IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Behar et al.	Serial No.:	N/A
Control No.:		Group No.:	N/A
Patent No.:	8,289,688	Examiner:	N/A
Filed:	July 10, 2008		
Entitled:	Portable Computer with Multiple Display Configurations		

REQUEST FOR *EX PARTE* REEXAMINATION UNDER 35.U.S.C. §§ 302-307 AND 37 C.F.R. § 1.510

EFS Web Filed
Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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1019	U.S. Patent Application Publication No. 2005/0134717 to Misawa ("**Misawa**"), published June 23, 2005
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1021	U.S. Patent No. 5,644,516 to Podwalny et al. ("**Podwalny**"), issued July 1, 1997
1022	U.S. Patent No. 7,061,472 to Schweizer et al. ("**Schweizer**"), issued June 13, 2006
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I. INTRODUCTION

This Request shows substantial new questions of patentability ("SNQs"), raised by prior art and arguments not previously considered by the Office, regarding claims 11-22 and 24-32 of U.S. Patent No. 8,289,688 ("the '688 Patent," Ex. 1001). For example, primary prior art references Lane (Ex. 1009), Kamikakai (Ex. 1010), and CN '170 (Ex. 1012) were neither cited during prosecution nor presented in a previously-denied IPR petition. Each of these primary references discloses a portable computer device configurable to various orientations including an "easel mode." Lane alone raises SNQs as to claims 12-14, 16, 19-20, 24-26, and 29-32. Additional SNQs are raised by Lane in combination with one or more secondary reference. Kamikakai in combination with secondary references, raises additional, distinct SNQs as to claims 11-22 and 24-32. And CN '170 in combination with secondary references raises an additional, distinct SNQ as to claim 11. This Request explains why these SNQs warrant reexamination and how the prior art renders these claims unpatentable, thus warranting their cancellation.

The '688 patent relates generally to a portable computer (e.g., laptop) that can be configured into additional "display modes" besides just a traditional laptop mode, such as the easel and frame modes shown below. *E.g.*, '688 Patent, 5:43–49.

Laptop Mode

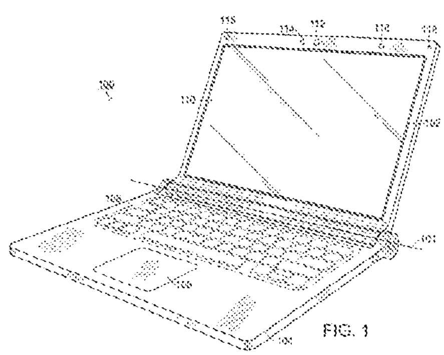


FIG. 1

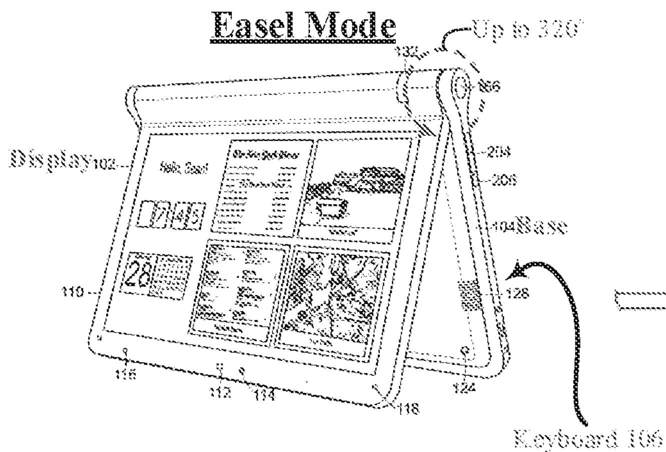


FIG. 4

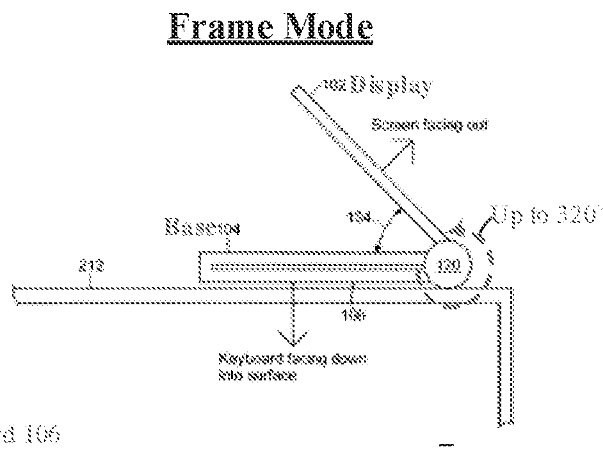


FIG. 26

’688 Patent, FIGS. 1, 4, 26 (with annotations). All independent claims of the ’688 Patent subject to this Request recite a portable computer including a laptop mode and an easel mode, while other claims require the computer to also be configurable into a frame mode.

This Request presents previously unconsidered prior art references—namely Lane, Kamikakai, and CN ’170—each of which discloses a “frame mode,” as shown in the following exemplary figures from each of these references:

Lane's Frame Mode

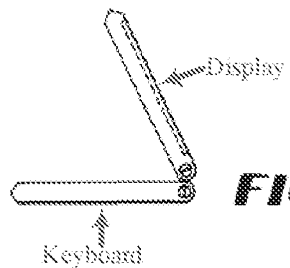
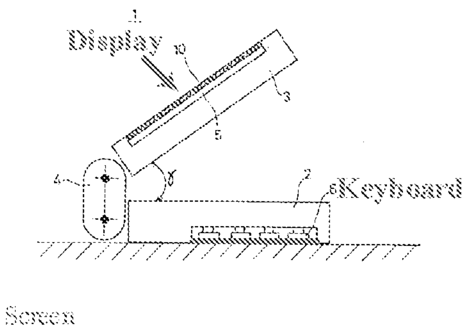


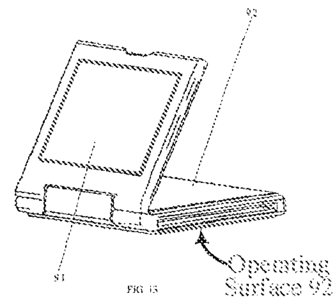
FIG 25

Kamikakai's Frame Mode

FIG. 8



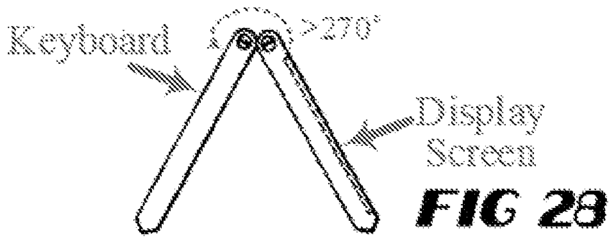
CN '170's Frame Mode



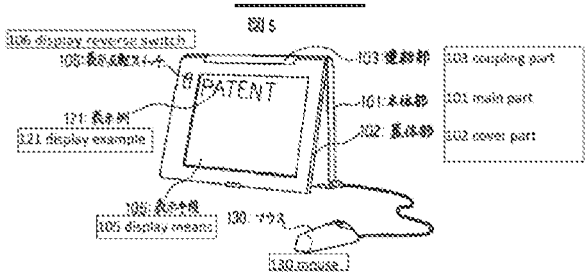
Kamikakai, FIG. 8 (with annotations); Lane, FIG. 25 (with annotations); CN '170, FIG. 13 (with annotations).

Similarly, both Lane and CN '170 disclose the claimed easel mode, and while Kamikakai does not explicitly disclose an easel mode it would have been obvious to implement it with such a mode in light of a secondary prior art reference, Shimura (Ex. 1014). The easel modes of Lane, CN '170 and Shimura are shown in the following exemplary figures:

Lane's Easel Mode



Shimura's Easel Mode



CN '170's Easel Mode

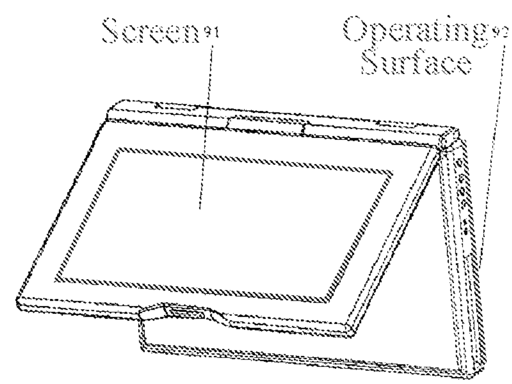


FIG. 19

Lane, FIG. 28 (with annotations); Shimura, FIG. 5; CN '170, FIG. 19 (with annotations).

Various claims of the '688 Patent also recite the portable computer's re-orienting of displayed content by 180 degrees when transitioning between a conventional laptop mode to an easel mode or between an easel mode and frame mode. However, there is nothing inventive in this concept as it would be plain to a person of ordinary skill in the art (POSITA) that when a computer's display becomes inverted (such as when going from a laptop to an easel mode orientation or from an easel mode to a frame mode), then the content on the display will likewise become inverted, causing the content to be upside-down relative to a user viewing the display. It would therefore be obvious to a POSITA to rotate the displayed content by 180 degrees in response to such a transition in order to maintain the content as right-side-up for a user. Various prior art references—including Lane as well as secondary references Hisano (Ex. 1015) and Shigeo (Ex. 1017)—recognize this need to invert displayed content in response to re-orientation of a portable computer to maintain the content as right-side-up for the user. These references all teach use of known sensors and computer logic for performing this fundamental content reorientation.

Each of the new primary references, alone and/or in combination with other prior art references, present substantial new questions of patentability ("SNQs") not previously considered by the Office. None of these prior art combinations or arguments have been presented to the Office in any post-grant proceeding involving the '688 Patent, including any petition for *inter partes* review of the '688 Patent. The Request also raises SNQs based on the declaration of Chris Schmandt ("Schmandt"), whose testimony informs how a POSITA would have combined the raised prior art references and how the prior art as a whole renders all claims unpatentable.

Based on these SNQs, Requester Lenovo (United States) Inc. ("Requester" or "Lenovo") respectfully requests that the Office institute *ex parte* reexamination of Claims 11-22 and 24-32 of the '688 Patent under 35 U.S.C. §§ 302-307 and 37 C.F.R. § 1.510. The Office should reexamine, find unpatentable, and issue a Certificate of Reexamination canceling each of these claims.

II. REQUIREMENTS FOR EX PARTE REEXAMINATION UNDER 37 C.F.R. § 1.510

A. 37 C.F.R. § 1.510(b)(1): Statement Pointing Out Each Substantial New Question Of Patentability

A statement pointing out each substantial new question of patentability ("SNQ") based on the cited references in accordance with 37 C.F.R. § 1.510(b)(1), is presented below in Section IX.

A chart of proposed SNQs is provided here for reference:

SNQ	Claims Affected
Lane	12-14, 16, 19-20, 24-26, 29-32
Lane in Combination with Kamikakai	26, 32
Lane in Combination with Hisano	12-14, 16-22, 24-32
Lane in Combination with Hisano and Choi	11
Lane in Combination with Hisano and Clapper	15
Kamikakai in Combination with Shimura and Hisano	12-14, 16-22, 24-32
Kamikakai in Combination with Shimura, Hisano and Choi	11
Kamikakai in Combination with Shimura, Hisano and Clapper	15
CN '170 in Combination with Misawa and Shigeo	11
CN '170 in Combination with Hisano and Choi	11

B. 37 C.F.R. § 1.510(b)(2): Identification Of Every Claim For Which Reexamination Is Requested

In accordance with 37 C.F.R. § 1.510(b)(2), reexamination is requested for Claims 11-22 and 24-32 of the '688 Patent.

C. 37 C.F.R. § 1.510(b)(2): Detailed Explanation Of The Pertinency And Manner Of Applying The Prior Art

A detailed explanation of the pertinency and manner of applying the cited prior art to each claim for which reexamination is requested, is provided below in Section X.

D. 37 C.F.R. § 1.510(b)(3): Copy Of Every Patent Or Printed Publication Relied Upon Or Referred To

A copy of every patent or printed publication relied upon herein is submitted as Exhibits 1001 through 1031, each of which is listed on the accompanying Form PTO-SB/08 (Exhibit 1003). Each of these cited prior art references constitutes effective prior art as to the claims of the '688 Patent under pre-AIA 35 U.S.C. § 102.[1]

E. 37 C.F.R. § 1.510(b)(4): Copy Of The Entire Patent For Which Reexamination Is Requested

A full copy of the '688 Patent is submitted herein as Exhibit 1001 and its corresponding file history is submitted as Exhibit 1002.

F. 37 C.F.R. § 1.510(b)(5): Certification That A Copy Of The Request Has Been Served In Its Entirety On The Patent Owner

A copy of this request has been served in its entirety on the Patent Owner at the following PAIR correspondence address of record:

Wolf Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

G. 37 C.F.R. § 1.510(b)(6): Certification By The Third Party Requester

Requester certifies that the statutory estoppel provisions of 35 U.S.C. §§ 315(e)(1), 325(e)(1) do not prohibit Requester from filing this *ex parte* reexamination request. Requester previously petitioned for IPR of the '688 Patent, but the Board did not institute IPR and thus did not reach a final written decision in that case. See *infra* Section II.I.

H. 37 C.F.R. § 1.510(a): Fee For Requesting Reexamination

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[1] As the '688 Patent alleges priority to Provisional Application No. 61/041,365, unless otherwise noted all citations herein are to the pre-AIA versions of Sections 102 and 103. Requester does not concede that any claim is entitled to claim priority to these earlier applications.

The Office is authorized to charge all fees associated with this Request, including the fee specified by 37 C.F.R. § 1.510(a), to Deposit Account No. 0-24550.

I. Related Matters

The '688 Patent was the subject of a request for *inter partes* review, in IPR2021-00681. As the Board denied institution of that IPR, it never reached a final written decision. *E.g.*, *Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the inter partes review, there was no 'final holding of invalidity' or 'concluded examination or review' ...."); see *also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). 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. Ex. 1007, 8-18. 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). *Id.*, 8-16.

Moreover, this Request presents substantially different obviousness combinations than the IPR Petition. Specifically, this Request presents entirely new primary references (Lane and Kamikakai), neither of which were cited or relied on in the IPR Petition.

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 claim of the '688 Patent. The district court judge recently denied a motion that the '688 Patent is invalid for lack of eligible subject matter under Section 101 for reasons that do not bear on this Request. *Id.*, Mem. Op., ECF No. 46, at 11. None of the prior art references or issues presented in this Request have been litigated to a verdict in any district court case.

III. REEXAMINATION SHOULD BE GRANTED DESPITE THE EARLIER-DENIED PETITION FOR INTER PARTES REVIEW

Patent Owner may suggest that the Office deny or terminate reexamination under Section 325(d), citing the Federal Circuit decision *In re: Vivint, Inc.* 14 F.4th 1342 (Fed. Cir. Sept. 29, 2021). The Office should not do so because this reexamination request is filed under circumstances far different from the narrow fact pattern of *Vivint*, and the narrow holding of *Vivint* does not apply here. The narrow holding in *Vivint* only bars Reexamination when the request is "nearly identical" to an IPR petition that the PTO previously denied for "abusive filing practices" under 325(d). *Id.* at 1354 ("Our ruling today is limited.").

In *Vivint*, the party requesting reexamination—Alarm.com—had already filed *three* failed petitions for *inter partes* review against a single patent. *Id.* at 1346. In denying the last of those IPR petitions, the Board "relied on § 325(d) considerations" in finding that the multiple petitions was an abuse of process. *Id.* at 1353. Alarm.com then filed a reexamination request nearly identical to its abusive IPR petition. *Id.* at 1347. The Federal Circuit effectively held that since the Office found the IPR petition to be abusive, it could not reverse course and find otherwise for the "nearly identical" reexamination request. *Id.* at 1354.

The present Request is far different, with only a single prior IPR petition, which was not denied under Section 325(d), let alone for "abusive filing practices." That sole petition was denied for a lack of clarity as to the grounds presented and for conclusory arguments that lacked sufficient explanation of the positions presented. Ex. 1007; *see also supra,* Section II.I. Moreover, the present Request presents new primary prior art references and combinations that were not previously presented to or considered by the Office. Indeed, the *Vivint* decision specifically noted that even swapping out just a single secondary reference from a previously presented ground is sufficient to raise an SNQ. *Id.* at 1350. This Request does far more than that.

IV. OVERVIEW OF THE '688 PATENT AND ITS PROSECUTION HISTORY

A. The '688 Patent

The '688 Patent purports to provide a portable computer having a hinge assembly that permits the computer to be transitioned to multiple display modes. *E.g.*, Ex. 1001, 2:2-9; *see also* Schmandt Declaration (Exhibit 1004), ¶¶ 22-30.[2]

For example, from a closed position (FIG. 2), the display component 102 of the portable computer 100 is rotatable up to 320° relative to the base component 104 to configure the portable computer 100 into a plurality of display modes, including: a conventional laptop mode (FIG. 1), an easel mode (FIG. 4), and a frame mode (FIG. 26). *E.g.*, *id.*, 2:19-38, 2:60-3:2, FIGS. 1-2, 4, 26.

[2] While the prior art alone presents SNQs and renders the claims unpatentable, as discussed *infra* Sections IX-X, this Request is further supported by the declaration of Christopher Schmandt, an expert in the field of the '688 Patent during the relevant time period.

Closed Position

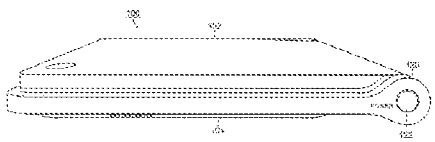


FIG. 2

Laptop Mode

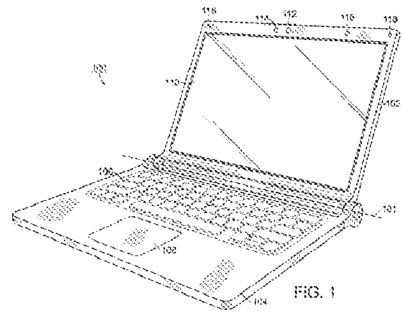


FIG. 1

Easel Mode

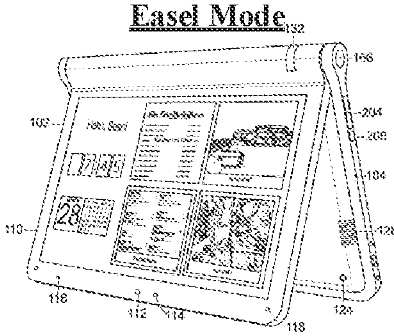


FIG. 4

Frame Mode

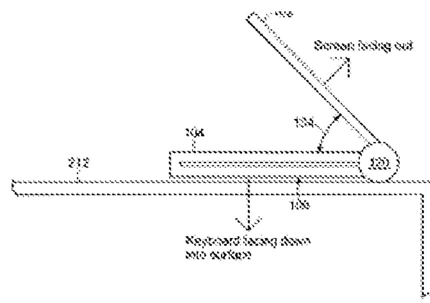


FIG. 26

'688 Patent, FIGS. 1, 2, 4, 26.

In the frame and easel modes, the display component 102 is opened (rotated) by more than 270° relative to the base component 104 from the initial closed position, such that the display screen 110 and keyboard 106 face away from each other. *E.g.*, *id.*, FIGS. 4, 26. The real difference between easel and frame modes is not the angle between the display component 102 and the base component 104, but the orientation of the device *as a whole*. In fact, the '688 patent, notes that "[i]n the frame mode, the display component 102 ***may be at a similar orientation, and angle 134,*** with respect to the base component 104 as in the easel mode." *Id.*, 16:5-8. However, while the computer stands upright in an inverted "V" position in easel mode, it lies keyboard 106 face down (on surface 212) in frame mode. *Id.*, 16:8-13. Thus, frame mode is like easel mode, just rotated approximately 90° such that the keyboard is horizontal (face down on surface 212) rather than nearly vertical like in easel mode.

Because the keyboard 106 is face down in frame mode, the '688 patent states that "software and/or hardware protection may be provided for the keyboard to prevent keys from being pressed (or to prevent the portable computer from responding to pressed keys) when the portable computer is in the frame mode." *Id.*, 16:14-17.

The specification's full description of the portable computer's frame mode and associated keyboard-deactivation functionality is presented below:

> **16**
>
> and "true" easel mode. In another example, the portable computer **100** may be configured into a "frame" mode, as illustrated in FIG. **26**, in which the portable computer is placed on a surface **212** with the keyboard **106** "face down" on the surface **212** and the display **110** facing upward. In the frame mode, the display component **102** may be at a similar orientation, and angle **134**, with respect to the base component **104** as in the easel mode. However, rather than the base component **104** and display component **102** being oriented vertically with respect to the surface **212**, as in the easel mode (in which the portable computer forms an inverted "V" as discussed above), in the frame mode, the base component **104** may lie flat on the surface **212**, as shown in FIG. **26**. In one example, software and/or hardware protection may be provided for the keyboard to prevent keys from being pressed (or to prevent the portable computer from responding to pressed keys) when the portable computer is in the frame mode.

Physical Configuration of Computer in Frame Mode
base and display at angle similar to that in easel mode, but keyboard is face down on surface

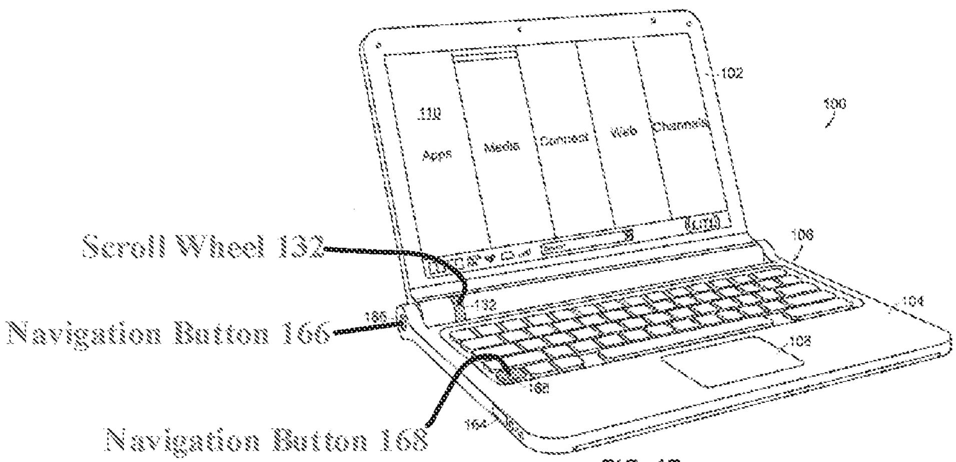
Keyboard Deactivation

'688 Patent, 16:1-18 (with annotations).

Thus, the only details the '688 patent provides on the frame mode are its physical configuration (i.e., that the keyboard is face down and the display faces upward) and that the keyboard can be deactivated in the frame mode.

Because the keyboard is inaccessible in the easel and frame modes, in addition to the traditional keyboard 106 and touch pad 108, the portable computer includes extra navigation controls (a scroll wheel 132 and navigation button 166) that are located in the computer's hinge assembly that is accessible in all of the display modes. *E.g.*, *Id.*, 11:13-19, FIG. 17.

Navigation Controls



'688 Patent, FIG. 17 (with annotations).

The computer also includes another navigation button 168 on the keyboard 106 that can have a different functionality than the navigation button 166. *E.g.*, *id.*, 13:28-30. These navigation controls allow a user to navigate the user interface (i.e., scroll through content, select content, go back and forth between different pages, levels, windows, etc.). *E.g.*, *id.*, 12:22-13:38.

The '688 patent also describes flipping the orientation of displayed content in the easel mode to ensure it is right-side up. *E.g.*, *id.*, 9:30-45, 8:7-48; *compare id.* FIGS. 1, 4, and 26. Thus, "when the portable computer 100 is configured into the easel mode, the visual display on the display screen 110 is automatically rotated 180 degrees such that the information appears 'right-way-up,' even through the display screen is upside-down compared to when the portable computer is in the laptop mode." *Id.*, 8:7-12. The '688 patent goes to describe how the content can be flipped automatically by including an orientation sensor in the computer that provides an indication of the relative angle between the display and the base (*e.g.*, an angular sensor in the hinge assembly) and/or an indication of the overall orientation of the display and/or base relative to gravity (*e.g.*, an accelerometer in the base and/or display). *Id.*, 8:17-34, 9:30-45. The patent admits that "[a]ccelerometers ha[d] been used in portable devices," including "some conventional devices" using such a sensor to "switch the display between portrait or landscape mode" prior to the patent's alleged priority date. *Id.*, 8:35-48. The '688 patent teaches that such a sensor "may be used to determine a precise relative orientation of the base component 104 with respect to the display component 102, or vice versa, for example, to determine whether the device is in the laptop mode, easel mode, or some point in between the two modes." *Id.*, 8:26-31.

B. The '688 Patent Application Prosecution History

1. Application

The '688 Patent, titled "Portable Computer with Multiple Display Configurations" issued on October 16, 2012, from Application No. 12/170,939, filed on July 10, 2008. Ex. 1001, 1. The '688 Patent also alleges priority to Provisional Application No. 61/041,365, filed on April 1, 2008. *Id.*

2. First Office Action

The first Office Action, dated July 9, 2010, rejected all pending claims. Claims 1-10 and 12-21 were rejected as being anticipated by Aarras (US Publication 2006/0264243). Ex. 1002, 158. Claim 11 was rejected as being obvious over Aarras in view of Rebeske (US Patent 6,295,038). *Id.*, 162.

3. Response to First Office Action

In response to the first Office Action, the Patent Owner amended all independent claims in an amendment filed on November 3, 2010, while cancelling dependent claim 10 and adding four new dependent claims 22-25. *Id.*, 190-95. In addition, with regard to independent claim 12, applicant argued that "[i]ndependent claim 12 recites 'means for,' thus presumptively invoking 35 U.S.C. § 112(6)" and that the examiner failed to identify structure in the specification that corresponds to the means plus function element recited in claim 12. *Id.*, 197-98. Patent Owner made the following relevant amendments to the independent claims:

Claim 13 (issued as Claim 12)

Patent owner amended claim 13, *inter alia*, to require that "the hinge assembly is at least partially housed [in the portable computer's] base." *Id.*, 192.

Claim 19 (issued as Claim 17)

Patent owner amended claim 19, *inter alia*, to require "comparing the degree of rotation [of the display component relative to the base] with respect to a threshold degree of rotation" and "displaying a first orientation of the content for the degree of rotation that is less than the threshold degree of rotation, and displaying a second orientation of the content for the degree of rotation that is greater than the threshold degree of rotation, the second orientation being at 180 degrees relative to the first orientation." *Id.*, 193-94.

Claim 21 (issued as Claim 19)

Patent owner amended claim 21, *inter alia*, to require orienting content displayed on a display screen "between at least a first display orientation and a second display orientation, the second display orientation being 180 degrees relative to the first display orientation; wherein the display orientation module is further configured to detect a change between a laptop mode and an easel mode based on the detected orientation, and wherein the display orientation module is further configured to trigger a display inversion from one of the first and second display orientations to the other of the first and second display orientation responsive to the orientation sensor detecting the change between the laptop mode and the easel mode." *Id.*, 194.

4. Second Office Action

The second Office Action was transmitted on January 31, 2011.

Regarding claim 12, the Examiner found that two recited claim limitations invoked 35 U.S.C. § 112, 6th Paragraph. First, "the limitation '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' meets the three-prong test per MPEP § 2181 and thereby invokes 35 USC § 112, 6th Paragraph. **For the 'means for rotating' limitation, the incorporated limitations from applicant's specification are applicant's hinge assembly 138 and all associated parts (housing 142, shaft 154, springs 156, member 158, bracket 140), as disclosed in paragraphs 0067-0068 and Figures 7a-10.**" *Id.*, 258 (emphasis added). Second, "the limitation 'means for detecting an orientation of the base relative to the display component' meets the three-prong test per MPEP 2181 and thereby invokes 35 USC § 112, 6th Paragraph. **For the 'means for detecting' limitation, the incorporated limitations from applicant's specification are applicant's sensor which is not shown in the drawings but is described in paragraphs 0011, 0015, 0059-0061 and 0063.**" *Id.*, 259 (emphasis added). Based on this claim interpretation, the Examiner found claim 12 to be allowable, finding that the Aarras reference failed to disclose the as-construed "means for rotating" as it "does not disclose a hinge assembly with a shaft, springs, member and bracket like that disclosed in applicant's specification paragraphs 0067-0068 and Figures 7a-10." *Id.*, 274.

Regarding claims 1-9 and 13-23, the Examiner rejected applicant's arguments made with its previous amendment and found the claims to still be anticipated by Aarras. *Id.*, 259. Claims 24-25 were rejected as obvious over Aarras alone. *Id.*, 265. Claim 11 was rejected as obvious over

Aarras in view of Rebeske. *Id.*, 265-66 Claims 19 and 21 were also rejected as obvious over Aarras in view of Moscovitch et al. (US Patent 6,343,006). *Id.*, 266.

5. Examiner Interview

On March 31, 2011, the applicant and Examiner conducted an interview regarding the outstanding claims and the prior office action. *Id.*, 294. On April 8, 2011, the Examiner submitted an Interview Summary describing the contents of the interview as follows:

> Applicant's representatives and the examiner discussed the general nature of applicant's invention and some of the differences between applicant's invention and the prior art of record. Specifically, applicant's discussed independent Claims 1, 12, 13, 19 and 21 and how some of the limitations in these claims differed from the Aarras reference. We discussed some possible amendments to the claims to overcome the rejections in light of the Aarras reference. The examiner agrees that more specifically claiming the longitudinal axis of rotation in Claims 1 and 13 would help to distinguish those claims from the Aarras reference. Some possible clarifications to the claim language in Claims 19 and 21 were also discussed. The examiner will consider all future arguments and amendments. Amended claims will require a new search.

Id., 294.

6. Response to Second Office Action

In response to the second Office Action, the Patent Owner amended all rejected independent claims in an amendment filed on April 29, 2011, while cancelling dependent claims 14 and 22. *Id.*, 311-16. Patent Owner made the following relevant amendments to the independent claims:

Claim 13 (issued as Claim 12)

Patent owner amended claim 13, *inter alia*, to require that the hinge assembly is at least partially housed in the display and "defines a single longitudinal axis running along an interface between the display component and the base." *Id.*, 313-14.

7. Third Office Action

The third Office Action was transmitted on September 8, 2011. *Id.*, 327.

Claims 1, 3-8, 13, 15-16, 18-21 and 23 were rejected as being anticipated over Schweizer (US Patent 7,061,472) alone. *Id.*, 331. Claims 9 and 17 were rejected as being obvious over Schweizer in view of Aarras. *Id.*, 336. Claim 11 was rejected as being obvious over Schweizer in view of Rebeske. *Id.*, 338. Claims 24-25 were rejected as being obvious over Schweizer in view of Saarinen (US Patent 6,882,335). *Id.*

8. Response To Third Office Action

In response to the third Office Action, the Patent Owner amended all rejected independent claims in an amendment filed on March 7, 2012, while adding one new independent claim (claim 32) and nine new dependent claims (claims 26-31 and 33-35). *Id.*, 360-69. Patent Owner made the following relevant amendments to the independent claims:

Claim 13 (issued as Claim 12)

Patent owner amended claim 13, *inter alia*, to require "wherein in the easel mode the single display component is oriented facing the operator with the keyboard oriented away from the operator; and 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

<u>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</u>." *Id.*, 363 (emphasis added).

Claim 19 (issued as Claim 17)

Patent owner amended claim 1, *inter alia*, to require "<u>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</u>." *Id.*, 365 (emphasis added).

Claim 21 (issued as Claim 19)

Patent owner amended claim 13, *inter alia*, to require and additional frame mode and to require its display orientation module to "<u>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.</u>" *Id.*, 366 (emphasis added).

***

In its remarks filed with the above amendments, Patent Owner argued that the amended independent claims were allowable over the cited prior art based on the newest amendments for each claim:

[<u>Claim 1</u>]

> Schweizer does not anticipate claim 1, as amended. In particular, Schweizer does not teach or suggest a laptop computer having "a single display component including a display screen," as recited in claim 1, as amended. . . . Further, Schweizer does not teach or suggest "rotating either the single

display component or the base by the operator about the single longitudinal axis beyond approximately 180 degrees from the closed mode configures the portable computer into the easel mode," and also does not teach "wherein in the easel mode the single display component is oriented facing the operator with the keyboard oriented away from the operator," as recited in claim 1, as amended.

