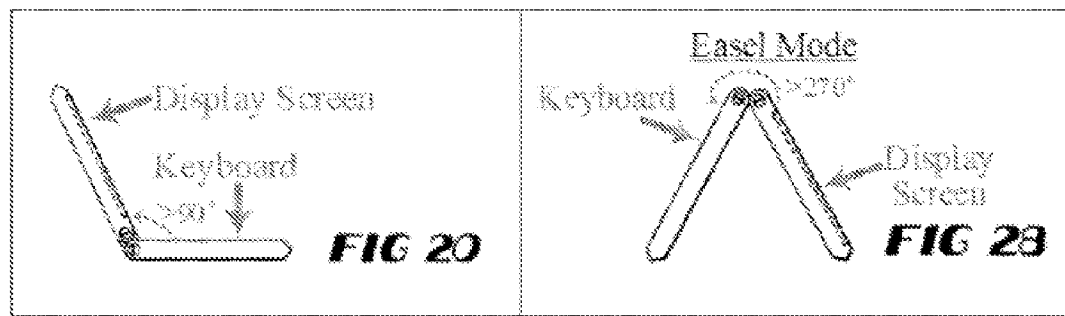
Lane discloses single display component 18 (“second module”)(Lane 5:1-6) which includes visual display 35 (Lane 5:10-17) (Fig. 1).

a base including an integrated keyboard;

Lane discloses base 14 (“first module”) including an integrated keyboard (having keys 36) (Fig. 1).

Lane, Fig. 20 (Laptop Mode)

Lane Fig. 28 (Easel Mode)



Lane, FIGS. 20, 28 (with annotations).

a hinge assembly configured to rotatably couple the single display component to the base, wherein the hinge assembly is at least partially housed within the base and the single display component, and defines a longitudinal axis running along an interface between the single display component and the base;

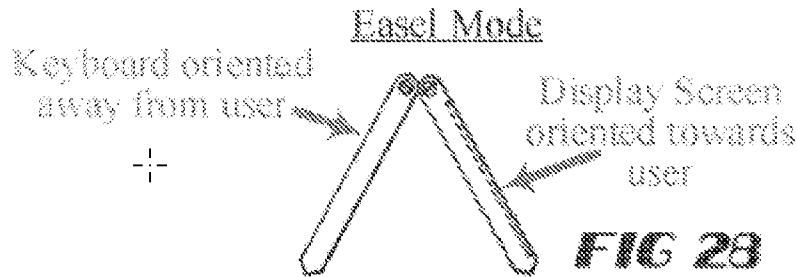
Lane discloses portable computer comprises a hinge assembly ("connector 54") disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane's base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and Lane's main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62"). (Fig. 3).

wherein the hinge assembly is configured to permit rotation of the single display component and the base about the longitudinal axis to configure the portable computer between the laptop mode and the easel mode;

Lane discloses hinge assembly permits rotation of the display and base to configure the portable computer between an easel mode and laptop mode (col. 10, lines 24-31)(Fig. 20, 28).

wherein in the easel mode the single display component is oriented facing the operator with the keyboard oriented away from the operator; and

Lane discloses, the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user.



at least one integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein at least one of the least one integrated navigation hardware control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user.

Lane discloses tablet for pen-based computing which require a touch sensitive display capable of receiving user input via the user touching the display in any of the configurable device modes when the keyboard is inaccessible or oriented away from the user. The "touchscreen" is a type of "navigation hardware control" (Lane, 3: 10-14;8:15-19; 10:17-20).

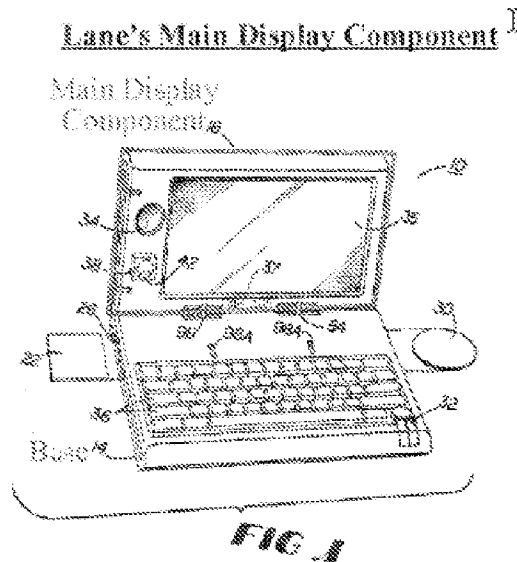
To the extent that Lane does not disclose at least one integrated navigation hardware control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user it would have been obvious. One of ordinary skill in the art would understand that the touch screen display would allow for control of the device when the keyboard is inaccessible to the user.



13. The portable computer of claim 12, wherein the single display component comprises a display screen configured to display content and a display orientation module configured to control an orientation of the content displayed on the display screen;

wherein the orientation of the content displayed on the display screen is configurable among a plurality of orientations relative to the longitudinal axis.

Lane discloses orientation of the content displayed on the display screen is configurable among a plurality of orientations, "landscape" and "portrait", relative to the longitudinal axis (Lane, 5:35-6:6).



14. The portable computer of claim 13, wherein the plurality of orientations comprises a first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis; and

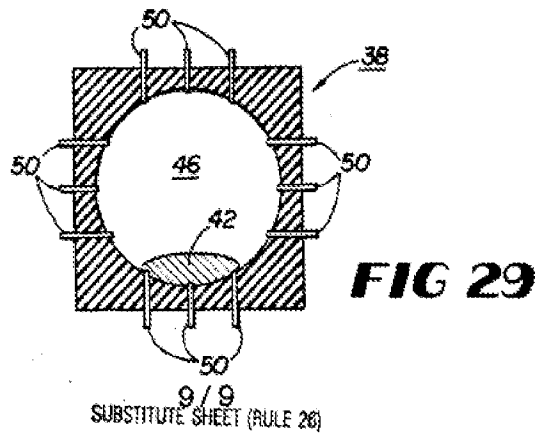
Lane discloses plurality of orientations, "landscape" and "portrait", comprises a first orientation "landscape" relative to the longitudinal axis and a second orientation "portrait", relative to the longitudinal axis (Lane, 5:35-6:6).

wherein when display orientation module is configured to automatically display the content in the first orientation when the portable computer is configured into the laptop mode and in the second orientation when the portable computer is configured into the easel mode.

Lane discloses to automatically display the content in laptop and easel mode. (Lane, 5:35-6:6).

16. The portable computer of claim 13, further comprising a mode sensor configured to provide information representative of a degree of rotation of the single display component relative to the base; and wherein the display orientation module is configured to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor.

Lane discloses portable computer of claim comprising a mode sensor 38 (Fig. 29) that provides information representative of a degree of rotation of the single display component relative to the base wherein the display orientation module is configured to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor. (Lane, 5:23-6:6).



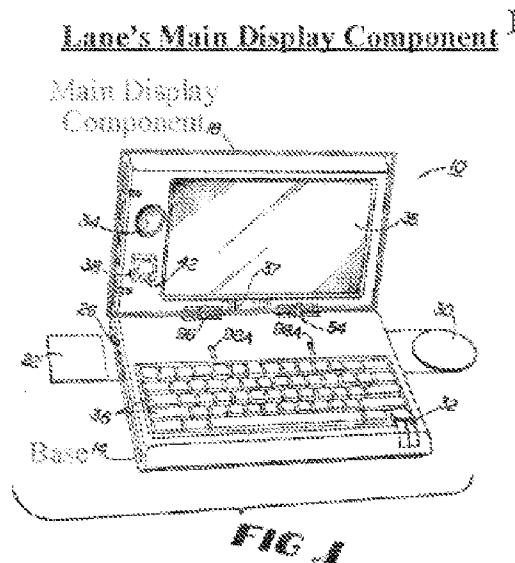
To the extent that Lane may not specifically disclose to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor it would have been obvious to one of ordinary skill in the art to do so because Lane discloses portable computer having a plurality of display, including laptop mode, an easel mode,

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and a frame mode and Lane teaches using the output of the position indicating mechanisms to properly orient the content so that it is presented right-side-up in each display mode.

19. A portable computer comprising: a base unit comprising an integrated keyboard;

Lane discloses portable computer comprising base 14 (“first module”) including an integrated keyboard (having keys 36) (Fig. 1).



a single display unit including a single display screen configured to display content;

Lane discloses a single display unit (second module 18) which includes the display screen (visual display 35) that displays content. (Lane, 5:6-15).

an orientation sensor which detects a physical orientation of the single display unit relative to the base unit; and

Lane discloses an orientation sensor 38 (Fig. 29) which detects a physical orientation of the single display unit relative to the base unit (Lane, 5:23-6:6).

a display orientation module which orients the content displayed on the single display screen responsive to the physical orientation detected by the orientation sensor between at least a first content display orientation and a second content display orientation, the second content display orientation being 180 degrees relative to the first content display orientation;

Lane discloses display orientation module comprising position-indicating mechanism 38 used to "assist device 10 (and its associated software) in determining" how to display information (i.e., content) on the visual display 35 responsive to the physical orientation detected by the orientation sensor 38 between at least a first content display orientation (laptop mode) and a second content display orientation (easel mode). Easel mode is oriented at 180 degrees to the laptop mode orientation. (Lane, 5:35-6:6).

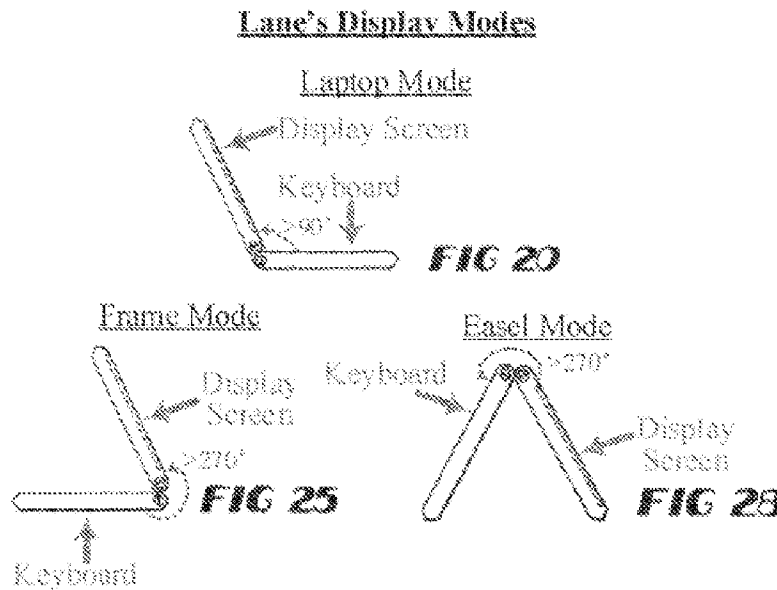
wherein the display orientation module is further configured to detect a change between a laptop mode, an easel mode, and a frame mode based on the detected physical orientation of the single display unit relative to the base unit, and wherein the display orientation module is further configured to:

Lane discloses portable computer having a laptop mode, a frame mode, and an easel mode. Lane discloses orientation sensor 38 detects laptop mode if the hinge angle is less than 180°. If the hinge angle is greater than 180° relative to the base then the display surfaces face

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away from each-other and the device would then be in either the easel mode or frame mode.

(10:17-31) (Fig. 20, 25, 28, annotated).



Lane. Fig. 20, 25, 28, annotated.

trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the laptop mode and the easel mode, trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the easel mode and the frame mode.

Lane discloses portable computer having a laptop mode, a frame mode, and an easel mode. Lane discloses that its position-indicating mechanisms allow the device to determine the orientation of the "information to appear on visual display 35" (i.e., content displayed on the

screen) according to the mode (5:35-6:6). Lane provides specific examples of 'landscape' or 'portrait' orientations, and disclose using the output of the position indicating mechanisms 38 to properly orient the content so that it is presented right-side-up in each display mode.

To the extent that Lane does not specifically disclose the display orientation module taught by Lane is capable of detecting a transition between all three of a laptop mode, an easel mode, and a frame mode to initiate an inversion of the display orientation, it would have been obvious to one of ordinary skill in the art to perform an inversion of the display orientation upon detecting a transition from laptop mode to easel mode as well as to perform an inversion between an easel mode and frame mode in order to maintain the orientation of the displayed content as right-side-up for a user.

20. The portable computer of claim 14, wherein the second orientation is 180 degrees relative to the first orientation.

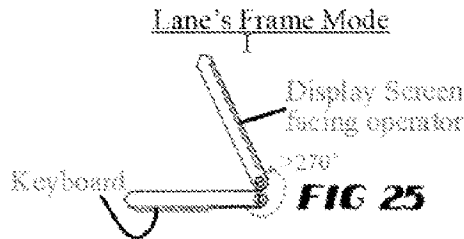
Lane discloses the content orientation in laptop mode is 180 degrees relative to the content orientation in easel mode (Fig. 20, 28).

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

Lane discloses portable computer with a plurality of modes (Figs. 19, 20, 28).including a frame mode (FIG. 25, annotated) in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts

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a substantially horizontal surface, and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated).



Lane, Fig. 25 (with annotations).

25. The portable computer of claim 13, wherein the plurality of modes includes a frame mode in which the single display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and

Lane discloses portable computer with a plurality of modes including a frame mode in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated).

wherein the plurality of orientations comprises a first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis; and

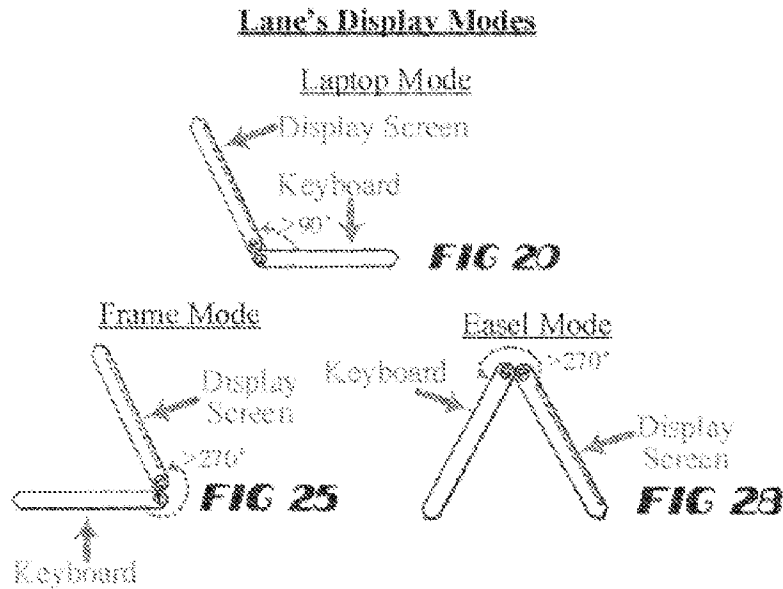
Lane discloses plurality of orientations, "landscape" and "portrait", comprises a first orientation "landscape" relative to the longitudinal axis and a second orientation "portrait", relative to the longitudinal axis (Lane, 5:35-6:6).

wherein when display orientation module is configured to display the content in the first orientation when the portable computer is configured into the laptop mode and frame mode and in the second orientation when the portable computer is configured into the easel mode.

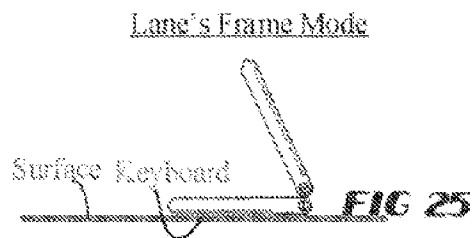
Lane discloses to automatically display the content in the first orientation in laptop mode and frame mode, and in the second orientation in easel mode. (Lane, 5:35-6:6). (Fig. 20, 25, 28, annotated).

26. The portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.

Lane discloses portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.(5:35-6:6). The structure for the protection module is a processor programmed in the portable computer of Lane to (1) utilize the computer's sensor input to determine that the computer is in frame mode, and (2) disable input from the keyboard when the computer is determined to be in frame mode. (Fig. 25). Lane specifically disclosed “ to render keys 36 of first module 14 inoperable when unused”.(Lane, 6:5-6).



Lane. Fig. 20, 25, 28, annotated.



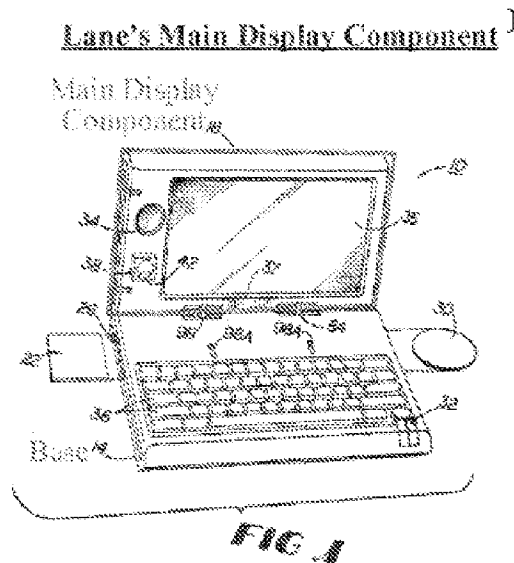
Lane, FIG. 25 (with annotations).

30. The method of claim 29, wherein the plurality of display modes includes a frame mode and the act of manipulating the physical configuration of the single display component to transition the portable computer between a plurality of display modes includes an act of orienting the single display component towards the operator, placing the base against a substantially horizontal surface, and orienting the keyboard towards the substantially horizontal surface to transition the portable computer into the frame mode.

Claim 30 depends from claim 29. Therefore, the limitations of claim 29 are addressed below.

29. A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a body, the body having:

Lane discloses method of managing user interaction with content displayed on a portable computer having a plurality of display modes (laptop mode, frame mode, easel mode)(Fig. 20, 25, 28) the portable computer comprising a body (Fig. 1).



a single display component including a display screen, a base including a keyboard, and a hinge assembly, the method comprising:

Lane discloses a single display component 18 including a display screen 35 (“visual display”), a base 14 including a keyboard having a plurality of keys 36, and a hinge assembly 54 (connector) (Fig. 1).

manipulating a physical configuration of the single display component relative to the base to transition the portable computer between a plurality of display modes,

Lane discloses manipulating a physical configuration of a single display component about a hinge assembly relative to a base to transition a portable computer between a plurality of display modes, including a laptop mode and an easel mode (Lane. Fig. 20, 25, 28).

Lane discloses the main display component and the base are rotatable about two axes of rotation to transition between the various display modes, including the laptop and easel modes. , Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16.

wherein the act of manipulating includes an act of rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the body of the portable computer to transition the portable computer to transition the portable computer between the plurality of display modes, including a laptop mode and an easel mode;

Lane discloses the main display component and the base are rotatable about two axes of rotation to transition between the various display modes, including the laptop and easel modes. (Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16).

Lane discloses base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62"). (Lane, 6:8-12, FIGS. 25, 28). Accordingly, Lane teaches a hinge assembly configured to rotatably couple a display and base and defines a longitudinal axis running along an interface between the display and the base.

wherein the plurality of modes includes at least the laptop mode wherein the single display component and the keyboard are oriented towards an operator and the easel mode wherein the single display component is oriented towards an operator and the keyboard is oriented away from the operator;

Lane discloses the plurality of modes includes at least the laptop mode (Fig. 20, annotated) wherein the single display component and the keyboard are oriented towards an operator and the easel mode (Fig. 29, annotated) wherein the single display component is oriented towards an operator and the keyboard is oriented away from the operator (Lane, 5:35-6:6). (Fig. 20, 25, 28, annotated).

determining a display mode responsive to the physical configuration of the single display component relative to the base;

Lane discloses detecting the physical orientation of its single display relative to its base by a position-indicating mechanism 38 (Fig. 1). Lane provides specific examples of 'landscape' or 'portrait' orientations, and disclose using the output of the position indicating mechanisms 38 to properly orient the content so that it is presented right-side-up in each display mode (Lane 5:23-6:6).

configuring a content orientation, relative to the longitudinal axis, of a visual display on the display screen of the single display component responsive to the display mode, wherein configuring the content orientation includes: displaying the visual display in a first content orientation of the content for the laptop mode, and displaying the visual display in

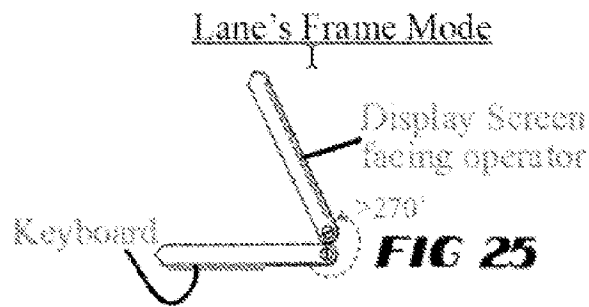
a second content orientation for the easel mode, the second content orientation being at 180 degrees relative to the first orientation.

Lane discloses determining a display mode based on measuring the physical configuration of its display relative to its base. Lane discloses displaying the visual display in a first content orientation of the content for the laptop mode, and displaying the visual display in a second content orientation for the easel mode and discloses the content orientation in laptop mode is 180 degrees relative to the content orientation in easel mode (Fig. 20, 28).

To the extent that Lane does not specifically disclose displaying the visual display in a second content orientation for the easel mode, the second content orientation being at 180 degrees relative to the first orientation it would have been obvious to one of ordinary skill in the art to change the orientation of the displayed content by 180° upon transitioning between laptop to easel mode (i.e., changing between a first and second content orientation) in order to present the displayed content right-side-up to the intended viewer.

Regarding claim 30, Lane discloses all of the limitations of claim 29 as set forth above.

Regarding claim 30, Lane discloses portable computer with a plurality of modes including a frame mode in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated).