[**Claim 13 (issued as Claim 12)**]

Schweizer does not anticipate claim 13, as amended. In particular, Schweizer does not teach or suggest an easel mode wherein a "single display component is oriented facing the operator with the keyboard oriented away from the operator," nor "at least one integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user," as recited in claim 13 as amended.

[**Claim 19 (issued as Claim 17)**]

Schweizer does not anticipate claim 19, as amended. In particular Schweizer does not teach or suggest "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," as recited in claim 19, as amended.

[**Claim 21 (issued as Claim 19)**]

Schweizer does not anticipate claim 21, as amended. In particular Schweizer does not teach or suggest a portable computer having a display orientation module "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," as recited in claim 21, as amended. Schweizer does not disclosure a frame mode for the presentation device. Thus, Schweizer does not teach or suggest "a portable computer having a display orientation module "wherein the display orientation module is further configured to detect a change between a laptop mode, an easel mode, and a frame mode," as recited in claim 21, as amended.
>
> [**Claim 32 (issued as Claim 29)**]
>
> As discussed above with respect to the independent claims, Schweizer does not teach or suggest "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 [sic] between the plurality of display modes, including a laptop mode and an easel mode," as recited in claim 32. Schweizer teaches and relies on dual displays to operate the disclosed presentation device. Further Schweizer does not teach the recited easel mode, as amended.

Id. at 370-74.

9. Allowance

After applicant's latest amendments, all pending claims were allowed on April 13, 2012. Ex. 1002, 391. The Examiner provided a statement of Reasons for Allowance for each claim, reproduced below. Other than claim 12 – which was allowed based on its invocation of 35 U.S.C. § 112, sixth paragraph – and newly added claim 32, the Examiner found each claim to be allowable over the prior art based on the claim language added in Patent Owner's latest claim amendments from March 13, 2012.

[Claim 1]

The specific limitations of "a single display component including a display screen" and "wherein rotating either the single display component or the base by the operator about the single longitudinal axis beyond approximately 180 degrees from the closed mode configures the portable computer into the easel mode; and wherein in the easel mode the single display component is oriented facing the operator with the keyboard oriented away from the operator" in Claim 1 are not anticipated or made obvious by the prior art of record in the examiner's opinion.

[Claim 12 (issued as Claim 11)]

The specific limitations of "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" in Claim 12 is not anticipated or made obvious by the prior art of record in the examiner's opinion. Note that this "means for" clause invokes §112, sixth paragraph.

[Claim 13 (issued as Claim 12)]

The specific limitations of "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user" in Claim 13 are not anticipated or made obvious by the prior art of record in the examiner's opinion.

[Claim 19 (issued as Claim 17)]

The specific limitations of "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" or "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" in combination with all remaining limitations of Claim 19 are not anticipated or made obvious by the prior art of record in the examiner's opinion.

[**Claim 21 (issued as Claim 19)**]

The specific limitations of "triggering 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" in combination with all remaining limitations of Claim 21 are not anticipated or made obvious by the prior art of record in the examiner's opinion.

[**Claim 32 (issued as Claim 29)**]

The specific limitations of "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" and "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" in

> combination with all remaining limitations of Claim 32 are not anticipated or made obvious by the prior art of record in the examiner's opinion.

Id. at 397-401 (emphasis in original).

V. <u>CLAIM CONSTRUCTION</u>

For purposes of this Request, the claim terms are presented by the Requester in accordance with 37 C.F.R. § 1.555(b) and MPEP § 2111. Specifically, each term of the claims is to be given its "broadest reasonable construction" consistent with the specification. MPEP § 2111; *In re Swanson*, 540 F.3d 1368, (Fed. Cir. 2008); *In re Trans Texas Holding Corp.*, 498 F.3d 1290, 1298 (Fed. Cir. 2007) (citing *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984)).

Although the District Court has yet to rule on the scope of these claim limitations, the Federal Circuit noted in *Trans Texas* that the Office has traditionally applied a broader standard than a Court does when interpreting claim scope. MPEP § 2111. The Office applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage, as one of ordinary skill in the art would understand them. *In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997). The rationale underlying the "broadest reasonable construction" standard is that it reduces the possibility that a claim, after issue or certificate of reexamination, will be interpreted more broadly than is justified. 37 C.F.R. § 1.555(b), MPEP § 2111.

Because the claim interpretation standards used in the courts are different from the claim interpretation standards used in the Office, any claim interpretations submitted herein for the purpose of demonstrating an SNQ are neither binding upon Requester in any litigation related to the '688 Patent, nor do they necessarily correspond to the construction of claims under the legal standards that are mandated to be used by the courts in patent litigation. *See* 35 U.S.C. § 507; *see* *also* MPEP § 2686.04 II (determination of an SNQ is made independently of a court's decision on validity because of different standards of proof and claim interpretation employed by the District Courts and the Office); *see also Trans Texas Holding*, 498 F.3d at 1297-98; *In re Zletz*, 893 F.2d 319, 322, 13 U.S.P.Q.2d 1320, 1322 (Fed. Cir. 1989).

The interpretation and/or construction of the claims in the '688 Patent presented either implicitly or explicitly should not be viewed as constituting, in whole or in part, Requester's own interpretation and/or construction of such claims, but instead should be viewed as constituting an interpretation and/or construction of such claims as may be raised through a broadest reasonable claim construction. In fact, Requester expressly reserves the right to present its own interpretation of such claims at a later time, which interpretation may differ, in whole or in part, from that presented herein. Further, for any claim term that may be construed as a means-plus-function limitation under 35 U.S.C. § 112 ¶ 6, Requester reserves the right to challenge the sufficiency of the specification's disclosure for purpose of satisfying the definiteness requirement of § 112.

A. "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 claims challenged in this Request. In the non-instituted IPR (IPR2021-00681), Petitioner proposed that "display orientation module" be construed as a means-plus-function limitation under 35 U.S.C. §112 ¶ 6. (See Ex. 1007 at 14-16.) For each claim in the '688 patent reciting a "display orientation module," the term is followed by purely functional language performed by the display orientation module, as demonstrated below with emphasis added:

- 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 functionality recited for each claim above, the "display orientation module" is just a generic placeholder for these *per se* 112(f) terms. The "display orientation module" does not convey to a POSITA any particular or sufficiently definite structure. Indeed, a "module" does not connote any physical structure at all, and the "display orientation" prefix does not impart any structural limitations to this otherwise structureless "module" term. Moreover, as shown above, where used in the claims the "display orientation module" term is followed by purely functional language and is never once mentioned in the '688 patent outside of the claims.

Although the '688 patent does not expressly describe what components perform the claimed functionality associated with the "display orientation module" (which raises doubts as to whether the specification satisfies the definiteness requirements of 35 U.S.C. § 112), for the purposes of this Request only, Requester submits that the '688 patent's described "central processing unit" ('688 patent, 6:38-42) or "dedicated logic circuitry" ('688 patent, 6:38-42) is what performs the claimed functionality. Thus, for the purposes of this Request only, Requester submits that this limitation need not be construed as means-plus-function and is satisfied by a computer processor that performs the claimed functionality. However, to the extent Patent Owner argues or the Examiner finds that this term invokes 35 U.S.C. §112, ¶ 6, has adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm for carrying out certain steps, the Request also explains how the prior art meets each of these claims' elements under such a construction.

B. "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. In IPR2021-00681, Petitioner proposed that this term be construed as a means-plus-function limitation under 35 U.S.C. §112, ¶ 6. (See Ex. 1007 at 16-17.) The term "protection module" as recited in claim 26 is followed by purely 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 these *per se* 112(f) terms. The "protection module" does not convey to a POSITA 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.

Although the '688 patent does not expressly describe what components perform the claimed functionality associated with the "protection module" (which raises doubts as to whether the specification satisfies the definiteness requirements of 35 U.S.C. § 112(b)), for the purposes of this Request only, Requester submits that the '688 patent's described "central processing unit" ('688 patent, 6:38-42) or "dedicated logic circuitry" ('688 patent, 6:38-42) is what performs the claimed functionality. Thus, for the purposes of this Request only, Requester submits that this limitation need not be construed as means-plus-function and is satisfied by a computer processor that performs the claimed functionality. However, to the extent Patent Owner argues or the

Examiner finds that this term invokes 35 U.S.C. §112, ¶ 6, has adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm for carrying out certain steps, the Request also explains how the prior art meets each of these claims' elements under such a construction.

C. "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)[3]

The limitation "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" presumptively invokes 35 U.S.C. § 112, ¶ 6. The applicant argued for such a construction during prosecution. Ex. 1002, 197-98. In response, the Examiner determined that this "means for rotating" limitation incorporates the following structure described in the '688 patent's specification: "hinge assembly 138 and all associated parts (housing 142, shaft 154, springs 156, member 158, bracket 140), as disclosed in paragraphs 0067-0068 and Figures 7a-10." *Id.*, 258. The applicant did not dispute the Examiner's stated interpretation. Similarly, in IPR2021-00681, Petitioner proposed that "means for rotating" be construed as invoking 35 U.S.C. § 112, ¶ 6, and that the "corresponding structure includes at least the hinge assembly and associated parts (housing 142, shaft 154, springs 156, member 158, bracket 140) illustrated in FIGs. 7A-10 and described in the specification at 10:22-53 and its equivalents." (See Ex. 1005 at 13.)

For purposes of this Request only, Requester submits that this term invokes 35 U.S.C. § 112, ¶ 6 and that the corresponding structure for performing the claimed function is hinge assembly

[3] This limitation is abbreviated in this Request as "means for rotating."

138 and all associated parts (housing 142, shaft 154, springs 156, member 158, bracket 140), as disclosed in paragraphs 10:22-53 and Figures 7A-10 and its equivalents.

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

The limitation "means for detecting an orientation of the base relative to the display component" presumptively invokes 35 U.S.C. § 112, ¶ 6. During prosecution, the Examiner determined that this "means for detecting" limitation incorporates the following structure described in the '688 patent's specification: "applicant's sensor which is not shown in the drawings but is described in paragraphs 0011, 0015, 0059-0061 and 0063." Ex. 1002, 259. The applicant did not dispute the Examiner's stated interpretation. Similarly, in IPR2021-00681, Petitioner proposed that "means for detecting" be construed as invoking 35 U.S.C. § 112, ¶ 6, and that the "corresponding structure for the above-discussed means for detecting limitations includes at least the orientation 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 its equivalents." (See Ex. 1005 at 13-14.)

For purposes of this Request only, Requester submits that this term invokes 35 U.S.C. § 112, ¶ 6 and that the corresponding structure for performing the claimed function is the orientation 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 its equivalents.

VI. ALLEGED INVENTION DATE

The references relied on herein by Requester are all prior art to the earliest alleged priority date of April 1, 2008. Requester does not concede, however, that any challenged claim is entitled to that date or that any challenged claim satisfies the requirements under 35 U.S.C. § 112.

VII. PERSON OF ORDINARY SKILL IN THE ART

The person of ordinary skill in the art in April of 2008 ("POSITA") would have possessed at least a bachelor's degree in computer science, computer engineering, or electrical engineering and would have had at least two years of experience in the design and architecture of personal computers (e.g., laptops) and other portable electronic devices (or equivalent degree or experience). The POSITA may have had less design experience with a higher level of education, such as a Master's or Ph.D. degree, and vice versa. Schmandt, ¶ 54.

VIII. SUMMARY OF THE PRIOR ART

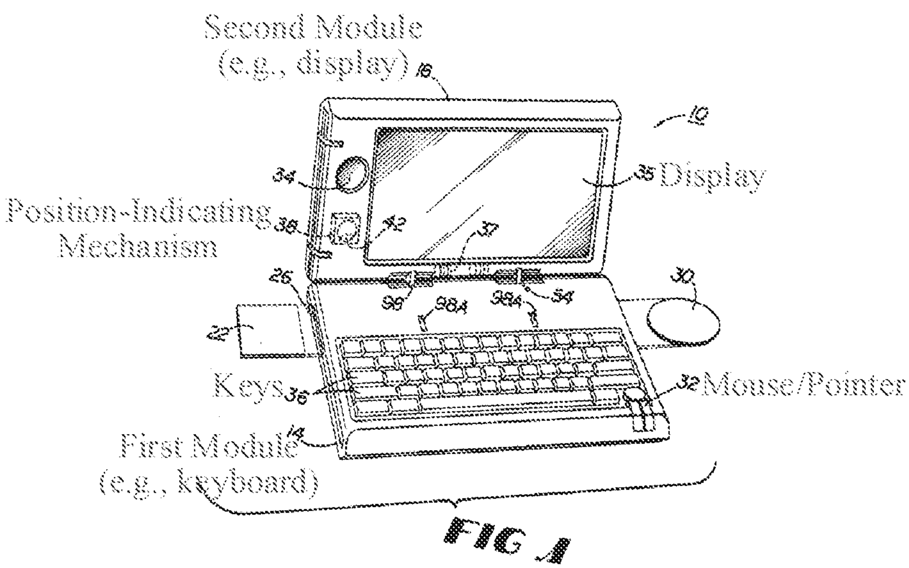
A. Lane (Exhibit 1009)

Lane (WO 95/24007) is a publication of a PCT international patent application that published on September 8, 1995—more than 12 years before the alleged priority date of the '688 Patent (April 1, 2008)—and thus qualifies as prior art at least under Sections 102(a) and 102(b) (pre-AIA). Lane was not relied on by the Examiner during prosecution of the '688 patent and also was not relied on by Petitioner in the related IPR proceeding.

That said, during prosecution of one of Patent Owner's counterpart European Patents, EP 2 283 407 B1 (Exhibit 1030), the European Patent Office (EPO) Examiner relied on Lane to reject claims similar to the issued claims of the '688 Patent. Ex. 1031, 11-15. Specifically, the rejected European claims similarly recited all three of the claimed display modes—laptop, easel, and frame—as well as an accelerometer for detecting a current display mode to automatically reorient content when transitioning to and from easel mode. Ex. 1031, 4-5.

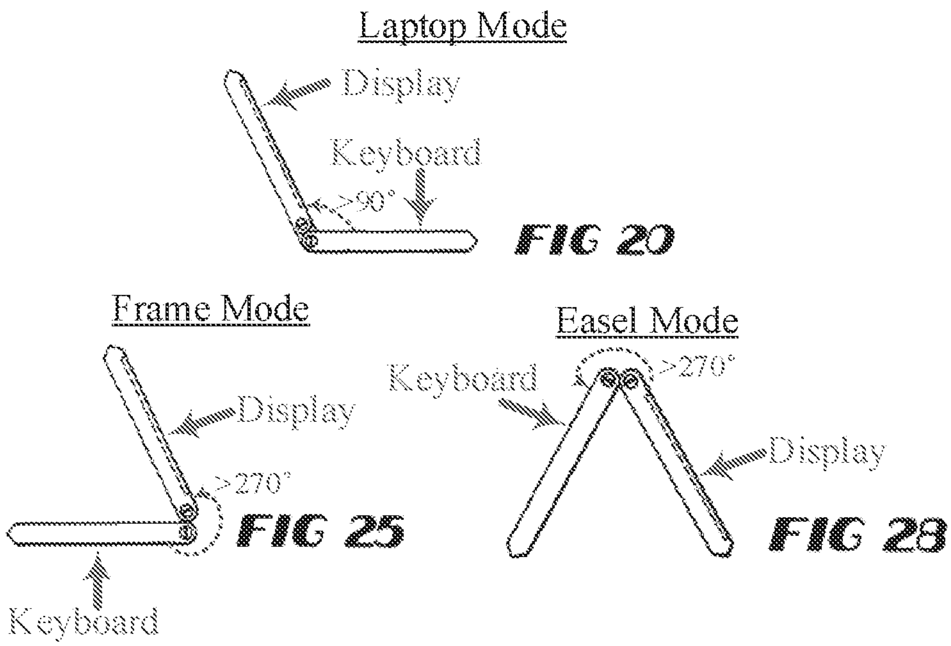
As noted by the EPO Examiner (Ex. 1031, 11-15), Lane discloses a portable computer having a first module 14 (base) and a second module 18 (display component) that are rotatable relative to one another by up to 360° to transition the computer into various modes, including all three of the '688 Patent's claimed display modes—the laptop, easel, and frame modes. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 20, 25, 28.

<u>Lane's Primary Components</u>



Lane, FIG. 1 (with annotations).

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Lane also teaches that the computer includes software for automatically reorienting displayed content based on an indication of the spatial orientation of the first and/or second modules 14, 18 provided by a position-indicating mechanism 38. *E.g.*, Lane, 5:23-6:6. Further, Lane teaches rendering the keyboard "inoperable when unused" such as in the easel and frame modes. *Id.*

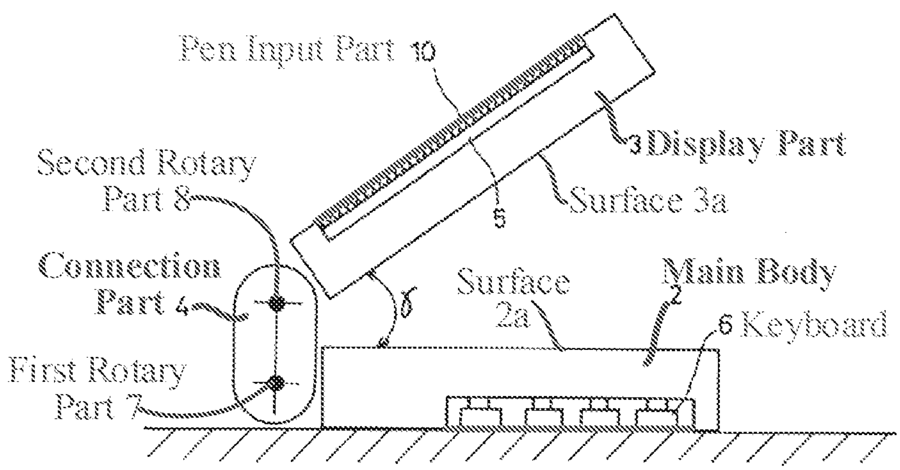
B. Kamikakai (Exhibit 1010)

Kamikakai (U.S. 6,154,359) is a U.S. patent that issued on November 28, 2000—more than seven years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under 35 U.S.C. § 102(b) (pre-AIA).

Kamikakai was not cited or relied on by the Examiner during original prosecution of the '688 patent; nor was it presented in the related IPR proceeding[4].

Kamikakai is directed to a portable electronic device comprising a type of dual-axis hinge (referred to by Kamikakai as a "connection part") that allows the touchscreen ("display part") and base ("main body") of the device to be rotated to "arbitrary rotary positions" between 0° and 360°. *E.g.*, Kamikakai, 3:52-64, 5:31-47, 6:28-36, FIGS. 8-9. Kamikakai's hinge ("connection part") can also hold the portable electronic device in any of these arbitrary rotary positions, including a position where the keyboard is placed face down on a surface and the screen ("display part") faces a user. *Id.* This position is shown in FIG. 8 of Kamikakai (reproduced below with annotations).

Annotated FIG. 8 of Kamikakai



Kamikakai, FIG. 8 (with annotations).

As described by Kamikakai, this frame mode-like position allows a user to "easily input data from the pen input part 10 by manipulating a pen." *Id.*, 6:49-50. The connection part 4 is

[4] "The related IPR proceeding" is used throughout this Request to refer to *Lenovo (United States) Inc. v. LiTL LLC*, IPR2021-00822 (PTAB).

capable of holding the display part 3 in this position (against the force of gravity) due to friction that exists between components of the connection part's secondary rotary part 8. See *e.g.*, Kamikakai, 4:27-42 (discussing how friction between the bearing part 26 and the rotary shaft 24 of the second rotary part 8 resists rotation of the display part 3 relative to the connection part 4). As such, at least a predetermined rotary manipulation force is required to rotate the display part 3 relative to the connection part 4; otherwise the display part 3 and connection part 4 remain fixed relative to one another. *E.g.*, *id.*, 3:61-64, 5:9-27.

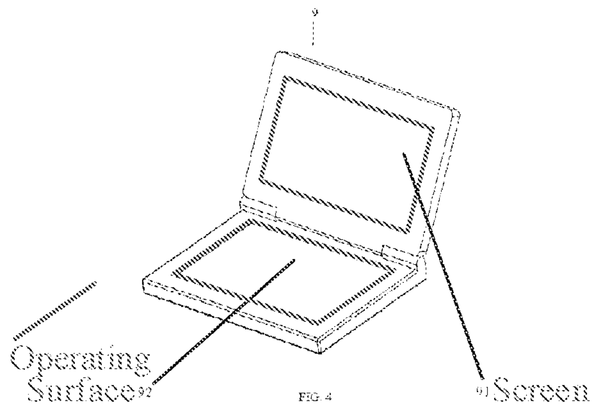
Kamikakai also recognizes that "erroneous inputs from the keyboard 6" can occur in the frame mode-like position of FIG. 8 and discloses "a mechanism for disabling the keyboard 6" when the display part 3 is rotated more than 270° relative to the main body 2, such that the backsides of the display part 3 and main body 2 (surfaces 3*a* and 2*a*, respectively) face each other and form an acute angle. *Id.*, 6:51-67.

C. <u>CN '170 (Exhibit 1012)</u>

CN '170 (CN 2627170Y) is a certified English translation of a Chinese Patent issued on July 21, 2004—nearly 4 years before the alleged priority date of the '688 Patent (April 1, 2008)—and thus qualifies as prior art at least under Sections 102(a) and 102(b) (pre-AIA). CN '170 was not relied on by the Examiner during prosecution of the '688 patent ('688 Patent, Cover) and also was not relied on by Petitioner in the non-instituted IPR proceeding.

CN '170 is directed to an electronic product, such as a laptop, that can be configured into a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19. In the easel mode, the screen 91 and operating surface 92 are at an angle similar to that in the frame mode, but the laptop is vertically oriented in an inverted "V" configuration. *E.g.*, CN '170, FIG. 19, 5:43-44, 7:11-14. CN '170 includes a keyboard in the form of its "operating surface 92," also described as a "key operating surface." *Id.*, 6:11-12, 5:4-10.

<u>CN '170's Laptop Mode</u>



<u>CN '170's Easel Mode</u>

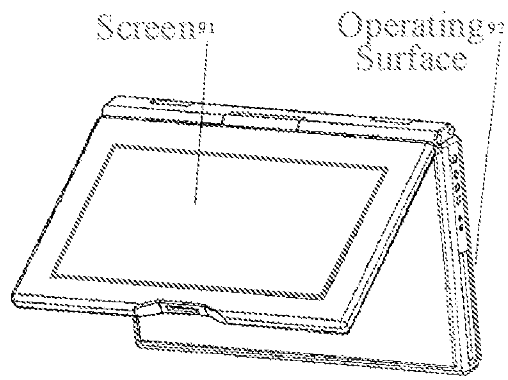
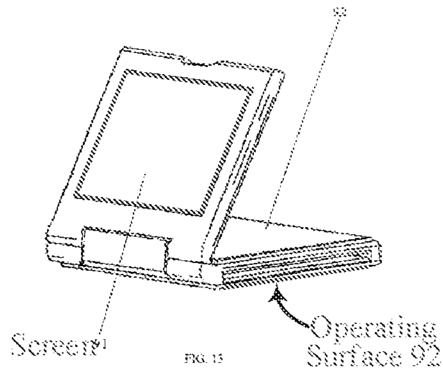


FIG 19

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

CN '170 (introduced above) also discloses that its computer can be configured into a frame mode-like position whereby the operating surface 92 is horizontal and facing down and the display screen 91 is facing toward a user. *E.g.*, CN '170, 4:7-10, FIGS. 13, 15, 17, 18.

CN '170's Frame Mode-Like Position



CN '170, FIG. 13 (with annotations).

D. Shimura (Exhibit 1014)

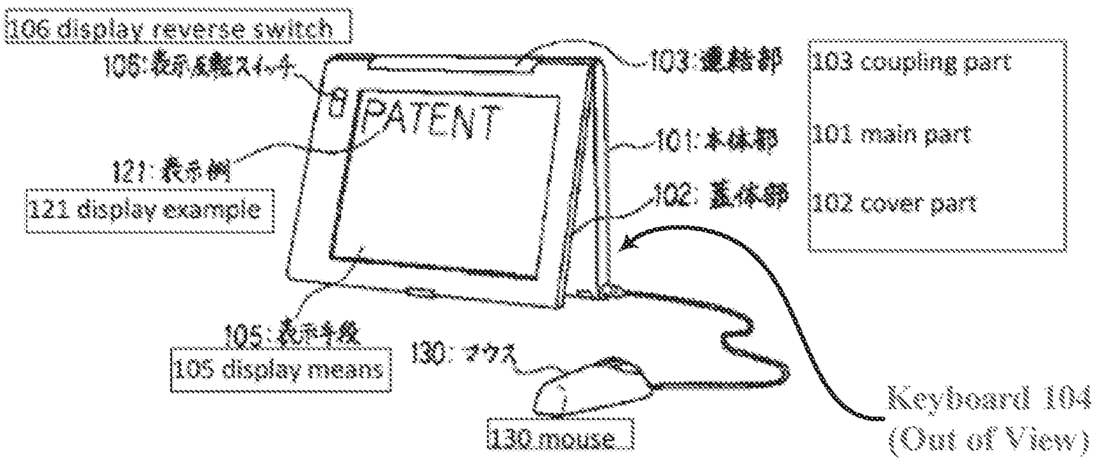
Shimura (JP H06-242853) is a certified English translation of a Laid-Open Japanese Patent that published on September 2, 1994—more than 13 years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Sections 102(a) and 102(b) (pre-AIA).

Shimura was not cited or relied on by the Examiner during prosecution of the '688 patent. Petitioner presented Shimura in the related IPR proceeding, which was not instituted.

Like Kamikakai, Shimura is directed to a personal computer comprising a touch-sensitive screen ("display means") connected to a base ("main part") having a keyboard that can be disabled when placed face down on a table. *E.g.*, Shimura, ¶¶ [0008], [0011], [0018]. Shimura's computer also has a similar hinge assembly ("coupling part") that permits the screen to be rotated to "any angle relative to the main part within a range of 0° to 360°." *Id.* ¶ [0008].

Extending on Kamikakai's frame mode (FIG. 8 Kamikakai shown above), Shimura shows how, with the screen ("display means 105") and base ("main part 101") in a similar relative orientation (approximately 340°), the computer can be placed on a table in an inverted "V" configuration. *E.g., id.*, ¶ [0017], Figure 5 (reproduced below with annotations).

Annotated Figure 5 of Shimura



Shimura, Figure 5 (with annotations).

Shimura explains that this easel mode configuration is advantageous because "the area taken up by by the computer on the table can be greatly reduced." *Id.*, ¶ [0017].

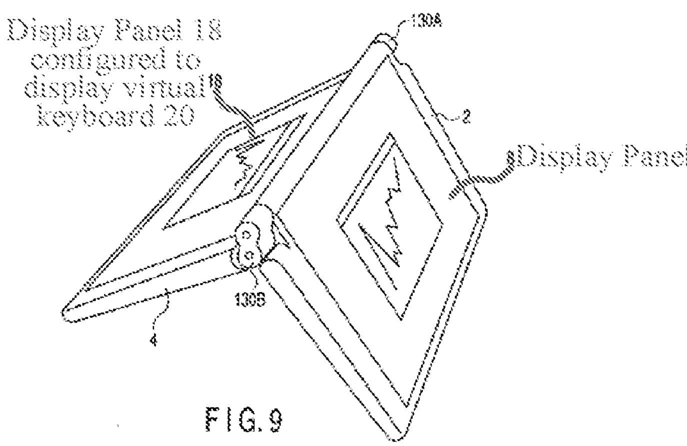
Since the display screen is upside down in this easel mode, Shimura includes a switching means, such as a physical display reverse switch 106, for re-orienting/flipping the displayed content to ensure it is right-side up. *E.g., id.*, ¶¶ [0008], [0012], [0016-18].

E. Hisano (Exhibit 1015)

Hisano (U.S. 2006/0034042) is a publication of a U.S. Patent Application that published on February 16, 2006—more than 2 years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Section 102(b) (pre-AIA). Hisano was not relied on by the Examiner during prosecution of the '688 patent but it was relied on by the Petitioner in the related IPR proceeding.

Hisano is directed to an electronic apparatus, such as a notebook personal computer, that includes a virtual keyboard 20 that is displayed on one of two display panels, rather than a conventional mechanical keyboard. *E.g.*, Hisano, ¶¶ [0054], [0058]. The two display panels are included in two housings that are rotatably coupled to one another and that can be configured into an easel mode-like position whereby the housings are rotated more than 180° such that their display panels face outward and away from one another, as shown in annotated Figure 9 below. *E.g.*, Hisano, ¶¶ [0054], [0058], [0098], FIG. 9.

Hisano's Easel Mode-Like Position



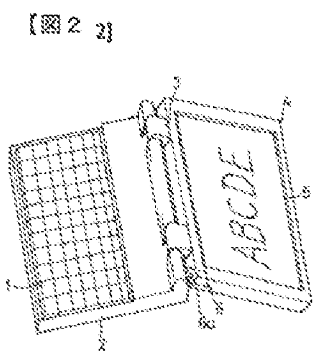
Hisano, FIG. 9 (with annotations).

Hisano also discloses reorienting the displayed content by 180° when the display panels are configured in the easel mode shown in FIG. 9. *E.g.*, Hisano, ¶¶ [0098-99]. Specifically, Hisano recognizes that the displayed content can be reoriented based on the angle of the device's hinges and/or based on a gravity sensor, stating that "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, ¶ [0099].

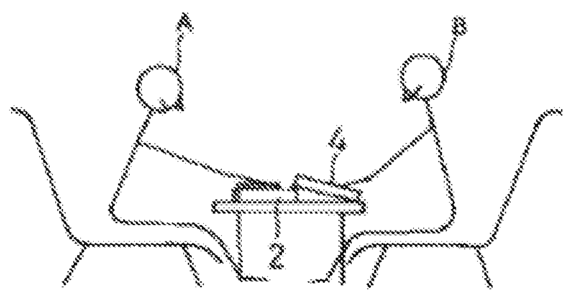
F. Shigeo (Exhibit 1017)

Shigeo is a certified English translation of a Laid-Open Japanese Disclosure that published on July 12, 1996—more than 11 years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Section 102(b) (pre-AIA). Shigeo was not relied on by the Examiner during prosecution of the '688 patent but was relied on by Petitioner in the related IPR proceeding.

Shigeo relates to a portable computer whereby the content presented on the display is rotated by 180 degrees when the user opens the display wider than 180 degrees relative to the main body 2. *E.g.*, Shigeo, Abstract, ¶¶ [0004], [0014-16]. As shown in FIGS. 2 and 4(b) of Shigeo and explained throughout Shigeo, reorienting the content in this way allows another user sitting across from the primary user to view the displayed content right-side up. *E.g.*, Shigeo, Abstract, ¶¶ [0004], [0014-16], FIGS. 2, 4(b).



(b)



Shigeo, FIGS. 2, 4(b).