Lane, Fig. 25 (with annotations)

31. The method according to claim 30, wherein the act of configuring the content orientation includes an act of displaying the visual display in the first content orientation of the content for the frame mode.

Lane discloses the act of configuring the content orientation includes an act of displaying the visual display in the first content orientation of the content for the frame mode.(Fig. 25).

32. The method according to claim 30, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Lane explicitly discloses "rendering keys 36 of first module 14 inoperable when unused" (Lane, 6:5-6). One of ordinary skill in the art would have understood that keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Furthermore, keyboard is inoperable when the portable computer is in frame mode because the keyboard is placed face-down against a surface which could result in accidental or unwanted key inputs.

6.2 Lane, Kamikakai (cl. 26, 32)

Claims 26 and 32 are rejected under 35 U.S.C 103 as being obvious over Lane (WO 95/24007) and Kamikakai (US 6,154,359).

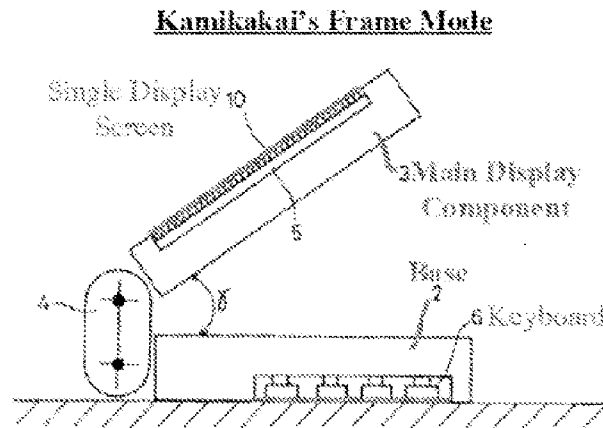
26. The portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.

Lane discloses portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.(5:35-6:6). The structure for the protection module is a processor programmed in the portable computer of Lane to (1) utilize the computer's sensor input to determine that the computer is in frame mode, and (2) disable input from the keyboard when the computer is determined to be in frame mode. (Fig. 25). Lane specifically disclosed “to render keys 36 of first module 14 inoperable when unused”.(Lane, 6:5-6).

To the extent that Lane does not specifically disclose to prevent keyboard operation when the portable computer is configured in the frame mode it would have been obvious over Kamikakai.

Kamikakai discloses a portable computer in a frame mode and discloses a mechanism for disabling the computer's keyboard when the computer is in the frame mode to prevent erroneous manipulation of the keyboard 6 and to prevent erroneous inputs from the keyboard 6 when making the data input from the pen input part 10 in the position of the portable information processing apparatus 1 shown in FIG. 8. (Fig 8, annotated) (Kamikakai 6:51-67).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the teaching of disabling input from keyboard in the frame mode disclosed by Kamikakai in the portable computer of Lane to prevent erroneous keyboard inputs in the frame mode when data is input from a pen input part.



Kamikakai, FIG. 8 (with annotations).

32. The method according to claim 30, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Lane discloses portable computer of claim 30, further comprising deactivating keyboard operation when the portable computer is configured in the frame mode (5:35-6:6) (Fig. 25). Lane specifically disclosed “to render keys 36 of first module 14 inoperable when unused”(Lane, 6:5-6).

To the extent that Lane does not specifically disclose deactivating keyboard operation when the portable computer is configured in the frame mode it would have been obvious over Kamikakai.

Kamikakai discloses a portable computer in a frame mode and discloses a mechanism for deactivating the computer's keyboard when the computer is in the frame mode to prevent erroneous manipulation of the keyboard 6 and to prevent erroneous inputs from the keyboard 6 when making the data input from the pen input part 10 in the position of the portable information processing apparatus 1 shown in FIG. 8. (Fig 8, annotated) (Kamikakai 6:51-67).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the teaching of deactivating the computer's keyboard when the computer is in the frame mode disclosed by Kamikakai in the portable computer of Lane to prevent erroneous keyboard inputs in the frame mode when data is input from a pen input part.

6.3 Lane, Hisano (cl. 12-14, 16-20, 24-28, 30-32)

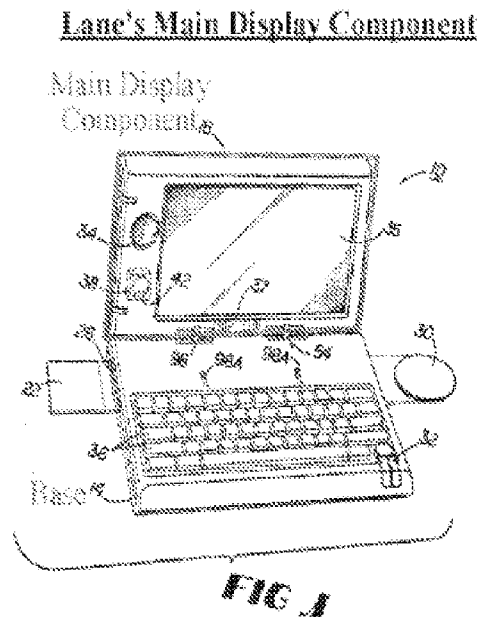
Claims 12-14, 16-20, 24-28, 30-32 are rejected under 35 U.S.C 103 as being obvious over Lane (WO 95/24007) and Kamikakai (US 6,154,359).

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

Lane discloses portable computer that is configurable between a plurality of modes including a laptop mode and an easel mode (Lane 1:3-6, 3:5-14, 10:24-31)(Figs. 19, 20, 28).

a single display component;

Lane discloses single display component 18 ("second module")(Lane 5:1-6) which includes visual display 35 (Lane 5:10-17) (Fig. 1).



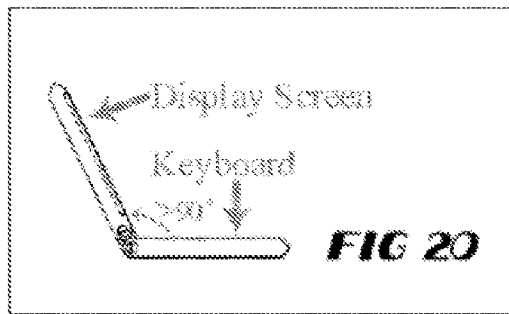
Lane, FIG. 1 (with annotations).

a base including an integrated keyboard;

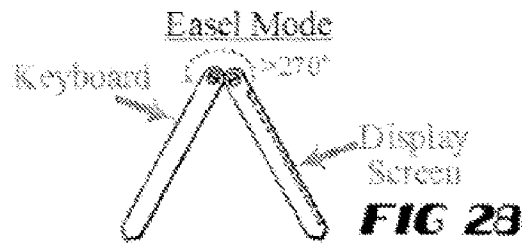
Lane discloses base 14 ("first module") including an integrated keyboard (having keys 36) (Fig. 1).

a hinge assembly configured to rotatably couple the single display component to the base, wherein the hinge assembly is at least partially housed within the base and the single display component, and defines a longitudinal axis running along an interface between the single display component and the base;

Lane, Fig. 20 (Laptop Mode)

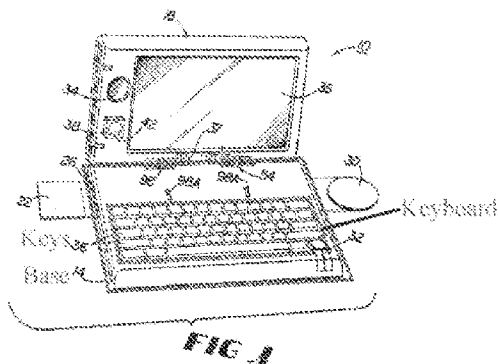


Lane Fig. 28 (Easel Mode)



Lane, FIGS. 20, 28 (with annotations).

Lane's Base with Keyboard



Lane, FIG. 1 (with annotations).

Lane discloses portable computer comprises a hinge assembly ("connector 54") disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane's base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and Lane's main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62"). (Fig. 3).

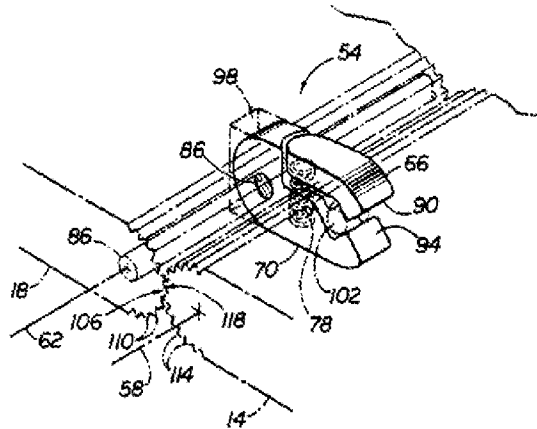


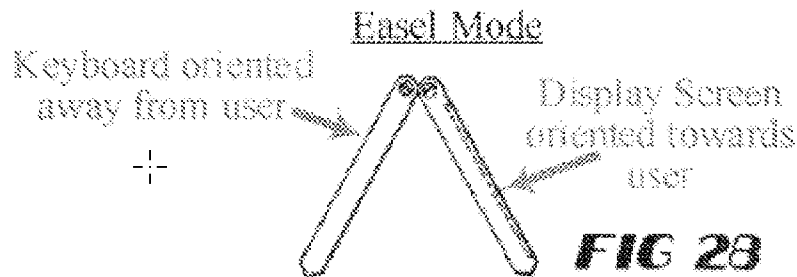
FIG 3

wherein the hinge assembly is configured to permit rotation of the single display component and the base about the longitudinal axis to configure the portable computer between the laptop mode and the easel mode;

Lane discloses hinge assembly permits rotation of the display and base to configure the portable computer between an easel mode and laptop mode (col. 10, lines 24-31)(Fig. 20, 28).

wherein in the easel mode the single display component is oriented facing the operator with the keyboard oriented away from the operator; and

Lane discloses, the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user.



at least one integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein at least one of the least one integrated navigation hardware control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user.

Lane discloses tablet for pen-based computing which require a touch sensitive display capable of receiving user input via the user touching the display in any of the configurable device modes when the keyboard is inaccessible or oriented away from the user. The "touchscreen" is a type of "navigation hardware control" (Lane, 3: 10-14;8:15-19; 10:17-20).

To the extent that Lane does not disclose at least one integrated navigation hardware control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user it would have been obvious over Hisano.

Hisano specifically teaches orientation sensor capable of distinguishing between a frame and easel mode. Hisano discloses that its sensor may include a gravity sensor that is capable of distinguishing the portable computer's orientation "regardless of the angle of the hinges ... or the placement of the personal computer." (Hisano [0099]). Accordingly, it would have been obvious to one of ordinary skill in the art to utilize the sensors disclosed in Hisano to detect the transitions between all three of the laptop, easel, and frame modes.

With respect to the navigation hardware Hisano discloses touch panel display including a virtual mouse (Hisano, [0059]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to provide integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer by providing a suitable user interface including a virtual mouse disclosed by Hisano to control and navigate the portable computer display such as when the portable computer is in an easel or frame mode orientation.

13. The portable computer of claim 12, wherein the single display component comprises a display screen configured to display content and a display orientation module configured to control an orientation of the content displayed on the display screen;

Lane discloses a single display component comprising a display screen configured to display content. Lane discloses position-indicating mechanism 38 used to "assist device 10 (and its associated software) in determining" how to display information (i.e., content) on the visual display 35. (Lane, 5:35-6:6).

wherein the orientation of the content displayed on the display screen is configurable among a plurality of orientations relative to the longitudinal axis.

Lane discloses orientation of the content displayed on the display screen is configurable among a plurality of orientations, "landscape" and "portrait", relative to the longitudinal axis (Lane, 5:35-6:6).

To the extent that Lane does not specifically disclose display orientation module it is disclosed by Hisano.

Hisano teaches the rotation angle of hinges 130A and 130B may be used to switch display of the content on the screen to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base. (Hisano [0099]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to program the portable computer disclosed by Lane to determine the rotating angle of the hinges 130A and 130B disclosed by Hisano corresponding to the angle of the display relative to the other housing structure, and use the angle to determine whether the device is in laptop or easel mode, by determining whether the angle is less than or greater than 180°, and orient the displayed screen depending on whether the device is in laptop or easel mode, where the content orientation for each mode is 180 degrees relative to the other so as to present the display right-side-up to the viewer in each mode.

14. The portable computer of claim 13, wherein the plurality of orientations comprises a first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis; and

Lane discloses plurality of orientations, "landscape" and "portrait", comprises a first orientation "landscape" relative to the longitudinal axis and a second orientation "portrait", relative to the longitudinal axis (Lane, 5:35-6:6).

wherein when display orientation module is configured to automatically display the content in the first orientation when the portable computer is configured into the laptop

mode and in the second orientation when the portable computer is configured into the easel mode.

To the extent that Lane does not specifically disclose first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis it is obvious over the Hisano reference.

Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing with respect to a separate housing, in order to determine the orientation of a displayed screen (Hisano [0099]). The hinge angle is measured by a mode sensor including a "gravity sensor," that senses the direction of gravity (Hisano [0099 -0100]).

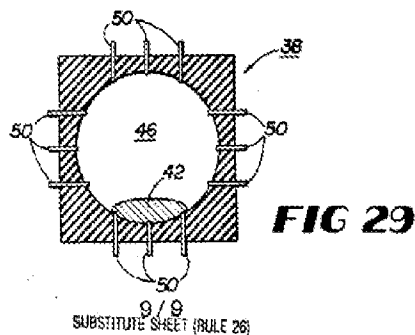
Hisano also teaches to automatically adjust the orientation of displayed content responsive to the information from the mode sensor. (Hisano [0099 -0100]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to program the portable computer disclosed by Lane to determine the rotating angle of the hinges (130A and 130B) disclosed by Hisano corresponding to the angle of the display relative to the other housing structure, and use the angle to determine whether the device is in laptop or easel mode.

16. The portable computer of claim 13, further comprising a mode sensor configured to provide information representative of a degree of rotation of the single display component relative to the base; and

wherein the display orientation module is configured to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor.

Lane discloses portable computer comprising a mode sensor 38 (Fig. 29) that provides information representative of a degree of rotation of the single display component relative to the base wherein the display orientation module is configured to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor. (Lane, 5:23-6:6).



To the extent that Lane may not specifically disclose to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor it would have been obvious to one of ordinary skill in the art to do so because Lane discloses portable computer having a plurality of display, including laptop mode, an easel mode, and a frame mode and Lane teaches using the output of the position indicating mechanisms to properly orient the content so that it is presented right-side-up in each display mode.

Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing with respect to a separate housing, in order to determine

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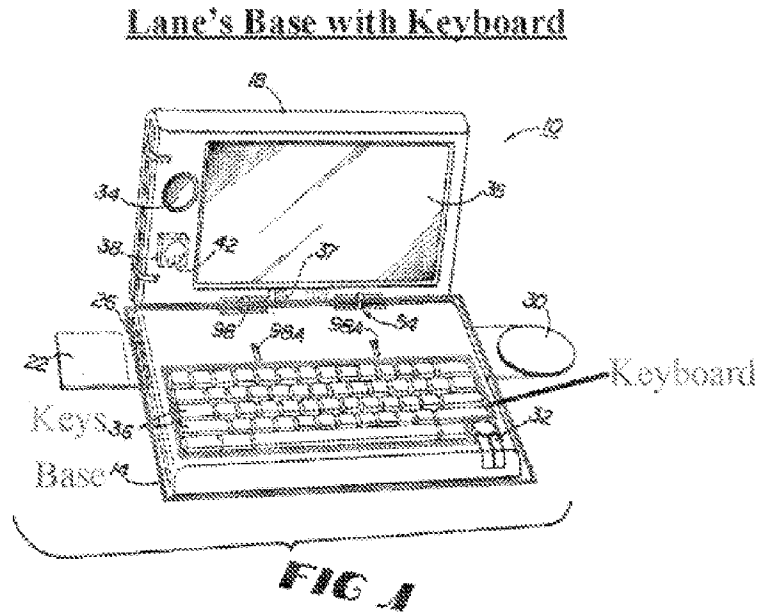
the orientation of a displayed screen (Hisano [0099]). The hinge angle is measured by a mode sensor including a "gravity sensor," that senses the direction of gravity (Hisano [0099 -0100]).

Hisano also teaches to automatically adjust the orientation of displayed content responsive to the information from the mode sensor.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to program the portable computer disclosed by Lane to determine the rotating angle of the hinges (130A and 130B) disclosed by Hisano corresponding to the angle of the display relative to the other housing structure, and use the angle to determine whether the device is in laptop or easel mode.

17. A method of automatically orienting content in a plurality of display modes displayed on a portable computer comprising a body, the body having a single display component including a display screen and a base including an integrated keyboard, the method comprising:

Lane discloses method of automatically orienting content in a plurality of display modes (laptop mode, frame mode, easel mode)(Fig. 20, 25, 28) on a portable computer comprising a body (Fig. 1), the body having a single display component including a display screen 35 and a base 14 (first module) including an integrated keyboard (having keys 36) (5: 15-17, 6:5-6, 8:22-23 and claim 12 discloses portable computer "comprises a keyboard having a plurality of keys).



Lane, FIG. 1 (with annotations).

rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the portable computer;

Lane discloses base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62") (Fig. 3). (Lane, 6:8-12, FIGS. 25, 28.

Accordingly, Lane discloses rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the portable computer.

**detecting a degree of rotation of the single display component relative to the base;
providing a signal representative of the degree of rotation of the single display
component;**

Lane discloses an orientation sensor 38 (Fig. 29) which detects a physical orientation of the single display unit relative to the base unit (Lane, 5:23-6:6).

Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen comparing the degree of rotation with respect to a threshold degree of rotation (Hisano [0099]).

**comparing the degree of rotation with respect to a threshold degree of rotation;
determining a display mode based, at least in part, on the act of comparing the degree of
rotation with respect to the threshold degree of rotation;**

Lane does not specifically disclose comparing the degree of rotation with respect to a threshold degree of rotation and determining the display mode based on the act of comparing the degree of rotation with respect to the threshold degree of rotation.

Hisano discloses measuring the angle of rotation of its hinges by a mode sensor (“gravity sensor”), which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen. Hisano teaches automatically adjusting the orientation of displayed content responsive to the information (signal) from the mode sensor. Hisano (Hisano [0099]).

One of ordinary skill in the art would understand that the mode sensor would transmit a signal corresponding to the detected hinge angle to the computer's processor to enable the processor to perform its required decision-making and provide an appropriate display orientation. Hisano specifically disclosed a display processor (Hisano. [0026]).

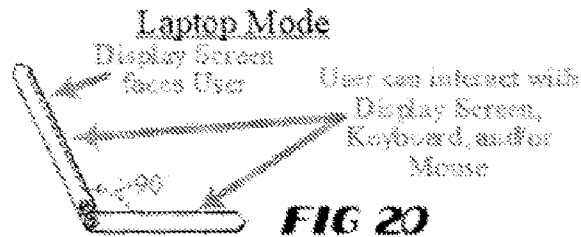
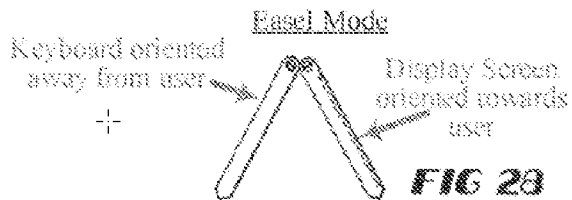
At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer of Lane in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

generating a visual display of the content for the display screen;

Lane discloses portable computer is configured for "information to appear on visual display" in landscape or portrait orientation. (Lane, 5:35-6:3). One of ordinary skill in the art would understand that the signals corresponding to the visual content is generated by the computer's internal processor and transmitted to the hardware of the display screen to be converted into a visible visual display of content and shown on the display screen.

orienting the visual display shown on the display screen of the single display component towards an operator for operation of the portable computer in each of the plurality of display modes, wherein the plurality of display modes includes a laptop mode with the integrated keyboard and display oriented towards the operation and an easel mode with the display oriented towards the operator and the keyboard oriented away from the operator; and

Lane discloses, in easel mode the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user. (Fig. 28). In laptop mode the main display component ("second module 18") and the keyboard is oriented toward the user (Fig. 20).



Lane. Fig. 20 and Fig. 28 with annotations

automatically configuring a content orientation, relative to the longitudinal axis, of the visual display on the display screen of the portable computer responsive to the signal and the determined display mode, wherein the act of automatically configuring includes acts of:

Lane discloses automatically configuring a content orientation, relative to the longitudinal axis, of the visual display on the display screen of the portable computer responsive to the signal and the determined display mode (laptop mode, frame mode, easel mode)(Fig. 20,

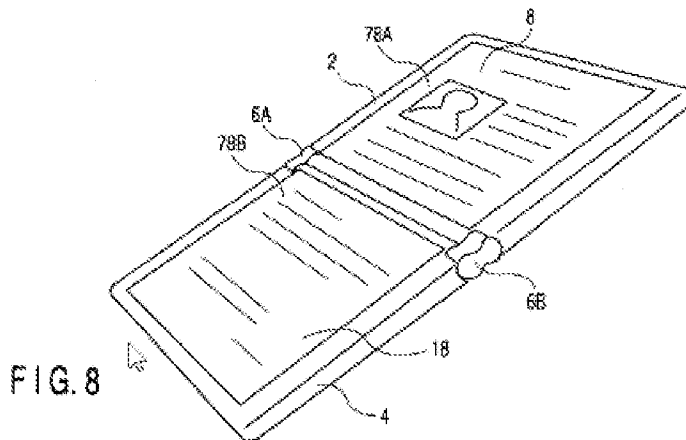
25, 28). Lane discloses portable computer comprising a mode sensor 38 (Fig. 29) that provides signal (to computer processor) representative of a degree of rotation of the display component relative to the base to automatically adjust the orientation of the content displayed on the display screen responsive to the signal from the mode sensor. (Lane, 5:23-6:6).

displaying the visual display in a first content orientation of the content for the degree of rotation that is less than the threshold degree of rotation and the portable computer is determined to be configured in the laptop mode, and displaying the visual display in a second content orientation of the content for the degree of rotation that is greater than the threshold degree of rotation and the portable computer is determined to be configured in the easel mode, the second content orientation being at 180 degrees relative to the first orientation.

Lane discloses displaying the visual display in a first content orientation of the content for the degree of rotation that is less than the threshold degree of rotation (page 10, and the portable computer is determined to be configured in the laptop mode (standard desktop orientation)(page 10, 25-31). Lane discloses displaying the visual display in a second content orientation of the content for the degree of rotation that is greater than the threshold degree of rotation and the portable computer is determined to be configured in the easel mode (Fig. 28), the second content orientation being at 180 degrees relative to the first orientation, and the second content orientation being at 180 degrees (270°-90°) relative to the first orientation (page 10, lines 25-31).

To the extent that Lane does not specifically disclose first content orientation is less than the threshold degree of rotation in the laptop mode and the second content orientation being at 180 degrees relative to the first orientation it would have been obvious over Hisano.

Hisano teaches detecting and providing a degree of rotation of a display component relative to a base. Hisano teaches a flat mode, as shown in Fig. 8, below whereby the two housing components are parallel with the hinges opened through an angle of about 180°. (Hisano [0087], Fig. 8). If the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode; and if the angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode.



Hisano. Fig. 8

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer of Lane in to distinguish between a laptop or easel mode by determining whether the measured angle of

rotation of the display relative to the base is greater or less than 180 degrees and to invert the displayed content in response to a transition between the two modes.

18. The method of claim 17, wherein automatically configuring the orientation of the content includes: displaying the visual display of the content in the first content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is less than the threshold degree of rotation of approximately 180 degrees relative to the base; and

Lane discloses displaying the visual display in a first content orientation of the content for the degree of rotation that is less than the threshold degree of rotation (page 10, and the portable computer is determined to be configured in the laptop mode (standard desktop orientation)(page 10, 25-31).

displaying the visual display of the content in the second content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is greater than the threshold degree of rotation of approximately 180 degrees relative to the base.

Lane discloses displaying the visual display in a second content orientation relative to the longitudinal axis responsive to the signal (from position-indicating mechanism 38)(Fig. 29) indicating that the degree of rotation of the single display component is greater than the threshold degree of rotation of approximately 180 degrees relative to the base (page 5, line 23 to page 6, line 6, page 10, lines 25-31).

To the extent that Lane does not specifically disclose displaying the visual display of the content in first content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is less than the threshold degree of rotation at 180 degrees relative to the base, and displaying the visual display of the content in second content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is greater than the threshold degree of rotation at 180 degrees relative to the base, it would have been obvious over Hisano.

Hisano teaches detecting and providing a degree of rotation of a display component relative to a base measured by orientation sensor for automatically configuring the orientation of the content displayed on the visual display. Hisano teaches a flat mode, as shown in Fig. 8, whereby the two housing components are parallel with the hinges opened through an angle of about 180°. (Hisano [0087], Fig. 8). If the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in the first content orientation (laptop mode); and if the angle is greater than 180 degrees then the display surfaces face away from each-other, therefore be in the second content orientation (easel mode).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer of Lane in to distinguish between a laptop or easel mode by determining whether the measured angle of rotation of the display relative to the base is greater or less than 180 degrees and to invert the displayed content in response to a transition between the two modes so as to maintain the displayed content right-side-up relative to a user/operator.

19. A portable computer comprising: a base unit comprising an integrated keyboard;

Lane discloses portable computer comprising base 14 ("first module") including an integrated keyboard (having keys 36) (Fig. 1).

a single display unit including a single display screen configured to display content;

Lane discloses single display unit 18 ("second module")(Lane 5:1-6) configured to display content in visual display 35 (Lane 5:10-17) (Fig. 1).

an orientation sensor which detects a physical orientation of the single display unit relative to the base unit; and

Lane discloses an orientation sensor 38 (Fig. 29) which detects a physical orientation of the single display unit relative to the base unit. (Lane, 5:23-6:6).

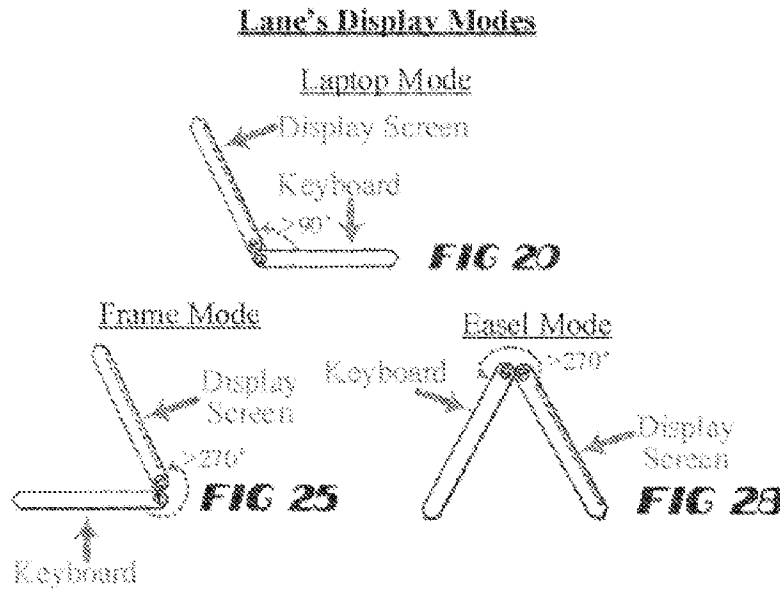
a display orientation module which orients the content displayed on the single display screen responsive to the physical orientation detected by the orientation sensor between at least a first content display orientation and a second content display orientation, the second content display orientation being 180 degrees relative to the first content display orientation;

Lane discloses display orientation module comprising position-indicating mechanism 38 used to "assist device 10 (and its associated software) in determining" how to display information (i.e., content) on the visual display 35 responsive to the physical orientation detected by the orientation sensor 38 between at least a first content display orientation (laptop mode) and a second content display orientation (easel mode). Easel mode is oriented at 180 degrees to the laptop mode orientation. (Lane, 5:35-6:6).

wherein the display orientation module is further configured to detect a change between a laptop mode, an easel mode, and a frame mode based on the detected physical orientation of the single display unit relative to the base unit, and

Lane discloses portable computer having a laptop mode, a frame mode, and an easel mode. Lane discloses orientation sensor 38 detects laptop mode if the hinge angle is less than 180°. If the hinge angle is greater than 180° relative to the base then the display surfaces face away from each-other and the device would then be in either the easel mode or frame mode. (10:17-31) (Fig. 20, 25, 28, annotated).

wherein the display orientation module is further configured to: trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the laptop mode and the easel mode, trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the easel mode and the frame mode.



Lane. Fig. 20, 25, 28, annotated.

Lane discloses portable computer having a laptop mode, a frame mode, and an easel mode. Lane discloses that its position-indicating mechanisms (sensor) allows the device to determine the orientation of the "information to appear on visual display 35" (content displayed on the screen) according to the mode (5:35-6:6). Lane provides specific examples of 'landscape' or 'portrait' orientations, and disclose using the output of the position indicating mechanisms 38 (sensor) to properly orient the content so that it is presented right-side-up in each display mode.

To the extent that Lane may not specifically disclose display orientation module orients the content displayed on the single display screen responsive to the physical orientation detected by the orientation sensor between at least a first content display orientation and a second content display orientation, the second content display orientation being 180 degrees relative to the first content display orientation; and wherein the display orientation module is further configured to: trigger a display inversion from one of the first and second content display orientations to the

other of the first and second content display orientations responsive to the orientation sensor detecting the change between the laptop mode and the easel mode, trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the easel mode and the frame mode, it would have been obvious over Hisano.

Hisano teaches an orientation sensor for measuring the hinge angle of a display relative to a base housing for detecting the physical orientation of the portable computer and the hinge angle is used to detect a transition between a laptop and an easel mode. Hisano discloses that its sensor may include a gravity sensor that is capable of distinguishing the portable computer's orientation regardless of the angle of the hinges or the placement of the personal computer. (Hisano [0099]). Therefore, Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between a laptop mode and an easel mode. Likewise, Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between an easel mode and a frame mode.

At the time the invention was made it would have been obvious to implement the display orientation module of Hisano to effect a change in display orientation in the portable computer of Lane from a first content display orientation for laptop mode to a second content display orientation for easel mode.

20. The portable computer of claim 14, wherein the second orientation is 180 degrees relative to the first orientation.

Lane discloses the content orientation in laptop mode is 180 degrees relative to the content orientation in easel mode (Fig. 20, 28).

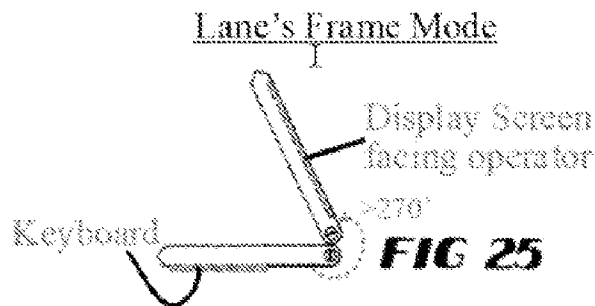
To the extent that Lane may not specifically disclose second orientation is 180 degrees relative to the first orientation it is obvious over the teaching of Hisano.

Hisano teaches inverting a display screen 180 degrees from a first orientation to a second orientation in order to maintain displayed content to be right side-up relative to a user. Specifically, Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing with respect to a separate housing, in order to determine the orientation of a displayed screen (Hisano [0099]). The hinge angle is measured by a mode sensor including a "gravity sensor," that senses the direction of gravity (Hisano [0099 - 0100]). Hisano also teaches to automatically adjust the orientation of displayed content responsive to the information from the mode sensor.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to program the portable computer disclosed by Lane to determine the rotating angle of the hinges disclosed by Hisano corresponding to the angle of the display relative to the other housing structure, and use the angle to determine whether the device is in laptop or easel mode, wherein the second orientation is 180 degrees relative to the first orientation.

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

Lane discloses portable computer with a plurality of modes (Figs. 19, 20, 28).including a frame mode (FIG. 25, annotated) in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated).



Lane, Fig. 25 (with annotations)

25. The portable computer of claim 13, wherein the plurality of modes includes a frame mode in which the single display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein the plurality of orientations comprises a first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis;

Lane discloses portable computer with a plurality of modes including a frame mode in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts a substantially horizontal surface,

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and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated). Lane discloses plurality of orientations, "landscape" and "portrait", comprises a first orientation "landscape" relative to the longitudinal axis and a second orientation "portrait", relative to the longitudinal axis (Lane, 5:35-6:6).

and wherein when display orientation module is configured to display the content in the first orientation when the portable computer is configured into the laptop mode and frame mode and in the second orientation when the portable computer is configured into the easel mode.

Lane discloses to automatically display the content in the first orientation in laptop mode and frame mode, and in the second orientation in easel mode. (Lane, 5:35-6:6). (Fig. 20, 25, 28, annotated).

Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between a laptop mode (Fig. 1) and an easel mode (Fig. 9). Likewise, Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between an easel mode and a frame mode.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to initiate a display inversion between the first content orientation to the second content orientation when transitioning between frame mode and easel mode, for the same reasons as the

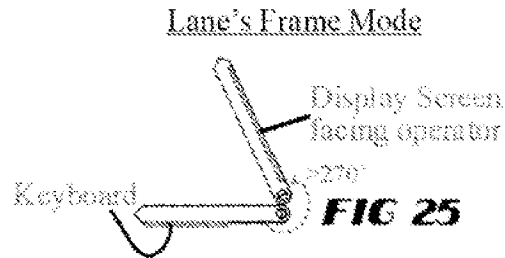
transition between laptop and easel mode, to maintain the displayed content as right-side-up relative to a viewer despite the top and bottom edges of the display becoming inverted.

26. The portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.

Lane discloses portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.(5:35-6:6). The structure for the protection module is a processor programmed in the portable computer of Lane to (1) utilize the computer's sensor input to determine that the computer is in frame mode, and (2) disable input from the keyboard when the computer is determined to be in frame mode. (Fig. 25). Lane specifically disclosed " to render keys 36 of first module 14 inoperable when unused".(Lane, 6:5-6).

27. The method of claim 17, wherein the plurality of display modes includes a frame mode wherein in the frame mode the display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the integrated keyboard is directed towards the substantially horizontal surface.

Lane discloses portable computer with a plurality of modes including a frame mode in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated).



Lane, Fig. 25 (with annotations).

and the act of automatically configuring includes an act of: displaying the visual display in the first content orientation of the content for the degree of rotation that is greater than the threshold degree of rotation and the portable computer is determined to be configured in the frame mode.

To the extent that Lane does not specifically disclose displaying the visual display in the first content orientation of the content for the degree of rotation that is greater than the threshold degree of rotation and the portable computer is determined to be configured in the frame mode, it would have been obvious over Hisano.

Hisano teaches that its orientation sensor is capable of distinguishing between a frame and easel mode. Hisano discloses that its sensor may include a gravity sensor that is capable of distinguishing the portable computer's orientation regardless of the angle of the hinges or the placement of the personal computer. (Hisano [0099]). Accordingly, one of ordinary skill in the art would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes.

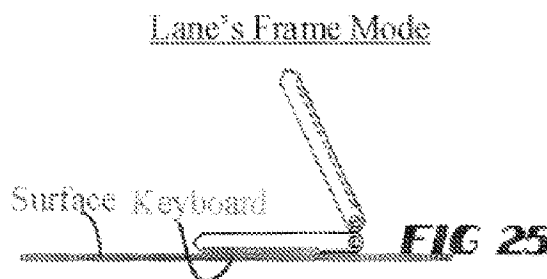
At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the gravity sensor disclosed by Hisano into the portable computer disclosed by

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Lane for detecting portable computer in frame by detecting a degree of rotation greater than the threshold degree of rotation.

28. The method of claim 17, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Lane explicitly discloses "rendering keys 36 of first module 14 inoperable when unused" (Lane, 6:5-6). One of ordinary skill in the art would have understood that keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Furthermore, keyboard is inoperable when the portable computer is in frame mode because the keyboard is placed face-down against a surface which could result in accidental or unwanted key inputs.



Lane, FIG. 25 (with annotations).

30. The method of claim 29, wherein the plurality of display modes includes a frame mode and the act of manipulating the physical configuration of the single display component to transition the portable computer between a plurality of display modes includes an act of

orienting the single display component towards the operator, placing the base against a substantially horizontal surface, and orienting the keyboard towards the substantially horizontal surface to transition the portable computer into the frame mode.

Claim 30 depends from claim 29, therefore the limitations of claim 29 are addressed below.

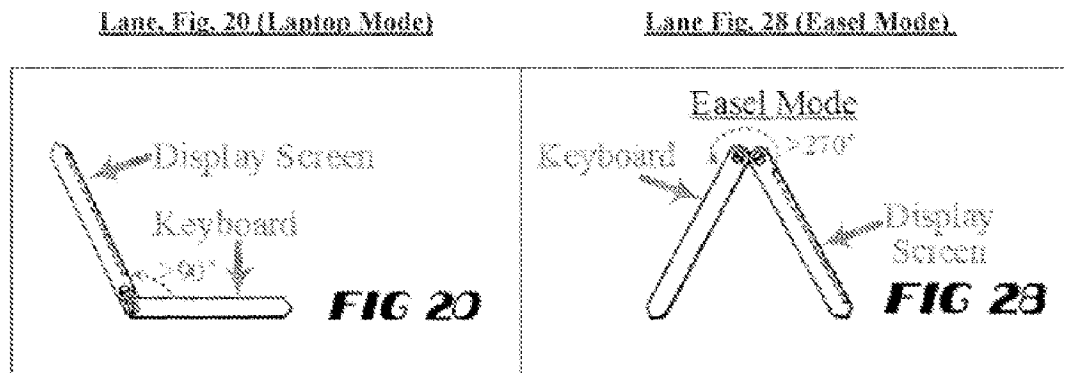
29. A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a body, the body having: a single display component including a display screen, a base including a keyboard, and a hinge assembly, the method comprising:

Lane discloses method of managing user interaction with content displayed on a portable computer having a plurality of display modes (laptop mode, frame mode, easel mode)(Fig. 20, 25, 28) on a portable computer comprising a body (Fig. 1), the body having a single display component including a display screen 35 and a base 14 (first module) including an integrated keyboard (having keys 36) and hinge assembly (connector 54) (5: 15-17, 6:5-6, 8:22-23 and claim 12 discloses portable computer "comprises a keyboard having a plurality of keys").

manipulating a physical configuration of the single display component relative to the base to transition the portable computer between a plurality of display modes, wherein the act of manipulating includes an act of rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the body of the portable computer to transition the

portable computer to transition the portable computer between the plurality of display modes, including a laptop mode and an easel mode;

Lane discloses manipulating a physical configuration of the single display component (display screen 35) relative to the base 14 about a hinge assembly 54 to transition the portable computer between a plurality of display modes including a laptop mode and an easel mode. (Fig. 20, 28).



Lane, FIGS. 20, 28 (with annotations).

Lane discloses base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62"). (Lane, 6:8-12, FIGS. 25, 28. Accordingly, Lane discloses rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the portable computer.

wherein the plurality of modes includes at least the laptop mode wherein the single display component and the keyboard are oriented towards an operator and the easel mode

wherein the single display component is oriented towards an operator and the keyboard is oriented away from the operator;

Lane discloses the plurality of modes includes at least the laptop mode (Fig. 20, annotated) wherein the single display component and the keyboard are oriented towards an operator and the easel mode (Fig. 29, annotated) wherein the single display component is oriented towards an operator and the keyboard is oriented away from the operator (Lane, 5:35-6:6). (Fig. 20, 25, 28, annotated).

determining a display mode responsive to the physical configuration of the single display component relative to the base;

Lane discloses detecting the physical orientation of its single display relative to its base by a position-indicating mechanism 38 (Fig. 1). Lane provides specific examples of 'landscape' or 'portrait' orientations, and disclose using the output of the position indicating mechanisms 38 to properly orient the content so that it is presented right-side-up in each display mode (Lane 5:23-6:6).

To the extent that Lane does not specifically disclose determining a display mode responsive to the physical configuration of the single display component relative to the base it is disclosed by Hisano.

Hisano discloses determining a display mode responsive to the physical configuration of the single display component relative to the base by measuring the angle of rotation of its hinges by a sensor, which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen (Hisano [0099]). Hisano

further discloses other types of sensors for measuring the relative orientation of its portable computer, including a "gravity sensor," that senses the direction of gravity (Hisano [0099-0100]), and numerous types of sensors for determining physical configuration of the single display component relative to the base (Lane, 5:23-6:6).

At the time the invention was made it obvious to one of ordinary skill in the art to utilize the sensor disclosed by Hisano to determine a display mode corresponding to the physical orientation of the display of Lane's portable computer relative to its base in order to invert the displayed content as needed to maintain the content right-side-up to a user.

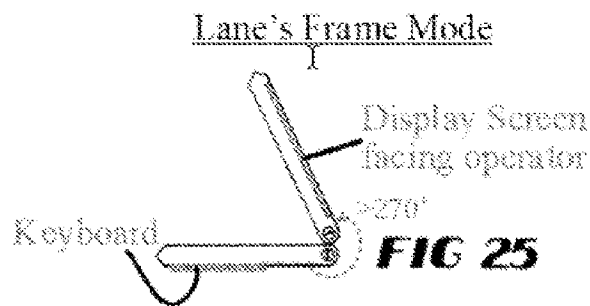
configuring a content orientation, relative to the longitudinal axis, of a visual display on the display screen of the single display component responsive to the display mode, wherein configuring the content orientation includes: displaying the visual display in a first content orientation of the content for the laptop mode, and displaying the visual display in a second content orientation for the easel mode, the second content orientation being at 180 degrees relative to the first orientation.

Lane discloses determining a display mode based on measuring the physical configuration of its display relative to its base. Lane discloses displaying the visual display in a first content orientation of the content for the laptop mode, and displaying the visual display in a second content orientation for the easel mode and discloses the content orientation in laptop mode is 180 degrees relative to the content orientation in easel mode (Fig. 20, 28).

Hisano teaches determining a display mode based on measuring a degree of rotation of a display component relative to a base (Hisano [0099]).

At the time the invention was made it obvious to one of ordinary skill in the art to implement the above teachings of Hisano into the portable computer of Lane in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base. One would recognize the need to change the orientation of the displayed content by 180° upon transitioning between laptop to easel mode (i.e., changing between a first and second content orientation) in order to present the displayed content right-side-up to the intended viewer.

Regarding claim 30, Lane discloses all of the limitations of claim 29 as set forth above. Regarding claim 30, Lane discloses portable computer with a plurality of modes including a frame mode in which the single display component ("first module 14") with the single display screen ("visual display 35") is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard (keys 36) is directed towards the substantially horizontal surface (Lane, 3:5-14, 10:24-31) (FIG. 25, annotated).



Lane, Fig. 25 (with annotations).

31. The method according to claim 30, wherein the act of configuring the content orientation includes an act of displaying the visual display in the first content orientation of the content for the frame mode.

Lane discloses the act of configuring the content orientation includes an act of displaying the visual display in the first content orientation of the content for the frame mode.(Lane. Fig. 25).

Hisano discloses orientation sensor for detecting orientation transitions between all three of laptop, frame, and easel modes.

At the time the invention was made it obvious to one of ordinary skill in the art to display visual content in a first orientation when the sensor as taught by Hisano detects that the portable computer is oriented into frame mode to ensure that the displayed content is presented right-side-up relative to a user.