G. Choi (Exhibit 1018)

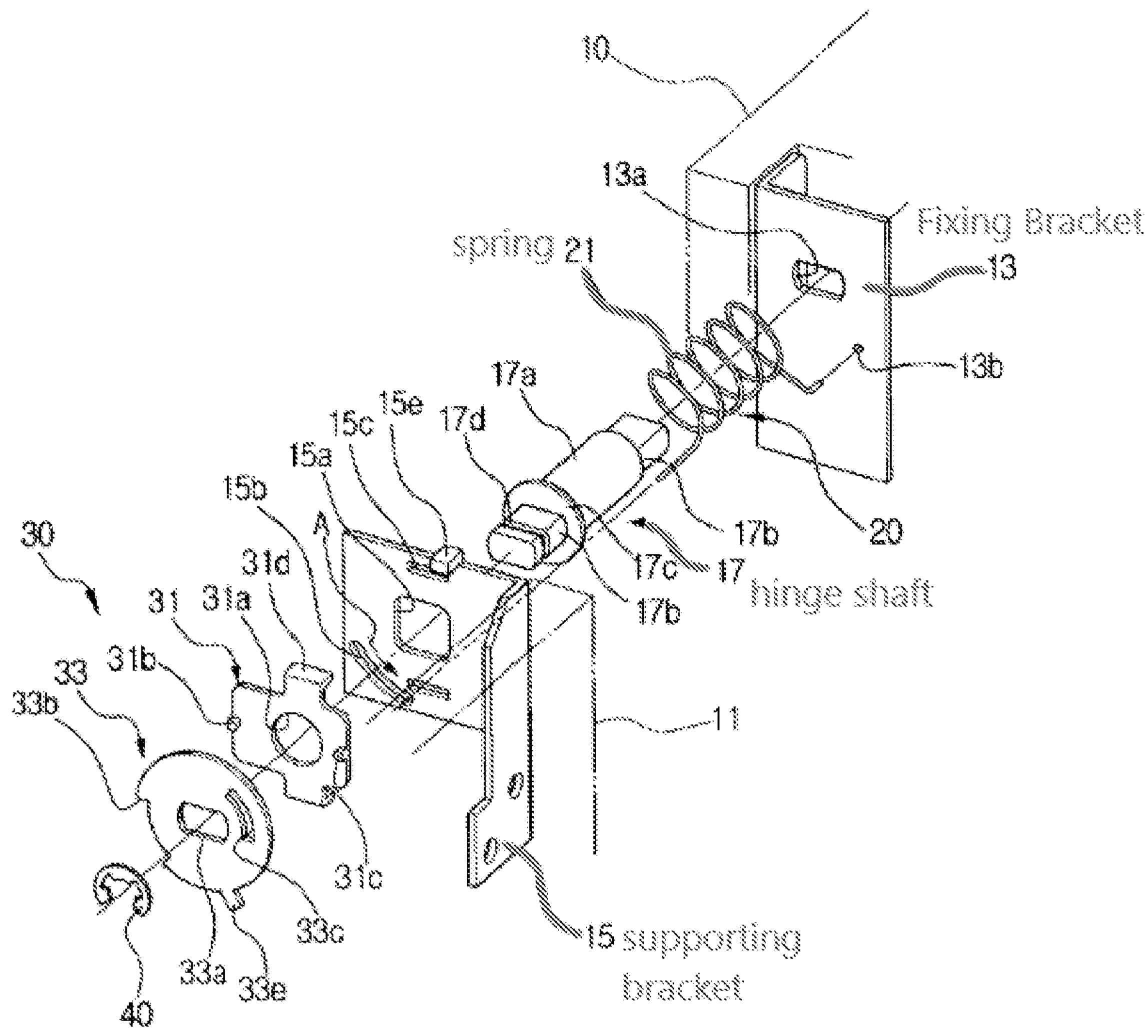
Choi (U.S. 6,918,159) is a U.S. patent that issued on July 19, 2005—more than two years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under 35 U.S.C. § 102(b) (pre-AIA). Choi was not relied on by the Examiner during prosecution of the '688 patent but it was relied on by the Petitioner in the related IPR proceeding.

Choi is directed to a hinge apparatus that is used to open and close a panel with respect to a laptop body. Ex. 1018, Abstract, 3:44-47. Among other elements, the hinge apparatus includes fixing bracket 13 fixed onto a laptop computer body 10, supporting bracket 15 fixed to the panel 11 (i.e., a LCD panel), hinge shaft 17, and coil spring 21. *Id.*, 3:36-42, 52-56. The hinge apparatus also includes structural elements that are coupled to the hinge shaft 17, including:

- shaft passing hole 15*a* through which the hinge shaft 17 is passed;
- plate spring 31 with shaft hole 31*a* through which the hinge shaft 17 is passed;
- frictional plate 33 with coupling hole 33*a* connected to fixing portion 17*b* of the hinge shaft 17; and
- fixing pin 40 connected to connection hole 17*d* of the hinge shaft 17.

Id., 4:7-14, 53-57, 60-61. Figure 2 of Choi is reproduced with annotations below.

Annotated Fig. 2 of Choi



H. Misawa (Exhibit 1019)

Misawa (U.S. 2005/0134717) is a U.S. patent publication that published on June 23, 2005—more than two years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under 35 U.S.C. § 102(b) (pre-AIA). Misawa was not relied on by the Examiner during prosecution of the '688 patent but it was relied on by the Petitioner in the related IPR proceeding.

Misawa is directed to an "opening/closing-type portable device," including notebook computers. Misawa, ¶¶ [0010], [0075]. The portable device of Misawa includes a first casing body (i.e., a base) and a second casing body (i.e., a display) and a hinge portion that "enables rotation of the first casing body and second casing body by more than 180°." *Id.*, Abstract. As shown in Figures 1, 8, and 9, reproduced and annotated below, the hinge enables the portable device of Misawa to be opened to and placed in an inverted-V orientation with the hinge at the top of the device and the two casing bodies (14 and 18) oriented downward and supporting the device on a surface. *Id.*, ¶ [0054], Figs. 8, 9 (annotated) (reproduced below).

FIG.8

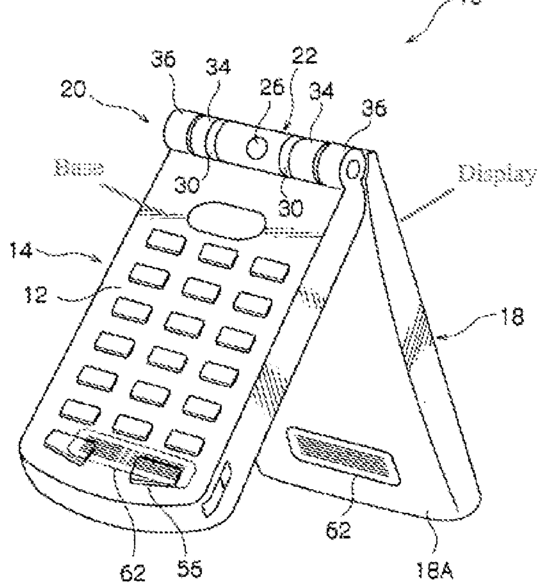
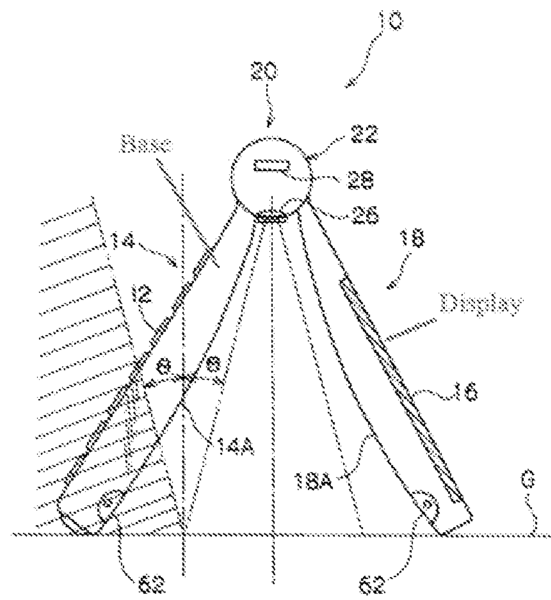


FIG.9



The hinge assembly of Misawa includes a "first tubular bod[y] 34" connected to the second casing body (i.e., the display) of the device, and a "second tubular bod[y] 36" connected to the first casing body (i.e., the base). *Id.*, ¶ [0036]. Among other elements, the hinge assembly also includes a rotation shaft 33 having screw portions and screwed into a base face 34B of first tubular body 34, a compression spring 46, and first and second hinge components (42 and 43, respectively). *Id.*, ¶¶ [0037], [0041], Figs. 4, 5.

Figures 4 and 5, showing the hinge assembly of Misawa are reproduced below.

FIG.4

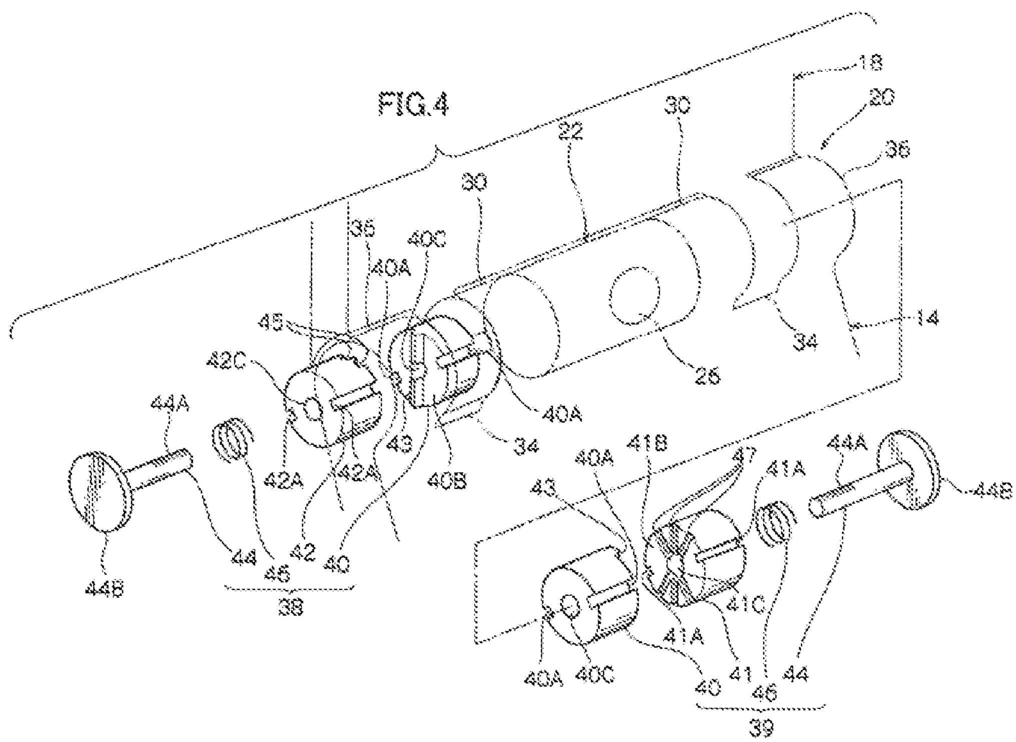
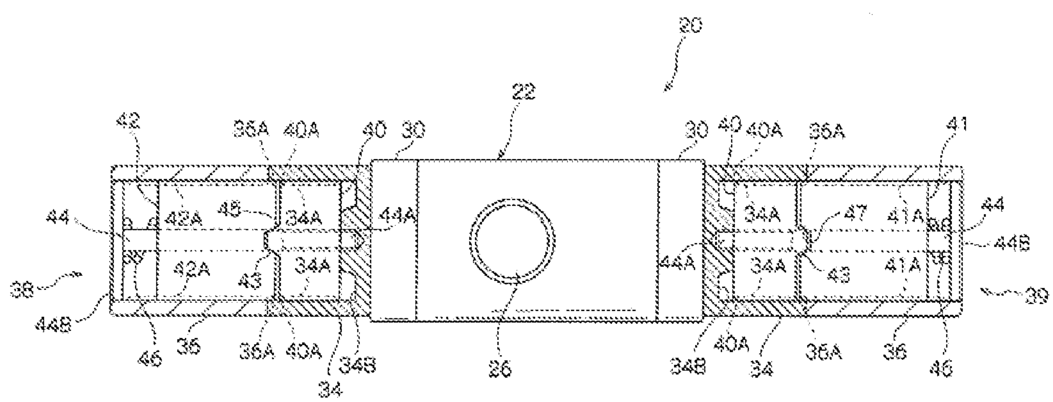


FIG.5



I. Clapper (Exhibit 1020)

Clapper (U.S. 6,704,007) is a U.S. Patent that issued on March 9, 2004 —more than 4 years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Section 102(b) (pre-AIA). Clapper was not relied on by the Examiner during prosecution of the '688 patent and was not relied on by the Petitioner in the related IPR proceeding.

Clapper discloses 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, Fig. 1 (reproduced below).

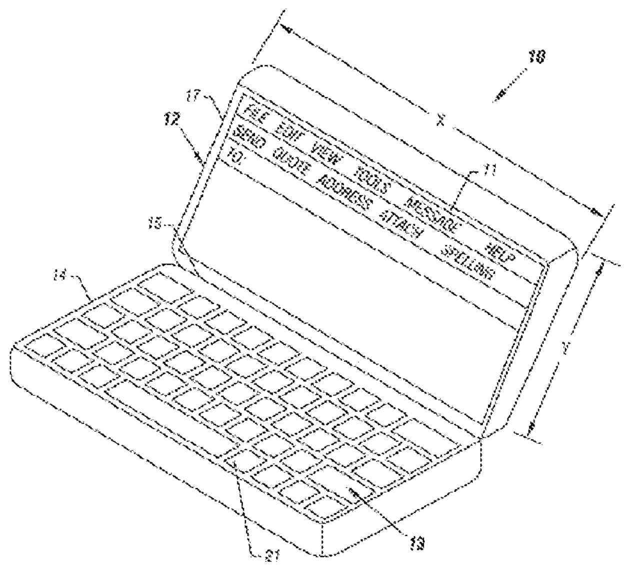


FIG. 1

The portable computer of Clapper may be "rotated approximately 90°. The housing 14 and the display 12 have been rotated to the right. Now the display 12 has a more upright configuration. Information displayed on the display 12 now uses the side edge 17 as the upper edge for purposes of displaying text. In other words, the textual information now extends up and down in the X axis and the across in the Y axis using the convention set forth in connection with FIG. 1." *Id.*, 2:18-26, Fig. 2 (reproduced below).

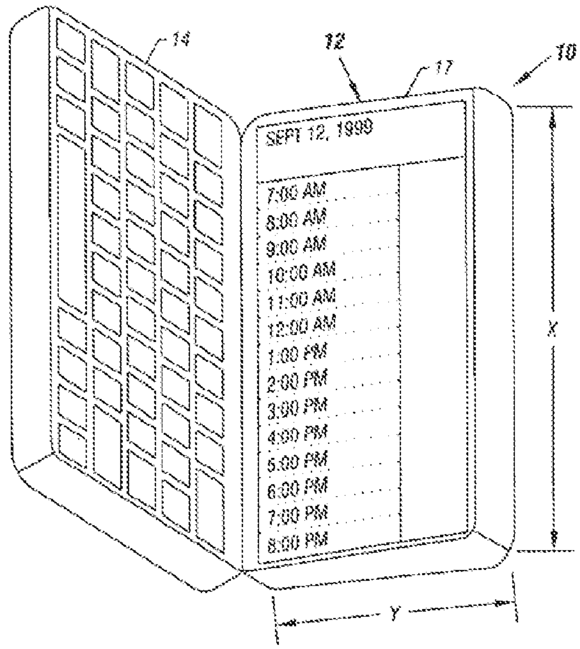


FIG. 2

Clapper implements an accelerometer to determine which orientation the portable computer is in. *Id.*, 5:13-20. Based on this determination of the orientation, the display may be rotated to correspond with the orienation of the device, i.e., rotating 90° when the device is changed from a landscape to a portrait configuration or vice-versa. *Id.*, 5:22-25, Figs. 2-3.

J. Additional References Disclosing Easel Mode

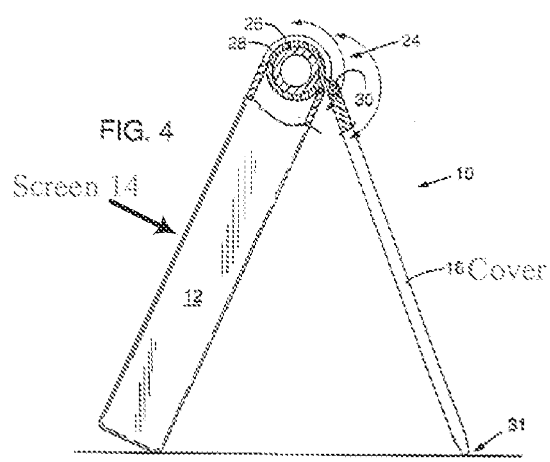
In addition to Lane, Shimura, and Hisano, several other prior art references also disclose a similar arrangement to the claimed easel mode. These supplementary prior art references are introduced briefly below just to show how well known it was prior to the alleged priority date of the '688 patent to configure a laptop computer into an upright "V" configuration like the claimed easel mode.

1. Podwalny (Exhibit 1021)

Podwalny (U.S. 5,644,516) is a U.S. Patent that issued on July 1, 1997—more than 10 years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Section 102(b) (pre-AIA). Podwalny was not relied on by the Examiner during prosecution of the '688 patent and also was not relied on by Petitioner in the related IPR proceeding.

Podwalny is directed to a portable computer that includes a housing 12 having a screen 14 and a cover 16 rotatably coupled to the housing 12. *E.g.*, Podwlany, 1:9-12, 2:32-39. Podwalny's computer can be configured into an easel mode-like position whereby the cover 16 and housing 12 (which includes the screen 14) are placed in an upright "V" configuration. *E.g.*, Podwalny, 4:16-26, FIG. 4. Specifically, Podwalny's computer includes a hinge 24 that includes a detent mechanism that effectively locks the hinge in a particular position, "permit[ting] the computer to be stable arranged in the easel-like fashion depicted in FIG. 4." Podwalny, 4:21-23, FIG. 4.

Podwalny's Easel Mode-like Position



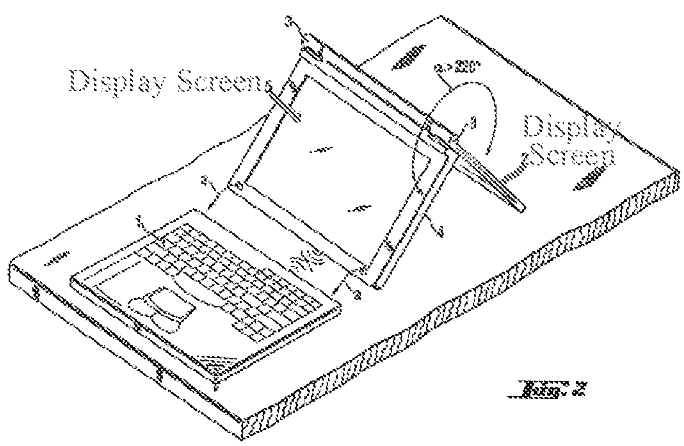
Podwalny, FIG. 4 (with annotations).

2. Schweizer (Exhibit 1022)

Schweizer (U.S. 7,061,472) is a U.S. Patent that issued on June 13, 2006—more than one year before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Section 102(b) (pre-AIA).

Schweizer is directed to a laptop computer that has a detachable keyboard and two display screens that can be configured into an easel-mode like position. *E.g.*, Schweizer, 1:49-2:4, FIGS. 2, 4, 6.

Schweizer's Easel Mode-like Position



Schweizer, FIG. 2 (with annotations).

K. Additional References Disclosing Content Reorientation And Inversion

In addition to Hisano, Lane, and Shigeo, several other prior art references also disclose reorienting displayed content to ensure it is right side up. These supplementary prior art references are introduced briefly below just to show how well known this claimed feature was prior to the alleged priority date of the '688 patent.

1. Tsuji (Exhibit 1023)

Tsuji (U.S. 2005/0062715) is a publication of a U.S. Patent Application that published on March 24, 2005—more than 3 years before the alleged priority date of the '688 patent (April 1, 2008)—and thus qualifies as prior art at least under Section 102(b) (pre-AIA). Tsuji was not relied on by the Examiner during prosecution of the '688 patent.

Tsuji relates to an information processing apparatus, such as a portable computer (Tsuji, ¶ [0003]), that includes a display unit 12 that can rotate relative to the main body 11 (which contains the keyboard 111) by more than 180°, and that can swivel about a single axis 15b between a tablet mode in which the backside of the display rests against the keyboard 111, and an open position similar to a conventional laptop mode. *E.g.*, Tsuji, ¶¶ [0033-34], [0049-50], [0057], FIGS. 1-2, 5-9.

Tsuji's Laptop Mode

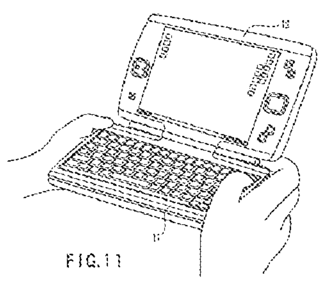


FIG.11

> 180° Rotation

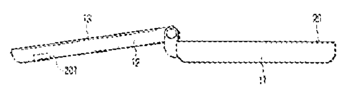


FIG.9

Swivel to Tablet Mode

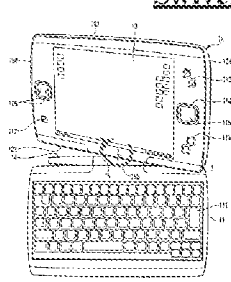


FIG.2

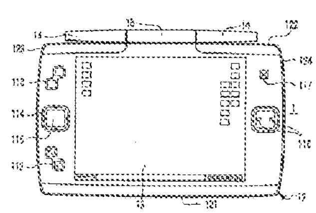


FIG.6

Tsuji, FIGS. 2, 6, 9, 11 (with annotation).

As explained by Tsuji, the display can be opened by more than 180° to, for example, "present the screen image to [a] partner who faces the user." *E.g.*, Tsuji, ¶ [0049]. Tsuji teaches automatically rotating the screen image 180 degrees relative to the default orientation (i.e., the orientation presented in laptop mode), so that "a user can present the screen image . . . in a correct orientation." Tsuji, ¶ [0049]. Tsuji goes on to state that a rotation angle sensor 202 can be used to "sense … an angle formed between the front surface of the display unit 12 and the top surface of the computer main body 11." Tsuji, ¶ [0061]. A POSITA would have understood that this rotation angle sensor 202 could have been used to sense when the display unit 12 has been rotated by more than 180° relative to the main body 11 in order to perform the automatic content reorienting prescribed by Tsuji in paragraph [0049]. Schmandt, ¶ 94. Further, when in the tablet mode, Tsuji teaches using a gravity sensor to automatically reorient the displayed content to ensure it is right-side up, regardless of the device's orientation. *E.g.*, Tsuji, ¶¶ [0055], [0059-60].

2. Schweizer

Schweizer (introduced above) teaches rotating an image on the main display screen by 180 degrees when the main display screen is rotated by an angle of at least 220 degrees relative to the display screen 5, such as to the position shown in FIG. 2. *E.g.*, Schweizer, 5:28-33, claim 1 (6:4-20). Schweizer also confirms that such contenting reorienting was well known in the art, stating that "the creation of the control electronics for rotating the image of the main display screen by 180 degrees" involves "no inventive activity." Schweizer, 5:23-35.

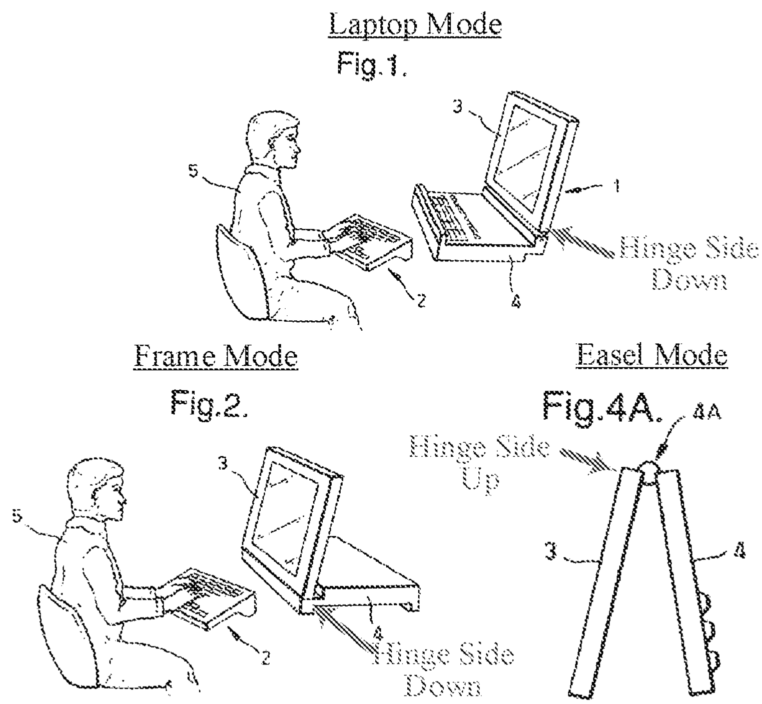
3. Välikangas (Exhibit 1024)

Välikangas (GB 2 321 982 A) is a publication of a UK patent application that published on August 12, 1998—nearly 10 years before the earliest possible priority date of the '154 Patent

(April 1, 2008)—and thus qualifies as prior art at least under Sections 102(a) and 102(b) (pre-AIA).

Välikangas discloses a notebook computer that is configurable into an easel mode in which the displayed content needs to be inverted/reversed relative to the device's laptop and frame modes. *E.g.*, Välikangas, pp. 1 (Abstract), 5, 7 (claim 5).

Välikangas's Display Orientations



Välikangas, FIGS. 1, 2, 4A (with annotations).

Although Välikangas does not disclose how to perform this content inversion, it is nonetheless recited in one of Välikangas's claims (claim 5), strongly suggesting that a POSITA could have implemented this content inversion without any undue experimentation circa 1998 when Välikangas published. In sum, Välikangas's lack of teaching on how to implement this content inversion evidences that even as early as 1998 (roughly 10 years before the earliest possible priority date of the '154 Patent), inverting displayed content when a display is upside down was something that was well within the ordinary skill of a POSITA.

IX. SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY UNDER 37 C.F.R. § 1.510(b)

The unpatentability grounds presented below in Section VIII raise substantial new questions of patentability ("SNQs") for claims 11-22 and 2432.

Each Ground presents a "substantial" question of patentability because "a reasonable examiner would consider the [identified prior art] important in deciding whether or not the claim is patentable." MPEP § 2242(I). As explained in the following sub-sections, the prior art Grounds relied on by this Request disclose and teach the features that the original Examiner found lacking in the prior art. In addition, the primary references raised in this request (Lane and Kamikakai) were not cited or relied on by the Examiner during original prosecution, nor have they been presented to the Patent Office in any post-grant proceeding, such as the related IPR Petition. Moreover, each Ground of unpatentability is "new" because it presents questions of patentability that have not "been: (A) decided in a final holding of invalidity by a federal court in a decision on the merits involving the claim, after all appeals; (B) decided in an earlier concluded examination or review of the patent by the Office; or (C) raised to or by the Office in a pending reexamination or supplemental examination of the patent." MPEP § 2242(I).

The *importance* of the prior art presented herein is reflected in the fact that each Ground actually establishes its respective claim(s) unpatentable (*infra* Section X), thus more than meeting the threshold of importance sufficient to qualify as "substantial" (*see* MPEP § 2242(I) ("'[A] substantial new question of patentability' as to a patent claim could be present even if the examiner would not necessarily reject the claim as … obvious in view of, the prior art patents or printed publications.”)).

Additional particulars of each SNQ are discussed in the following sub-sections.

A. The Lane Reference Raises An SNQ With Respect To Claims 12-14, 16, 19-20, 24-26, And 29-32 Of The ’688 Patent

As discussed above in Section VII, Lane published more than one year before the alleged priority date of the ’688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. §§ 102(a–b) (pre-AIA).

Lane presents “new” art. Lane was not relied on or discussed by the Examiner during prosecution of the ’688 patent, nor was it cited on the face of the ’688 patent. Lane was also not presented in the non-instituted IPR proceeding. Thus, Lane has not been the subject of any “concluded examination or review” and has not been considered “in an earlier ***concluded trial*** by the Patent Trial and Appeal Board.” Thus, Lane is new art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) (“Because no trial was instituted in the *inter partes* review, there was no ‘final holding of invalidity’ or ‘concluded examination or review’ ….”).); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) (“[A] question of patentability is new until it has been considered and decided on the merits.”). Neither was Lane the subject of any other proceeding relating to the ’688 patent.

Lane presents “substantial” questions of patentability that a reasonable examiner would find important to patentability. Lane presents new, non-cumulative technical teachings not previously considered by the Examiner for the reasons stated for the following independent claims and their dependent claims.

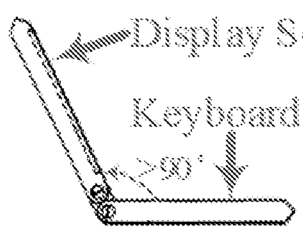
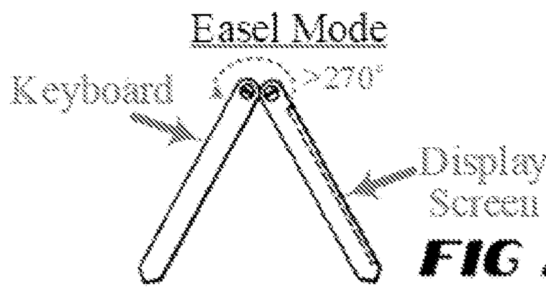
Independent Claim 12 And Dependent Claims 13-14, 16, 20, And 24-26

Lane presents a "substantial" question of patentability at least because, as explained in more detail below, the Lane renders all of claims 12-14, 16, 20, and 24-26 obvious. (*Infra* Section X.A.)

Significantly, Lane teaches "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user" which is the claim element that the Examiner cited in the Reasons for Allowance for independent claim 12 (and by extension its dependent claims 13-14, 16, 20, and 24-26). Ex. 1002, 397-98. Thus, "a reasonable examiner would consider" the Lane reference "important in deciding whether or not [claims 12-14, 16, 20, and 24-26 are] patentable." (MPEP § 2242(I).).

Specifically, Lane discloses an integrated navigation hardware control accessible in a plurality of modes in the form of a touch-sensitive display.[5] Lane, for example, discloses a portable computer that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20 28.

[5] In district court litigation, Patent Owner in its First Amended Complaint alleges that a "touch screen" is "a navigation control accessible in each of the plurality of display modes and configured to permit a user to manipulate" parameters and content, in the context of related U.S. Pat. No. 8,624,844. Ex. 1008, ¶ 160 (pp. 77-78). The '688 and '844 patents issued from applications filed the same day and both claim priority to Provisional application No. 61/041,365.

Lane, Fig. 20 (Laptop Mode)	**Lane Fig. 28 (Easel Mode)**
 FIG 20	 FIG 28

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

Lane teaches a touch sensitive display capable of "pen-based computing" when the computer is oriented into a tablet mode with its display rotated approximately 360 degrees relative to its base. 3:5-14; 8:15-19; 10-:17-20. A POSITA would understand this to teach a touch sensitive display capable of receiving user input via the user touching the display. Schmandt, ¶¶ 117-118. A POSITA would also be motivated to allows such pen-based input in other modes to allow a user to interface with the computer without the need for a separate interface device such as a mouse. *Id.*

Accordingly, Lane teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 12-14, 16, 20 and 24-26, namely "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user." Ex. 1002, 397-98.

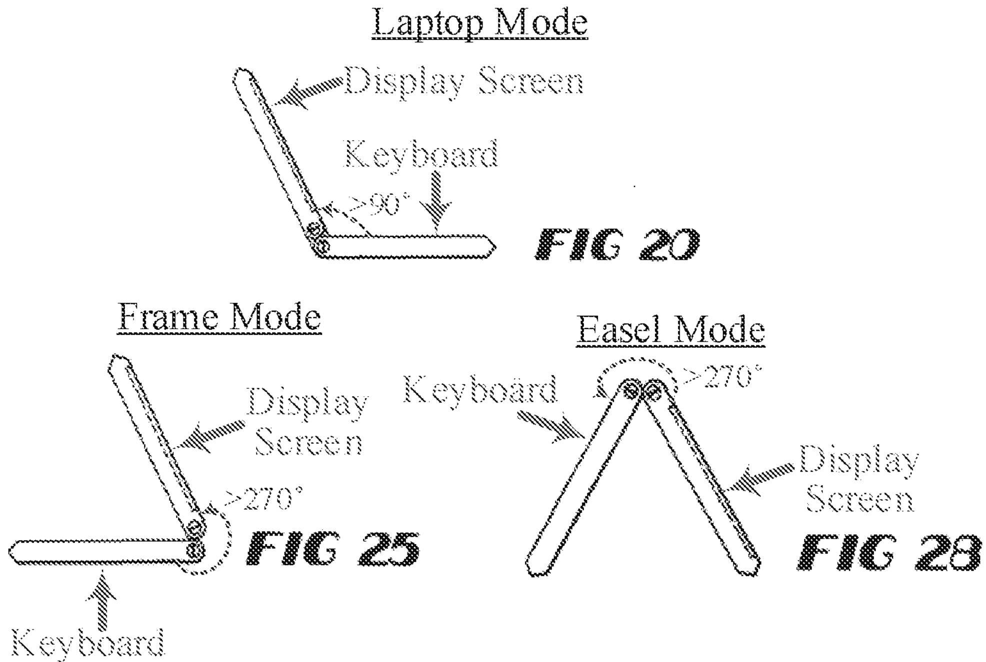
Independent Claim 19

The Lane presents a "substantial" question of patentability at least because, as explained in more detail below, Lane renders claim 19 obvious. (*Infra* Section X.A.)