32. The method according to claim 30, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Lane explicitly discloses "rendering keys 36 of first module 14 inoperable when unused" (Lane, 6:5-6). One of ordinary skill in the art would have understood that keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Furthermore, keyboard is inoperable when the portable computer is in frame mode because the keyboard is placed face-down against a surface which could result in accidental or unwanted key inputs.

6.4 Lane, Hisano, Ayazi (cl. 21, 22)

Claims 21 and 22 are rejected under 35 U.S.C 103 as being obvious over Lane (WO 95/24007), Hisano (US 2006/0034042), and Ayazi et al. (US 7,337,671 B2).

21. The portable computer of claim 18, wherein the orientation sensor includes an accelerometer.

Lane discloses orientation sensor 38 (Fig. 29) (Lane, 5:23-6:6). Lane did not disclose wherein the orientation sensor includes an accelerometer.

Hisano teaches an orientation sensor that detects a physical orientation of a display unit relative to a base. Hisano teaches the sensor may be a gravity sensor ("sensor that senses the direction of gravity") which is broadly interpreted as an accelerometer.(Hisano [0099]).

To the extent that Hisano may not disclose orientation sensor (gravity sensor) includes an accelerometer it would have been obvious over Ayazi et al. (US 7,337,671 B2).

Ayazi et al. discloses micro-gravity (micro-g) accelerometers for laptop computers for various applications (col. 1, lines 25-38).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add an accelerometer disclosed by Ayazi et al.to laptop computer disclosed by Lane and Hisano for various applications.

22. The portable computer of claim 21, the orientation sensor is configured to detect an angle of the base relative to the display unit.

Lane discloses orientation sensor 38 configured to detect an angle of the base relative to the display unit. (Fig. 29) (Lane, 5:23-6:6).

To the extent that Lane may not disclose the orientation sensor is configured to detect an angle of the base relative to the display unit it is obvious over Hisano.

Hisano teaches detecting an angle of rotation about hinge of a display unit relative to a base using an orientation sensor. (Hisano [0099]).

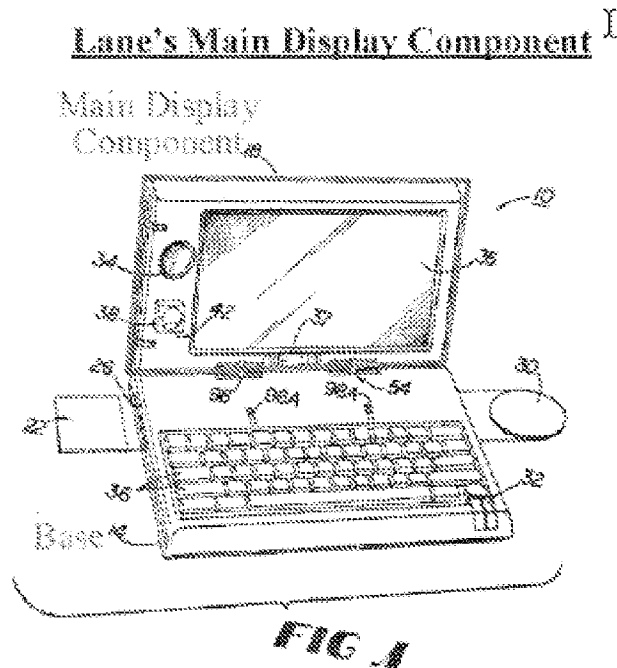
At the time the invention was made it would have been obvious to one of ordinary skill in the art utilize the sensor disclosed by Hisano to determine a current display mode for the portable computer of Lane in order to provide an appropriate right-side-up content orientation for a user.

6.5 Lane, Hisano, Choi (cl. 11)

Claim 11 is rejected under 35 U.S.C 103 as being obvious over Lane (WO 95/24007), Hisano (US 2006/0034042), and Choi (US 6,918,159).

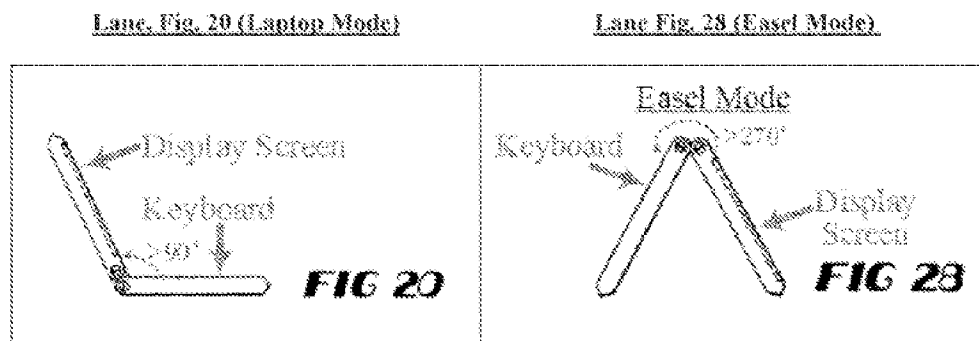
11. A portable computer comprising: a base; a display component rotatably coupled to the base;

Lane discloses portable computer comprising a base 14 a display component 18 rotatably coupled to the base 14 (Fig. 1).by a hinge assembly (Fig. 3).



means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode;

Lane discloses means for rotating including a hinge assembly (Fig. 3) wherein the main display component and the base are rotatable about two axes of rotation to transition between the various display modes, including the laptop (Fig. 20) and easel (Fig. 28) modes. (Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16).

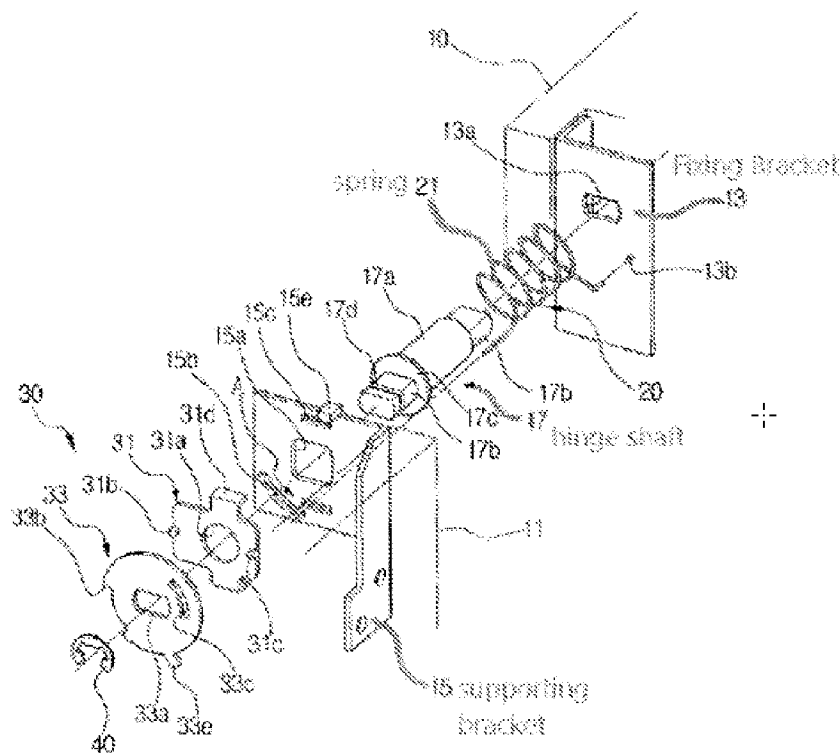


Lane, FIGS. 20, 28 (with annotations).

To the extent that Lane does not disclose the means for rotating as per the corresponding structure determined in the 112 (f) analysis, it would have been obvious over Choi.

Choi discloses means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode comprising a single-axis hinge assembly. The hinge assembly connects panel 11 to body 10 so that the panel 11 is opened and closed with respect to the body 10, particularly for connecting a display to a body in a laptop computer. (Choi, 3:36-50). Choi discloses the hinge apparatus includes fixing bracket 13 fixed onto a laptop computer body 10, supporting bracket 15 fixed to the panel 11 (LCD panel), hinge shaft 17, and coil spring 21. (Choi, 3:36-42, 52-56)(Fig. 2).

Annotated Fig. 2 of Choi



Choi disclose the hinge assembly enables rotation of a laptop display relative to a body (Fig. 5) and enables the display to open beyond 180 degrees relative to the base (display opened to approximately 210 degrees) (Fig. 7)(Choi, 6:26-27).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to use a single-axis hinge disclosed by Choi instead of a dual-axis hinge disclosed by Lane for having a simpler design with only one hinge instead of two, and therefore having fewer movable parts, a single-axis hinge can be designed to be more durable and less susceptible to wear and damage to its parts compared to a dual-axis hinge. Having fewer components also allows a single-axis hinge to be less expensive to manufacture than a dual-axis hinge. In addition, one of ordinary skill in the art would be motivated to implement the hinge disclosed by Choi at least partially disposed within the display and base housings in order to cover the movable components of the hinge, such as its shaft and spring, in order to prevent wear to these components and to prevent foreign objects from entering and potentially jamming these movable components.

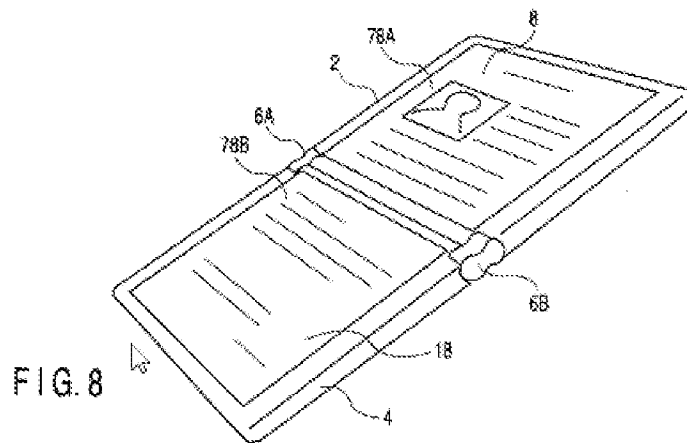
a display orientation module configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode, configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode

Lane discloses display orientation module comprising position-indicating mechanism 38 (mode sensor) used to assist device 10 and its associated software to automatically orient content displayed on the display component 15 responsive to at least a transition between the laptop mode (Fig. 20) and the easel mode (Fig. 28) (Lane, 5:35-6:6). Lane specifically disclosed

detecting a transition between the laptop mode and easel mode when the second module 18 is rotated more than 90° provide a standard "desktop" orientation (laptop mode), and when the second module 18 is rotated more than 270° provide the easel mode and to automatically orient content displayed on the display component responsive to detecting transition between the laptop mode and the easel mode (col. 10, lines 25-31) (Fig. 20, 28).

To the extent that Lane may not disclose the display orientation module as claimed it would have been obvious over Hisano.

Hisano discloses its portable computer switching content orientation in response to measuring the angle of the computer's hinges for measuring the angle or rotation of the display relative to the base. [Hisano. [0099]. Specifically, Hisano discloses a flat mode, as shown in Fig. 8, below whereby the two housing components are parallel with the hinges opened through an angle of about 180°. (Hisano [0087], Fig. 8). If the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode; and if the angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode.



Hisano. Fig. 8

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer of Lane to distinguish between a laptop or easel mode by determining whether the measured angle of rotation of the display relative to the base is greater or less than 180 degrees and to invert the displayed content in response to a transition between the two modes.

wherein the display orientation module is further configured to orient the content displayed between a first display orientation and a second display orientation, the first and second display orientations being 180 degrees relative to each other; and

Lane discloses display orientation module configured to orient the content displayed content orientation in laptop mode is 180 degrees relative to the content orientation in easel mode (col. 10, lines 25-31) (Fig. 20, 28).

means for detecting an orientation of the base relative to the display component, wherein the means for detecting is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation.

Lane discloses the means for detection (position-indicating mechanism 38 (mode sensor) used to assist device 10 and its associated software) for detecting an orientation of the base 10 relative to the display component 18 is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation. (col. 10, lines 25-31) (Fig. 20, 28).

6.6 Lane, Hisano, Clapper (cl. 15)

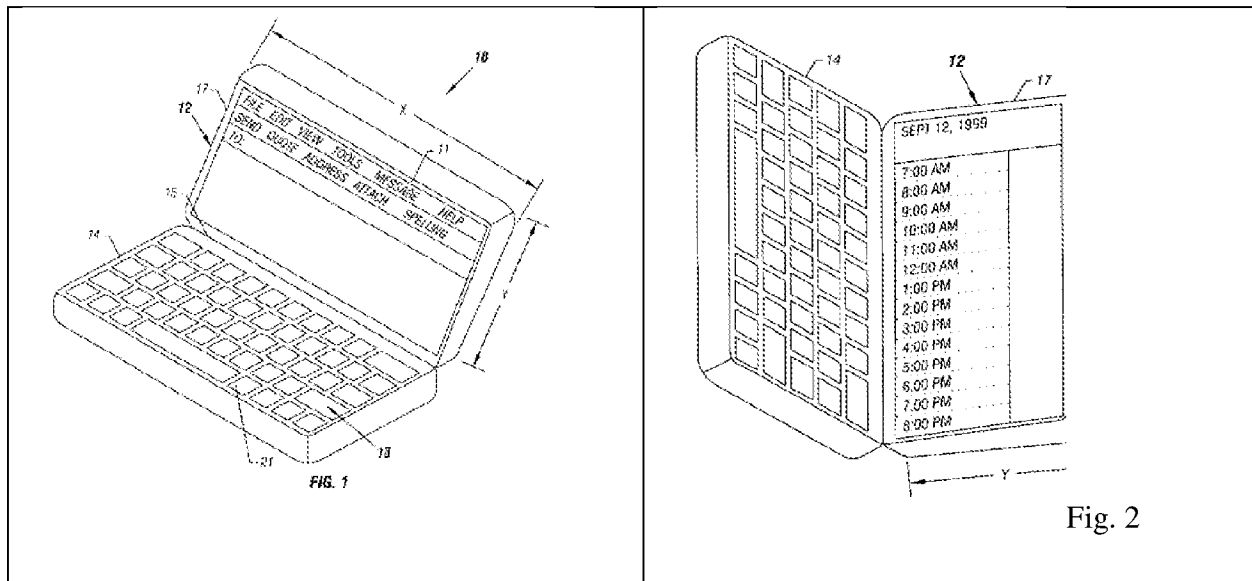
Claim 15 is rejected under 35 U.S.C 103 as being obvious over Lane (WO 95/24007), Hisano (US 2006/0034042), and Clapper (US 6,704,007).

15. The portable computer of claim 14, wherein the second orientation is 180 degrees relative to the first orientation; and wherein the plurality of orientations further comprises a third orientation relative to the longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation.

Lane in combination with Hisano discloses displaying the content in first and second orientations with the two orientations inverted 180 degrees relative to each other.

To the extent that Lane in combination with Hisano does not disclose a third orientation relative to the longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation it would have been obvious over Clapper.

Clapper discloses a portable computer comprising a third orientation relative to the longitudinal axis. Clapper teaches a portable computer device including a housing 14 coupled to a display 12, as shown in FIG. 1. The display 12 may be coupled by a hinge 15 to the housing 14. The housing 14 may conventionally include a keyboard 13 in one embodiment of the present invention." (Clapper, 1:66-2:3).



Clapper. Fig. 1 and 2

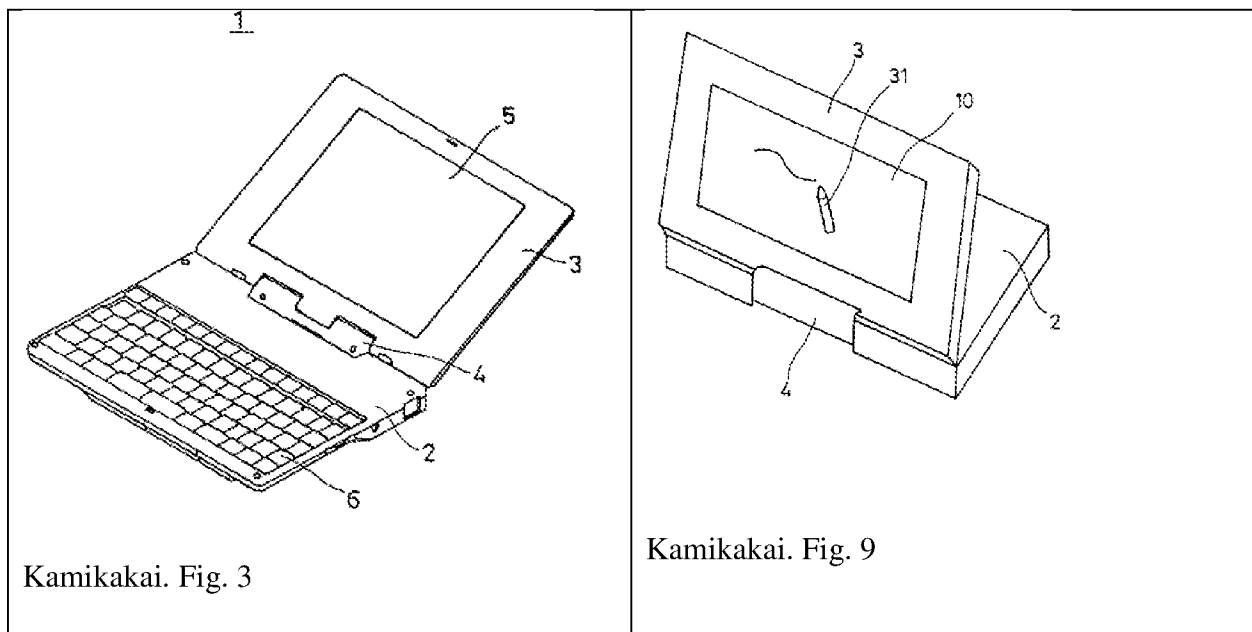
At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement Clapper's functionality of allowing the portable computer to be rotated 90 degrees about the plane of its display screen and, in response, rotating the displayed content by 90 degrees relative to the longitudinal axis of the hinge to allow a user to view content in both landscape orientation (Clapper. Fig. 1) and a portrait orientation (Clapper Fig. 2), and a user may prefer using a different orientation for different uses. For example, a user may prefer a portrait orientation for reading an electronic document, while preferring a landscape orientation for

viewing a photograph or watching a movie. Thus, one would implement the functionality of Clapper into the portable computer of Lane to improve usability of the portable computer.

6.7 Kamikakai, Shimura, Hisano (cl. 12-14, 16-22, 24-28, 30-32)

Claims 12-14, 16-22, 24-28, and 30-32 are rejected under 35 U.S.C 103 as being obvious over Kamikakai (US 6,154,359), Shimura (JP H06-242853, English Translation), and Hisano (US 2006/0034042).

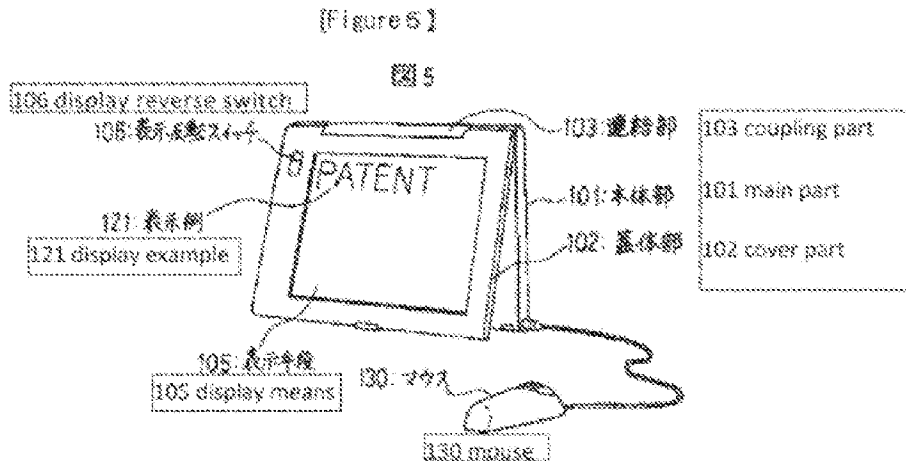
12. A portable computer configurable between a plurality of modes including a laptop mode and an easel mode, the portable computer comprising:



Kamikakai discloses portable computer configurable between a plurality of modes including a laptop mode and frame mode (Fig. 3 and 9).

To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.

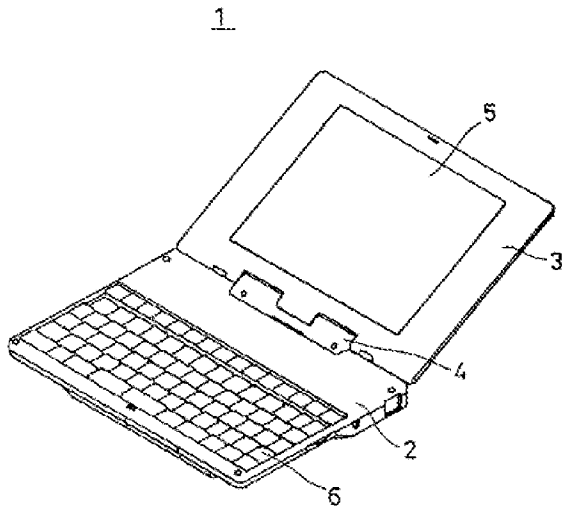
Shimura discloses portable computer comprising easel mode (Fig. 5). Shimura teaches that including the easel mode has the benefit of space savings. Shimura specifically teaches, "the area taken up by the computer on the table can be greatly reduced" in the easel mode. (Shimura. [0017]).



At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced.

a single display component;

Kamikakai discloses portable computer comprising a single display component 5 (display panel) (Kamikakai. 3:43-46) (Figs. 3, 9).