Significantly, the Lane reference teaches "triggering 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" which is the claim element that the Examiner cited in the Reasons for Allowance for claim 19. Ex. 1002, 398. Thus, "a reasonable examiner would consider" the Lane reference "important in deciding whether or not [claim 19] is patentable." (MPEP § 2242(I).).

Specifically, Lane discloses a portable computer configurable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations). Lane also teaches using a position-indicating mechanism for determining a display mode based on measuring the physical orientation of a personal computer and inverting the orientation of displayed content (i.e., from a first orientation to a second orientation) in response. *Infra* Section X.A.

Accordingly, Lane teaches the limitation that the Examiner cited in the Reasons for Allowance of claim 19, namely "triggering 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" Ex. 1002, 398.

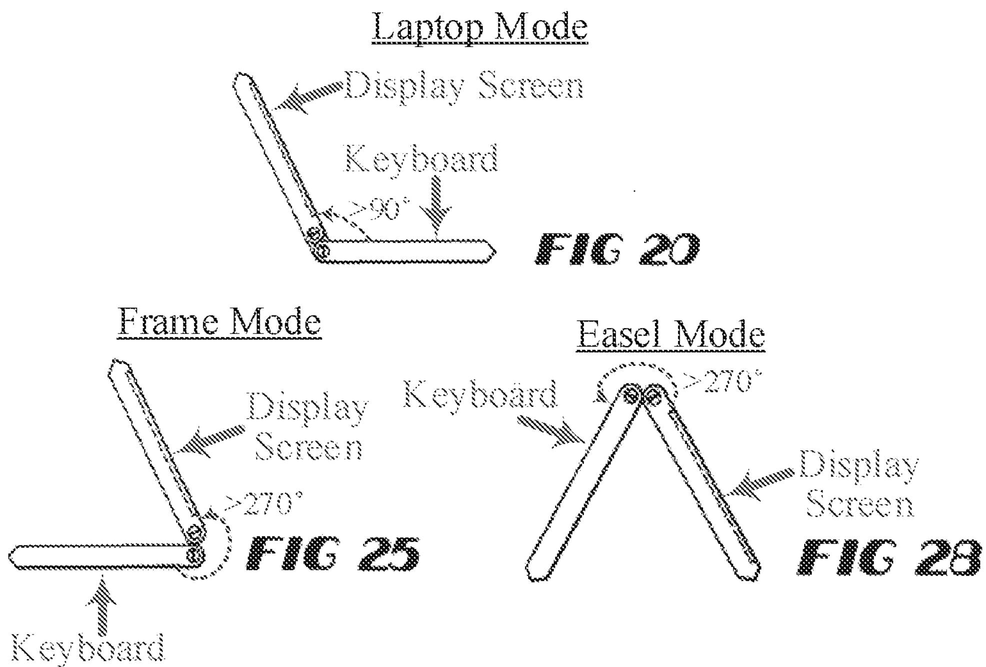
Independent Claim 29 And Dependent Claims 30-32

Lane presents a "substantial" question of patentability at least because, as explained in more detail below, Lane renders all of claims 29 and 30-32 obvious. (*Infra* Section X.A.)

Significantly, Lane teaches the claim elements that the Examiner cited in the Reasons for Allowance for claim 29 (and by extension its dependent claims 30-32), i.e., "'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' and '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.'" Ex. 1002, 398-99. Thus, "a reasonable examiner would consider" the Lane reference "important in deciding whether or not [claims 29-32 are] patentable." (MPEP § 2242(I).).

Specifically, Lane discloses a portable computer configurable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Lane also teaches using a position-indicating mechanism for determining a display mode based on measuring the physical orientation of a personal computer and inverting the orientation of displayed content (i.e., from a first orientation to a second orientation) in response. *Infra* Section X.A.

Accordingly, Lane teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 29-32, namely "'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' and '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.'" Ex. 1002, 398-99.

***

Lane teaches all the limitations of claims 12-14, 16, 19-20, 24-26 and 29-32, as further confirmed by the detailed unpatentability ground presented below in Section X.A. Thus, Lane presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 12-14, 16, 19-20, 24-26 and 29-32.

As explained in the preceding paragraphs, Lane provides new and non-cumulative technical teachings of the limitations of claims 12-14, 16, 24-26 and 29-32 of the '688 Patent, including those specifically cited by the examiner in the Reasons for Allowance. Thus, a reasonable Examiner would consider Lane important in deciding the patentability of these claims. Accordingly, Lane raises SNQs with respect to claims 12-14, 16, 24-26 and 29-32 of the '688 Patent and warrants reexamination.

B. The Lane-Kamikakai Combination Raises An SNQ With Respect To Claims 26 and 32 Of The '688 Patent

As discussed above in Section VII., Lane and Kamikakai both published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. §§ 102(a–b) (pre-AIA).

The combination presents "new" art. Neither Lane nor Kamikakai were relied on or discussed by the Examiner during prosecution of the '688 patent, nor were they cited on the face of the '688 patent. Neither Lane nor Kamikakai were presented in the non-instituted IPR proceeding. Thus, Lane and Kamikakai have not been the subject of any "concluded examination or review" and has not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Lane and Kamikakai are new art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ….").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). Neither were Lane nor Kamikakai the subject of any other proceeding relating to the '688 patent.

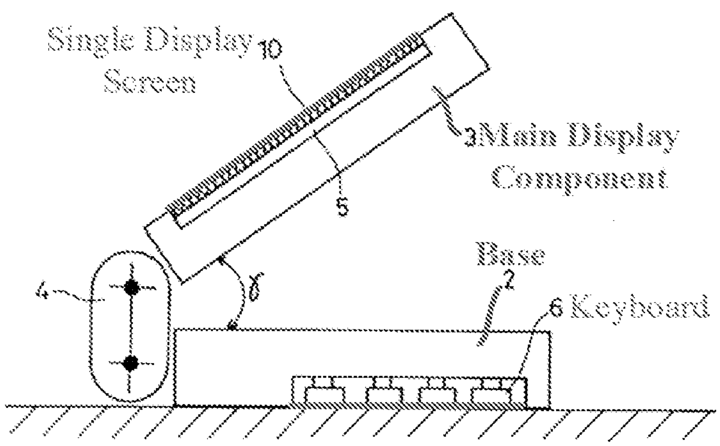
Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Lane and Kamikakai present new, non-cumulative technical teachings not previously considered by the Examiner. As discussed in Section IX.A, the Lane reference presents a substantial question of patentability with regard to independent claim 12 and its dependent claim 24. The addition of Kamikakai to the combination teaches the additional limitations of dependent claim 26. Similarly, as discussed in Section IX.A, the Lane reference presents a substantial question of patentability with regard to independent claim 29 and its dependent claim 30. The addition of Kamikakai to the combination teaches the additional limitations of dependent claim 32.

Claim 26 depends from claims 12 and 24 and adds the additional limitation of "a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode." '688 patent claim 26. Similarly, claim 32 depends from claims 29 and 30 and adds the additional limitation of "deactivating keyboard operation when the portable computer is configured in the frame mode."

Kamikakai discloses a portable computer in a frame mode, as shown in Figure 8, reproduced below.

Kamikakai's Frame Mode



Kamikakai, FIG. 8 (with annotations).

Kamikakai discloses a mechanism for disabling the computer's keyboard when the computer is in an orientation as shown in Figure 8 and provides express motivation for a POSITA to do so. In particular, Kamikakai discloses the following:

> Preferably, the portable information processing apparatus 1 is provided with a mechanism for disabling the keyboard 6 when the angle γ formed between the surface, *3a* of the display part 3, opposite to the surface *3b* provided with the pen input part 10, and the surface *2a* of the main body 2, opposite to the surface *2b* provided with the keyboard 6, is within an angular range of 0° to 90°, so that the data input is only possible from the pen input part 10. A mechanism similar to a known mechanism for turning OFF power of the portable information processing apparatus 1 when the

> display part 3 is folded and closed with respect to the main body 2 may be used to disable the keyboard 6. ***In this case, it [sic] possible 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.***

Kamikakai, 6:51-67 (emphasis added). A POSITA would have been motivated to implement this teaching into the portable computer of Lane to deactivate the keyboard of a portable computer in frame mode in order to prevent erroneous keyboard inputs.

The combination of Lane and Kamikakai teaches all the limitations of claims 26 and 32, as further confirmed by the detailed unpatentability ground presented below in Section X.B. Thus, the Lane-Kamikakai combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claims 26 and 32.

Because Lane in combination with Kamikakai provides new and non-cumulative technical teachings of the limitations of claims 26 and 32 of the '688 Patent, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Lane in combination with Kamikakai raises SNQs with respect to claims 26 and 32 of the '688 Patent and warrants reexamination.

C. The Lane-Hisano Combination Raises An SNQ With Respect To Claims 12-14, 16-22, And 24-32 Of The '688 Patent

As discussed above in Section VII, Lane and Hisano both published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. §§ 102(a–b) (pre-AIA).

The combination presents "new" art. None of these references were relied on or discussed by the Examiner during prosecution of the '688 patent, nor are they cited on the face of the '688 patent. Lane was not presented in the non-instituted IPR proceeding. While Hisano was presented in the non-instituted IPR proceeding, it was not presented in combination with primary reference Lane. Moreover, the Board never reached a final written decision in that proceeding because it denied institution due to procedural defects. Ex., 1007, 8-16. Thus, Hisano has not been the subject of any "concluded examination or review" and has not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Hisano is also "new" art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ....").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Lane and Hisano present new, non-cumulative technical teachings not previously considered by the Examiner for the reasons stated for the following independent claims and their dependent claims.

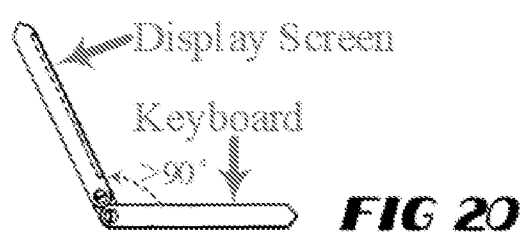
Independent Claim 12 And Dependent Claims 13-14, 16, 20 And 24-26

The Lane-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Lane-Hisano combination renders all of claims 13-14, 16, 20 and 24-26 obvious. (*Infra* Section X.C.)

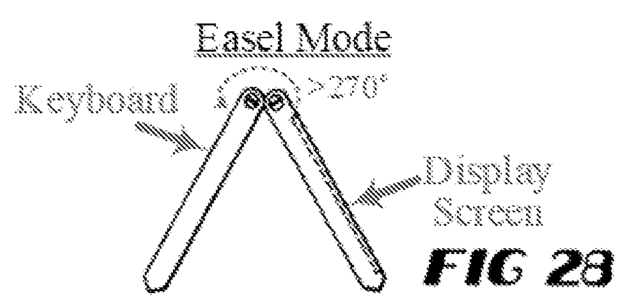
Significantly, the combination of Lane and Hisano teaches the claim element that the Examiner cited in the Reasons for Allowance for independent claim 12 (and by extension its dependent claims 13-14, 16, 20, and 24-26), i.e., a "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user." Ex. 1002, 397-98. Thus, "a reasonable examiner would consider" the combination of Lane and Hisano "important in deciding whether or not [claims 13-14, 16, 20 and 24-26 are] patentable." (MPEP § 2242(I).).

Specifically, Lane and Hisano each disclose "an integrated navigation hardware control accessible in a plurality of modes in the form of a touch-sensitive display.[6] Lane, for example, discloses a portable computer that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20 28.

Lane, Fig. 20 (Laptop Mode)



Lane Fig. 28 (Easel Mode)



[6] In district court litigation, Patent Owner in its First Amended Complaint alleges that a "touch screen" is "a navigation control accessible in each of the plurality of display modes and configured to permit a user to manipulate" parameters and content, in the context of related U.S. Pat. No. 8,624,844. Ex. 1008, ¶ 160 (pp. 77-78). The '688 and '844 patents issued from applications filed the same day and both claim priority to Provisional application No. 61/041,365.

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

Lane teaches a touch sensitive display capable of "pen-based computing" when the computer is oriented into a tablet mode with its display rotated approximately 360 degrees relative to its base. 3:5-14; 8:15-19; 10-:17-20. A POSITA would understand this to teach a touch sensitive display capable of receiving user input via the user touching the display. Schmandt, ¶ 205. A POSITA would also be motivated to allows such pen-based input in other modes to allow a user to interface with the computer without the need for a separate interface device such as a mouse. *Id.*

Hisano likewise discloses that its portable computer can include a hardware "touch panel" and that this touch sensitive display can include a "virtual mouse" for navigation of the user interface in the same way a common computer mouse would. Hisano, ¶¶ [0009], [0057], [0059]. A POSITA would understand that as this touch panel is integral to the portable computer's display, it would be available to a user in both laptop and easel modes because the computer's display is available to the user in both modes. Schmandt, ¶ 206.

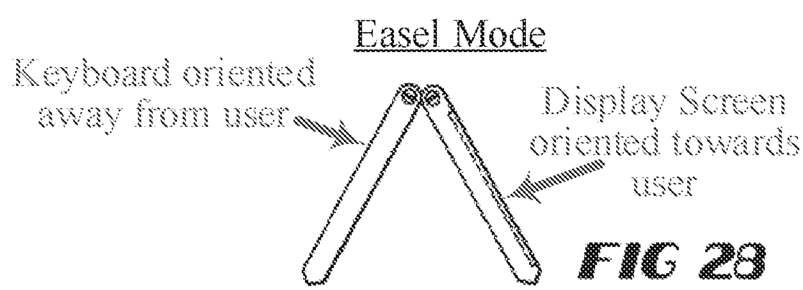
Accordingly, the combination of Lane and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 12-14, 16, 20 and 24-26, namely "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user." Ex. 1002, 397-98.

Independent Claim 17 And Dependent Claims 18 And 27-28

The Lane-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Lane-Hisano combination renders all of claims 17-18 and 27-28 obvious. (*Infra* Section X.C.)

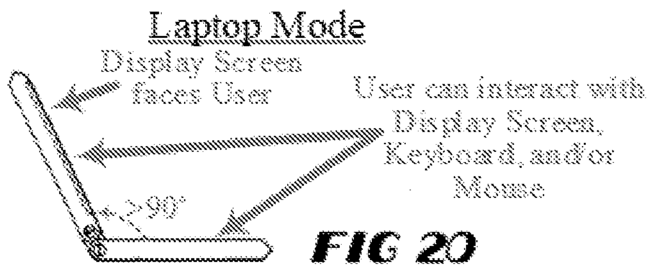
Significantly, the combination of Lane and Hisano teaches the claim elements that the Examiner cited in the Reasons for Allowance for claim 17 (and by extension its dependent claims 18 and 27-28), i.e., "determining a display mode based, at least in part, on the act of comparing the degree of rotation with respect to the threshold degree of rotation" and "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." Ex. 1002, 398. Thus, "a reasonable examiner would consider" the combination of Lane and Hisano "important in deciding whether or not [claims 17-18 and 27-28 are] patentable." (MPEP § 2242(I).).

Specifically, Lane teaches a laptop mode and an easel mode. As shown in FIG. 28 of Lane, in easel mode the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user.



Lane, FIG. 28 (with annotations).

As shown in FIG. 20 of Lane, in laptop mode the main display component ("second module 18") and the keyboard is oriented toward the user.



Lane, FIG. 20 (with annotations).

Hisano teaches determining a display mode based on comparing a degree of rotation to a threshold degree. 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, ¶¶ [0099-100].

Accordingly, the combination of Lane and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 17-18 and 27-28, namely "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" and "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." Ex. 1002, 398.

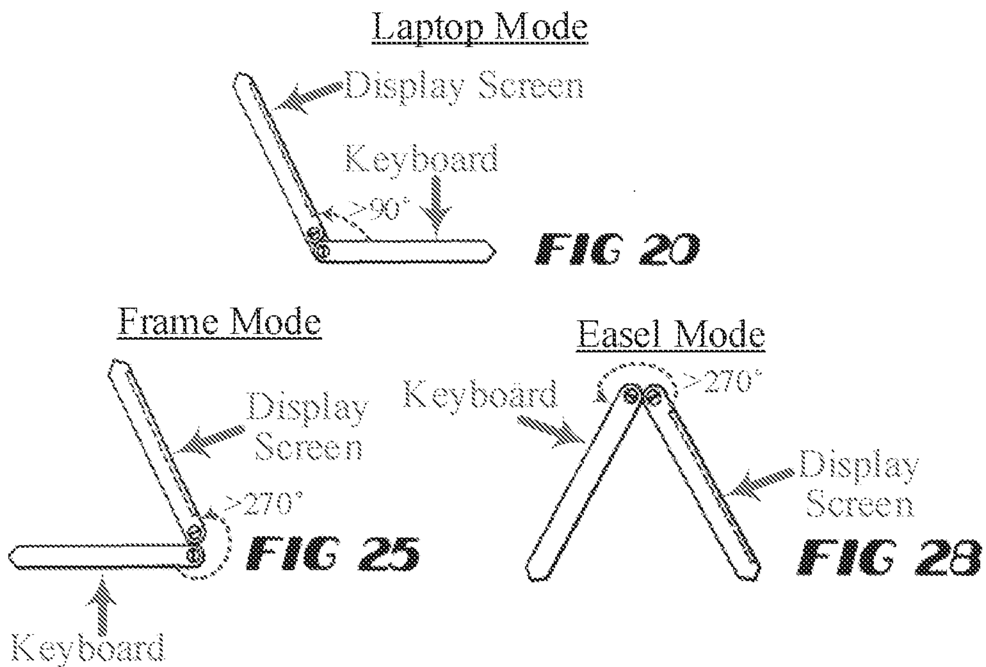
Independent Claim 19 And Dependent Claims 21-22

The Lane-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Lane-Hisano combination renders all of claims 19 and 21-22 obvious. (*Infra* Section X.C.)

Significantly, the combination of Lane and Hisano teaches the claim element that the Examiner cited in the Reasons for Allowance for claims 19 (and by extension its dependent claim 21-22), i.e., "triggering 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." Ex. 1002, 398. Thus, "a reasonable examiner would consider" the combination of Lane and Hisano "important in deciding whether or not [claims 19 and 21-22] is patentable." (MPEP § 2242(I).).

Specifically, Lane discloses a portable computer configurable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Hisano teaches determining a display mode based on measuring the physical orientation of a personal computer and inverting the orientation of displayed content (i.e., from a first orientation to a second orientation) in response. Hisano, ¶¶ [0099-100].

Accordingly, the combination of Lane and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 19 and 21-22,namely "triggering 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." Ex. 1002, 398.

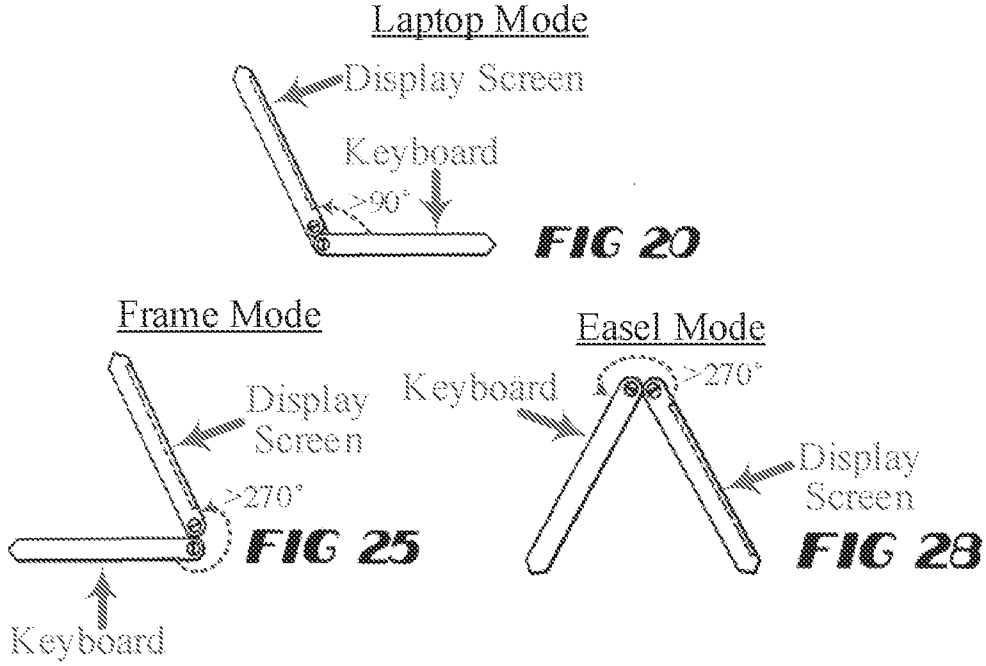
<u>Independent Claim 29 and Dependent Claims 30-32</u>

The Lane-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Lane-Hisano combination renders all of claims 29 and 30-32 obvious. (*Infra* Section X.C.)

Significantly, the combination of Lane and Hisano teaches the claim elements that the Examiner cited in the Reasons for Allowance for claim 29 (and by extension its dependent claim 30-32), i.e., "'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' and '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.'" Ex. 1002, 398-99. Thus, "a reasonable examiner would consider" the combination of Lane and Hisano "important in deciding whether or not [claims 29-32 are] patentable." (MPEP § 2242(I).).

Specifically, Lane discloses a portable computer configurable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Further, Hisano teaches determining a display mode based on measuring the physical orientation of a personal computer and inverting the orientation of displayed content (i.e., from a first orientation to a second orientation) in response. Hisano, ¶¶ [0099-100].

Accordingly, the combination of Lane and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 29 and 30-32namely, "'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' and '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.'" Ex. 1002, 398-99.

***

The combination of Lane and Hisano teaches all the limitations of claims 12-14, 16-22, and 24-32, as further confirmed by the detailed unpatentability ground presented below in Section X.C. Thus, the Lane-Hisano combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 12-14, 16-22, and 24-32.

As explained in the preceding paragraphs, Lane in combination with Hisano provides new and non-cumulative technical teachings of the limitations of claims 12-14, 16-22, and 24-32 of the '688 Patent, including those specifically cited by the examiner in the Reasons for Allowance. Thus, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Lane in combination with Hisano raises SNQs with respect to claims 12-14, 16-22, and 24-32 of the '688 Patent and warrants reexamination.

D. The Lane-Hisano-Choi Combination Raises An SNQ With Respect to Claim 11 Of The '688 Patent

As discussed above in Section VII, Lane, Hisano, and Choi all published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. §§ 102(a–b) (pre-AIA).

The combination presents "new" art. None of these references were cited or relied on or discussed by the Examiner during prosecution of the '688 patent. Lane was not relied on in the related IPR proceeding. Although Hisano, and Choi were relied upon as secondary prior art references in the IPR, they were not presented along with Lane as a primary reference. *See* Ex. 1005, at 3. Moreover, while Hisano, and Choi were relied on by Petitioner in the related IPR proceeding, the Board never reached a final written decision in that proceeding; instead denying institution of the IPR due to procedural defects on finding a lack of clarity and explanation as to the grounds presented. *See Supra,* Section II.I. Thus, Hisano, and Choi also have not been the subject of any "concluded examination or review" and have not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Hisano, and Choi are also "new" art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ….").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

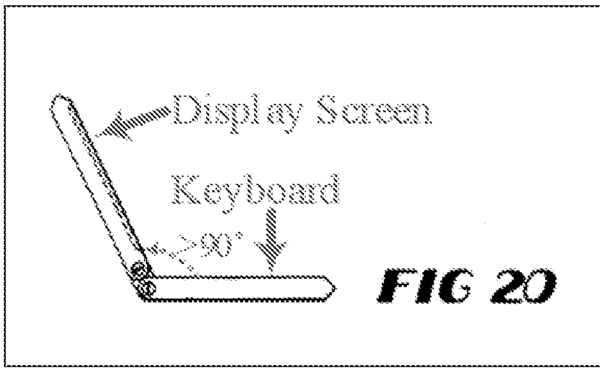
Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Lane, Hisano, and Choi present new, non-cumulative technical teachings not previously considered by the Examiner. The Lane-Hisano-Choi combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Lane-Hisano-Choi combination renders all of claim 11 obvious. (*Infra* Section X.D.)

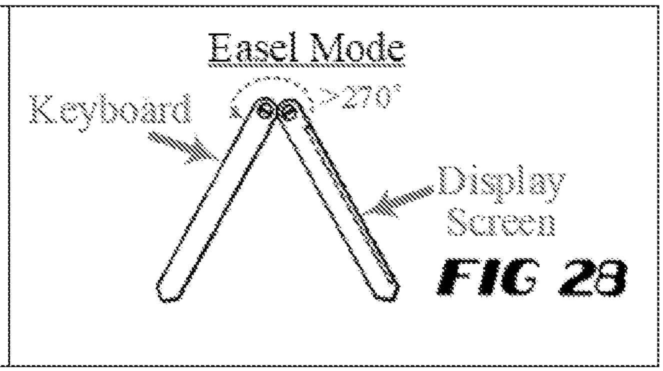
Significantly, the combination of Lane with Hisano and Choi teach the claim element that the Examiner cited in the Reasons for Allowance for claim 11, i.e., a "means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode." Ex. 1002, 397. Thus, "a reasonable examiner would consider" the combination of Lane, Hisano, and Choi "important in deciding whether or not [claim 11] is patentable." (MPEP § 2242(I).).

Specifically, Lane discloses a portable that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane, Fig. 20 (Laptop Mode)



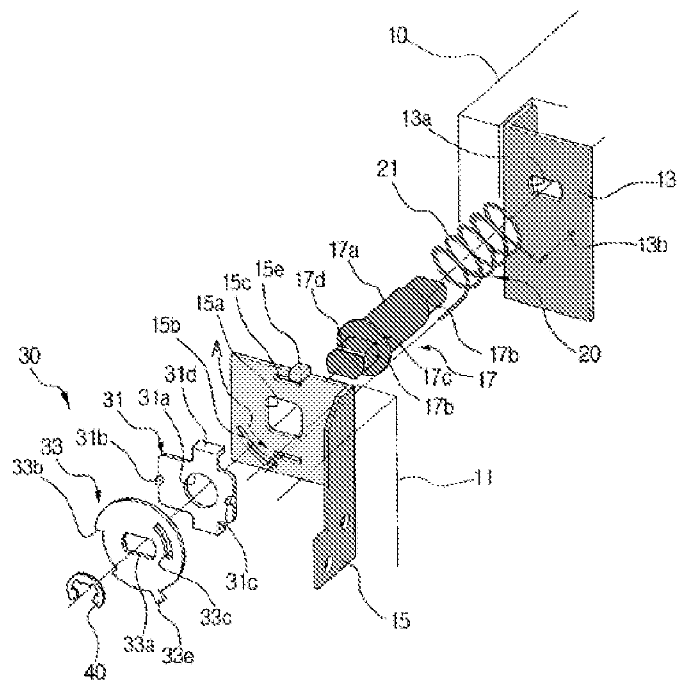
Lane Fig. 28 (Easel Mode)



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

Further, Choi teaches a means for rotating a display component to configure a computer between a laptop and easel mode. Specifically, Choi discloses a hinge apparatus for use with a portable computer having a housing, a bracket having a member, a shaft, and springs, as shown in Fig. 2 below (color-coded). Choi, 3:36-56, Fig. 2.

FIG.2



Accordingly, the combination of Lane, Hisano, and Choi teaches the limitation that the Examiner cited in the Reasons for Allowance leading to the allowance of claim 11, namely a "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." Ex. 1002, 397.

The combination of Lane, Hisano, and Choi teaches all the limitations of claim 11, as further confirmed by the detailed unpatentability ground presented below in Section X.D. Thus, the Lane-Hisano-Choi combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 11.

As explained in the preceding paragraphs, Lane in combination with Hisano and Choi provides new and non-cumulative technical teachings of the limitations of claim 11 of the '688 Patent, including those specifically cited by the examiner in the Reasons for Allowance. Thus, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Lane in combination with Hisano and Choi raises SNQs with respect to claim 11 of the '688 Patent and warrants reexamination.

E. The Lane-Hisano-Clapper Combination Raises An SNQ With Respect To Claim 15 Of The '688 Patent

As discussed above in Section VII, Lane and Hisano both published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. §§ 102(a–b) (pre-AIA).

Clapper issued on March 9, 2004, thus qualifying as prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and (b).

The combination presents "new" art. As discussed in Section IX.C, Lane and Hisano present new prior art that was not relied on or discussed during original prosecution. Thus, Lane and Hisano constitute new art, as does their combination. In addition, Clapper was neither relied on nor discussed by the Examiner during prosecution of the '688 patent. Clapper was also not relied on in the related IPR proceeding. Thus, Clapper is also "new" art. (MPEP § 2242(I); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ….").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

Thus, these three references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Lane, Hisano, and Clapper present new, non-cumulative technical teachings not previously considered by the Examiner. As discussed in Section IV.A, the combination of Lane and Hisano present a substantial question of patentability with regard to independent claim 12 and dependent claims 13-14. The addition of Clapper to the combination teaches the additional limitations of dependent claim 15.

Claim 15 depends from claims 12-14 and adds the additional limitation that a "second orientation is 180 degrees relative to [a] first orientation; and wherein [a] plurality of orientations further comprises a third orientation relative to [a] longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation." '688 patent, 19:13-18 (claim 15).

Hisano discloses changing a display orientation for a portable computer 180 degrees from a first or second orientation in response to a measuring a change in the angle of rotation of a laptop's hinges. Hisano, ¶ [0099]. Hisano also discloses using an accelerometer to change a display's orientation in response to a change in orientation of the portable computer. *Id.*

Clapper discloses using an accelerometer to detect a 90 degree orientation change of a portable computer and to, in response, effect a 90 degree orientation change of displayed content on the display of the computer. Clapper, 5:13-25, Figs. 2-3.

The combination of Lane, Hisano, and Clapper teaches all the limitations of claim 15, as further confirmed by the detailed unpatentability ground presented below in Section X.E. Thus, the Lane-Hisano-Clapper combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 15.

Because Lane in combination with Hisano and Clapper provides new and non-cumulative technical teachings of the limitations of claim 15 of the '688 Patent, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Lane in combination with Hisano and Clapper raises SNQs with respect to claim 15 of the '688 Patent and warrants reexamination.

F. The Kamikakai-Shimura-Hisano Combination Raises An SNQ With Respect To Claims 12-14, 16-22, And 24-32 Of The '688 Patent

As discussed above in Section VII, Kamikakai, Shimura, and Hisano all published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. § 102(b) (pre-AIA).

The combination presents "new" art. None of these references were cited or relied on or discussed by the Examiner during prosecution of the '688 patent. Kamikakai was not relied on in the related IPR proceeding. Although Shimura and Hisano were presented in the IPR, they were not presented along with Kamikakai as a primary reference. Similarly, while Shimura and Hisano were relied on by Petitioner in the related IPR proceeding, the Board never reached a final written decision in that proceeding; instead denying institution of the IPR due to procedural defects. Ex., 1007, 8-16. Thus, Shimura and Hisano also have not been the subject of any "concluded examination or review" and have not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Shimura and Hisano are also "new" art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ….").); *see also In re Vivint, Inc.*, 14 F.4th at 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Kamikakai, Shimura and Hisano present new, non-cumulative technical teachings not previously considered by the Examiner.