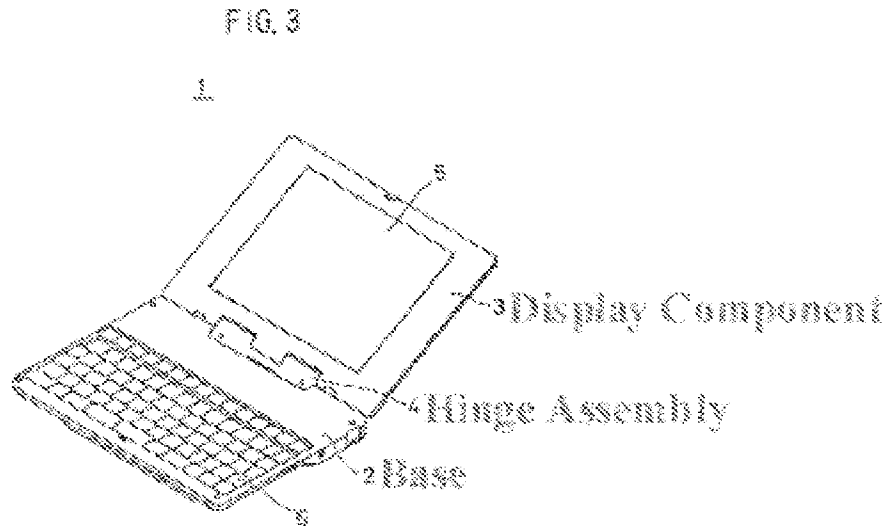
Kamikakai. Fig. 3.

a base including an integrated keyboard;

Kamikakai discloses portable computer comprising a base 2 (main body) including an integrated keyboard 6.(Kamikakai, 3:39-43) (Fig. 3).

a hinge assembly configured to rotatably couple the single display component to the base, wherein the hinge assembly is at least partially housed within the base and the single display component, and defines a longitudinal axis running along an interface between the single display component and the base;

Kamikakai discloses a hinge assembly 4 (connection part) configured to rotatably couple the single display 5 component to the base 2 (Fig. 3, annotated).



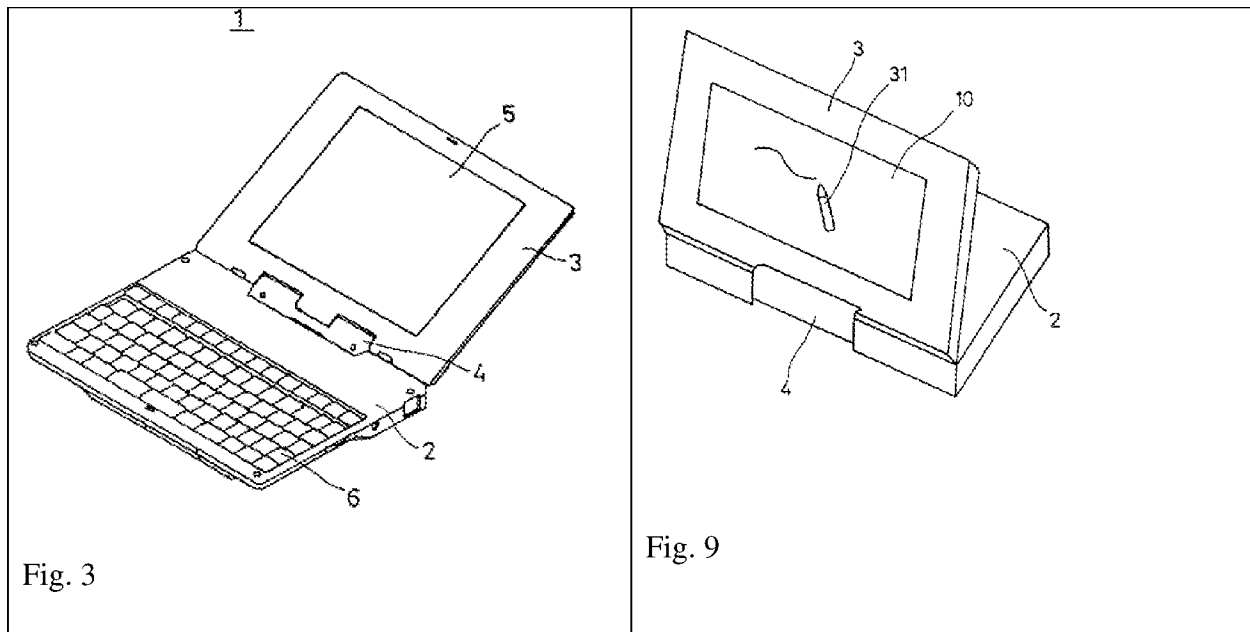
Kamikakai. Fig. 3, annotated.

wherein the hinge assembly is configured to permit rotation of the single display component and the base about the longitudinal axis to configure the portable computer between the laptop mode and the easel mode;

Kamikakai discloses that its connection part 4 is configured to permit its portable computer to rotate between a plurality of display modes including a laptop mode (FIG. 3) and a frame mode (FIGS. 8-9). (Kamikakai, 6:24-36, FIGS. 3, 9, reproduced below).

wherein in the easel mode the single display component is oriented facing the operator with the keyboard oriented away from the operator; and

To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.



Shimura discloses portable computer comprising easel mode wherein hinge assembly 4 is configured to permit rotation of the single display component 5 and the base 2 about the longitudinal axis to configure the portable computer between the laptop mode and the easel mode (Fig. 5). Shimura teaches that including the easel mode has the benefit of space savings. Shimura specifically teaches, "the area taken up by the computer on the table can be greatly reduced" in the easel mode. (Shimura. [0017]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced.

at least one integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein at least one of the least one integrated navigation hardware control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user.

Kamikakai discloses at least one integrated navigation hardware control (touch sensitive pen input part) to control features and manipulate content displayed on the portable computer (Kamikakai, 3 :39-47). Kamikakai further discloses its pen input part is accessible in other configurations, including its frame mode as shown in Figs. 8-9. (Kamikakai, 6:37-50).

To the extent that Kamikakai does not disclose the touch sensitive hardware is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user, this feature is disclosed by Hisano.

Hisano teaches integrated navigation hardware control comprising touch panel display including a virtual mouse configured to control features and manipulate content displayed on the portable computer. Hisano teaches wherein at least one of the least one integrated navigation hardware control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user [0009] [0057] [0059].

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add integrated navigation hardware control comprising touch panel display including a virtual mouse and keyboard disclosed by Hisano into the portable computer disclosed by Kamikakai to control features and manipulate content displayed on the visual display. The motivation for doing so would be to provide a suitable user interface for a user to control and navigate the portable computer even without the need for a separate mouse or keyboard, such as when the portable computer is in an easel or frame mode orientation.

13. The portable computer of claim 12, wherein the single display component comprises a display screen configured to display content and a display orientation module configured to control an orientation of the content displayed on the display screen; wherein

the orientation of the content displayed on the display screen is configurable among a plurality of orientations relative to the longitudinal axis.

Kamikakai in combination with Shimura and Hisano discloses all of the limitations of claim 12 as set forth above.

Kamikakai discloses a single display component comprising a display screen configured to display content, and a display orientation module comprising touch sensitive hardware and display processor configured to control an orientation of the content displayed on the display screen.

To the extent that Kamikakai does not disclose display orientation module configured to control an orientation of the content displayed on the display screen it is disclosed by Hisano.

Specifically, Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing to a separate housing, and in response controlling the orientation of displayed content on a displayed screen between two orientations relative to a longitudinal axis (Hisano. [0099]). Hisano, discloses display processor to generate application images to be displayed on the first display screen and interface images to be displayed on the second display screen in response to the angle of rotation of a display housing to a separate housing [0026].

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the add the display orientation module comprising sensor for measuring the angle of rotation of its hinges and the display processor disclosed by Hisano for controlling the

orientation of displayed content on a displayed screen between two orientations relative to a longitudinal axis in the portable computer of Kamikakai.

14. The portable computer of claim 13, wherein the plurality of orientations comprises a first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis; and wherein when display orientation module is configured to automatically display the content in the first orientation when the portable computer is configured into the laptop mode and in the second orientation when the portable computer is configured into the easel mode.

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 13 as set forth above.

To the extent that Kamikakai does not disclose display orientation module configured to automatically display the content in the first orientation when the portable computer is configured into the laptop mode and in the second orientation when the portable computer is configured into the easel mode it is disclosed by Hisano.

Hisano teaches a display orientation module configured to display content in at least two orientations relative to a longitudinal axis, with the two orientations inverted 180 degrees relative to each other. Specifically, Hisano teaches display orientation module configured to automatically transition between the two orientations upon transitioning between laptop and easel modes in order to maintain displayed content in a right-side-up orientation relative to a user viewing the display screen.(Hisano [0099]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to detect the transitions between all three of the laptop, easel, and frame modes to the portable computer of Kamikakai to (1) determine the rotating angle of hinges 130A and 130B disclosed by Hisano [0099]; and (2) use the angle to determine whether the device is in laptop or easel mode, i.e., whether the angle is less than or greater than 180°, and (3) orient the displayed screen depending on whether the device is in laptop or easel mode, where the content orientation for each mode is 180 degrees relative to the other so as to present the display right-side-up to the viewer in each mode.

16. The portable computer of claim 13, further comprising a mode sensor configured to provide information representative of a degree of rotation of the single display component relative to the base; and wherein the display orientation module is configured to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor.

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 13 as set forth above.

To the extent that Kamikakai does not disclose display orientation module is configured to automatically adjust the orientation of the content displayed on the display screen responsive to the information from the mode sensor, it is disclosed by Hisano.

Hisano discloses a mode sensor configured to provide information representative of a degree of rotation of a display relative to a separate housing component. Specifically, Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation

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of a display housing to a separate housing, in order to determine the orientation of a displayed screen (Hisano [0099]). Hisano discloses other types of sensors for measuring the relative orientation of its portable computer, including a "gravity sensor," that senses the direction of gravity (Hisano [0099]-[0100]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to the portable computer of Kamikakai to automatically adjust the orientation of displayed content responsive to the information from the mode sensor in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

17. A method of automatically orienting content in a plurality of display modes displayed on a portable computer comprising a body, the body having a single display component including a display screen and a base including an integrated keyboard, the method comprising:

Kamikakai discloses method of automatically orienting content in a plurality of display modes displayed (Fig. 3, 9) on a portable computer comprising a body 2 (main body) (Fig. 3), the body having a single display component including a display screen and a base including an integrated keyboard

rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the portable computer;

Kamikakai discloses rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component 3 (display part) and the base 2 of the portable computer (Fig. 3). Kamikakai discloses that the portable computer comprises rotating its display part using a hinge assembly (connection part 4").

**detecting a degree of rotation of the single display component relative to the base;
providing a signal representative of the degree of rotation of the single display
component;**

To the extent that Kamikakai may not specifically disclose detecting a degree of rotation of the single display component relative to the base, it is disclosed by Hisano.

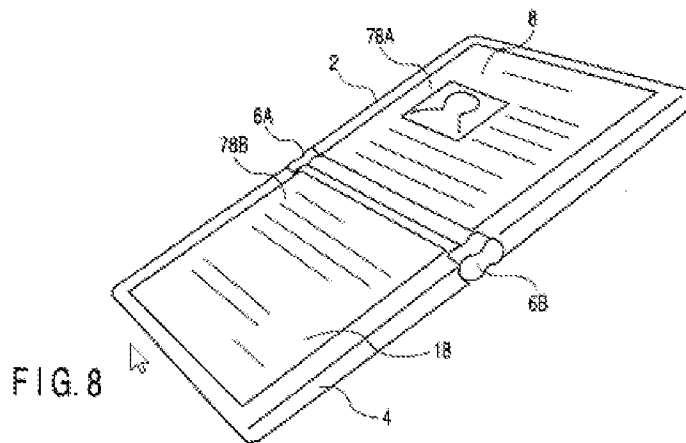
Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen.[Hisano [0099]. Specifically, Hisano discloses that the rotating angle of the hinges 130A and 130B may be used for automatically adjusting the orientation of displayed content responsive to the information (i.e., a signal) from the mode sensor [0099]. Hisano discloses display processor to generate application images to be displayed on the first display screen and interface images to be displayed on the display screen [0026]. Therefore, it is obvious that that the sensor detecting the hinge angle would transmit a signal corresponding to the detected hinge angle to the computer's processor to enable the processor to perform its required decision-making and provide an appropriate display orientation.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to the portable computer of Kamikakai to automatically adjust the orientation of displayed content responsive to the information from the mode sensor in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

**comparing the degree of rotation with respect to a threshold degree of rotation;
determining a display mode based, at least in part, on the act of comparing the degree of rotation with respect to the threshold degree of rotation;**

Hisano teaches detecting and providing a degree of rotation of a display component relative to a base and determining whether the computer is in laptop or easel mode based on the hinge angle of the display relative to the base compared to a threshold value for the hinge angle. Hisano teaches a flat mode, as shown in Fig. 8, below whereby the two housing components are parallel with the hinges opened through an angle of about 180° . (Hisano [0087], Fig. 8). If the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode; and if the angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer of Kamikakai to distinguish between a laptop or easel mode by comparing the degree of rotation with respect to a threshold (measured angle of rotation of the display relative to the base is greater or less than 180 degrees) and to invert the displayed content in response to a transition between the two modes.



Hisano. Fig. 8

generating a visual display of the content for the display screen;

Kamikakai discloses generating a visual display of the content for the display screen 52 (Fig. 3). It is obvious to one of ordinary skill in the art that the signals corresponding to the visual content is generated by the computer's internal processor and transmitted to the hardware of the display screen to be converted into a visible visual display of content to be shown on the display screen.

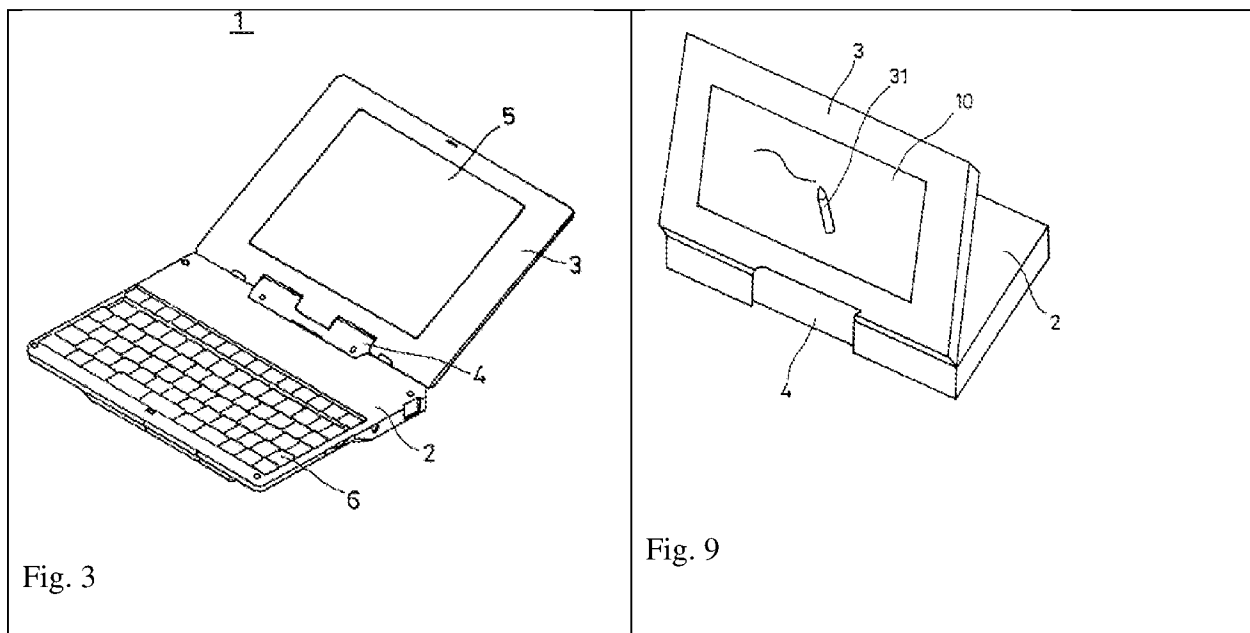
To the extent that Kamikakai may not disclose generating a visual display of the content for the display screen it is obvious over Hisano.

Hisano also discloses display hardware for receiving an image display signal from processor in the portable computer and generating a corresponding visual display of content for a display screen (LCD Display section 18B)(Fig. 3). (Hisano [0070]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to provide the display hardware disclosed by Hisano into the portable computer of Kamikakai hardware for receiving an image display signal from processor in the portable computer and generating a corresponding visual display of content for a display screen.

orienting the visual display shown on the display screen of the single display component towards an operator for operation of the portable computer in each of the plurality of display modes,

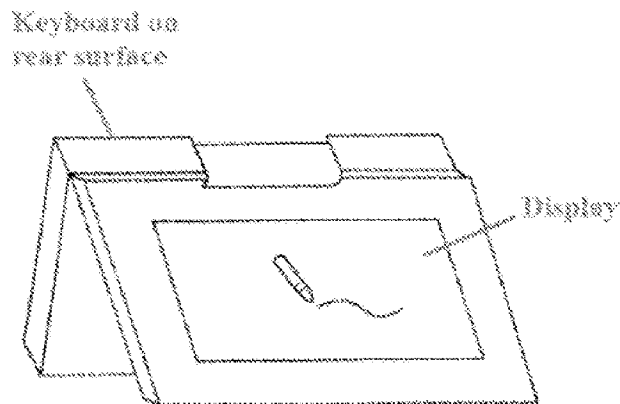
Kamikakai discloses orienting the visual display shown on the display screen of the single display component towards an operator for operation of the portable computer in each of the plurality of display modes (Fig. 3, 9).



wherein the plurality of display modes includes a laptop mode with the integrated keyboard and display oriented towards the operation and an easel mode with the display oriented towards the operator and the keyboard oriented away from the operator; and

Kamikakai discloses plurality of display modes includes a laptop mode (Fig. 3) with the integrated keyboard 6 and display 5 oriented towards the operation and a frame mode (Fig. 9) with the display oriented towards the operator and the keyboard oriented away from the operator. It is obvious to one of ordinary skill in the art that the portable computer of Kamikakai, when oriented into easel mode (see Fig. 9, oriented) would have its single display directed toward a viewer/operator as it is the frame mode, and accordingly the keyboard would be directed away from the viewer/operator.

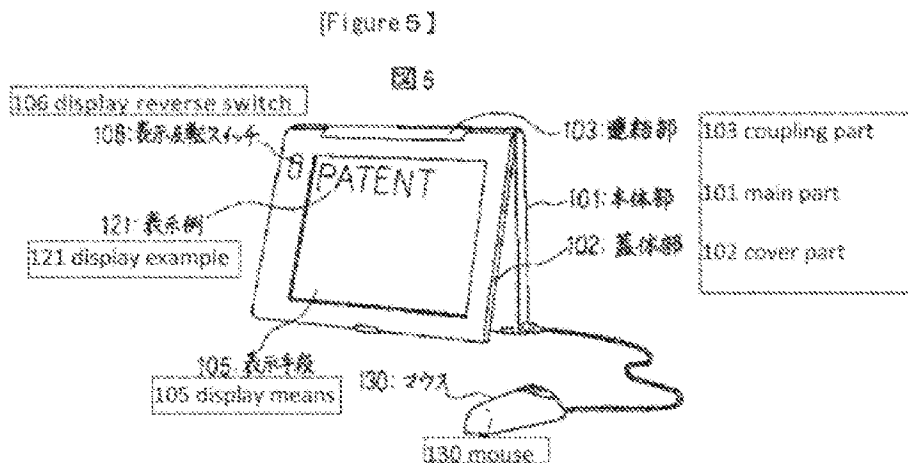
Exemplary Easel Mode for Kamikakai Portable Computer



To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.

Shimura discloses portable computer comprising easel mode (Fig. 5). Shimura teaches that including the easel mode has the benefit of space savings. Shimura specifically teaches, "the

area taken up by the computer on the table can be greatly reduced" in the easel mode. (Shimura. [0017]).



At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced.

automatically configuring a content orientation, relative to the longitudinal axis, of the visual display on the display screen of the portable computer responsive to the signal and the determined display mode, wherein the act of automatically configuring includes acts of:

Kamikakai discloses plurality of display modes as shown in Fig. 3 and Fig. 9, and it is obvious that the content displayed on the screen is oriented automatically relative to the longitudinal axis in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

displaying the visual display in a first content orientation of the content for the degree of rotation that is less than the threshold degree of rotation and the portable computer is determined to be configured in the laptop mode, and displaying the visual display in a second content orientation of the content for the degree of rotation that is greater than the threshold degree of rotation and the portable computer is determined to be configured in the easel mode, the second content orientation being at 180 degrees relative to the first orientation.

To the extent that Kamikakai may not specifically disclose the first and second content orientation is based on threshold degree of rotation for the laptop mode and easel mode respectively it is disclosed by Hisano.

Hisano discloses detecting and providing a degree of rotation of a display component relative to a base. Hisano teaches if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode (Fig. 10), while if the hinge angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode (Fig. 9).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to enable the portable computer of Kamikakai to distinguish between a laptop mode when the measured hinge angle is less than 180 degrees and an easel mode when the measured hinge angle is greater than 180 degrees, and to invert the displayed content in response to a transition between the two modes disclosed by Hisano in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

18. The method of claim 17, wherein automatically configuring the orientation of the content includes: displaying the visual display of the content in the first content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is less than the threshold degree of rotation of approximately 180 degrees relative to the base; and displaying the visual display of the content in the second content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is greater than the threshold degree of rotation of approximately 180 degrees relative to the base.

Kamikakai in combination with Shimura and Hisano discloses all of the limitations of claim 17 as set forth above.