Independent Claim 12 and Dependent Claims 13-14, 16-20, And 24-26

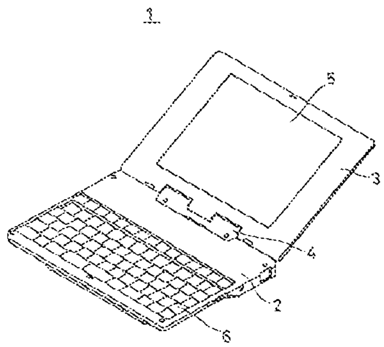
The Kamikakai-Shimura-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Kamikakai-Shimura-Hisano combination renders all of claims 12-14, 16-20, and 24-26 obvious. (*Infra* Section X.F.)

Significantly, the combination of Kamikakai, Shimura, and Hisano teach the claim element that the Examiner cited in the Reasons for Allowance for independent claim 12 (and by extension its dependent claims 13-14, 16, 20, and 24-26), i.e., a "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user." Ex. 1002, 397-98. Thus, "a reasonable examiner would consider" the combination of Kamikakai, Shimura, and Hisano "important in deciding whether or not [claims 12-14, 16, 20, and 24-26 are] patentable." (MPEP § 2242(I).).

Specifically, Kamikakai teaches an integrated navigation hardware control accessible in a plurality of modes in the form of a touch-sensitive display. Kamikakai, for example, discloses a 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).

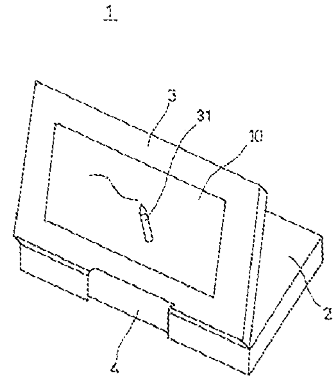
Laptop Mode

FIG. 3



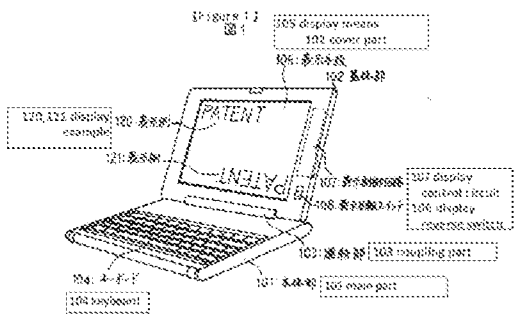
Frame Mode

FIG. 9

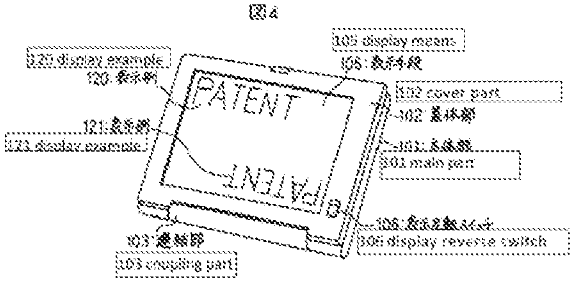


Shimura discloses a portable computer configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, Figures. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

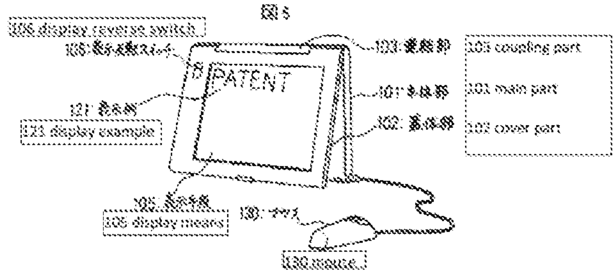
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

Kamikakai teaches an integrated navigation hardware control in the form of a touch sensitive pen input component on its display. Specifically, Kamikakai discloses the following:

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4. The main body 2 includes a keyboard 6 for inputting data. On the other hand, the display part 3 includes a liquid crystal display panel 5, ***and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.***

Kamikakai, 3:39-47 (emphasis added).

Hisano also teaches that a portable computer can include a hardware "touch panel" and that this touch sensitive display can include a "virtual mouse" for navigation of the user interface in the same way a common computer mouse would. Hisano, ¶¶ [0009], [0057], [0059]. A POSITA would understand that as this touch panel is integral to the portable computer's display, it would be available to a user in both laptop and easel modes because the computer's display is available to the user in both modes. Schmandt, ¶ 402.

Accordingly, for the reasons just explained, the combination of Kamikakai, Shimura, and Hisano satisfies the limitation that the Examiner cited in the Reasons for Allowance of claims 12-14, 16-20, and 24-26, namely "an integrated navigation hardware control configured to control features and manipulate content displayed on the portable computer, wherein the ... control is accessible in each of the plurality of modes including when the keyboard is inaccessible or oriented away from the user." Ex. 1002, 397-98.

Independent Claim 17 And Dependent Claims 18 And 27-28

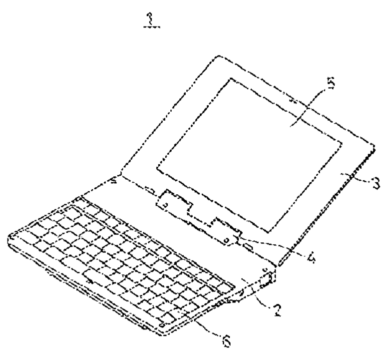
The Kamikakai-Shimura-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Kamikakai-Shimura-Hisano combination renders all of claims 17-18 and 27-28 obvious. (*Infra* Section X.F.)

Significantly, the combination of Kamikakai, Shimura and Hisano teaches the claim elements that the Examiner cited in the Reasons for Allowance for claim 17 (and by extension its dependent claims 18 and 27-28), i.e., "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" and "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." Ex. 1002, 398. Thus, "a reasonable examiner would consider" the combination of Kamikakai Shimura, and Hisano "important in deciding whether or not [claims 17-18 and 27-28 are] patentable." (MPEP § 2242(I).).

Specifically, Kamikakai teaches a laptop mode and Shimura teaches an easel mode. 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). Kamikakai, FIGS. 3, 9 (reproduced below).

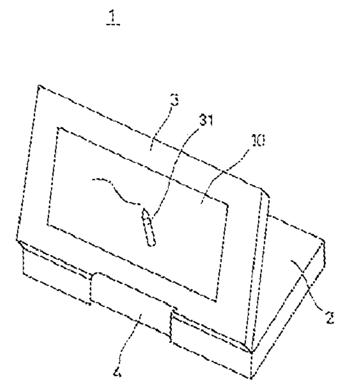
Laptop Mode

FIG. 3



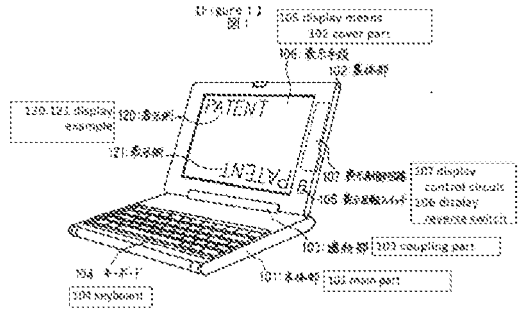
Frame Mode

FIG. 9

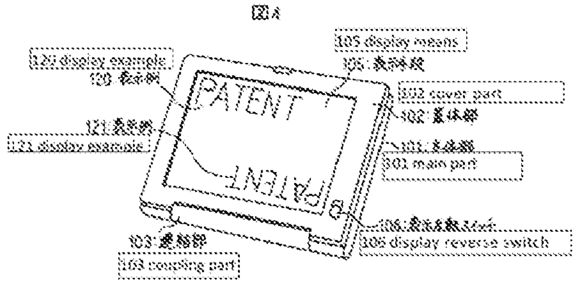


Shimura discloses an additional easel mode and provides explicit motivation for including this display mode, namely space savings. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, Figures. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

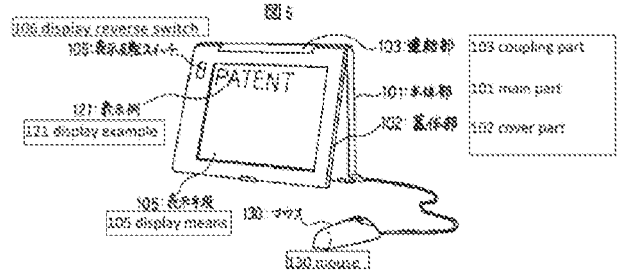
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

Further, Hisano teaches determining a display mode based on comparing a degree of rotation to a threshold degree. 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, ¶¶ [0099-100].

Accordingly, the combination of Kamikakai, Shimura, and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance of claims 17-18 and 27-28, namely "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" and "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." Ex. 1002, 398.

<u>Independent Claim 19 and Dependent Claims 21-22</u>

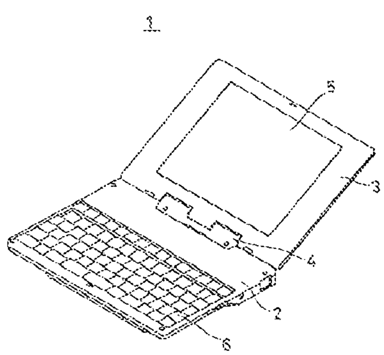
The Kamikakai-Shimura-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Kamikakai-Shimura-Hisano combination renders all of claims 19 and 21-22 obvious. (*Infra* Section X.F.)

Significantly, the combination of Kamikakai and Hisano teaches the claim element that the Examiner cited in the Reasons for Allowance for claim 19 (and by extension its dependent claims 21-22), i.e., "triggering 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." Ex. 1002, 398. Thus, "a reasonable examiner would consider" the combination of Kamikakai and Hisano "important in deciding whether or not [claims 19 and 21-22 are] patentable." (MPEP § 2242(I).).

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

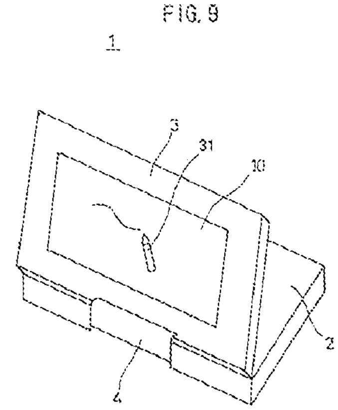
<u>Laptop Mode</u>

FIG. 3



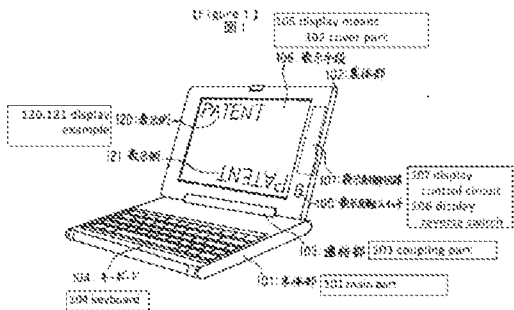
<u>Frame Mode</u>

FIG. 9

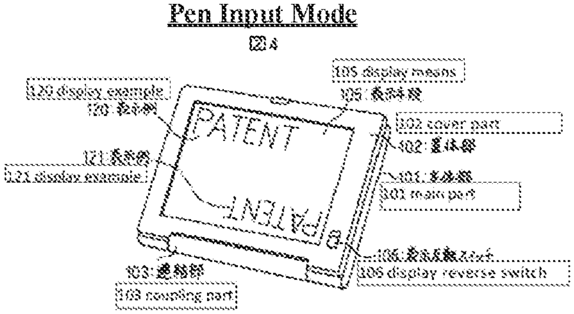


Shimura discloses an additional easel mode and provides explicit motivation for including this display mode, namely space savings. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, Figures. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

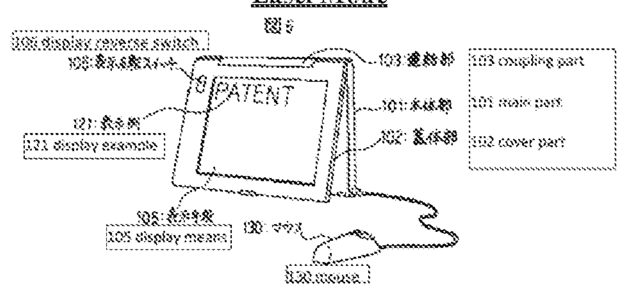
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

Further, Hisano teaches determining a display mode based on comparing a degree of rotation to a threshold degree. 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, ¶¶ [0099-100].

Accordingly, the combination of Kamikakai, Shimura, and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance leading to the allowance of claims 19 and

21-22, namely, "triggering 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." Ex. 1002, 398.

Independent Claim 29 and Dependent Claims 30-32

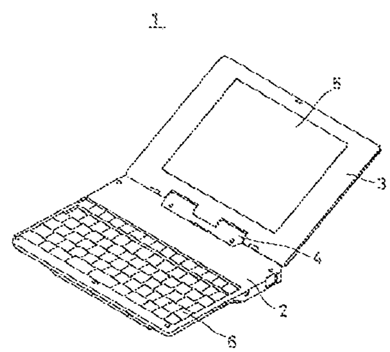
The Kamikakai-Shimura-Hisano combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Kamikakai-Shimura-Hisano combination renders all of claims 29 and 30-32 obvious. (*Infra* Section X.F.)

Significantly, the combination of Kamikakai, Shimura, and Hisano teaches the claim elements that the Examiner cited in the Reasons for Allowance for claim 29 (and by extension its dependent claim 30-32), i.e., "'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' and '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.'" Ex. 1002, 398-99. Thus, "a reasonable examiner would consider" the combination of Kamikakai and Hisano "important in deciding whether or not [claims 29-32 are] patentable." (MPEP § 2242(I).).

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

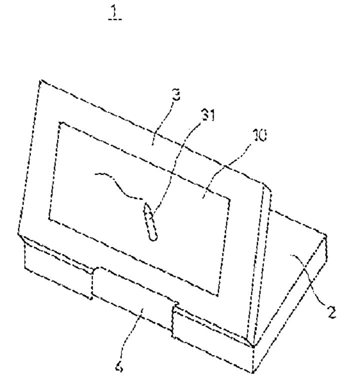
Laptop Mode

FIG. 3



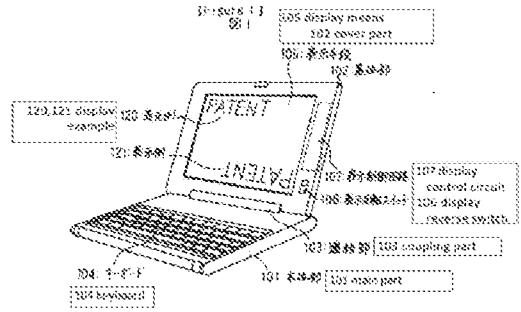
Frame Mode

FIG. 9

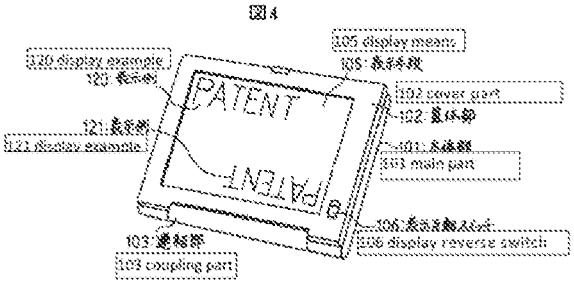


Shimura discloses an additional easel mode and provides explicit motivation for including this display mode, namely space savings. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, Figures. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

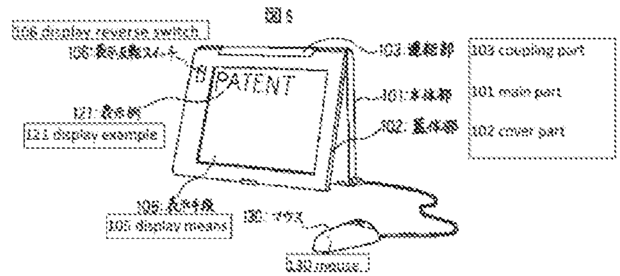
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

Further, Hisano teaches determining a display mode based on measuring the physical orientation of a personal computer and inverting the orientation of displayed content (i.e., from a first orientation to a second orientation) in response. Hisano, ¶¶ [0099-100].

Accordingly, the combination of Kamikakai, Shimura, and Hisano teaches the limitation that the Examiner cited in the Reasons for Allowance leading to the allowance of claims 29-32, namely "'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' and '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.'" Ex. 1002, 398-99.

***

The combination of Kamikakai, Shimura, and Hisano teaches all the limitations of claims 12-14, 16-22, and 24-32, as further confirmed by the detailed unpatentability ground presented below in Section X.F. Thus, the Kamikakai-Shimura-Hisano combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 12-14, 16-22, and 24-32.

As explained in the preceding paragraphs, Kamikakai in combination with Shimura and Hisano provides new and non-cumulative technical teachings of the limitations of claims 12-14, 16-22, and 24-32 of the '688 Patent, including those specifically cited by the examiner in the Reasons for Allowance. Thus, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Kamikakai in combination with Shimura and Hisano raises SNQs with respect to claims 12-14, 16-22, and 24-32 of the '688 Patent and warrants reexamination.

G. The Kamikakai-Shimura-Hisano-Choi Combination Raises An SNQ With Respect To Claim 11 Of The '688 Patent

As discussed above in Section VII, Kamikakai, Shimura, Hisano, and Choi all published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. § 102(b) (pre-AIA).

The combination presents "new" art. None of these references were relied on or discussed by the Examiner during prosecution of the '688 patent. Kamikakai was not relied on in the related IPR proceeding. Although Shimura, Hisano, and Choi were presented in the IPR, they were not presented along with Kamikakai as a primary reference. Similarly, while Shimura, Hisano, and Choi were relied on by Petitioner in the related IPR proceeding, the Board never reached a final written decision in that proceeding; instead denying institution of the IPR due to procedural defects. Ex., 1007, 8-16. Thus, Shimura, Hisano, and Choi also have not been the subject of any "concluded examination or review" and have not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Shimura, Hisano, and Choi are also "new" art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ….").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

Thus, these references constitute new art, as does their combination.

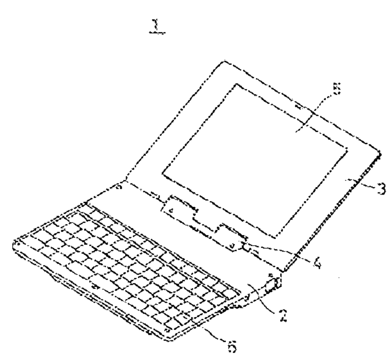
The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Kamikakai, Shimura, Hisano, and Choi present new, non-cumulative technical teachings not previously considered by the Examiner. The Kamikakai-Shimura-Hisano-Choi combination presents a "substantial" question of patentability at least because, as explained in more detail below, the Kamikakai-Shimura-Hisano-Choi combination renders all of claim 11 obvious. (*Infra* Section X.G.)

Significantly, the combination of Kamikakai with Shimura, Hisano, and Choi teach the claim element that the Examiner cited in the Reasons for Allowance for claim 11, i.e., a "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." Ex. 1002, 397. Thus, "a reasonable examiner would consider" the combination of Kamikakai, Shimura, Hisano, and Choi "important in deciding whether or not [claim 11] is patentable." (MPEP § 2242(I).).

Specifically, Kamikakai discloses a 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).

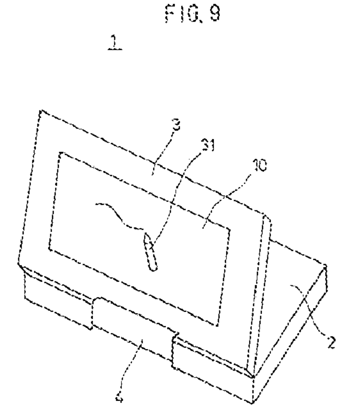
Laptop Mode

FIG. 3

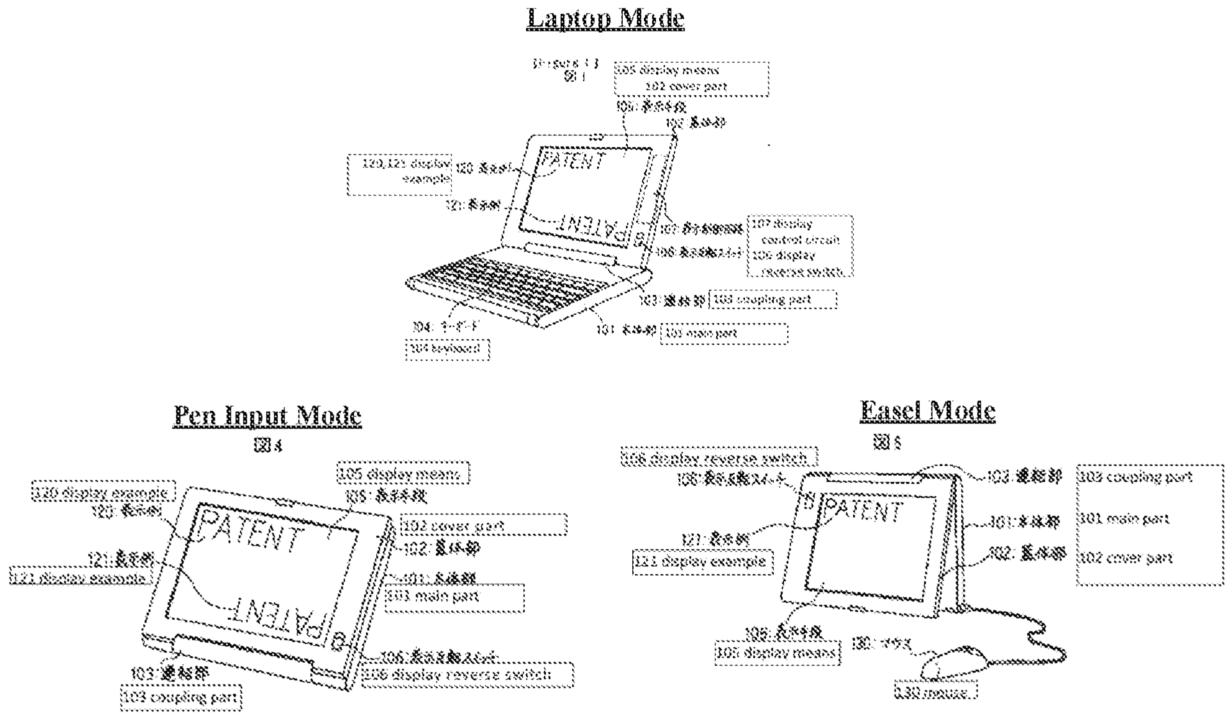


Frame Mode

FIG. 9



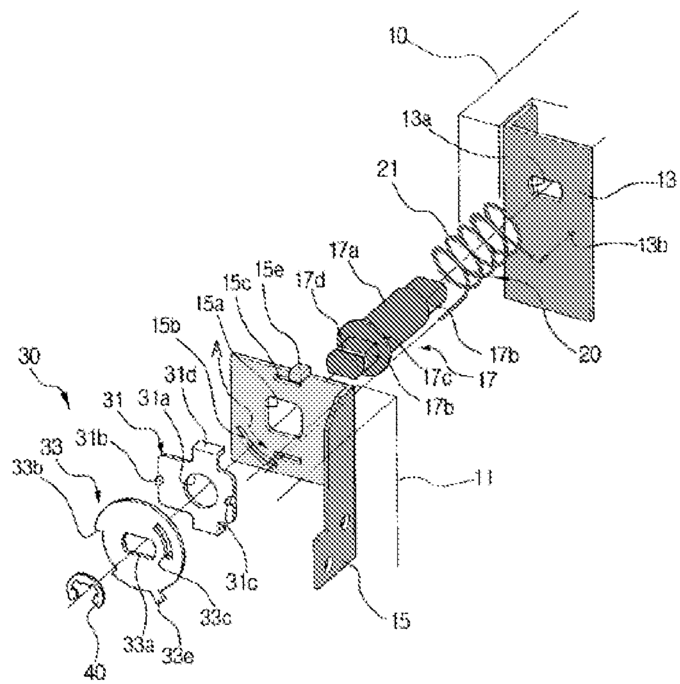
Shimura discloses the easel mode and provides explicit motivation for including this display mode, namely space savings. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, Figures. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).



Shimura, FIGS. 1, 4, and 5 (with annotations).

Further, Choi teaches a means for rotating a display component to configure a computer between a laptop and easel mode. Specifically, Choi discloses a hinge apparatus for use with a portable computer having a housing, a bracket having a member, a shaft, and springs, as shown in Fig. 2 below (color-coded). Choi, 3:36-56, Fig. 2.

FIG.2



Accordingly, the combination of Lane, Shimura, Hisano and Choi teaches the limitation that the Examiner cited in the Reasons for Allowance leading to the allowance of claim 11, namely a "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." Ex. 1002, 397.

The combination of Kamikakai, Shimura, Hisano, and Choi teaches all the limitations of claim 11, as further confirmed by the detailed unpatentability ground presented below in Section X.G. Thus, the Kamikakai-Shimura-Hisano-Choi combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 11.

Because Kamikakai in combination with Shimura, Hisano and Choi provides new and non-cumulative technical teachings of the limitations of claim 11 of the '688 Patent, including those specifically cited by the examiner in the Reasons for Allowance, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Kamikakai in combination with Shimura, Hisano and Choi raises SNQs with respect to claim 11 of the ’688 Patent and warrants reexamination.

H. The Kamikakai-Shimura-Hisano-Clapper Combination Raises An SNQ With Respect To Claim 15 Of The ’688 Patent

As discussed above in Section VII, Kamikakai, Shimura, Hisano all published or issued more than one year before the alleged priority date of the ’688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. § 102(b) (pre-AIA).

Clapper issued on March 9, 2004, thus qualifying as prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and (b).

The combination presents “new” art. As discussed in Section IX.F, Kamikakai, Shimura, and Hisano present new prior art that was not relied on or discussed during original prosecution. Thus, Kamikakai, Shimura, and Hisano constitute new art, as does their combination. In addition, Clapper was neither relied on nor discussed by the Examiner during prosecution of the ’688 patent. Clapper was also not relied on in the related IPR proceeding. Thus, Clapper is also “new” art. (MPEP § 2242(I); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) (“Because no trial was instituted in the *inter partes* review, there was no ‘final holding of invalidity’ or ‘concluded examination or review’ ….”).); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) (“[A] question of patentability is new until it has been considered and decided on the merits.”). None of these references were the subject of any other proceeding relating to the ’688 patent.

Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. Kamikakai, Shimura, Hisano, present new, non-cumulative technical teachings not previously considered by the Examiner. As discussed in Section IX.F, the combination of Kamikakai, Shimura, and Hisano present a substantial question of patentability with regard to independent claim 12 and dependent claims 13-14. The addition of Clapper to the combination teaches the additional limitations of dependent claim 15.

Claim 15 depends from claims 12-14 and adds the additional limitation that a "second orientation is 180 degrees relative to [a] first orientation; and wherein [a] plurality of orientations further comprises a third orientation relative to [a] longitudinal axis, the third orientation, wherein the third orientation is 90 degrees relative to the first orientation." '688 patent, 19:13-18 (claim 15).

Hisano discloses changing a display orientation for a portable computer 180 degrees from a first or second orientation in response to a measuring a change in the angle of rotation of a laptop's hinges. Hisano, ¶ [0099]. Hisano also discloses using an accelerometer to change a display's orientation in response to a change in orientation of the portable computer. *Id.*

Clapper discloses using an accelerometer to detect a 90 degree orientation change of a portable computer and to, in response, effect a 90 degree orientation change of displayed content on the display of the computer. Clapper, 5:13-25, Figs. 2-3.

The combination of Kamikakai, Shimura, Hisano, and Clapper teaches all the limitations of claim 15, as further confirmed by the detailed unpatentability ground presented below in Section X.H. Thus, the Kamikakai-Shimura-Hisano-Clapper combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 15.

Because Kamikakai in combination with Shimura, Hisano and Clapper provides new and non-cumulative technical teachings of the limitations of claim 15 of the '688 Patent, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, Kamikakai in combination with Shimura, Hisano and Clapper raises SNQs with respect to claim 15 of the '688 Patent and warrants reexamination.

I. The CN '170-Misawa-Shigeo Combination Raises An SNQ With Respect To Claim 11 Of The '688 Patent

As discussed above in Section VII, CN '170, Misawa, and Shigeo all published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. § 102(b) (pre-AIA).

The combination presents "new" art. None of these references were relied on or discussed by the Examiner during prosecution of the '688 patent, nor are they cited on the face of the '688 patent. CN '170 and Misawa were not presented in the non-instituted IPR proceeding. While Shigeo was presented in the non-instituted IPR proceeding, it was not presented in combination with primary reference CN '170. Moreover, the Board never reached a final written decision in that proceeding because it denied institution due to procedural defects. Ex., 1007, 8-16. Thus, Shigeo has not been the subject of any "concluded examination or review" and has not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Hisano is also "new" art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ....").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021)

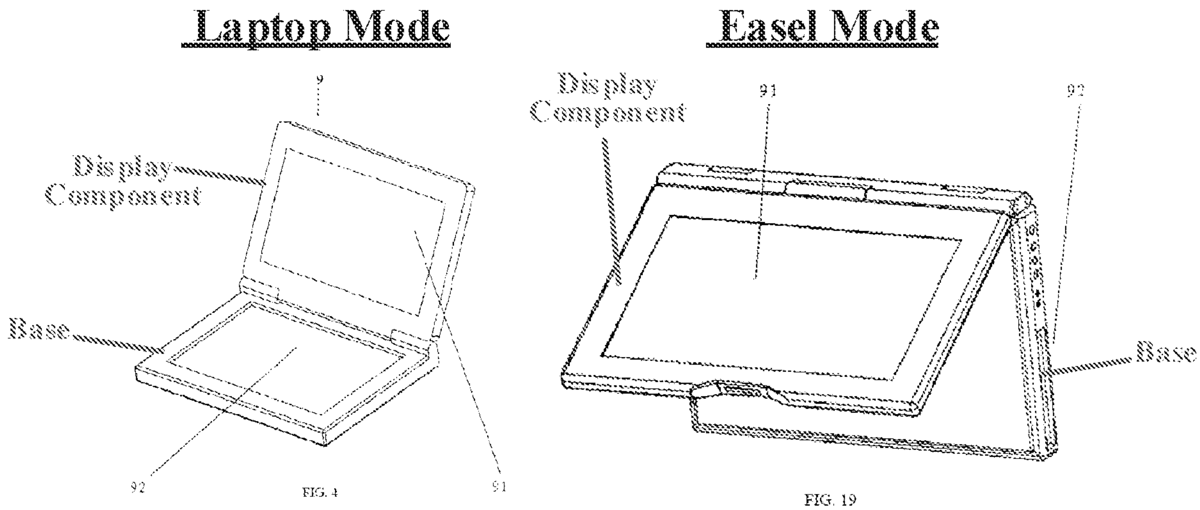
("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. CN '170, Misawa, and Shigeo present new, non-cumulative technical teachings not previously considered by the Examiner. The CN '170-Shigeo-Misawa combination presents a "substantial" question of patentability at least because, as explained in more detail below, the CN '170-Shigeo-Misawa combination renders all of claim 11 obvious. (*Infra* Section X.H.)

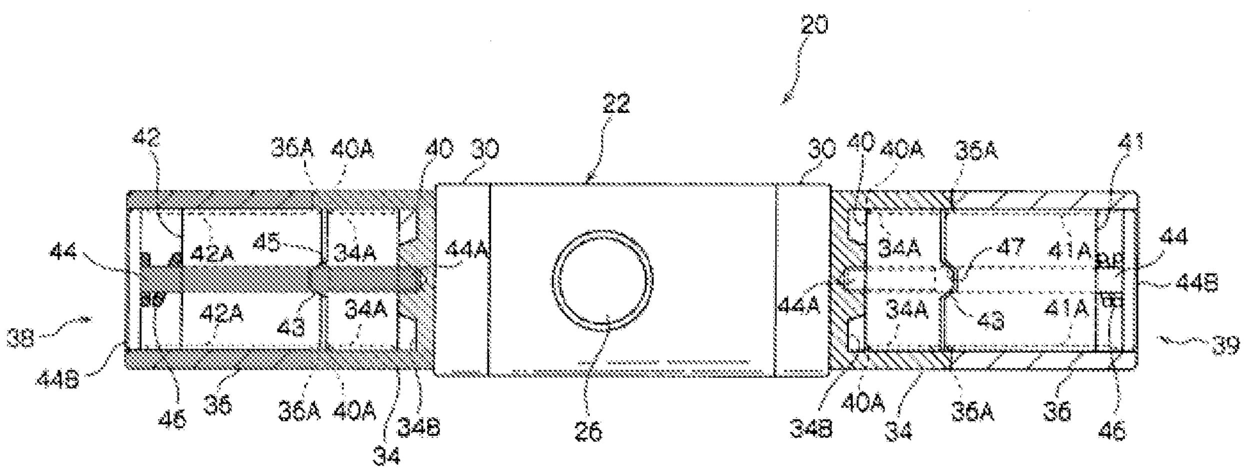
Significantly, the combination of CN '170 with Shigeo and Misawa teach the claim element that the Examiner cited in the Reasons for Allowance for claim 11, i.e., a "means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode." Ex. 1002, 397. Thus, "a reasonable examiner would consider" the combination of CN '170, Shigeo, and Misawa "important in deciding whether or not [claim 11] is patentable." (MPEP § 2242(I).).

Specifically, CN '170 discloses a portable that is openable from a closed configuration to a plurality of display modes including a laptop mode and an easel mode that is configurable between a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18.

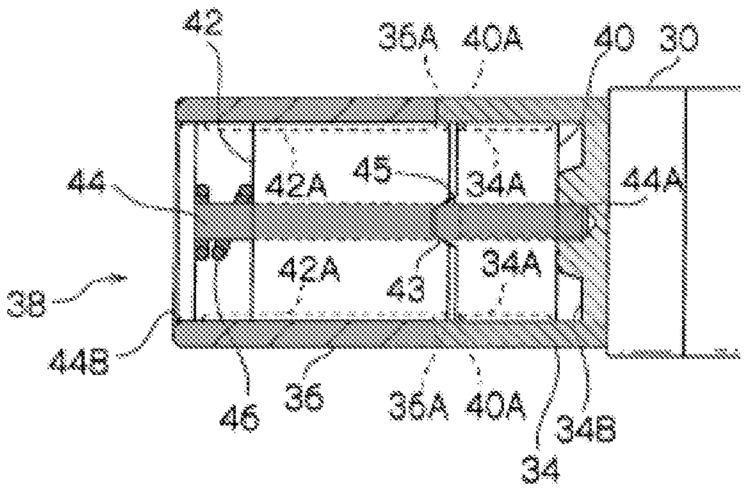


CN '170, FIGS. 4, 19 (with annotations).

Further, Misawa teaches a means for rotating a display component to configure a computer between a laptop and easel mode. Specifically, Misawa discloses a hinge apparatus for use with a portable computer having a housing, a bracket having a member, a shaft, and springs, as shown in Fig. 5 below (color-coded). Misawa, ¶¶ [0036-37], [0041], Figs. 4, 5.



Misawa, Figure 5



Misawa, Figure 5 (enlarged excerpt)

Accordingly, the combination of CN '170, Shigeo, and Misawa teaches the limitation that the Examiner cited in the Reasons for Allowance leading to the allowance of claim 11, namely a "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." Ex. 1002, 397.

The combination of CN '170, Shigeo, and Misawa teaches all the limitations of claim 11, as further confirmed by the detailed unpatentability ground presented below in Section X.H. Thus, the CN '170-Shigeo-Misawa combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 11.

Because CN '170 in combination with Shigeo and Misawa provides new and non-cumulative technical teachings of the limitations of claim 11 of the '688 Patent, including those specifically cited by the examiner in the Reasons for Allowance, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, CN '170 in combination with Shigeo and Misawa raises SNQs with respect to claim 11 of the '688 Patent and warrants reexamination.

J. The CN '170-Hisano-Choi Combination Raises An SNQ With Respect To Claim 11 Of The '688 Patent

As discussed above in Section VII, CN '170, Hisano, and Choi all published or issued more than one year before the alleged priority date of the '688 patent (April 1, 2008), and thus qualify as prior art at least under 35 U.S.C. § 102(b) (pre-AIA).

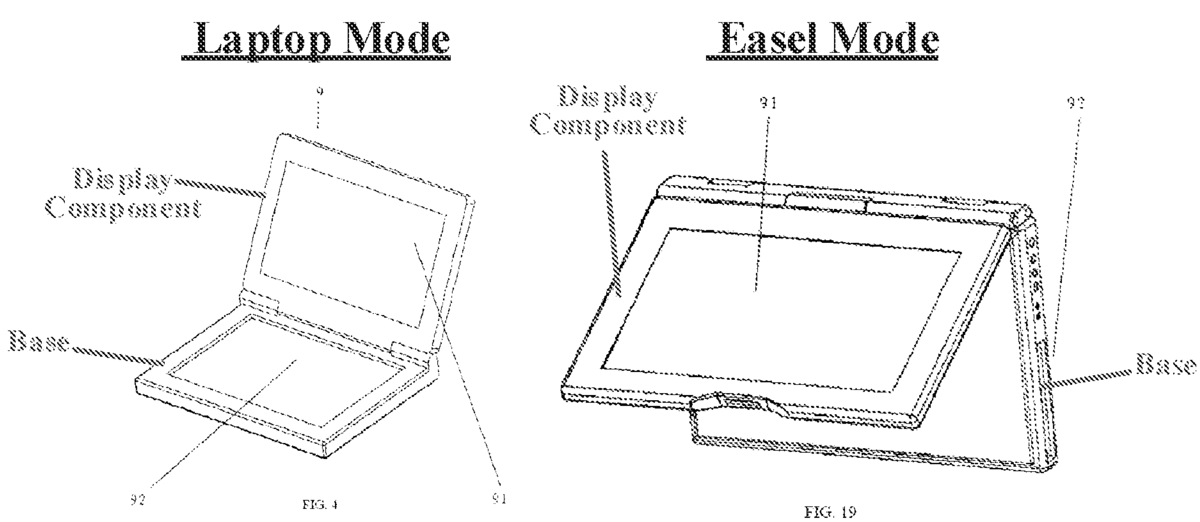
The combination presents "new" art. None of these references were relied on or discussed by the Examiner during prosecution of the '688 patent. CN '170 was not relied on in the related IPR proceeding. Although Hisano and Choi were presented in the IPR, they were not presented along with CN '170 as a primary reference. Similarly, while Hisano and Choi were relied on by Petitioner in the related IPR proceeding, the Board never reached a final written decision in that proceeding; instead denying institution of the IPR due to procedural defects. Ex., 1007, 8-16. Thus, Hisano and Choi also have not been the subject of any "concluded examination or review" and have not been considered "in an earlier ***concluded trial*** by the Patent Trial and Appeal Board." Thus, Hisano and Choi are also "new" art. (MPEP § 2242(I) (emphasis added); *see also Ex Parte Finjan, Inc.*, Appeal No. 2018-007444, 2018 WL 4740168, at *5 (P.T.A.B. Sept. 28, 2018) ("Because no trial was instituted in the *inter partes* review, there was no 'final holding of invalidity' or 'concluded examination or review' ....").); *see also In re Vivint, Inc.*, 14 F.4th 1342, 1349 (Fed. Cir. 2021) ("[A] question of patentability is new until it has been considered and decided on the merits."). None of these references were the subject of any other proceeding relating to the '688 patent.

Thus, these references constitute new art, as does their combination.

The combination presents "substantial" questions of patentability that a reasonable examiner would find important to patentability. CN '170, Hisano, and Choi present new, non-cumulative technical teachings not previously considered by the Examiner. The CN '170- Hisano-Choi combination presents a "substantial" question of patentability at least because, as explained in more detail below, the CN '170-Hisano-Choi combination renders all of claim 11 obvious. (*Infra* Section X.J.)

Significantly, the combination of CN '170 with Hisano, and Choi teach the claim element that the Examiner cited in the Reasons for Allowance for claim 11, i.e., a "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." Ex. 1002, 397. Thus, "a reasonable examiner would consider" the combination of CN '170, Hisano, and Choi "important in deciding whether or not [claim 11] is patentable." (MPEP § 2242(I).).

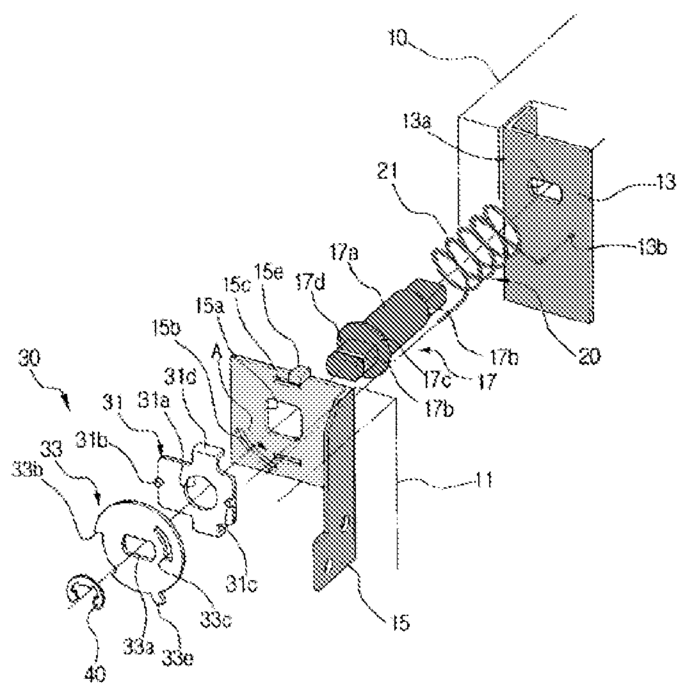
Specifically, CN '170 discloses a portable computer ("electronic product such as a notebook computer") that is configurable between a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18.



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

Further, Choi teaches a means for rotating a display component to configure a computer between a laptop and easel mode. Specifically, Choi discloses a hinge apparatus for use with a portable computer having a housing, a bracket having a member, a shaft, and springs, as shown in Fig. 2 below (color-coded). Choi, 3:36-56, Fig. 2.

FIG.2



Accordingly, the combination of Lane, Hisano and Choi teaches the limitation that the Examiner cited in the Reasons for Allowance leading to the allowance of claim 11, namely a "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." Ex. 1002, 397.

The combination of CN '170, Hisano, and Choi teaches all the limitations of claim 11, as further confirmed by the detailed unpatentability ground presented below in Section X.J. Thus, the CN '170-Hisano-Choi combination presents additional new, non-cumulative technical teachings not previously considered by the Examiner with respect to claim 11.

Because CN ’170 in combination with Hisano and Choi provides new and non-cumulative technical teachings of the limitations of claim 11 of the ’688 Patent, including those specifically cited by the examiner in the Reasons for Allowance, a reasonable Examiner would consider this combination important in deciding the patentability of these claims. Accordingly, CN ’170 in combination with Hisano and Choi raises SNQs with respect to claim 11 of the ’688 Patent and warrants reexamination.

X. DETAILED EXPLANATION OF THE PERTINENCY AND MANNER OF APPLYING THE PRIOR ART REFERENCES TO EVERY CLAIM FOR WHICH REEXAMINATION IS REQUESTED AS REQUIRED BY 37 C.F.R. § 1.510(b)

The following sub-sections lay out unpatentability grounds that explain pertinent aspects of the prior art and how that prior art is applied to each respective claim for which reexamination is requested.

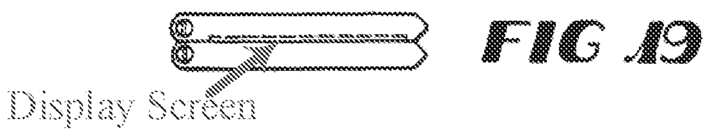
By applying the claim language of the ’688 patent as set forth in the explanations provided below, the Requester is not admitting and/or acquiescing to the correctness and/or reasonableness of any particular construction for the purposes of the Underlying Litigation. Moreover, by mapping claim language to the prior art as set forth below, the Requester is not conceding that any particular language in the claims of the ’688 patent is entitled to “patentable weight.”

A. Lane Renders Obvious Claims 12-14, 16, 19-20, 24-26, 29-32 (Ground 1)

1. A POSITA Would Have Implemented Lane Such That Content Was Displayed Right-Side-Up In Each Of Its Modes

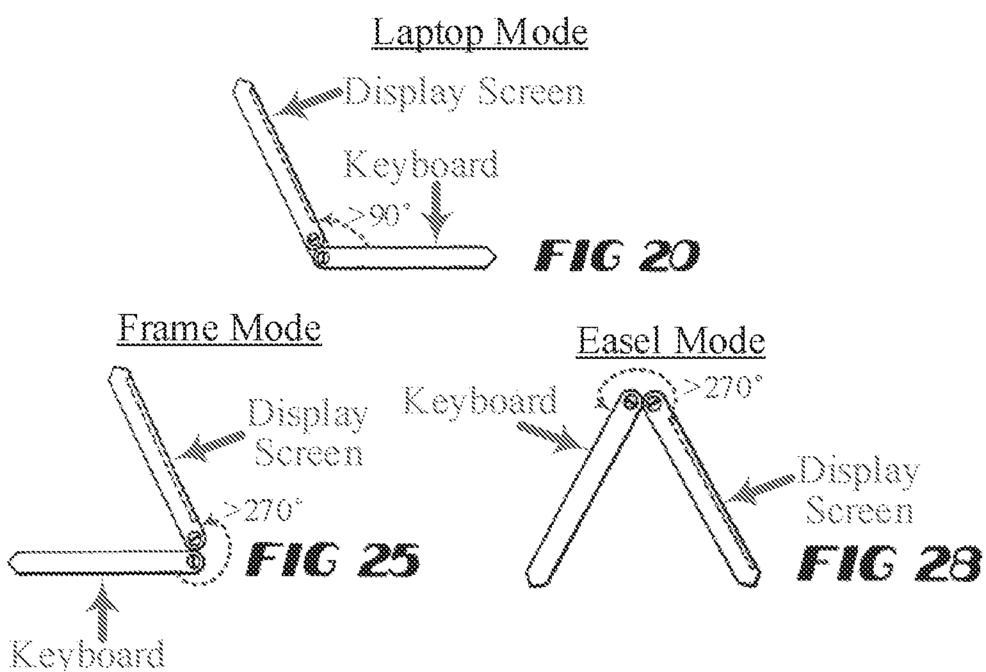
Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Closed Configuration



Lane, FIG. 19 (with annotations).

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

A POSITA implementing Lane would have done so such that the content was displayed right-side-up on the screen in each mode, at least because this would have allowed the user to properly view the content. Schmandt, ¶ 100. Indeed, Lane teaches automatically reorienting displayed content based on the spatial orientation of the display and base components ("second module 18" and "first module 14"). *E.g.*, Lane, 5:23–6:6. Lane discloses a "position-indicating mechanism 38" to "indicate the spatial orientation" of each module. *Id.*, 5:23–35. Lane teaches 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). *Id.*, 5:35–6:6. While Lane provides specific examples of "'landscape' or 'portrait'" orientations, a POSITA would have understood that Lane more generally 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. Schmandt, ¶ 100. Orienting content in any other way (e.g., sideways, upside down) would be nonsensical, as it would needlessly make it difficult, if not impossible, for a user to view the displayed content. Schmandt, ¶ 100.

Earlier publications further confirm that a POSITA would have implemented Lane in this manner. More than a decade before the '688 Patent's alleged priority date, others publicly recognized the common-sense observation that, for configurable devices, displayed content "needs inverting," e.g., when transitioning from laptop to easel mode. *See, e.g.*, Välikangas, Abstract (describing how displayed content needs to be inverted in its computer's easel mode, i.e., "shaped configuration," shown in FIG. 4A), *also see* Välikangas, FIG. 4A, p. 5. Schmandt, ¶ 101.

Thus, in view of Lane's own teachings and disclosures, a POSITA would have implemented Lane such that it displayed the content right-side-up, e.g., with content in easel mode flipped 180 degrees relative to laptop or frame modes. Schmandt, ¶ 102. That this implementation had a reasonable expectation of success and required no undue experimentation is confirmed by the fact that the '688 patent itself provides no meaningful detail on how to implement this content orientation. *In re Fox*, 471 F.2d 1405, 1407 (CCPA 1973) ("[A]ppellant's specification . . . assumes anyone desiring to carry out the process would know of the equipment and techniques to be used, none being specifically described."); Schmandt, ¶ 102. That such content inverting would have been desirable and easily implemented is further confirmed by the multitude of prior art references that had disclosed such inverting when a screen is rotated more than 180° relative to its base from a closed position. *See, e.g.*, Hisano, ¶¶ [0098–99], FIG. 9; Tsuji, ¶¶ [0049], [0055], [0059–61], [0074], FIG. 14; Schweizer, 5:23–35; Shigeo, Abstract, ¶¶ [0004], [0014–16], FIGS. 2, 4(b); *supra* Section VIII.K.

2. Lane's Position-Indicating Mechanisms Provide Detailed Data About The Orientation Of The Lane Base And Display

Lane teaches a "position-indicating mechanism 38" used for "indicating" (i.e., detecting) the "spatial orientation of that module" (i.e., a current configuration), including a configuration where keyboard input is inoperable:

> Also shown in FIG. 1 (and FIG. 29) as part of second module 18 is **position-indicating mechanism 38. Mechanism 38 includes a moveable conductor 42 (such as liquid mercury)** in a spherical cavity 46 having contacts 50 spaced about its periphery. Conductor 42 responds via gravitational forces to spatial reorientation of mechanism 38 by moving relative to contacts 50 (to contact at least one contact 50 to close its respective circuit). Including mechanism 38 as a component of either first or second modules 14 or 18 would thus **permit it to indicate the spatial orientation of that module**. Doing so would also allow **mechanism 38 to assist device 10 (and**

> **its associated software) in determining**, for example, whether the information to appear on visual display 35 should be in "landscape" or "portrait" position as the visual display 35 is spatially configured, the direction in which to move a curser of second module 18 when a visual display, or **whether to render keys 36 of first module 14 inoperable when unused**.

Lane at 5:23–6:6 (emphases added); *id.* at claim 9; Schmandt ¶ 103. Lane's FIG. 29 of position-indicating mechanism 38 is shown below:

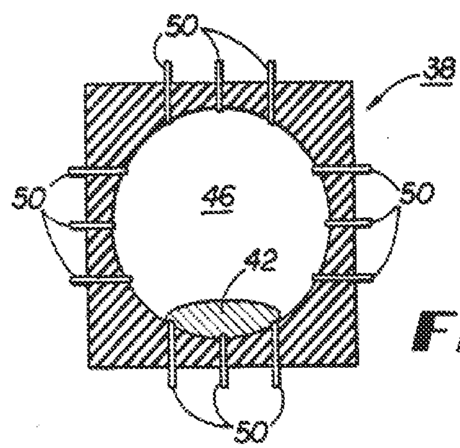


FIG 29

Lane at FIG. 29. A POSITA viewing FIG. 29 would have understood the position-indicating mechanism 38 shows at least twelve contacts 50, which can be touched in various combinations by a moveable conductor 42 (e.g., mercury) inside, and hence determine orientation with at least adequate resolution to accurately measure any of the disclosed modes of operation (e.g., laptop, frame, easel, tablet). Schmandt ¶ 104. While FIG. 29 shows the position-indicating mechanism with at least twelve contacts, a POSITA would have understood Lane's disclosure of a "spherical cavity 46" indicates at least six more contacts in addition to the twelve contacts shown. While FIG. 29 shows a two-dimensional cross-section, a POSITA would recognize the mechanism as three dimensional and also including similar groups of three contacts on each end of the mechanism along the z-axis so as to detect the computer's position in three dimensions . Schmandt ¶ 104.

Moreover, Lane teaches its position-indicating mechanism 38 can be included as a component in first or second housing modules 14 or 18 (i.e., a keyboard or a display). Lane at 5:32–35. A POSITA thus would have understood Lane taught that including the position-indicating mechanism in module 14 (i.e., a keyboard) permitted distinction between configurations such as laptop and frame mode (i.e., with the keyboard facing down rather than up, while the display is the same as laptop mode). Schmandt ¶ 104. Similarly, a POSITA would have understood Lane taught that including a such a position-indicating mechanism in module 18 (i.e., the computer's display) permitted distinction between an easel mode configuration (in which the hinge-side edge of the display is facing upward and the non-hinge-side edge is downward) and laptop/frame mode configurations (in which the non-hinge-side edge of the display is upward and the hinge-side edge is downward). Schmandt ¶ 104. Accordingly, a POSITA would have understood that by including a position-indicating mechanism in both the computer's base and display, the portable computer would be able to accurately determine the relative position of both the base and display and therefore be able to distinguish between every device orientation taught by Lane and to orient displayed content right-side-up as needed for each orientation.

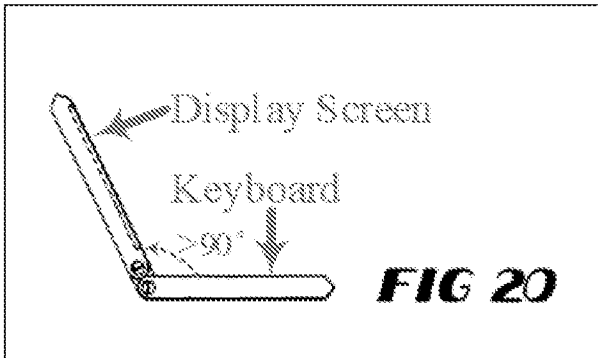
3. Independent Claim 12

[12.1[7]] A portable computer configurable between a plurality of modes including a laptop mode and an easel mode, the portable computer comprising:

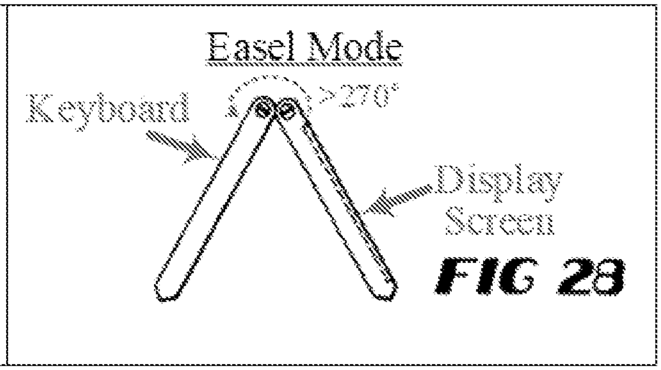
[7] Reference numbers in the format of [claim#.limitation#] are added throughout for ease of reference.

Lane satisfies this limitation, as it discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20 28.

Lane, Fig. 20 (Laptop Mode)



Lane Fig. 28 (Easel Mode)

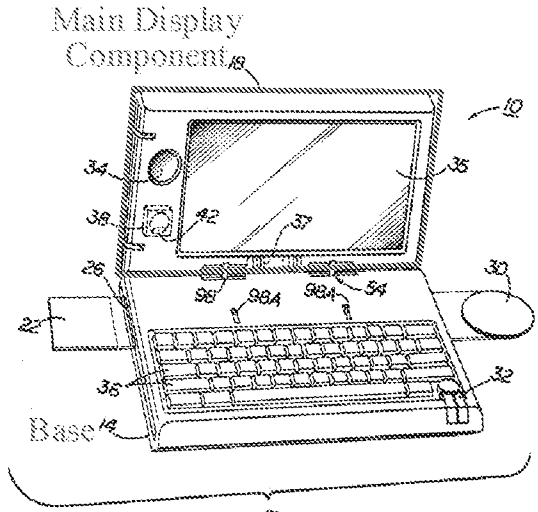


Lane, FIGS. 20, 28 (with annotations).

[12.2] a single display component;

Lane discloses this limitation. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35"). Lane, 5:10-17. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

<u>Lane's Main Display Component</u>



Lane, FIG. 1 (with annotations).

[12.3] a base including an integrated keyboard;

Lane discloses this limitation. Specifically, Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard

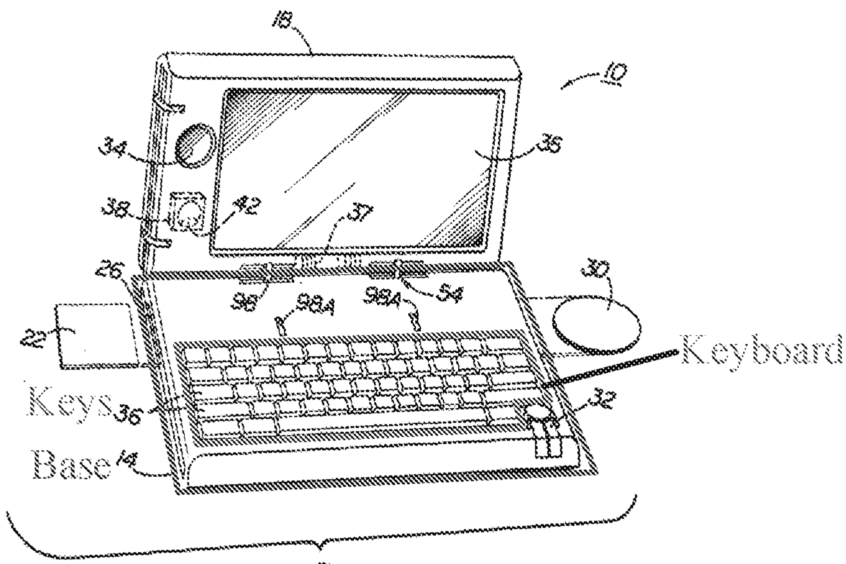


FIG 1

Lane, FIG. 1 (with annotations).

> [12.4] 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 this limitation.

Lane discloses that its portable computer comprises a hinge assembly ("connector 54"). As shown in FIG. 3 of Lane, this hinge assembly is disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane, Fig. 3.

As shown in FIGS. 3, 25, and 28, and described in Lane, 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. *E.g.*, Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, 12 (claim 2), 10:24-11:16.

> The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

Lane, 3:5-14. As shown in Figure 3, reproduced below, the hinge assembly is located at the interface between the base and the display.

Lane's Parallel Axes of Rotation

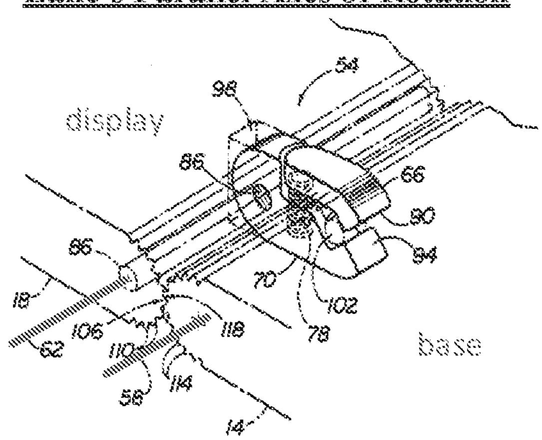


FIG 3

Lane, FIG. 3 (with annotations).

Thus, 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"). *E.g.*, Lane, 6:8-12, FIGS. 25, 28; Schmandt, ¶ 111. 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.

[12.5] 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;

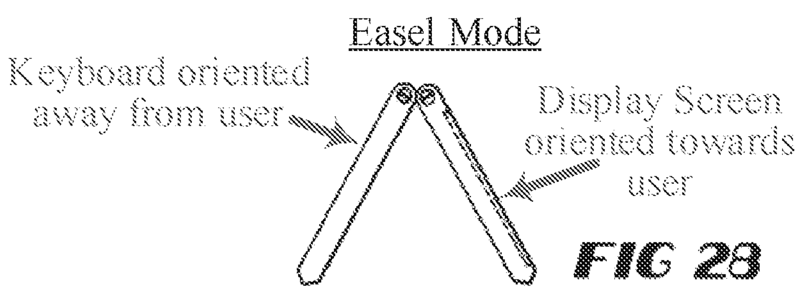
Lane discloses this limitation.

Lane discloses a hinge assembly as explained for claim [12.4] and the hinge assembly permits rotation of the display and base to configure the portable computer of Lane between an easel mode and laptop mode as explained for claim [12.1]. *Supra* claim [12.1], [12.4].

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

Lane teaches this limitation.

As shown in FIG. 28 of Lane, the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user. A POSITA would have understood that in this mode the user operator faced the display screen in order to control the device using its pen-based touch display. *E.g.*, Lane, 8:18–19 (noting "pen-based computing" of the Lane device); *infra* Element [12.7] (describing this pen-based computing); Schmandt, ¶ 115.



Lane, FIG. 28 (with annotations).

[12.7] 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 this limitation, or at least renders it obvious, as it discloses an integrated navigation hardware control in the form of a touch-sensitive input screen that is accessible in all modes and allowed users to control features and manipulate content displayed on the Lane device.[8]

Lane discloses that its device includes a "tablet for pen-based computing." Lane, 3:10-14; 8:15-19; 10:17-20. A POSITA would have understood this to require a touch sensitive display capable of receiving user input via the user touching the display in any of the configurable device modes. Schmandt, ¶ 117. The '688 patent itself admits that "[t]he use of a touch screen to input data is sometimes referred to as operating in 'tablet mode' because the computer is being used in a manner similar to a tablet of paper." '688 Patent, 1:32-37. Thus, a POSITA would have understood that Lane discloses a touch-sensitive display, or at least renders such a display obvious. Schmandt, ¶ 117. That Lane discloses a touch-sensitive display is further confirmed by the fact that the keyboard is disabled in certain device modes. Lane, 6:5–6. A POSITA would have understood that, when the keyboard was disabled, e.g., in easel, frame, and tablet modes, the touch display was required to allow for control of the device. Schmandt, ¶ 117. Indeed, Lane expressly contemplates modes in which "only visual display 35 need be accessible" (Lane, 8:12–15, 10:29–31; FIGS. 8, 28) and in those modes the POSITA would have understood that device control took place through the touch screen display.

While Lane does not explicitly disclose that its touch screen is *configured to control features and manipulate content displayed on the screen*, this would have been inherent or at least obvious to a POSITA because any user interaction through the screen would necessarily involve

[8] As noted above, patent owner alleges that a "touchscreen" is a type of "navigation hardware control" in the context of the '688 patent family. *Supra* footnote 6; Ex. 1008, ¶ 160 (pp. 77-78).

controlling features and manipulating displayed content. Schmandt, ¶ 118. Every time a user touches a touch sensitive screen (or manipulates an input device/navigation control for that matter) the computer (i.e., its processor) responds by changing an operating parameter and/or changing what is displayed on the screen. Schmandt, ¶ 118. Without such associated software functionality, the touch screen would provide limited to no means for a user to actually interact with Lane's computer. Accordingly, a POSITA would have implemented Lane such that its touch-sensitive pen input display was configured to control the computer, including controlling features and manipulating content in the same manner as a user would with a traditional computer mouse. Schmandt, ¶ 118. Moreover, because the mouse 32 and keyboard ("keys 36") are inaccessible in the easel and frame modes, a POSITA would have understood that Lane's touch sensitive screen incorporated the same functionality in the easel and frame modes, thus allowing a user to manipulate operating parameters and content just as they would be able to with a mouse and/or keyboard in laptop mode. Schmandt, ¶ 118. Since mice and keyboards conventionally functioned to allow users to control features and manipulate displayed content, a POSITA would have understood that incorporating functionality from the mouse 32 and/or keyboard into the display screen in the easel and frame modes would necessarily have entailed including their ability to permit users to manipulate operating parameters and displayed content. Schmandt, ¶ 118.