Kamikakai discloses plurality of display modes as shown in Fig. 3 and Fig. 9, and it is obvious that the content displayed on the screen is oriented automatically relative to the longitudinal axis in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

To the extent that Kamikakai may not specifically disclose displaying the visual display of the content in the first content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is less than the threshold degree of rotation of approximately 180 degrees relative to the base; and displaying the visual display of the content in the second content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is greater than the threshold degree of rotation of approximately 180 degrees relative to the base it would have been obvious over Hisano.

Hisano discloses displaying the visual display of the content in the first content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is less than the threshold degree of rotation of approximately 180 degrees relative to the base; and displaying the visual display of the content in the second content orientation relative to the longitudinal axis responsive to the signal indicating that the degree of rotation of the single display component is greater than the threshold degree of rotation of approximately 180 degrees relative to the base. Specifically, detecting and providing a degree of rotation of a display component relative to a base. Hisano teaches if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode (Fig. 10), while if the hinge angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode (Fig. 9).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to enable the portable computer of Kamikakai to distinguish between a laptop mode when the measured hinge angle is less than 180 degrees and an easel mode when the measured hinge angle is greater than 180 degrees, and to invert the displayed content in response to a transition between the two modes disclosed by Hisano in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

19. A portable computer comprising: a base unit comprising an integrated keyboard; a single display unit including a single display screen configured to display content;

Kamikakai discloses portable computer comprising a base unit 2 comprising an integrated keyboard 6, a single display unit 3 including a single display screen 5 configured to

display content (Kamikakai. 1:6-12, 3:39-6) (Fig. 3).

an orientation sensor which detects a physical orientation of the single display unit relative to the base unit; and

Kamikakai discloses portable computer configurable between a plurality of display modes including a laptop mode (FIG. 3) and a frame mode (FIGS. 8-9).

To the extent that Kamikakai may not disclose an orientation sensor which detects a physical orientation of the single display unit relative to the base unit it is disclosed by Hisano.

Hisano discloses measuring the angle of rotation of its hinges, ,which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen. [0099].

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add orientation sensor disclosed by Hisano to the portable computer of Kamikakai to automatically adjust the orientation of displayed content responsive to the information from the orientation sensor in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

a display orientation module which orients the content displayed on the single display screen responsive to the physical orientation detected by the orientation sensor between at least a first content display orientation and a second content display orientation, the second content display orientation being 180 degrees relative to the first content display orientation;

Hisano teaches a display orientation module configured to orient displayed content responsive to the physical orientation of its orientation sensor between a first and second content display orientation, with the second orientation being 180 degrees relative to the first content display orientation. Specifically, Hisano discloses measuring the angle of rotation of its hinges which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen. [0099]. The display orientation module disclosed by Hisano comprise computer's internal processor and associated logic [0026].

At the time the invention was made it would have been obvious to one of ordinary skill in the art to provide a display orientation module disclosed by Hisano into the portable computer of Kamikakai in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

wherein the display orientation module is further configured to detect a change between a laptop mode, an easel mode, and a frame mode based on the detected physical orientation of the single display unit relative to the base unit, and wherein the display orientation module is further configured to:

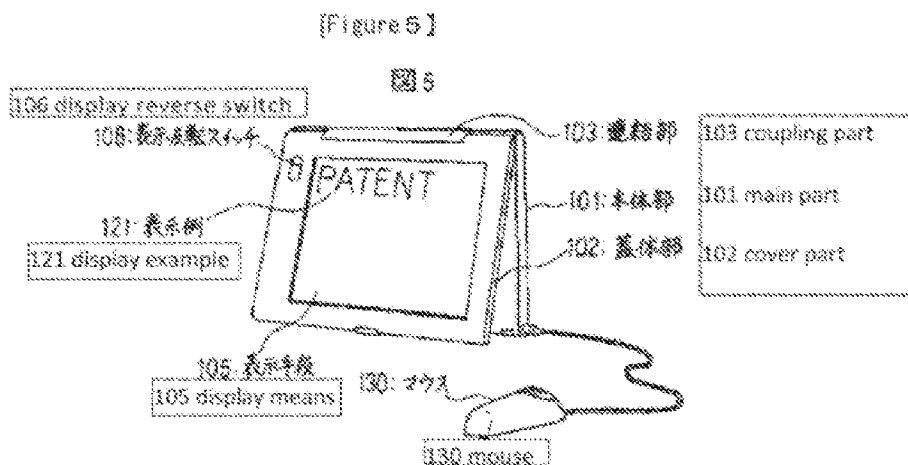
Kamikakai teaches a portable computer having a laptop mode and a frame mode and Shimura teaches an easel mode.

To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.

Shimura discloses portable computer comprising easel mode (Fig. 5). Shimura teaches that including the easel mode has the benefit of space savings. Shimura specifically teaches, "the

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area taken up by the computer on the table can be greatly reduced" in the easel mode. (Shimura. [0017]).



At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced. Furthermore, it would have been obvious to implement the easel mode of Shimura into the portable computer of Kamikakai to provide a portable computer capable of operating in laptop, frame, or easel modes.

trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the laptop mode and the easel mode, trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the easel mode and the frame mode.

Hisano discloses measuring the hinge angle to determine (1) the angle of the display relative to the other housing structure, (2) use the angle to determine whether the device is in laptop or easel mode, whether the angle is less than or greater than 180°, and (3) orient the displayed screen depending on whether the device is in laptop or easel mode, where the content orientation for each mode is 180 degrees relative to the other so as to present the display right-side-up to the viewer in each mode.

Hisano further teaches the orientation sensor is capable of distinguishing between a frame and easel mode. Specifically, Hisano discloses orientation sensor may include a gravity sensor that is capable of distinguishing the portable computer's orientation regardless of the angle of the hinges, or the placement of the personal computer. (Hisano [0099]).

Thus, Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between a laptop mode and an easel mode. Hisano also teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between an easel mode and a frame mode.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to the portable computer of Kamikakai to automatically adjust the orientation of displayed content responsive to the information from the mode sensor in order to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base.

20. The portable computer of claim 14, wherein the second orientation is 180 degrees relative to the first orientation.

Kamikakai in combination with Shimura and Hisano discloses all of the limitations of claim 14 as set forth above.

To the extent that Kamikakai does not specifically disclose portable computer wherein the second orientation is 180 degrees relative to the first orientation, it is disclosed by Hisano.

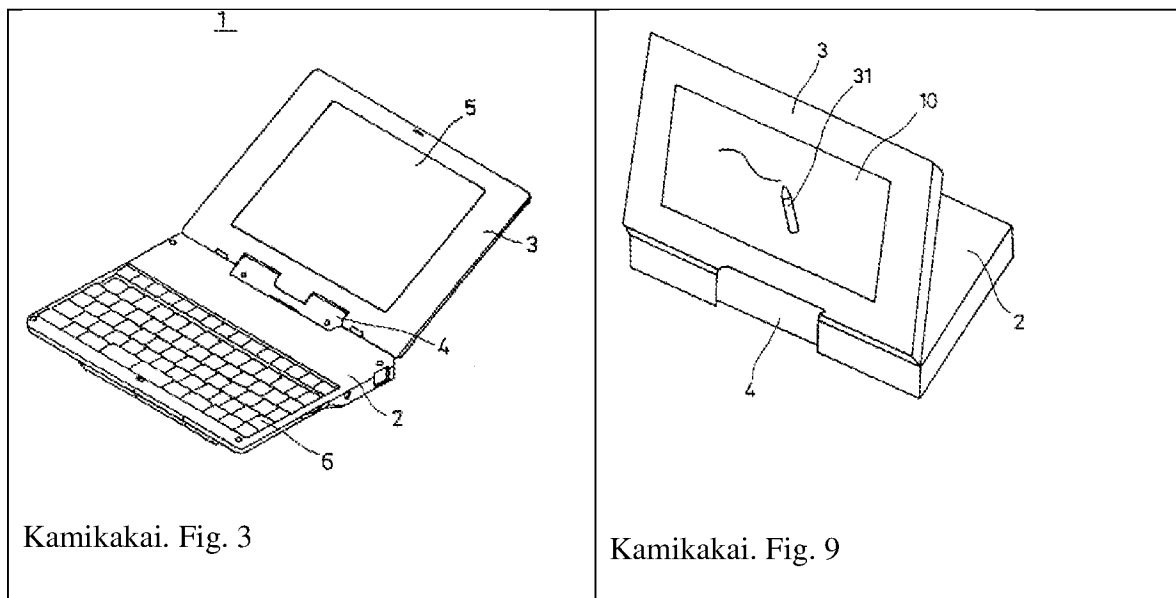
Hisano teaches a display orientation module configured to display content in at least two orientations relative to a longitudinal axis, with the two orientations inverted 180 degrees relative to each other. Specifically, Hisano teaches display orientation module configured to automatically transition between the two orientations upon transitioning between laptop and easel modes in order to maintain displayed content in a right-side-up orientation relative to a user viewing the display screen.(Hisano [0099]).

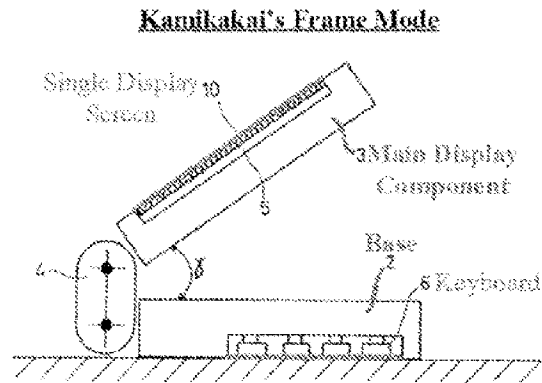
At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to detect the transitions between all three of the laptop, easel, and frame modes to the portable computer of Kamikakai to (1) determine the rotating angle of hinges 130A and 130B disclosed by Hisano [0099]; and (2) use the angle to determine whether the device is in laptop or easel mode, i.e., whether the angle is less than or greater than 180°, and (3) orient the displayed screen depending on whether the device is in laptop or easel mode, where the content orientation for each mode is 180 degrees relative to the other so as to present the display right-side-up to the viewer in each mode.

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

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 12 as set forth above.

Kamikakai discloses its portable computer configurable between a plurality of display modes including a laptop mode (Fig. 3) and a frame mode (FIGS. 8-9) in which the single display component 3 (display part) is oriented towards the operator with the single display screen (pen input part 10') facing up, the base 2 (main body) contacts a substantially horizontal surface, and the keyboard 6 is directed towards the substantially horizontal surface.





Kamikakai, FIG. 8 (with annotations).

25. The portable computer of claim 13, wherein the plurality of modes includes a frame mode in which the single display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 13 as set forth above.

Kamikakai discloses its portable computer configurable between a plurality of display modes including a laptop mode (Fig. 3) and a frame mode (FIGS. 8-9) in which the single display component 3 (display part) is oriented towards the operator with the single display screen (pen input part 10') facing up, the base 2 (main body) contacts a substantially horizontal surface, and the keyboard 6 is directed towards the substantially horizontal surface. Kamikakai discloses the base (main body 2) contacts a substantially horizontal surface with the keyboard (keyboard 6) facing down downwards the surface. The main display component (display part 3) is oriented towards the operator with the single display screen (pen input part 10) facing up. (FIG. 8 annotated). (Kamikakai, 6:27-36).

wherein the plurality of orientations comprises a first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis; and

Kamikakai discloses first orientation relative to the longitudinal axis and a second orientation relative to the longitudinal axis (Kamikakai, Fig. 3, 9).

wherein when display orientation module is configured to display the content in the first orientation when the portable computer is configured into the laptop mode and frame mode and in the second orientation when the portable computer is configured into the easel mode.

To the extent that Kamikakai does not disclose display orientation module is configured to display the content in the first orientation when the portable computer is configured into the laptop mode and frame mode and in the second orientation when the portable computer is configured into the easel mode, it is disclosed by Hisano.

Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between a laptop mode and an easel mode. Likewise, Hisano teaches its display orientation module configured to trigger a display inversion between a first content orientation and second content orientation responsive to its sensor detecting a transition between an easel mode and a frame mode (Hisano [0099]-[0100])(Fig. 1, 9).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to initiate a display inversion between the first content orientation to the second content orientation when transitioning between frame mode and easel mode disclosed by Hisano, for the

same reasons as the transition between laptop and easel mode, to maintain the displayed content as right-side-up relative to a viewer despite the top and bottom edges of the display becoming inverted.

26. The portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 24 as set forth above.

Kamikakai further discloses a mechanism that disables its keyboard when the portable computer is in frame mode and the keyboard faces a horizontal surface as shown in Figures 8 and 9. (Kamikakai, 6:51-67). It would be obvious to implement a gravity sensor as taught by Hisano in order to detect the computer's orientation to distinguish between a frame and easel mode regardless of the hinge angle and would therefore be able to disable the keyboard in frame mode while maintaining its operability in easel mode.

27. The method of claim 17, wherein the plurality of display modes includes a frame mode wherein in the frame mode the display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the integrated keyboard is directed towards the substantially horizontal surface.

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 17 as set forth above.

Kamikakai discloses its portable computer configurable between a plurality of display modes including a laptop mode (Fig. 3) and a frame mode (FIGS. 8-9) in which the single display component 3 (display part) is oriented towards the operator with the single display screen (pen input part 10') facing up, the base 2 (main body) contacts a substantially horizontal surface, and the keyboard 6 is directed towards the substantially horizontal surface. Kamikakai discloses the base (main body 2) contacts a substantially horizontal surface with the keyboard (keyboard 6) facing down downwards the surface. The main display component (display part 3) is oriented towards the operator with the single display screen (pen input part 10) facing up. (FIG. 8 annotated). (Kamikakai, 6:27-36).

28. The method of claim 17, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 17 as set forth above.

Kamikakai further discloses a mechanism that disables its keyboard when the portable computer is in frame mode and the keyboard faces a horizontal surface as shown in Figures 8 and 9. (Kamikakai, 6:51-67).

To the extent that Kamikakai does not disclose deactivating keyboard operation when the portable computer is configured in the frame mode, it would have been obvious over Hisano. Hisano discloses gravity sensor to detect the computer's orientation to distinguish between a frame and easel mode regardless of the hinge angle.

It would be obvious to implement a gravity sensor as taught by Hisano in the portable computer of Kamikakai in order to detect the computer's orientation to distinguish between a frame mode and easel mode and to disable the keyboard in frame mode while maintaining its operability in easel mode.

30. The method of claim 29, wherein the plurality of display modes includes a frame mode and the act of manipulating the physical configuration of the single display component to transition the portable computer between a plurality of display modes includes an act of orienting the single display component towards the operator, placing the base against a substantially horizontal surface, and orienting the keyboard towards the substantially horizontal surface to transition the portable computer into the frame mode.

Claim 30 depends from claim 29, therefore the Examiner addresses the limitations of claim 29 below:

29. A method of managing user interaction with content displayed on a portable computer having a plurality of display modes, the portable computer comprising a body, the body having:

Kamikakai discloses method of managing user interaction with content displayed on a portable computer having a plurality of display modes (Fig. 3, 9)

a single display component including a display screen, a base including a keyboard, and a hinge assembly, the method comprising:

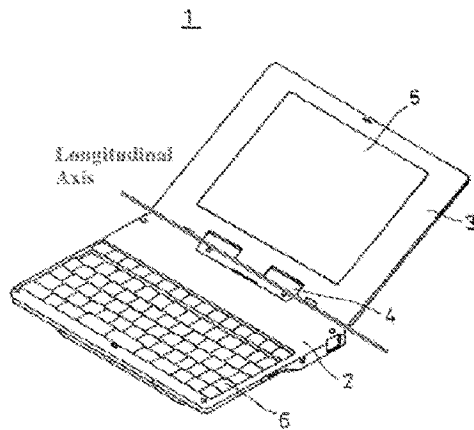
Kamikakai discloses portable computer comprising a body (Fig. 3) including a display screen 5, base 2 (main body) including keyboard 6, and hinge assembly 4 (Kamikakai, 3:39-43) (Fig. 3).

manipulating a physical configuration of the single display component relative to the base to transition the portable computer between a plurality of display modes,

Kamikakai discloses manipulating a physical configuration of the single display component 5 relative to the base 2 to transition the portable computer between a plurality of display modes (Fig. 3, 9).

wherein the act of manipulating includes an act of rotating the single display component of the portable computer about a longitudinal axis running along an interface between the single display component and the base of the body of the portable computer to transition the portable computer to transition the portable computer between the plurality of display modes, including a laptop mode and an easel mode;

Kamikakai discloses that its connection part 4 is configured to permit its portable computer to rotate about a longitudinal axis running along an interface between the single display component 5 and the base 2 of the body of the portable computer to transition the portable computer between plurality of display modes, including a laptop mode (FIG. 3) and a frame mode (FIGS. 8-9). (Kamikakai, 6:24-36, FIGS. 3, 9). Specifically, the hinge assembly of Kamikakai (connection part 4) defines a longitudinal axis running along the interface between the single display component and base (Kamikakai, Fig. 3 annotated).



Kamikakai, Fig. 3 annotated

To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.

Shimura discloses portable computer comprising easel mode wherein hinge assembly 4 is configured to permit rotation of the single display component 5 and the base 2 about the longitudinal axis to configure the portable computer between the laptop mode and the easel mode (Fig. 5). Shimura teaches that including the easel mode has the benefit of space savings. Shimura specifically teaches, "the area taken up by the computer on the table can be greatly reduced" in the easel mode. (Shimura. [0017]).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced.

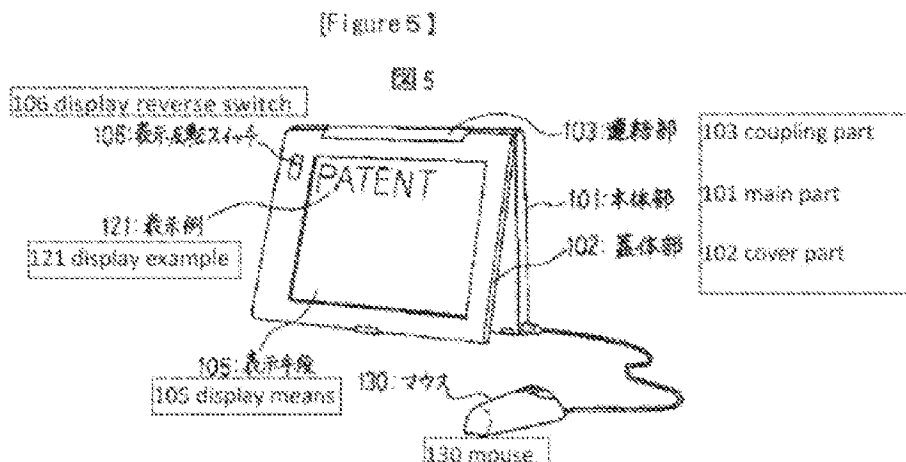
wherein the plurality of modes includes at least the laptop mode wherein the single display component and the keyboard are oriented towards an operator and the easel mode wherein the single display component is oriented towards an operator and the keyboard is oriented away from the operator;

Kamikakai discloses plurality of modes includes at least the laptop mode (Fig. 3) wherein the single display component 5 and the keyboard 6 are oriented towards an operator.

To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.

Shimura discloses easel mode wherein the single display component 105 is oriented towards an operator and the keyboard (in main part 101) is oriented away from the operator (Fig. 5).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced.



determining a display mode responsive to the physical configuration of the single display component relative to the base;

To the extent that Kamikakai does not disclose determining a display mode responsive to the physical configuration of the single display component relative to the base it is obvious over Hisano.

Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen. (Hisano [0099]).

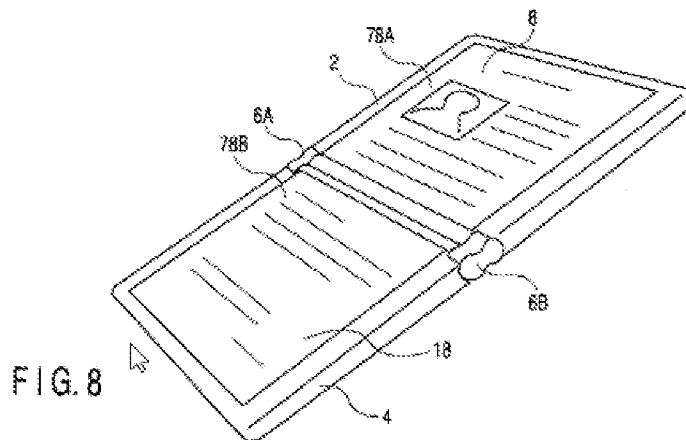
At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to the portable computer of Kamikakai to automatically adjust the orientation of displayed content responsive to the information from the mode sensor in order to provide displayed content right-side-up to a user.

configuring a content orientation, relative to the longitudinal axis, of a visual display on the display screen of the single display component responsive to the display mode, wherein configuring the content orientation includes:

Hisano teaches determining a display mode based on measuring a degree of rotation of a display component relative to a base. Specifically, Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing to a separate housing, in order to determine the orientation of a displayed screen (Hisano [0099]).

displaying the visual display in a first content orientation of the content for the laptop mode, and displaying the visual display in a second content orientation for the easel mode, the second content orientation being at 180 degrees relative to the first orientation.

Hisano discloses a flat mode, as shown in Fig. 8, below whereby the two housing components are parallel with the hinges opened through an angle of about 180° . (Hisano [0087], Fig. 8). If the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode; and if the angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode.