4. Dependent Claim 13

[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 satisfies this element. Lane discloses a single display component comprising a display screen configured to display content. *See supra*, claim [12.2]. And, as explained above, a POSITA implementing Lane would have at least found it obvious to do so such that content was displayed right-side-up based on input from a "position-indicating mechanism" in each of the base and display (first and second modules 14, 18). *Supra* Section X.A.1.[9]

Lane describes use of the position-indicating mechanism and the device's "associated software" in order to control the display of content on the Lane device. Lane, 5:35–6:6. At least given this reference to software for controlling the device's operation and display, a POSITA would have understood that the Lane device included a central processing unit (or "CPU"), just like all similar configurable laptop devices. Schmandt, ¶ 120. Indeed, the '688 patent itself describes "[c]onventional portable computers" as "most commonly" including CPUs in the base. '688 Patent, 1:21-27. Lane explains that its position-indicating mechanism 38 is 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 (parenthetical in original). Given Lane's reference to "associated software," a POSITA would have naturally implemented Lane's content orientation mechanism by programming a CPU with associated software code to cause the rendering of content on the display. Schmandt, ¶ 120. The software algorithm would have caused the processor to render the content in one of several possible orientations such that it appeared right-side-up and

[9] Indeed, Lane describes the implementation and use of its position-indicating mechanism in at least as much detail as the '688 patent's "orientation sensor," which is only described in general terms, thus confirming that such orientation sensors were well-known. '688 Patent, 9:31-38 ("[A]n orientation sensor (not shown) that is configured to detect a relative orientation of the display component 102 and the base component 104. In one example, the orientation sensor may be an accelerometer incorporated into the base component 104, as discussed above. Alternatively, the orientation sensor may be incorporated into the hinge assembly 138 and may be used to detect movement of the hinge assembly."); *In re Fox*, 471 F.2d at 1407.

could thus be viewed properly by the user in any given mode (laptop, easel, etc.). *Supra* Section X.A.1; Schmandt, ¶ 120. Lane expressly discloses "landscape" and "portrait" orientations, which alone meets claim 13, as each is an "orientation relative to the longitudinal axis." Moreover, for reasons explained above a POSITA would have understood that the Lane device provided content oriented one way in laptop mode and, in easel mode, oriented at 180 degrees to the laptop mode orientation. *Supra* Section X.A.1; Schmandt, ¶ 120.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See Supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm to "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up'" based on a determined display mode. '688 Patent, 8:7-34.[10]

5. Dependent Claim 14

[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.

As explained above, a POSITA would have implemented Lane such that content was displayed right-side-up in each of its modes. *Supra* Section X.A.1. Thus, in laptop mode content

[10] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained below for Claim 16. *Infra,* Section X.A.6.

would have been displayed in first orientation, whereas in easel mode the content would have been displayed in a second orientation that was 180 degrees relative to the first orientation. *Id.*; Schmandt, ¶ 122.

6. Dependent Claim 16

[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 satisfies this element. As explained above, Lane teaches placing a "position-indicating mechanism" in the base and display (first and second modules, 14 and 18), and that these mechanisms sense the spatial orientation of the base and display. *Supra* Section X.A.2; Lane, 5:23–6:6. As further explained, a POSITA would have found it obvious to implement Lane's device so as to use these mechanisms to provide relative spatial orientations between the base and display, and thus adjust the orientation of displayed "information" (content). *Supra* Section X.A.2. A POSITA would have understood that this spatial orientation data was *representative of a degree of rotation of the single display component relative to the base* because the spatial orientation of the base relative to the display indicates the degree of relative rotation between the two modules. Schmandt, ¶ 123. A POSITA would have implemented Lane so as to use this data from the position-indicating mechanisms to automatically adjust the content to the appropriate right-side-up orientation in each of the different Lane modes (e.g., laptop, easel, frame). *Supra* Section X.A.1. Schmandt, ¶ 123.

7. Dependent Claim 20[11]

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

Lane satisfies this element, as the content orientation in laptop mode is 180 degrees relative to the content orientation in easel mode. *Supra* Section X.A.1; Schmandt, ¶ 124.

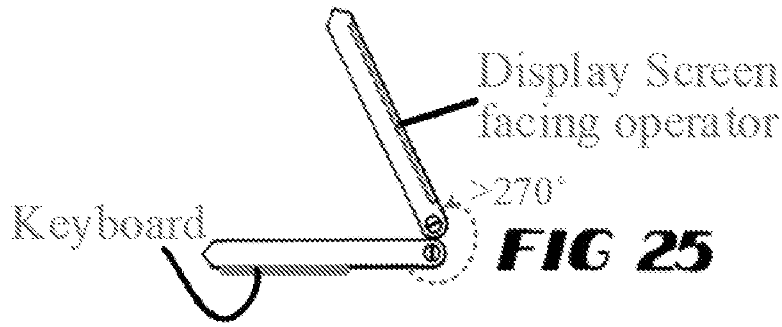
8. Dependent Claim 24

[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 its portable computer including a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down such that they keyboard is directed towards the horizontal surface on which the device is placed, and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 125.

[11] Claims 20 and 24-26 depend, directly or indirectly, from claim 12, and thus are presented in sequential order with the other claims that depend from claim 12.

Lane's Frame Mode



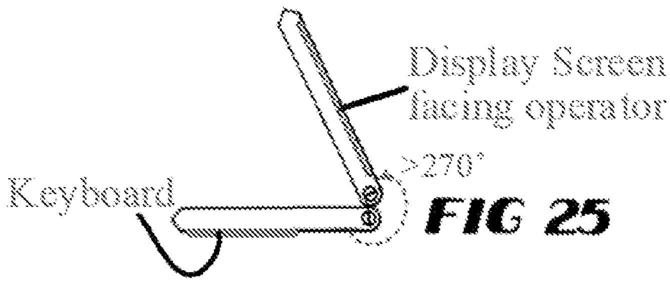
Lane, Fig. 25 (with annotations).

9. Dependent Claim 25

> [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; 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 its portable computer including a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 126.

Lane's Frame Mode



Lane, Fig. 25 (with annotations).

Because the Lane laptop and frame modes have the display (second module 18) in the same relative position with respect to the user, a POSITA would have recognized that content would appear having the same orientation in both laptop and frame modes. Schmandt, ¶ 127. Indeed, this would result in the content appearing right-side-up in each of these modes. *Id.*; *supra* Section X.A.1 As explained above, for the content to appear right-side-up in Lane's easel mode, it would be displayed in a second orientation at 180 degrees to the content orientation in laptop and frame modes. *Supra* Section X.A.1; Schmandt, ¶ 127.

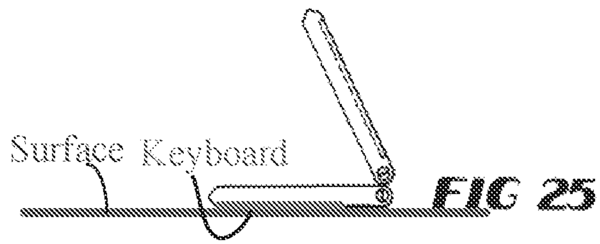
10. Dependent Claim 26

[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 satisfies this limitation.

Lane explicitly discloses "render[ing] keys 36 of first module 14 inoperable when unused." Lane, 6:5-6. A POSITA would have understood that Lane's keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in Lane's frame mode. Specifically, as discussed above for element 24, a POSITA would have understood that Lane's keyboard ("keys 36") is placed face down on a surface in frame mode given how it is depicted in FIG. 25, thereby rendering them unused. Schmandt, ¶ 129.

Lane's Frame Mode



Lane, FIG. 25 (with annotations).

Thus, in accordance with Lane's prescription to render the keys 36 inoperable when the keys 36 are unused, the keys 36 would be rendered inoperable in the frame mode, since a POSITA would have understood that the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Schmandt, ¶ 130. In addition, a POSITA would recognize the utility of rendering its keyboard 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. Schmandt, ¶ 130. Lane states that its functionality of rendering its keys inoperable is performed by "device 10 (and its associated software)." 5:35-6:6. Accordingly, a POSITA would understand the device's software performing this functionality to constitute a protection module. Schmandt, ¶ 130.

While, for purposes of this Request only, Requester submits that the term "protection module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). See *supra*, Section V.B. This element is also satisfied to the extent the Examiner finds or PO argues that the term "protection module" invokes

112(6), has adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: (1) determines that the portable computer is in frame mode (2) "prevent[s] keys from being pressed . . . when the portable computer is in the frame mode." '688 Patent, 16:13-17.

As explained above, Lane teaches a mechanism for performing this same function and it would have been obvious for a POSITA to implement a software algorithm 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. Schmandt, ¶ 132.

11. Independent Claim 19

[19.1] A portable computer comprising:

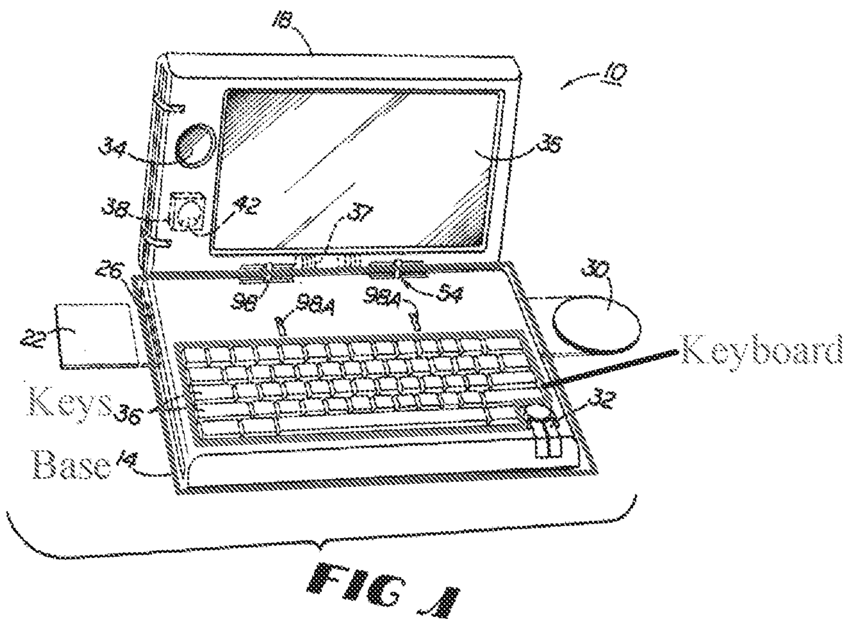
Lane discloses this limitation.

Lane discloses a "portable computer." Lane, 1:3-6.

[19.2] a base unit comprising an integrated keyboard;

Lane discloses this limitation. Specifically, Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard

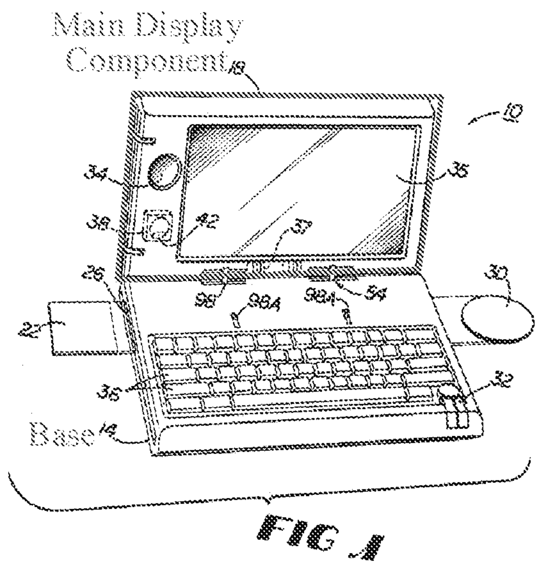


Lane, FIG. 1 (with annotations).

[19.3] a single display unit including a single display screen configured to display content;

Lane discloses this limitation. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35") that displays content. Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

<u>Lane's Main Display Component</u>



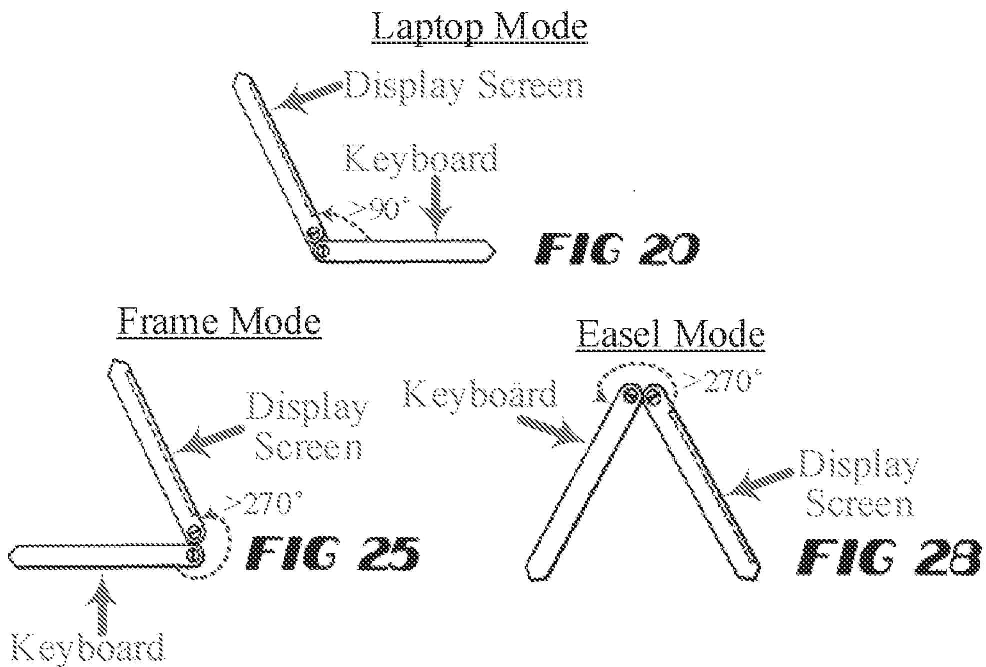
Lane, FIG. 1 (with annotations).

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

Lane teaches this limitation.

Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is configurable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Lane also teaches an orientation sensor that detects physical orientation of its single display relative to its base. As explained above, a POSITA would have understood to incorporate a position-indicating mechanism 38, as taught by Lane, into both the display and base of Lane's portable computer in order to determine the physical orientation of the display relative to the base to distinguish between all physical orientations the computer and invert the displayed content as necessary to maintain it as right-side-up to a user. *Supra* Section X.A.2.

[19.5] 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 satisfies this element. Lane discloses a single display component comprising a display screen configured to display content. *See supra*, claim [19.3]. And, as explained above, a POSITA implementing Lane would have at least found it obvious to do so such that content was displayed right-side-up based on input from a "position-indicating mechanism" in each of the base and display (first and second modules 14, 18) and that this would cause the computer to invert the displayed content when transitioning between easel mode and a laptop or frame mode. *Supra* Section X.A.2.[12]

Lane describes use of the position-indicating mechanism and the device's "associated software" in order to control the display of content on the Lane device. Lane, 5:35–6:6. At least given this reference to software for controlling the device's operation and display, a POSITA would have understood that the Lane device included a central processing unit (or "CPU"), just like all similar configurable laptop devices. Schmandt, ¶ 141. Indeed, the '688 patent itself describes "[c]onventional portable computers" as "most commonly" including CPUs in the base. '688 Patent, 1:21-27. Lane explains that its position-indicating mechanism 38 is 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 (parenthetical in original). Given Lane's reference to

[12] Indeed, Lane describes the implementation and use of its position-indicating mechanism in at least as much detail as the '688 patent's "orientation sensor," which is only described in general terms, thus confirming that such orientation sensors were well-known. '688 Patent, 9:31-38 ("[A]n orientation sensor (not shown) that is configured to detect a relative orientation of the display component 102 and the base component 104. In one example, the orientation sensor may be an accelerometer incorporated into the base component 104, as discussed above. Alternatively, the orientation sensor may be incorporated into the hinge assembly 138 and may be used to detect movement of the hinge assembly."); *In re Fox*, 471 F.2d at 1407.

"associated software," a POSITA would have naturally implemented Lane's content orientation mechanism by programming a CPU with associated software code to cause the rendering of content on the display. Schmandt, ¶ 141. The software algorithm would have caused the processor to render the content in one of several possible orientations such that it appeared right-side-up and could thus be viewed properly by the user in any given mode (laptop, easel, etc.). *Supra* Section X.A.1; Schmandt, ¶ 141. Lane expressly discloses "landscape" and "portrait" orientations, which alone meets claim 13, as each is an "orientation relative to the longitudinal axis." Moreover, for reasons explained above a POSITA would have understood that the Lane device provided content oriented one way in laptop mode and, in easel mode, oriented at 180 degrees to the laptop mode orientation. *Supra* Section X.A.2; Schmandt, ¶ 141.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra*, Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[13]

[19.6] 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

[13] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained above for Claim [19.4]. *Supra,* Section X.A.11, claim [19.4].

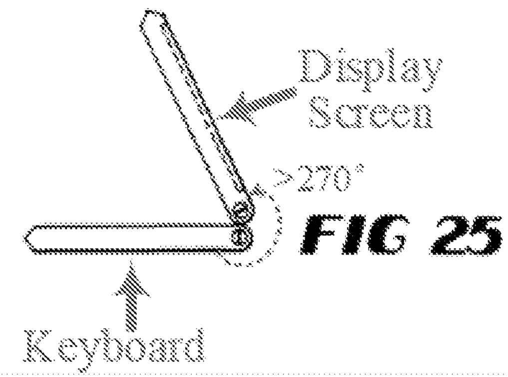
the single display unit relative to the base unit, and wherein the display orientation module is further configured to:

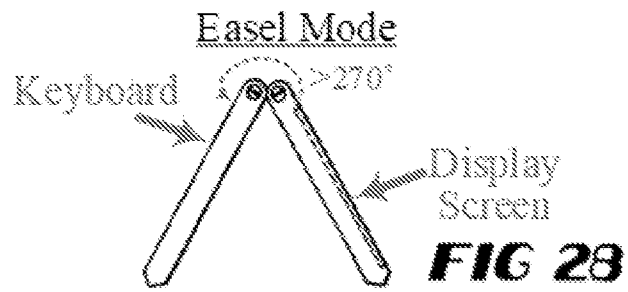
Lane satisfies this element. As explained above for claim [19.4], Lane teaches a portable computer having a laptop mode, a frame mode, and an easel mode.

In addition, as explained for claim [19.4], Lane teaches an orientation sensor which detects the physical orientation of the portable computer and a POSITA would have recognize that the orientation sensor of Lane is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. *See supra,* Section X.A.2; Schmandt, ¶ 144.

Further, a POSITA would have recognized that this hinge angle may be used to detect a transition between a laptop and an easel mode. *See supra,* Sections X.A.1. Specifically, POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Lane would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in either the easel mode or frame mode. *See supra,* Sections X.A.1; That is, POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode the frame mode and that both the easel and frame modes may utilize a similar hinge angle. Schmandt, ¶ 145. This is demonstrated by comparing Figures 25 and 28 of Lane, reproduced below (with annotations).

Lane, Fig. 25 (Frame Mode) | **Lane Fig. 28 (Easel Mode)**





A POSITA would have also understood that Lane's orientation sensor is capable of distinguishing between a frame and easel mode. *See Supra*, Section X.A.2; Schmandt, ¶ 146. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 146.

[19.7] 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 satisfies this element. As explained above for claims [19.5] and [19.6], 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 accordingly.

As explained above for claim [19.5] it would have been obvious to a POSITA 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. *See supra*, Sections X.A.1.

12. Independent Claim 29

[29.1] 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 teaches this limitation.

Lane discloses a portable computer comprising a body including a single display component with a display screen and including an integrated keyboard. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35"). Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

Lane's Main Display Component

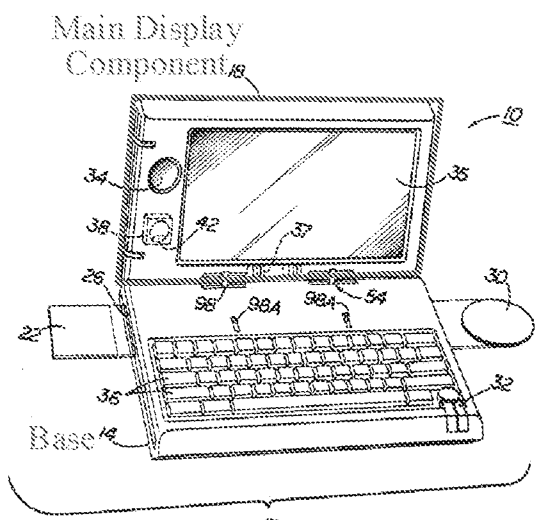
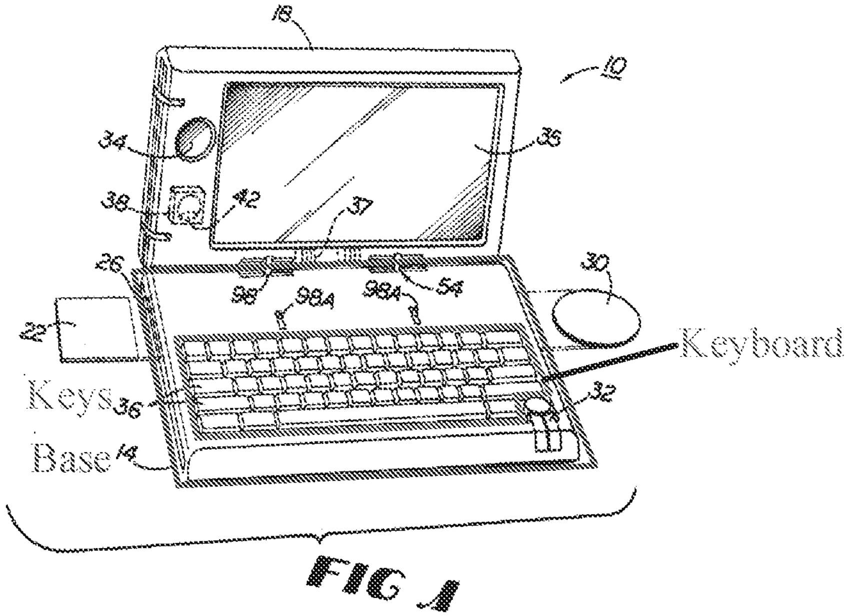


FIG. 1

Lane, FIG. 1 (with annotations). Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard



Lane, FIG. 1 (with annotations).

Lane discloses that its portable computer comprises a hinge assembly ("connector 54"). As shown in FIG. 3 of Lange, this hinge assembly is disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane, Fig. 3. As shown in FIGS. 3, 25, and 28, and described in Lane, 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. *E.g.*, Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16.

> The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

Lane, 3:5-14.

Lane's Parallel Axes of Rotation

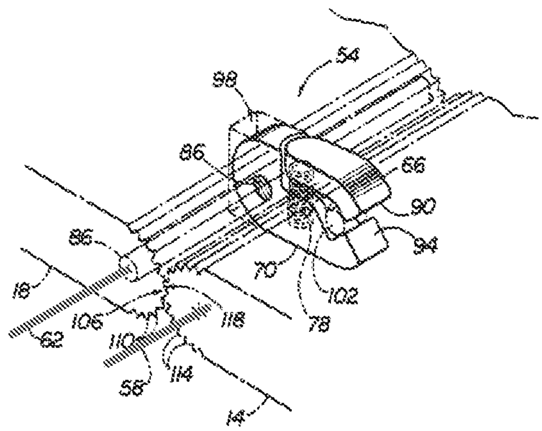


FIG 3

Lane, FIG. 3 (with annotations).

Lane discloses its "portable computer[]" (*e.g.*, Lane, 1:3-6) is configurable, via its hinge assembly, among a plurality of display modes. The computer is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Closed Configuration

FIG 19

Lane, FIG. 19 (with annotations).

Lane's Display Modes

Laptop Mode

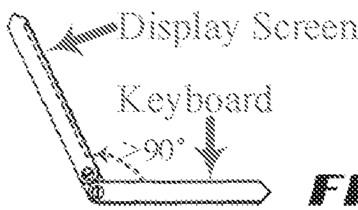


FIG 20

Frame Mode

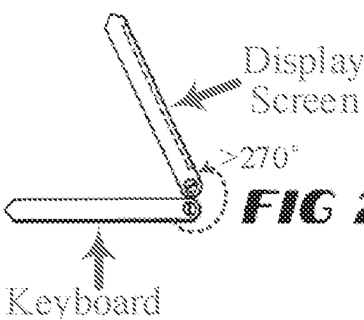


FIG 25

Easel Mode

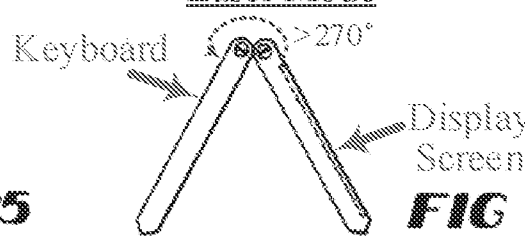


FIG 28

Lane, FIGS. 20, 25, 28 (with annotations).

[29.2] 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 satisfies this limitation.

As explained above for claim [29.1], 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.

As shown in Figure 3, reproduced below, the hinge assembly is located at the interface between the base and the display.

Lane's Parallel Axes of Rotation

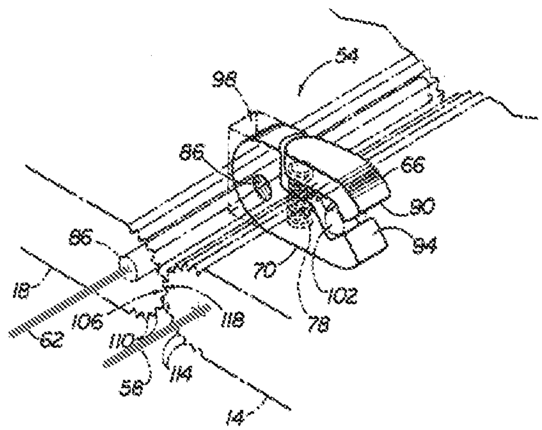


FIG 3

Lane, FIG. 3 (with annotations).

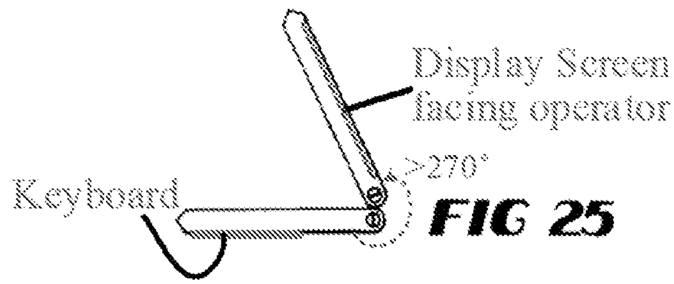
Lane's base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and Lane's main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62"). *E.g.*, Lane, 6:8-12, FIGS. 25, 28; Schmandt, ¶ 156. Accordingly, Lane teaches a hinge assembly configure to rotatably couple a display and base and defines a longitudinal axis running along an interface between the display and the base.

[29.3] 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 satisfies this limitation.

As described for claim element [29.1], Lane discloses orientating a visual display into a laptop mode, as shown in Fig.25, below.

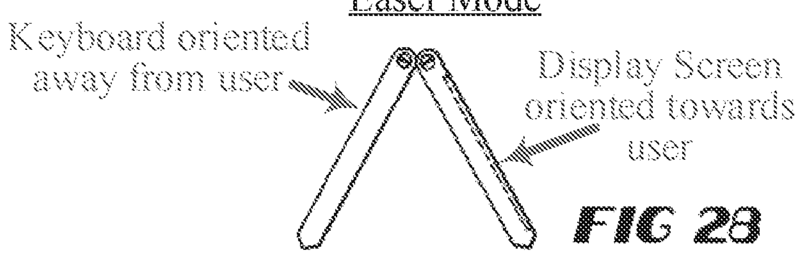
Lane's Frame Mode



Lane, FIG. 25 (with annotations).

As described for claim element [29.1] Lane discloses easel mode, wherein the portable computer's display is oriented toward a user and the computer's keyboard is oriented away, as shown in Fig. 28, below.

Easel Mode



Lane, FIG. 28 (with annotations).

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

Lane satisfies this limitation.

Lane teaches detecting the physical orientation of its single display relative to its base. As explained above, a POSITA would have understood to incorporate a position-indicating mechanism 38, as taught by Lane, into both the display and base of Lane's portable computer in order to determine the physical orientation of the display relative to the base to distinguish between all physical orientations the computer and invert the displayed content as necessary to maintain it as right-side-up to a user. *Supra* Section X.A.1.

[29.5] 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 satisfies this limitation.

As explained above for claim [29.4], Lane teaches determining a display mode based on measuring the physical configuration of its display relative to its base.

Also as explained in Section X.A.1, a POSITA 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. Schmandt, ¶ 164.

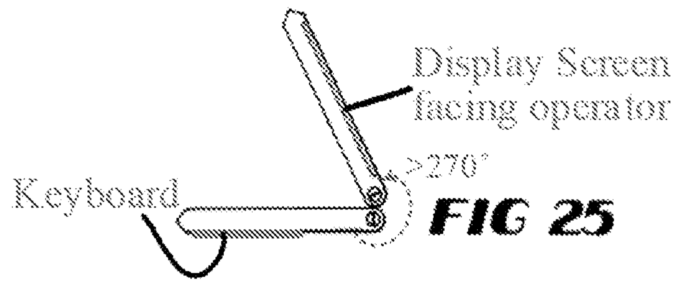
13. Dependent Claim 30

[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.

Lane satisfies this limitation.

Lane discloses its portable computer configurable between a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 166.

<u>Lane's Frame Mode</u>



Lane, Fig. 25 (with annotations).

14. <u>Dependent Claim 31</u>

> [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 satisfies this limitation.

As explained above for claim [29.5], Lane teaches a laptop mode having a first content orientation. As explained above for claim 30, Lane teaches manipulating the physical configuration of a portable computer to place it into frame mode. *See supra,* Section X.A.13. Also as explained above, a POSITA would have understood to present displayed content in a frame mode in the same orientation as in a laptop mode (i.e., a first content orientation). *See supra,* Section X.A.1.

15. <u>Dependent Claim 32</u>

> [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 satisfies this limitation.

Lane explicitly discloses "render[ing] keys 36 of first module 14 inoperable when unused." Lane, 6:5-6. A POSITA would have understood that Lane's keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in Lane's frame mode. Specifically, as discussed above for element 24, a POSITA would have understood that Lane's keyboard ("keys 36") is placed face down on a surface in frame mode given how it is depicted in FIG. 25, thereby rendering them unused. Schmandt, ¶ 170.

Lane's Frame Mode

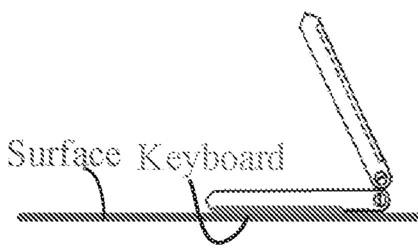


FIG 25

Lane, FIG. 25 (with annotations).

Thus, in accordance with Lane's prescription to render the keys 36 inoperable when the keys 36 are unused, the keys 36 would be rendered inoperable in the frame mode, since a POSITA would have understood that the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Schmandt, ¶ 171. In addition, a POSITA would recognize the utility of rendering its keyboard 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. Schmandt, ¶ 171.

B. Lane In View Of Kamikakai Renders Obvious Claim 26 Of The '688 Patent (Ground 2)

1. Dependent Claim 26

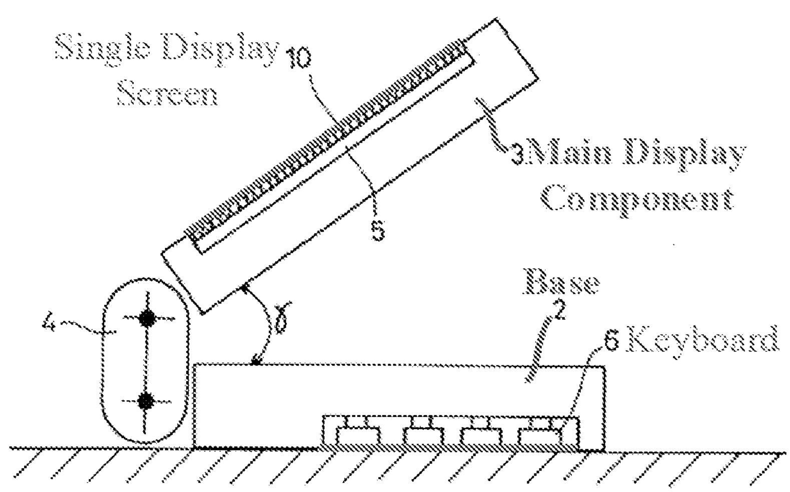
[26] The portable computer of claim 24, further comprising a protection module configured to prevent keyboard operation when the portable computer is configured in the frame mode.

Lane in combination with Kamikakai teaches this limitation.

As explained above, Lane renders obvious claim 24. *Supra*, Section X.A.8. The combination of Lane and Kamikakai further renders obvious claim 26 for the reasons explained below.