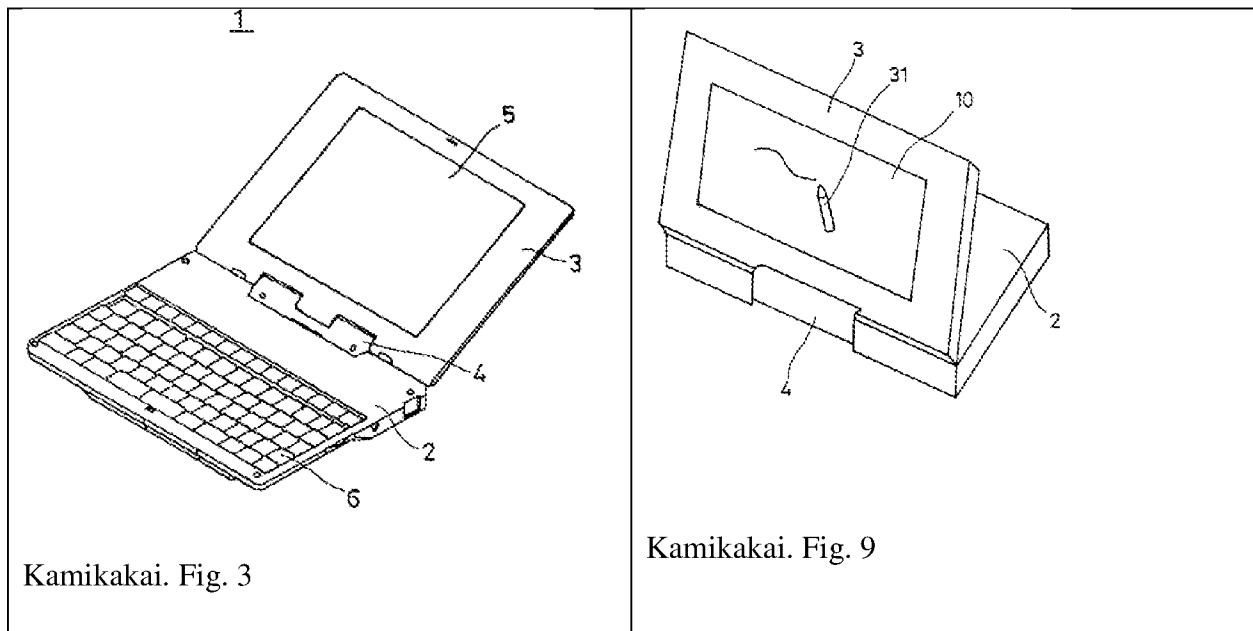
Hisano. Fig. 8

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer of Kamikakai in to distinguish between a laptop or easel mode by determining whether the measured angle of rotation of the display relative to the base is greater or less than 180 degrees and to invert the displayed content in response to a transition between the two modes.

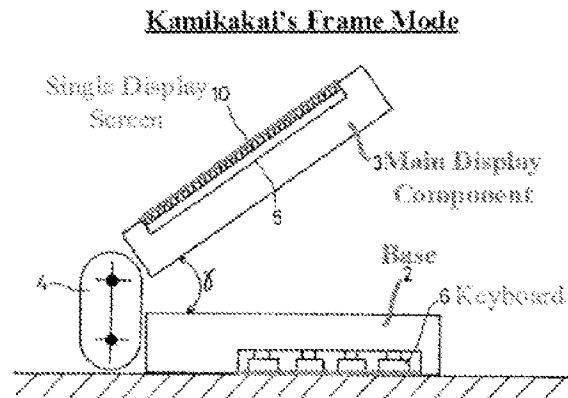
Regarding claim 30, Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 29 as set forth above.

Regarding claim 30, Kamikakai discloses portable computer configurable between a plurality of display modes including a laptop mode (FIG. 3) and a frame mode (FIGS. 8-9) and manipulating the physical configuration of the portable computer to place it into frame mode.

Kamikakai, FIGS. 3, 9 (reproduced below).



Kamikakai discloses placing the base 2 against a substantially horizontal surface, and orienting the keyboard 6 towards the substantially horizontal surface to transition the portable computer into the frame mode. (Fig. 8, annotated below).



Kamikakai, FIG. 8 (with annotations).

31. The method according to claim 30, wherein the act of configuring the content orientation includes an act of displaying the visual display in the first content orientation of the content for the frame mode.

Regarding claim 31, Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 30 as set forth above.

Kamikakai discloses configuring the content orientation includes an act of displaying the visual display in the first content orientation of the content for the frame mode (Fig. 8).

Additionally, Hisano teaches orientation sensor for detecting orientation transitions between all three of laptop, frame, and easel modes. Hisano teaches its orientation sensor for measuring the hinge angle of a display relative to a base housing, and this hinge angle may be used to detect a transition between laptop and easel mode.

At the time the invention was made it would have been obvious to one of ordinary skill in the art implement Hisano's teaching of measuring the hinge angle of a display relative to a base

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housing to detect a transition between laptop and easel mode in the portable computer of Kamikakai in order to display content right-side-up to a user.

32. The method according to claim 30, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Regarding claim 32, Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 30 as set forth above.

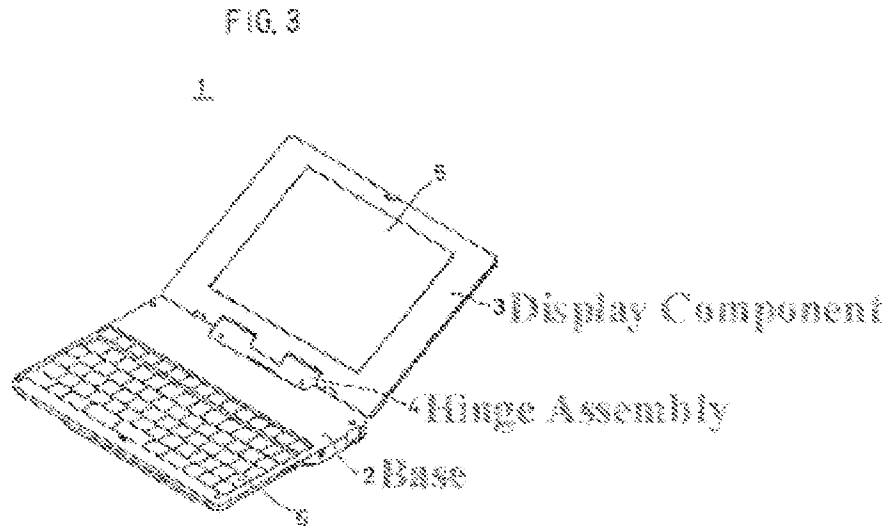
Kamikakai teaches using a mechanism that deactivates its keyboard when the portable computer is in frame mode and the keyboard faces a horizontal surface as shown in Figures 8 and 9.

6.8 Kamikakai, Shimura, Hisano, Choi (cl. 11)

Claim 11 is rejected under 35 U.S.C 103 as being obvious over Kamikakai (US 6,154,359), Shimura (JP H06-242853, English Translation), Hisano (US 2006/0034042), and Choi (US 6,918,159).

11. A portable computer comprising: a base; a display component rotatably coupled to the base;

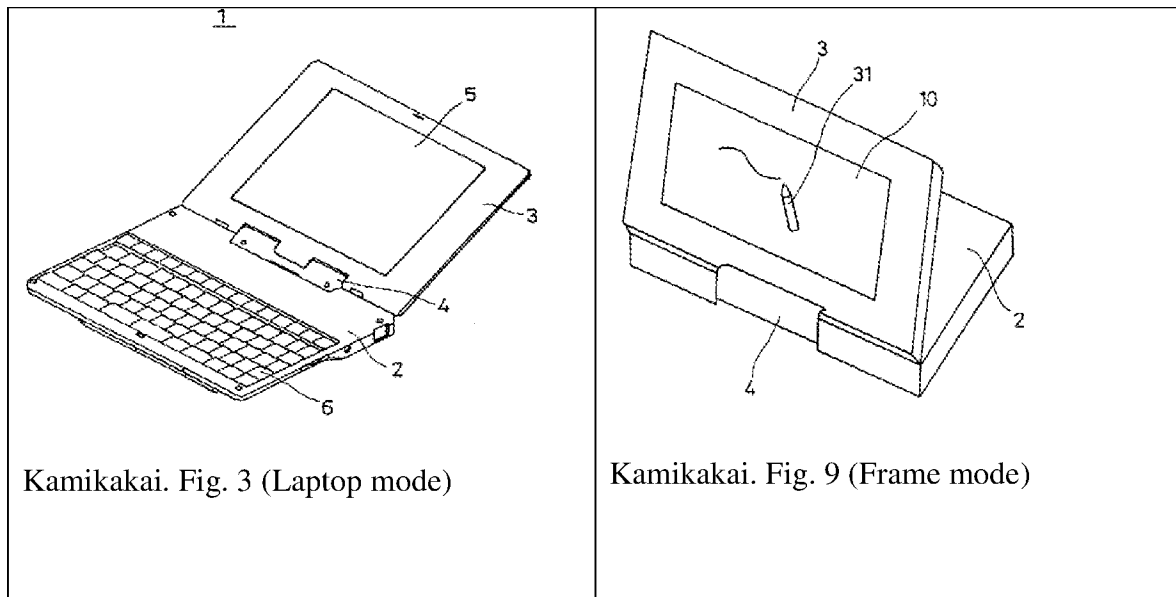
Kamikakai discloses portable computer comprising a base 2 (main body) and display component 5 rotatably coupled to the base. Kamikakai discloses a hinge assembly 4 (connection part) configured to rotatably couple the single display 5 component to the base 2 (Fig. 3, annotated). (Kamikakai 3:43-46).



Kamikakai. Fig. 3, annotated.

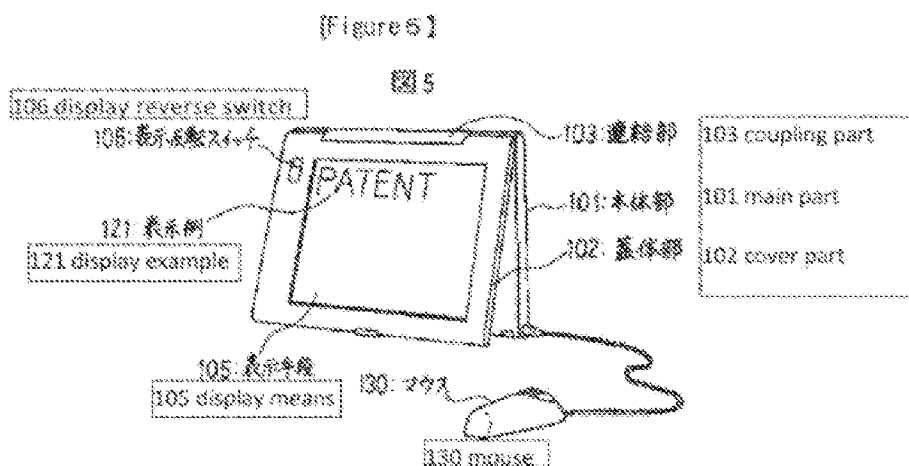
means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode;

Kamikakai discloses means for rotating the display component 5 in a single direction relative to the base 2 comprising a hinge assembly 4 (connection part) configured to rotatably couple the single display 5 component to the base 2 (Fig. 3, annotated). Kamikakai further discloses portable computer configurable between a plurality of display modes including a laptop mode (FIG. 3) and a frame mode (FIGS. 8-9). (Kamikakai, FIGS. 3, 9, reproduced below).



To the extent that Kamikakai does not specifically disclose portable computer comprising easel mode it is obvious over Shimura.

Shimura discloses portable computer comprising easel mode (Fig. 5). Shimura teaches that including the easel mode has the benefit of space savings. Shimura specifically teaches, "the area taken up by the computer on the table can be greatly reduced" in the easel mode. (Shimura. [0017]).



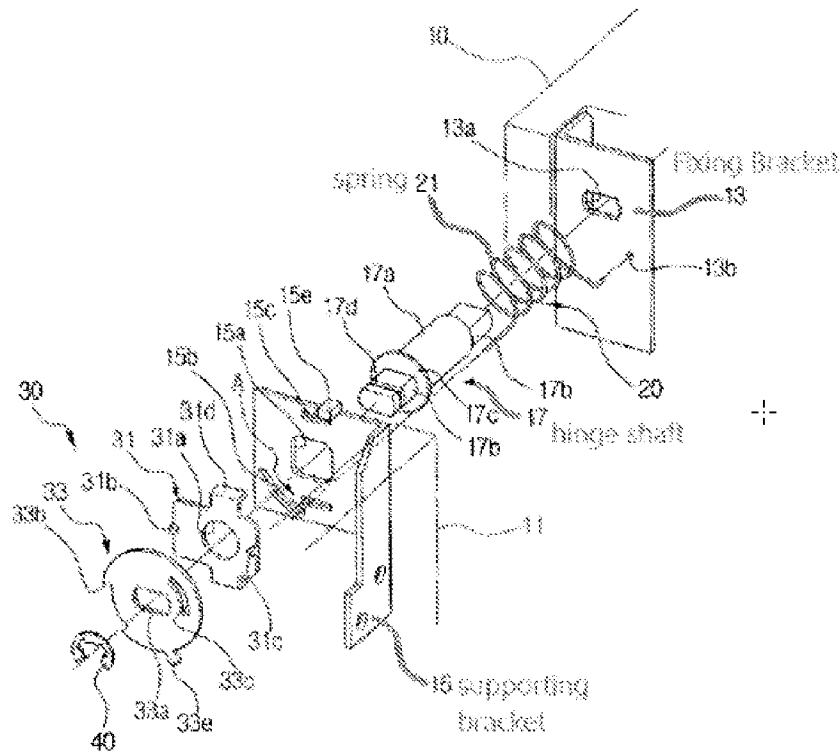
At the time the invention was made it would have been obvious to one of ordinary skill in the art to add easel mode disclosed by Shimura to the portable computer disclosed by Kamikakai so that the area taken up by the computer on the table can be greatly reduced.

To the extent that Kamikakai does not disclose the means for rotating as per the corresponding structure determined in the 112 (f) analysis, it would have been obvious over Choi.

Choi discloses means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode comprising a single-axis hinge assembly. The hinge assembly connects panel 11 to body 10 so that the panel 11 is opened and closed with respect to the body 10, particularly for connecting a display to a body in a laptop computer. (Choi, 3:36-50). Choi discloses the hinge apparatus includes fixing bracket 13 fixed onto a laptop computer body 10, supporting bracket 15 fixed to the panel 11 (LCD panel), hinge shaft 17, and coil spring 21. (Choi, 3:36-42, 52-56)(Fig. 2). Choi discloses the hinge assembly enables rotation of a laptop display relative to a body (Fig. 5) and enables the display to open beyond 180 degrees relative to the base (display opened to approximately 210 degrees) (Fig. 7)(Choi, 6:26-27).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to use a single-axis hinge disclosed by Choi instead of a dual-axis hinge disclosed by Kamikakai for having a simpler design with only one hinge instead of two, and therefore having fewer movable parts, a single-axis hinge can be designed to be more durable and less susceptible to wear and damage to its parts compared to a dual-axis hinge.

Annotated Fig. 2 of Choi



Having fewer components also allows a single-axis hinge to be less expensive to manufacture than a dual-axis hinge. In addition, one of ordinary skill in the art would be motivated to implement the hinge disclosed by Choi at least partially disposed within the display and base housings in order to cover the movable components of the hinge, such as its shaft and spring, in order to prevent wear to these components and to prevent foreign objects from entering and potentially jamming these movable components.

a display orientation module configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode, configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode;

Kamikakai discloses display orientation module comprising touch sensitive hardware and display processor configured to control an orientation of the content displayed on the display screen.

To the extent that Kamikakai does not disclose to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode, it would have been obvious over Hisano.

Hisano discloses its portable computer switching content orientation in response to measuring the angle of the computer's hinges, corresponding to the angle or rotation of the display relative to the base. Specifically, Hisano teaches the rotation angle of hinges 130A and 130B may be used to switch display of the content on the screen to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base. (Hisano [0099])

means for detecting an orientation of the base relative to the display component, wherein the means for detecting is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation.

To the extent that Kamikakai may not specifically disclose the means for detecting **an** orientation is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation, it is disclosed by Hisano.

Hisano discloses measuring the angle of rotation of its hinges, which corresponds to the angle of rotation of a display housing relative to a separate housing, in order to determine the orientation of a displayed screen. Specifically, Hisano discloses that the rotating angle of the

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hinges 130A and 130B may be used for automatically adjusting the orientation of displayed content responsive to the information from the mode sensor. Hisano discloses the rotating angle less than or greater than 180° (threshold) is used to determine whether the device is in laptop or easel mode. [0099].

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add the sensor disclosed by Hisano to the portable computer of Kamikakai for measuring the rotating angle of the display component with respect to the base and automatically adjust the orientation of displayed content responsive to the information from the sensor in order to provide displayed content right-side-up to a user.

6.9 Kamikakai, Shimura, Hisano, Clapper (cl. 15)

Claim 15 is rejected under 35 U.S.C 103 as being obvious over Kamikakai (US 6,154,359), Shimura (JP H06-242853, English Translation), Hisano (US 2006/0034042), and Clapper (US 6,704,007).

15. The portable computer of claim 14, wherein the second orientation is 180 degrees relative to the first orientation; and wherein the plurality of orientations further comprises a third orientation relative to the longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation.

Kamikakai in combination with Shimura and Hisano discloses all of the limitations of claim 14 as set forth above.

To the extent that Kamikakai in combination with Shimura and Hisano does not disclose third orientation relative to the longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation, it is disclosed by Clapper.

Clapper discloses third orientation relative to the longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation (Fig. 2).

At the time the invention was made it would have obvious to one of ordinary skill in the art to recognize that rotating the display by 90 degrees would allow a user to view content in both a landscape orientation (such as shown in Fig. 1 of Clapper) and a portrait orientation (shown in Fig. 2 of Clapper) and that a user may prefer using a different orientation for different uses.

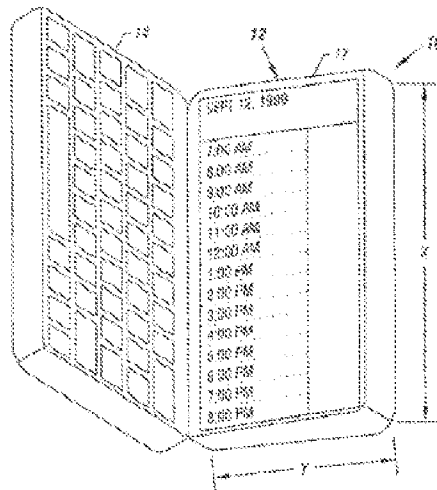


FIG. 2

Clapper. Fig. 2

6.10 Kamikakai, Shimura, Hisano, Ayazi (cl. 21, 22)

Claims 21 and 22 are rejected under 35 U.S.C 103 as being obvious over Kamikakai (US 6,154,359), Shimura (JP H06-242853, English Translation), Hisano (US 2006/0034042), and Ayazi et al. (US 7,337,671 B2).

21. The portable computer of claim 18, wherein the orientation sensor includes an accelerometer.

Kamikakai in combination with Shimura and Hisano disclosed all of the limitations of claim 18 as set forth above.

Kamikakai did not disclose wherein the orientation sensor includes an accelerometer.

Hisano teaches an orientation sensor that detects a physical orientation of a display unit relative to a base. Hisano teaches the sensor may be a gravity sensor ("sensor that senses the direction of gravity") which is broadly interpreted as an accelerometer.(Hisano [0099]).

To the extent that Hisano may not disclose orientation sensor (gravity sensor) includes an accelerometer it would have been obvious over Ayazi et al. (US 7,337,671 B2).

Ayazi et al. discloses micro-gravity (micro-g) accelerometers for laptop computers for various applications (col. 1, lines 25-38).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to add an accelerometer disclosed by Ayazi et al.to laptop computer disclosed by Kamikakai and Hisano for various applications.

22. The portable computer of claim 21, the orientation sensor is configured to detect an angle of the base relative to the display unit.

Kamikakai in combination with Shimura, Hisano, and Ayazi disclosed all of the limitations of claim 21 as set forth above.

To the extent that Kamikakai may not specifically disclose an orientation sensor configured to detect an angle of the base relative to the display unit, it would have been obvious over Hisano.

Hisano teaches detecting an angle of rotation about hinge of a display unit relative to a base using an orientation sensor. (Hisano [0099]).

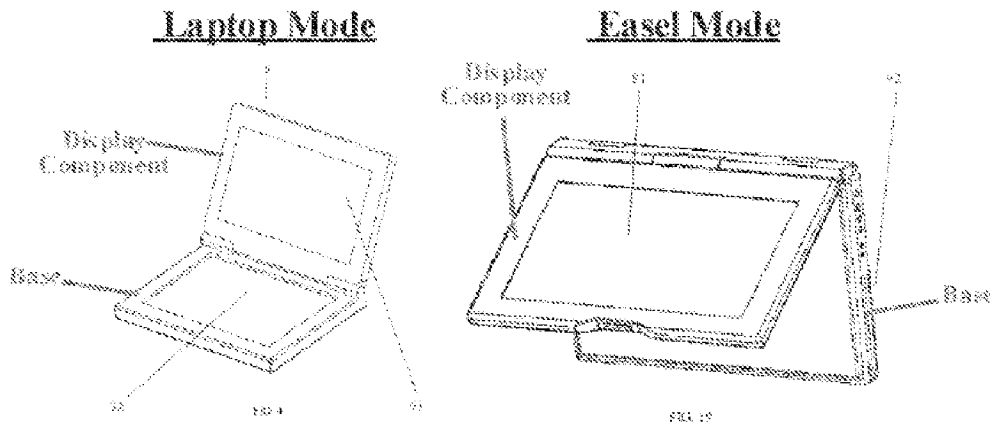
At the time the invention was made it would have been obvious to one of ordinary skill in the art utilize the sensor disclosed by Hisano to determine a current display mode for the portable computer of Kamikakai in order to provide an appropriate right-side-up content orientation for a user.

6.11 CN ‘170, Misawa, Shigeo (cl. 11)

Claim 11 is rejected under 35 U.S.C 103 as being obvious over CN ‘170 (Ruijiang CN 2627170Y, English Translation), Misawa (US 2005/0134717), and Shigeo (JP H08-179851, English Translation).

11. A portable computer comprising: a base; a display component rotatably coupled to the base;

CN '170 discloses portable computer ("electronic product such as a notebook computer") comprising: a base 92, and display component 91 (display screen) rotatably coupled to the base 92 (operating surface) (Fig. 4, 19 annotated).



CN '170, FIGS. 4, 19 (with annotations).

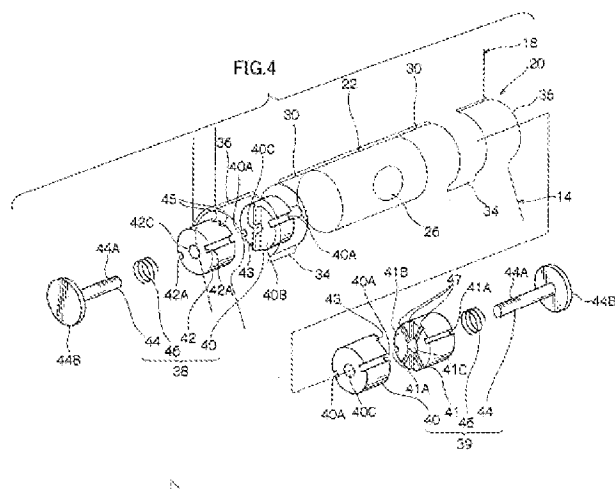
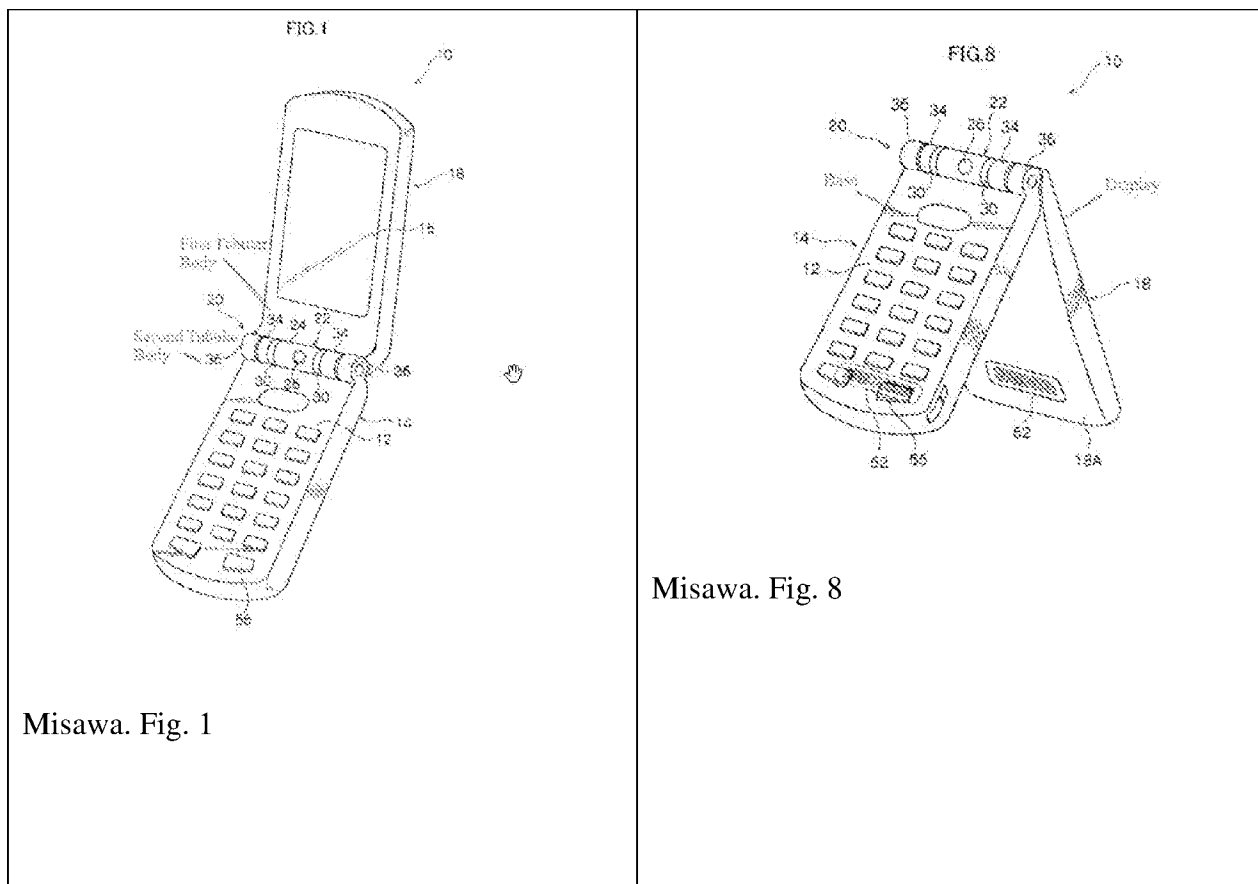
means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode;

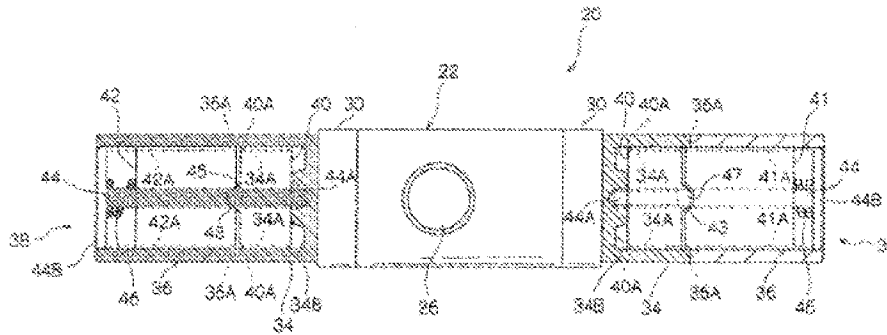
CN '170 discloses portable computer having means for rotating (360° rotating function) (CN '170 Abstract) the display component in a single direction relative to the base to configure the portable computer between a laptop mode (Fig. 5) and an easel mode (Fig. 19). CN '170 specifically discloses means for rotating including double hinge structure that enables a rotation at 360 degrees (CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18).

To the extent that CN '170 does not disclose the means for rotating the display component corresponding structure of the 35 U.S.C. 112, sixth paragraph analysis it is disclosed by Misawa.

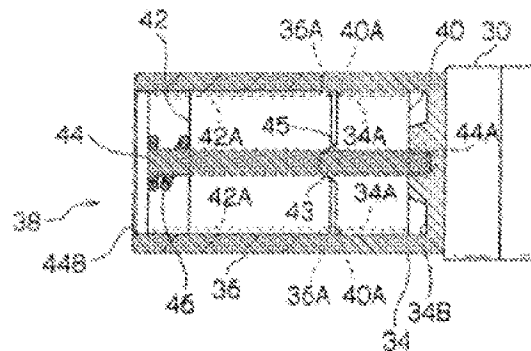
Misawa discloses portable device (Fig. 1) comprising means for rotating a display component to configure portable device a normal mode and easel like mode (Fig. 8). The means for rotating includes a hinge apparatus including housing 36 (second tubular body), bracket 34 (first tubular body) having a member (supporting bracket 15 having a perpendicular plate member for inserting a shaft), a shaft 44 (rotating shaft), and springs (compression coil spring 46). (Misawa [0036][0037][0041]) (Figs. 4, 5).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the portable computer of CN '170 to replace the dual-axis hinge assembly with the single-axis hinge taught by Misawa as nothing more "than the simple substitution of one known element for another" (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415- 21 (2007)). Specifically, one of ordinary skill in the art would have recognized that a dual-axis hinge of a portable computer may be replaced with a single-axis hinge to perform the same desired function, namely rotating the computer's display about an axis relative to the base.





Misawa, Figure 5



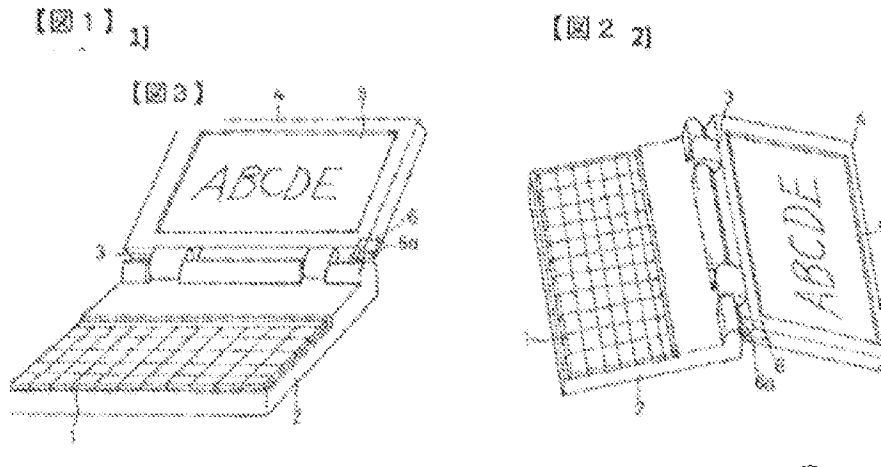
Misawa, Figure 5 (enlarged excerpt)

a display orientation module configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode, configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode;

CN '170 discloses a portable computer that is configurable between a plurality of display modes including a laptop mode and an easel mode.

To the extent that CN '170 does not disclose display orientation module corresponding to structure of the 35 U.S.C. 112, sixth paragraph analysis it is disclosed by Shigeo.

Shigeo discloses portable computer content orientation transition between the laptop mode and the easel mode. (Figs. 1 and 2).



Shigeo. Fig. 1 and Fig. 2

Specifically, Shigeo discloses display orientation module comprises angle sensor 6 for measuring hinge angle for detecting the angle of rotation of the computer's display relative to the base. Signals from the sensor 6 is input to processing unit 9 and in response the display processing unit 10 changes the view on the display 5 to a state in which the view is rotated 180° from the previous display state (i.e. transitioning between the laptop mode and the easel mode). If the hinge angle is less than 180° then the computer's display with respect to the base would face each-other and therefore be in a laptop mode; and if the angle is greater than 180 degrees then the computer's display face away from the base enabling an easel mode (See Fig. 4 (a) and Fig. 4(b)).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the portable computer disclosed by CN '170 by adding the hinge angle sensor disclosed by Shigeo for detecting the angle of rotation of the computer's display relative to the base to automatically orient content displayed on the display component responsive to the angle of rotation detecting a transition between the laptop mode and the easel mode.

means for detecting an orientation of the base relative to the display component, wherein the means for detecting is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation.

CN '170 discloses portable computer that is configurable between a plurality of display modes including a laptop mode and an easel mode.

To the extent that CN '170 may not specifically disclose the means for detecting is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation it is obvious over Shigeo.

Shigeo discloses “means for detecting” as construed under 35 USC 112(6) comprising an angle-detection sensor for measuring the angle of rotation of hinges corresponding to the angle of rotation of display housing relative to a separate housing (base), to determine the orientation of a displayed screen when the angle of the display with respect to the base reaches a predetermined value or goes beyond a predetermined value. The predetermined value disclosed by Shigeo is considered same as the threshold value.(Shigeo [0010][0011]).

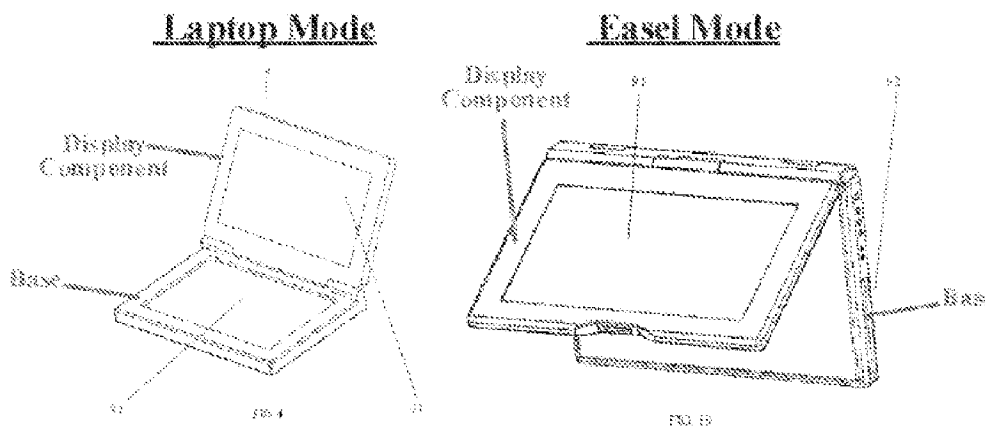
At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the portable computer disclosed by CN '170 by adding the hinge angle sensor and associated programming logic disclosed by Shigeo in order to provide displayed content right-side up to a user regardless of the orientation of the computer's display relative to the base.

6.12 CN '170, Hisano, Choi (cl. 11)

Claim 11 is rejected under 35 U.S.C 103 as being obvious over CN '170 (Ruijiang CN 2627170Y, English Translation), Hisano (US 2006/0034042), and Choi (US 6,918,159).

11. A portable computer comprising: a base; a display component rotatably coupled to the base;

CN '170 discloses portable computer ("electronic product such as a notebook computer") comprising: a base 92, and display component 91 (display screen) rotatably coupled to the base 92 (operating surface) (Fig. 4, 19 annotated).



CN '170, FIGS. 4, 19 (with annotations)

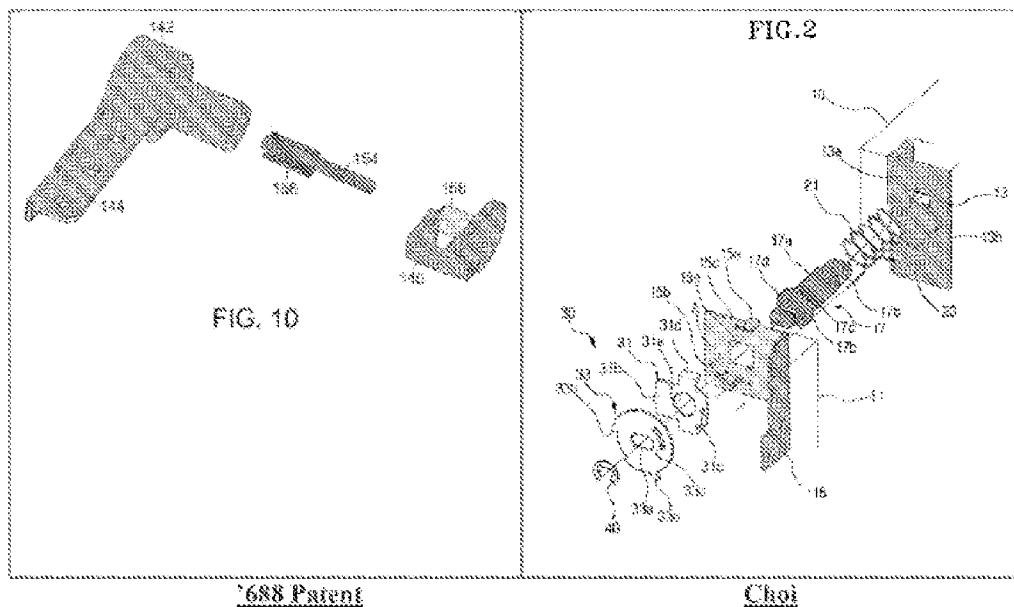
means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode;

CN '170 discloses portable computer having means for rotating (360° rotating function) (CN '170 Abstract) the display component in a single direction relative to the base to configure the portable computer between a laptop mode (Fig. 5) and an easel mode (Fig. 19). CN '170

specifically discloses means for rotating including double hinge structure that enables a rotation at 360 degrees (CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18).

To the extent that CN '170 does not disclose the means for rotating the display component corresponding structure of the 35 U.S.C. 112, sixth paragraph analysis it is disclosed by Choi.

Choi discloses a fixed bracket 13 having a member including supporting bracket 15 having a perpendicular plate member for inserting a shaft (hinge shaft 17), and springs (coil spring 21). (Choi, 3:36-56)(Choi, Fig. 2). The means for rotating (hinge apparatus) disclosed by Choi (Fig. 2) is compared to the means for rotating (hinge apparatus) disclosed in the '688 patent (Fig. 10). As shown in the Figures the hinge assembly of Choi contains the same components as the "means for rotating" claimed in the '688 patent (housing 142, shaft 154, springs 156, member 158, bracket 140).



At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the portable computer of CN '170 to replace the dual-axis hinge assembly with the single-axis hinge taught by Choi as nothing more "than the simple substitution of one known element for another" (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415- 21 (2007)). Specifically, one of ordinary skill in the art would have recognized that a dual-axis hinge of a portable computer may be replaced with a single-axis hinge to perform the same desired function, namely rotating the computer's display about an axis relative to the base.

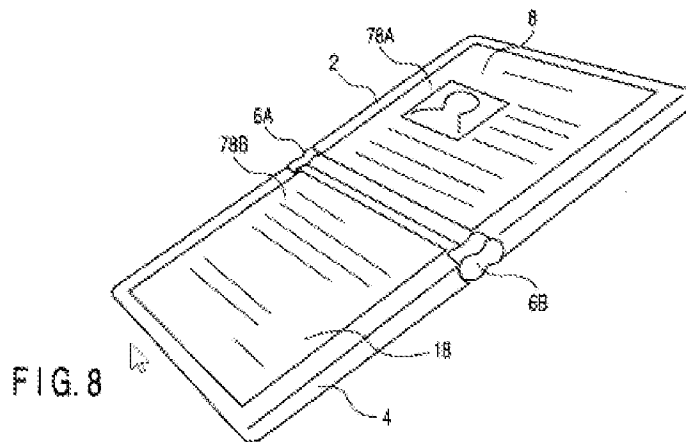
a display orientation module configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode, configured to automatically orient content displayed on the display component responsive to at least a transition between the laptop mode and the easel mode;

CN '170 discloses a portable computer that is configurable between a plurality of display modes including a laptop mode and an easel mode.

To the extent that CN '170 does not disclose display orientation module corresponding to structure of the 35 U.S.C. 112, sixth paragraph analysis it is disclosed by Hisano.

Hisano discloses its portable computer switching content orientation in response to measuring the angle of the computer's hinges for measuring the angle or rotation of the display relative to the base. [Hisano. [0099]. Specifically, Hisano teaches the rotation angle of hinges 130A and 130B may be used to switch display of the content on the screen to provide displayed content right-side-up to a user regardless of the orientation of the computer's display relative to its base. (Hisano [0099]). Specifically, Hisano discloses a flat mode, as shown in Fig. 8, below

whereby the two housing components are parallel with the hinges opened through an angle of about 180° . (Hisano [0087], Fig. 8). If the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in a laptop mode; and if the angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode.



Hisano. Fig. 8

Hisano discloses the display orientation module corresponding to the structure of the
35 U.S.C. 112, sixth paragraph analysis comprising a portable computer having a processor with
an algorithm program to (1) determine the rotating angle of the hinges 130A and 130B (Hisano,
[0099]), corresponding to the angle of the display relative to the other housing structure, (2) use
the angle to determine whether the device is in laptop or easel mode, i.e., whether the angle is
less than or greater than 180° , and (3) orient the displayed screen depending on whether the
device is in laptop or easel mode, where the content orientation for each mode is 180 degrees
relative to the other so as to present the display right-side-up to the viewer in each mode.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to implement the above teaching of Hisano into the portable computer disclosed in CN '170 to distinguish between a laptop or easel mode by determining whether the measured angle of rotation of the display relative to the base is greater or less than 180 degrees and to invert the displayed content in response to a transition between the two modes.

means for detecting an orientation of the base relative to the display component, wherein the means for detecting is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation.

CN '170 discloses portable computer that is configurable between a plurality of display modes including a laptop mode and an easel mode.

To the extent that CN '170 may not specifically disclose the means for detecting is further configured to identify the transition between the laptop mode and the easel mode based on a stored threshold orientation it is obvious over Hisano.

Hisano discloses “means for detecting” as construed under 35 USC 112(6) comprising an angle-detection sensor for measuring the angle of rotation of hinges corresponding to the angle of rotation of display housing relative to a separate housing (base), to determine the orientation of a displayed screen.(Hisano [0099]).

When the personal computer according to the embodiment of the present invention is used in this form, the rotating angle of the hinges 130A and 130B may be used to switch between the display of a side of the screen closer to the hinges as the top and the display of a side of the screen farther from the hinges 130A and 130B as the top. Further, the personal computer may comprise a sensor that senses the direction of gravity so as to automatically switch the top and bottom of the display screen regardless of the angle of the hinges 130A and 130B or the placement of the personal computer.

Hisano discloses other types of sensors for measuring the relative orientation of its portable computer, including a "gravity sensor," that senses the direction of gravity, and numerous types of sensors for measuring the angle of a hinge were known in the art (Hisano, [0099-0100]).

At the time the invention was made it would have been obvious to one of ordinary skill in the to provide an angle sensor disclosed by Hisano and programming the portable computer processor disclosed by CN '170 with an algorithm to (1) determine the rotating angle of the hinges 130A and 130B (Hisano, [0099]), corresponding to the angle of the display relative to the other housing structure, (2) use the angle to determine whether the device is in laptop or easel mode, i.e., whether the angle is less than or greater than 180° (threshold), and (3) orient the displayed screen depending on whether the device is in laptop or easel mode, where the content orientation for each mode is 180° relative to the other so as to present the display right-side-up to the viewer in each mode.

Art Unit: 3992

7.0 CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANJAN K DEB whose telephone number is (571)272-2228.

The examiner can normally be reached on M-F 9:00AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hetul Patel can be reached on 571-272-4184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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