Like Lane, Kamikakai also teaches a portable computer configurable into a frame mode with its keyboard placed against a surface and its display screen facing a user. As shown in Figure 8 of Kamikakai, the base ("main body 2") contacts a substantially horizontal surface with the keyboard ("keyboard 6") facing down towards 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.

Kamikakai's Frame Mode



Kamikakai, FIG. 8 (with annotations).

Kamikakai teaches a mechanism that disables its keyboard when the portable computer is in frame mode and the keyboard faces a horizontal surface as shown in Figure 8 and Kamikakai provides express motivation for why a POSITA would implement such a mechanism for a portable computer placed in a frame mode.

> Preferably, the portable information processing apparatus 1 is provided with a mechanism for disabling the keyboard 6 when the angle γ formed between the surface, 3*a* of the display part 3, opposite to the surface 3*b* provided with the pen input part 10, and the surface 2*a* of the main body 2, opposite to the surface 2*b* provided with the keyboard 6, is within an angular range of 0° to 90°, so that the data input is only possible from the pen input part 10. A mechanism similar to a known mechanism for turning OFF power of the portable information processing apparatus 1 when the display part 3 is folded and closed with respect to the main body 2 may be used to disable the keyboard 6. ***In this case, it [sic] possible 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.***

Kamikakai, 6:51-67 (emphasis added).

Accordingly, a POSITA would be motivated to implement the teaching of Kamikakai of disabling a keyboard when a portable computer is placed into frame mode into the portable computer of Lane. A POSITA would be motivated to do so for the express reason taught by Kamikakai of "prevent[ing] erroneous manipulation of the keyboard . . . and to prevent erroneous inputs from the keyboard." Kamikakai, 6:51-67, Schmandt, ¶ 176. A POSITA would also have a reasonable expectation of success in such a combination. As explained, it would be obvious to a POSITA to implement the position-indicating mechanisms of Lane to allow the portable computer of Lane to detect when the computer is placed into a frame mode. *Supra*, Section X.A.2. A POSITA could therefor simply implement Kamikakai's teaching of disabling the keyboard when the portable computer of Lane detects that it is in frame mode. Schmandt, ¶ 176. Moreover, Lane already discloses using its "device 10 (and its associated software) . . . to render keys 36 of first module 14 inoperable when unused" Lane, 5:35-6:6. Thus, a POSITA would program the software of Lane's portable computer to implement the solution of Kamikakai to disable the computer's keyboard in frame mode. Schmandt, ¶ 176. Accordingly, a POSITA would understand the device's software performing this functionality to constitute a protection module. Schmandt, ¶ 176.

While, for purposes of this Request only, Requester submits that the term "protection module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). See *supra*, Section V.B. This element is also satisfied to the extent the Examiner finds or PO argues that the term "protection module" invokes 112(6), has adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: (1) determines that the portable computer is in frame mode (2) "prevent[s] keys from being pressed . . . when the portable computer is in the frame mode." '688 Patent, 16:13-17.

As explained above, Kamikakai teaches the function of disabling a computer's keyboard when it is in frame mode and it would have been obvious for a POSITA to program the associated software for 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. Schmandt, ¶ 178.

2. **Dependent Claim 32**

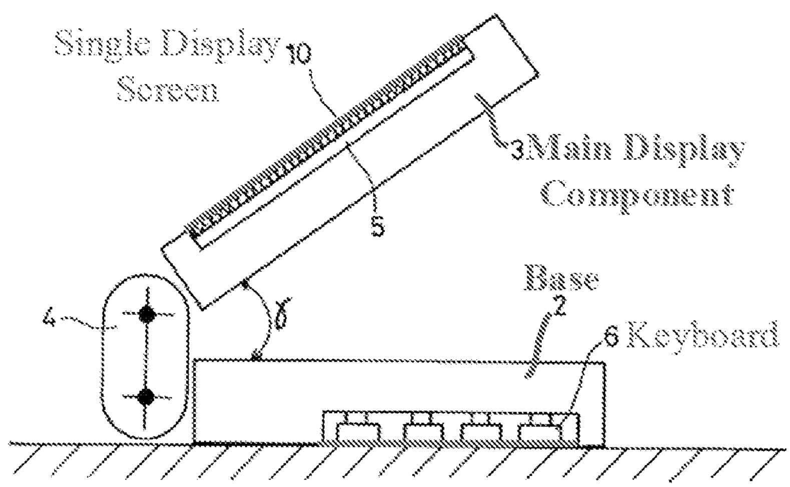
[32] The method according to claim 30, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Lane in combination with Kamikakai teaches this limitation.

As explained above, Lane renders obvious claim 30. *Supra*, Sections X.A.13. The combination of Lane and Kamikakai further renders obvious claim 32 for the reasons explained below.

Like Lane, Kamikakai also teaches a portable computer configurable into a frame mode with its keyboard placed against a surface and its display screen facing a user. As shown in Figure 8 of Kamikakai, the base ("main body 2") contacts a substantially horizontal surface with the keyboard ("keyboard 6") facing down towards 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.

Kamikakai's Frame Mode



Kamikakai, FIG. 8 (with annotations).

Kamikakai teaches a mechanism that disables its keyboard when the portable computer is in frame mode and the keyboard faces a horizontal surface as shown in Figure 8 and Kamikakai provides express motivation for why a POSITA would implement such a mechanism for a portable computer placed in a frame mode.

> Preferably, the portable information processing apparatus 1 is provided with a mechanism for disabling the keyboard 6 when the angle γ formed between the surface, *3a* of the display part 3, opposite to the surface *3b* provided with the pen input part 10, and the surface *2a* of the main body 2, opposite to the surface *2b* provided with the keyboard 6, is within an angular range of 0° to 90°, so that the data input is only possible from the pen input part 10. A mechanism similar to a known mechanism for turning OFF power of the portable information processing apparatus 1 when the display part 3 is folded and closed with respect to the main body 2 may be used to disable the keyboard 6. ***In this case, it [sic] possible 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.***

Kamikakai, 6:51-67 (emphasis added).

Accordingly, a POSITA would be motivated to implement the teaching of Kamikakai of disabling a keyboard when a portable computer is placed into frame mode into the portable computer of Lane. A POSITA would be motivated to do so for the express reason taught by Kamikakai of "prevent[ing] erroneous manipulation of the keyboard . . . and to prevent erroneous inputs from the keyboard." Kamikakai, 6:51-67, Schmandt, ¶ 183. A POSITA would also have a reasonable expectation of success in such a combination. As explained, it would be obvious to a

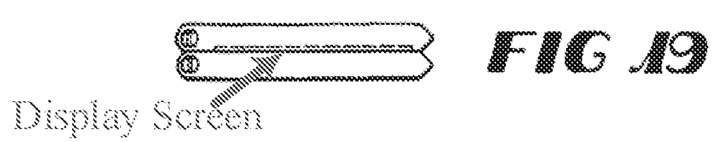
POSITA to implement the position-indicating mechanisms of Lane to allow the portable computer of Lane to detect when the computer is placed into a frame mode. *Supra*, Section X.A.B. A POSITA could therefor simply implement Kamikakai's teaching of disabling the keyboard when the portable computer of Lane detects that it is in frame mode. Schmandt, ¶ 183. Moreover, Lane already discloses using its "device 10 (and its associated software) . . . to render keys 36 of first module 14 inoperable when unused" Lane, 5:35-6:6. Thus, a POSITA would program the software of Lane's portable computer to implement the solution of Kamikakai to disable the computer's keyboard in frame mode. Schmandt, ¶ 183. Accordingly, a POSITA would understand the device's software performing this functionality to constitute a protection module. Schmandt, ¶ 183.

C. Lane In View Of Hisano Renders Obvious Claims 12–14, 16-22 And 24-32 Of The '688 Patent (Ground 3)

1. Combining Lane And Hisano

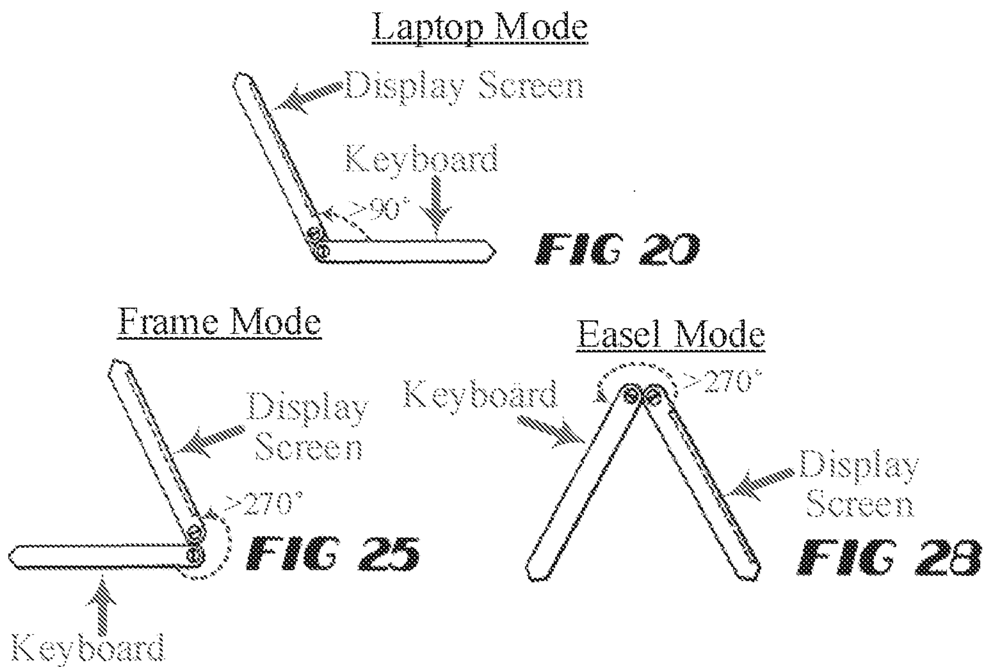
Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Closed Configuration



Lane, FIG. 19 (with annotations).

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

A POSITA implementing Lane would have been motivated to do so such that the content was displayed right-side-up on the screen in each mode, at least because doing so would have allowed the user to properly view the content. Schmandt, ¶ 185. Indeed, Lane teaches automatically reorienting displayed content based on the spatial orientation of the main display component ("second module 18") and based component ("first module 14"). *E.g.*, Lane, 5:23–6:3. Lane discloses a "position-indicating mechanism 38" in order to "indicate the spatial orientation" of each module. Lane, 5:23–35. Lane teaches that this information allows the device to determine the orientation of the information (i.e., content) displayed on the screen. *Id.* at 5:35–6:6 (discussing, among other things, proper orientation of the "information to appear on visual display 35"). While Lane provides the specific examples of "'landscape' or 'portrait'" orientations, a

POSITA would have understood that Lane more generally teaches orienting the content so that it is presented right-side-up in each display mode. Orienting content in any other way (e.g., sideways, upside down) would be nonsensical, as it would make it difficult, if not impossible, for a user to view the displayed content. Schmandt, ¶ 185. Thus, in view of Lane's own teachings and disclosures, a POSITA would have implemented Lane such that it displayed the content right-side-up, e.g., with content in easel mode flipped 180 degrees relative to laptop or frame modes. Schmandt, ¶ 185. That this implementation had a reasonable expectation of success and required no undue experimentation is confirmed by the fact that the '688 patent itself provides no meaningful detail on how to implement this content orientation. *In re Fox*, 471 F.2d at 1407; Schmandt, ¶ 185. Moreover, more than a decade before the '688 Patent's alleged priority date, others had already publicly recognized that, for configurable devices, displayed content "needs inverting," e.g., when transitioning from going laptop to easel mode. *See, e.g.*, Välikangas (Ex. 1024), Abstract (describing how displayed content needs to be inverted in its computer's easel mode ("A shaped configuration") shown in FIG. 4A), *also see* Välikangas, FIG. 4A, p. 5. Moreover, such content inverting would have been obvious given the state of the art at or before the alleged priority date, as evidenced by the multitude of prior art references that had disclosed such inverting when a screen is rotated more than 180° relative to its base from a closed position. *See, e.g.*, Hisano, ¶¶ [0098–99], FIG. 9; Tsuji, ¶¶ [0049], [0055], [0059–61], [0074], FIG. 14; Schweizer, 5:23–35; Shigeo, Abstract, ¶¶ [0004], [0014–16], FIGS. 2, 4(b); *supra* Section VIII.K.

To the extent Patent Owner argues that Lane lacks sufficient detail as to properly orientating displayed content, a POSITA would have naturally turned to other references that provided more detail on proper display of content in configurable devices, such as Hisano. Schmandt, ¶ 186.

Hisano teaches means for detecting the physical orientation of a personal computer and, in response, performing an inversion of displayed content in order to maintain the content as right-side-up for a user of the computer. Hisano discloses determining an angle of rotation of the hinges of the laptop, which corresponds to the hinge angle of the housings relative to one another:

> 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.

Hisano, ¶ [0099]. Hisano also discloses using a sensor in the form of an accelerometer (i.e., a "gravity sensor") to detect the orientation of the computer. Hisano, ¶¶ [0099-100].[14] 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].

It would have been obvious to a POSITA to combine the teachings of Hisano regarding detecting the orientation of a portable computer and, in response, inverting displayed content, with the portable computer and corresponding display modes of Lane, for the reasons that follow. Specifically, a POSITA would do so because it would be obvious to a POSITA that a visual display on a computer screen should be displayed right-side-up relevant to the intended viewer of the display. Numerous prior art references recognize the need to change orientation of a computer's

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[14] A POSITA would have understood that Hisano's teaching of a gravity sensor would have implied an accelerometer, as these were inexpensive devices capable of determining acceleration with respect to the force of gravity. Schmandt, ¶ 187.

displayed content in response to changing the orientation of a display relative to a user. *See, e.g.*, Shimura ¶¶ [0008], [0012], [0016-18]; additional references discussed above in Section VIII.K; Schmandt, ¶ 188. Moreover, a POSITA would also recognize that in transition from a laptop mode to an easel mode, as demonstrated in annotated Figs. 1 and 9 of Hisano below, the top and bottom edges of a display become inverted, so that what was the top edge in laptop mode is at the bottom in easel mode, and vice-versa. Hisano, Figs. 1, 9; Schmandt, ¶ 188.

Annotated Hisano Fig. 1 (Laptop Mode) **Annotated Hisano Fig. 9 (Easel Mode)**

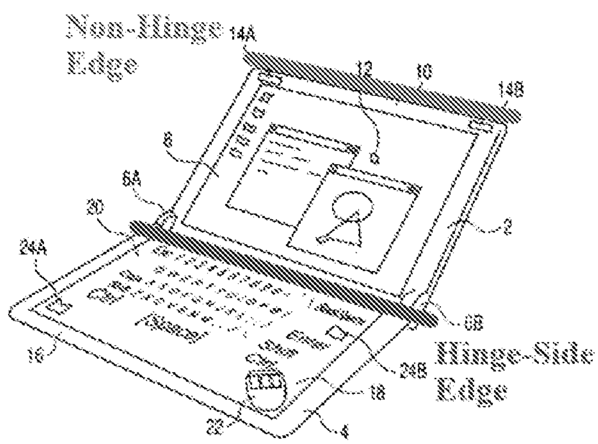


FIG. 1

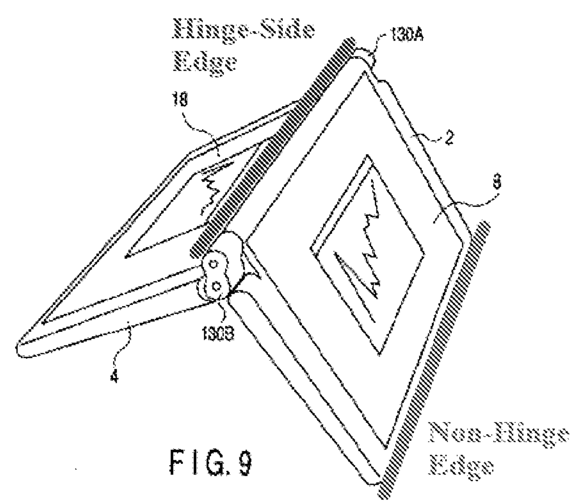
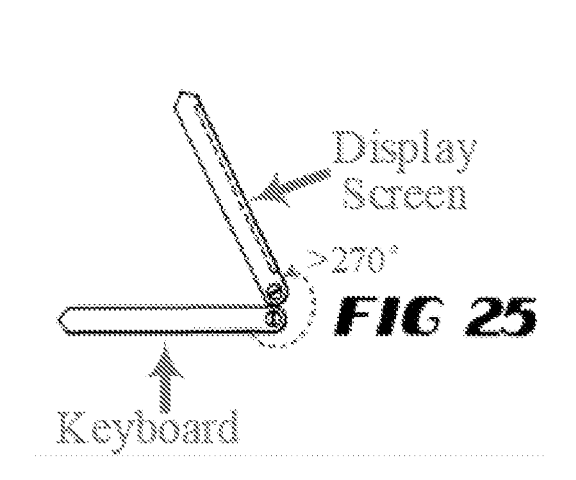


FIG. 9

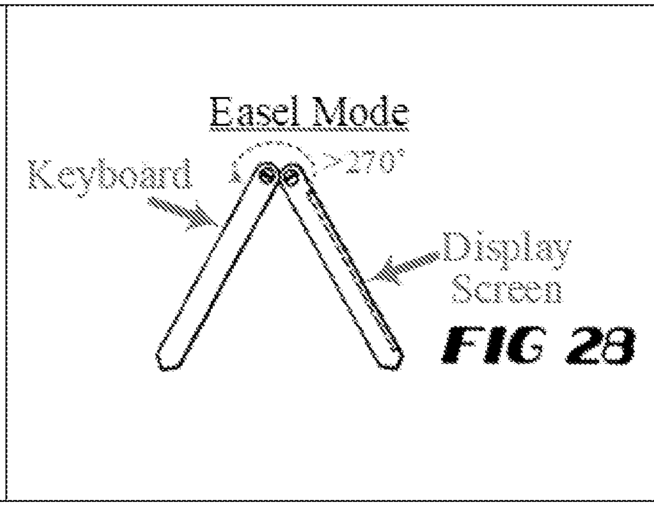
A POSITA would recognize that if the displayed screen remained the same upon transitioning from laptop to easel mode, the screen would be displayed upside-down and therefore difficult to read to the intended view. Schmandt, ¶ 189. A POSITA would therefore recognize the need to change the orientation of the displayed content by 180° upon transitioning from laptop to easel mode (and vice-versa) in order to present the displayed content right-side-up to the intended viewer and would therefore implement this functionality as taught by Hisano into the personal computer of Lane. Schmandt, ¶ 189.

A POSITA would also recognize that in a personal computer implementing both an easel mode and a frame mode, a determination of only a computer hinge angle would not be sufficient to distinguish between an easel mode and a frame mode. That is, POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode and that both the easel and frame modes may utilize a similar hinge angle. Schmandt, ¶ 190. This is demonstrated by comparing Figure 25 of Lane, showing a frame mode, with Figure 28 of Lane, reproduced below, showing an easel mode. Lane, Figs. 25, 28 (with annotations).

Lane, Fig. 25 (Frame Mode)



Lane Fig. 28 (Easel Mode)



Hisano specifically 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]; Schmandt, ¶ 191. Accordingly, a POSITA would be able to utilize the sensors disclosed in Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 191.

2. Independent Claim 12

[12.1] A portable computer configurable between a plurality of modes including a laptop mode and an easel mode, the portable computer comprising:

Lane teaches this limitation.

Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20 28.

Lane, Fig. 20 (Laptop Mode) **Lane Fig. 28 (Easel Mode)**

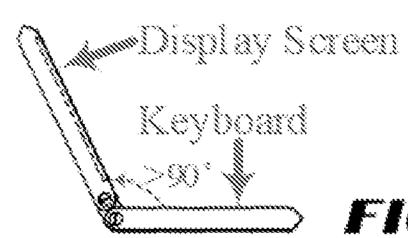


FIG 20

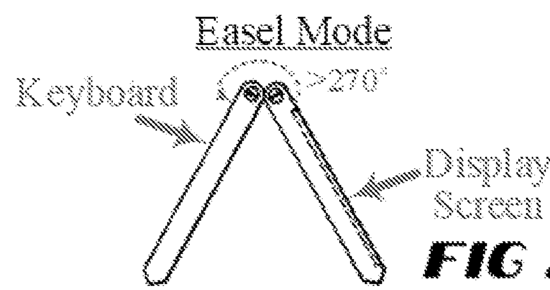


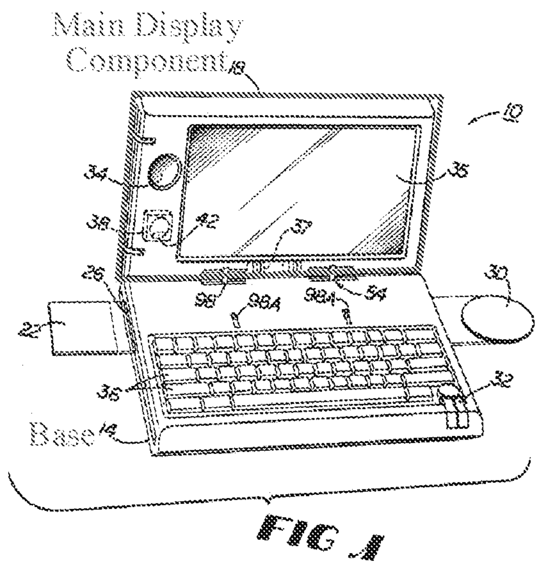
FIG 28

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

[12.2] a single display component;

Lane discloses this limitation. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35"). Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

Lane's Main Display Component

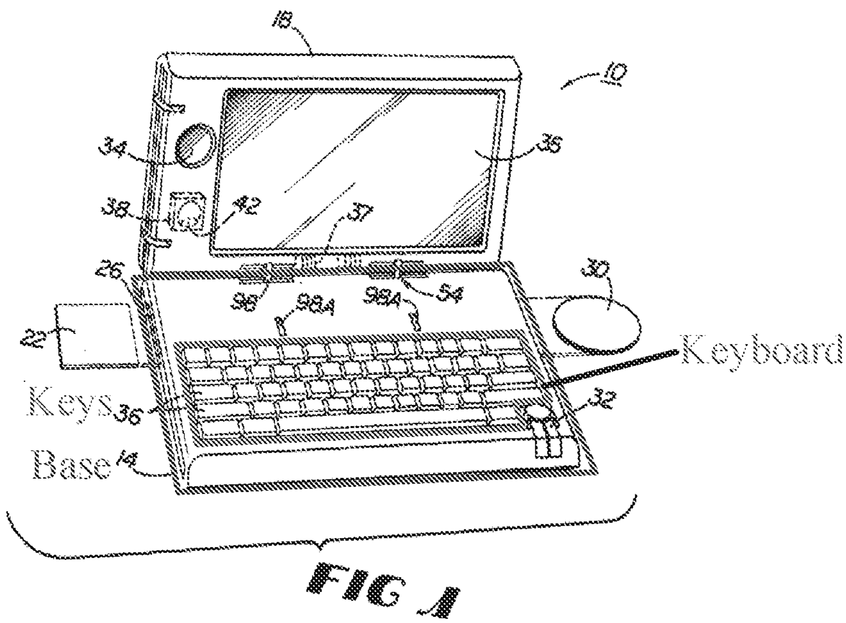


Lane, FIG. 1 (with annotations).

[12.3] a base including an integrated keyboard;

Lane discloses this limitation. Specifically, Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.,* Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard



Lane, FIG. 1 (with annotations).

> [12.4] 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 this limitation.

Lane discloses that its portable computer comprises a hinge assembly ("connector 54"). As shown in FIG. 3 of Lang, this hinge assembly is disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane, Fig. 3.

As shown in FIGS. 3, 25, and 28, and described in Lane, 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. *E.g.*, Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16.

The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

Lane, 3:5-14. As shown in Figure 3, reproduced below, the hinge assembly is located at the interface between the base and the display.

<u>Lane's Parallel Axes of Rotation</u>

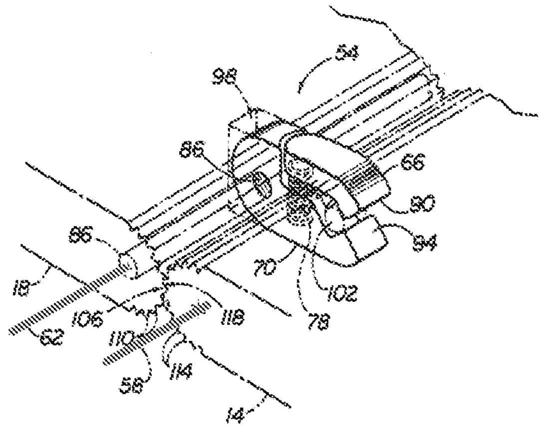


FIG 3

Lane, FIG. 3 (with annotations).

Thus, 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"). *E.g.*, Lane, 6:8-12, FIGS. 25, 28; Schmandt, ¶ 199. Accordingly, Lane teaches a hinge assembly configure to rotatably couple a display and base and defines a longitudinal axis running along an interface between the display and the base.

[12.5] 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 this limitation.

Lane discloses a hinge assembly as explained for claim [12.4] and the hinge assembly permits rotation of the display and base to configure the portable computer of Lane between an easel mode and laptop mode as explained for claim [12.1]. *Supra* claim [12.1], [12.4].

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

Lane teaches this limitation.

As shown in FIG. 28 of Lane, the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user.

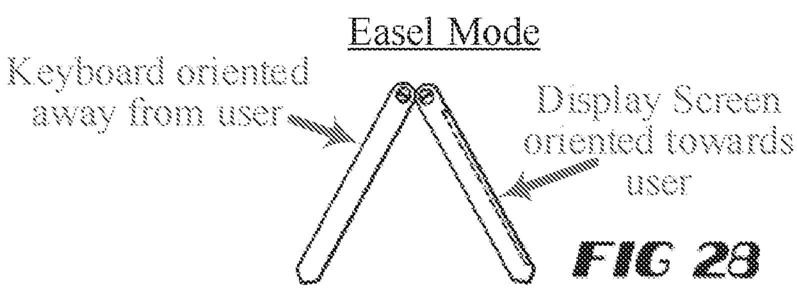


FIG 28

Lane, FIG. 28 (with annotations).

[12.7] 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.

The Lane-Hisano combination discloses this limitation. Both Lane and Hisano disclose an integrated navigation hardware control in the form of a touch-sensitive screen.[15]

Lane discloses a display that provides "pen-based computing." Lane, 3:10-14; 8:15-19; 10:17-20. A POSITA would have understood this to require a touch sensitive display capable of receiving user input via the user touching the display in any of the configurable device modes. Schmandt, ¶ 205. Thus, a POSITA would have understood that Lane discloses a touch-sensitive display, or at least renders such a display obvious. Schmandt, ¶ 205. That Lane discloses a touch-sensitive display is further confirmed by the fact that the keyboard is disabled in certain device modes. Lane, 6:5–6. A POSITA would have understood that, when the keyboard was disabled, the touch display would still allow for control of the device, e.g., in easel, frame, and tablet modes. Schmandt, ¶ 205. Indeed, Lane expressly contemplates modes in which "only visual display 35 need be accessible" (Lane, 8:12–15, 10:29–31; FIGS. 8, 28) and in those modes the POSITA would have understood that device control took place through the touch screen display. Accordingly, a POSITA would have implemented Lane such that its touch-sensitive pen input display was configured to control the computer, including controlling features and manipulating content in the same manner as a user would with a traditional computer mouse. Schmandt, ¶ 205.

To the extent patent owner argues that Lane is somehow lacking in its disclosure of a touch-sensitive user interface, a POSITA would have been motivated to implement the teachings of Hisano of a touch panel display including a virtual mouse into the portable computer of Lane. *See Hisano*, ¶ [0059]. A POSITA would be motivated to do so to provide a suitable user interface for

[15] As noted above, patent owner alleges that a touch screen is a type of "navigation hardware control" in the context of the '688 patent family. *Supra* footnote 6; Ex. 1008, ¶ 160 (pp. 77-78).

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. Schmandt, ¶ 206. A POSITA implementing Lane would have been motivated to turn to Hisano and its "touch panel" teachings, for at least the following reasons. Hisano provide specific details regarding how to implement a touch screen display. Lane discloses a touch panel for controlling the device when the keyboard is inaccessible. Schmandt, ¶ 206. As Lane does not provide specific details on the use of this touch display, a POSITA would have sought out other teachings on how to implement such displays in configurable devices. In doing so, the POSITA would have naturally encountered Hisano and appreciated the value of its teachings on touch panel displays. Schmandt, ¶ 206. Hisano teaches, in the context of a similar configurable computer, a hardware "touch panel" that provides a "virtual mouse" for navigation of the user interface in the same way a common computer mouse would.

> Notebook personal computers are also commercially available which have an electromagnetic or pressure-sensitive touch panel lying on top of an LCD panel so that direct touch with the screen enables the position on the screen to be input.
>
> ***
>
> The second housing 4 has a touch panel-installed LCD panel 18 installed in its frame 16. The touch panel-installed LCD panel 18 includes a pressure-sensitive touch panel laminated to an LCD panel (liquid crystal display device) used to display images, characters, and the like.
>
> ***
>
> ***The touch panel-installed LCD panel 18 displays not only the virtual keyboard 20 but also a virtual mouse 22 operated similarly***

> to ***a common mouse to move a pointer position or make any icon active.*** That is, an image corresponding to the mouse 22 is displayed in a screen on which the keyboard 20 is displayed. The user uses his or her hand to touch and depress a part of the touch panel corresponding to the displayed position of the virtual mouse 22, to move the virtual mouse 22.

Hisano, ¶¶ [0009], [0057], [0059] (emphasis added). A POSITA would have been motivated to incorporate these Hisano features of a touch screen with "virtual mouse" and keyboard into the Lane system, at least because doing so would provide intuitive user control of the device. Schmandt, ¶ 206. A POSITA would have experienced no technical difficulties in doing so, as Lane already discloses pen-based computing, which would have required a touch-sensitive display; Hisano notes that such displays were "commercially available." Hisano, ¶ [0009].

3. Dependent Claim 13

[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.

The combination of Lane and Hisano teaches this limitation.

Lane discloses a single display component comprising a display screen configured to display content. *See supra*, Section X.C. 2, claim [12.2].

Hisano teaches a display orientation module performing the claimed functionality. 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.

> 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.***

Hisano, ¶ [0099] (emphasis added). In other words, based on the hinge rotation angle, the system of Hisano inverts the displayed content 180 degrees relative a longitudinal axis. Schmandt, ¶ 209. A POSITA would recognize that such an operation would be performed in order to maintain displayed content as right-side-up relative to a user viewing the portable computer. (Schmandt, ¶ 209). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is performed by a display orientation module in the form of the computer's internal processor and associated logic, constituting a display orientation module. *See e.g.,* Hisano, ¶ [0026] (describing "a 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"); Schmandt, ¶ 209.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra,* Section X.C.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[16]

A POSITA would recognize that whether the computer of Lane is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base, for at least the following reasons. To illustrate, 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 (reproduced below).

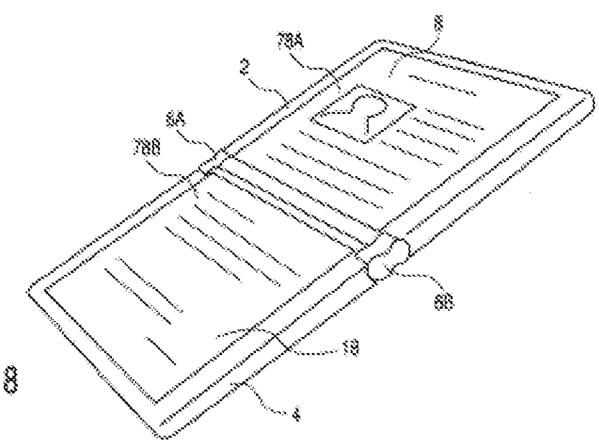


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device may be in easel

[16] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained below for Claim 16. *Infra,* Section X.C.5.

mode, such as taught by Lane. Schmandt, ¶ 213.[17] Accordingly, a POSITA would know how to program a portable computer to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 213. Specifically, a POSITA would implement the teachings of Hisano to program the portable computer of Lane 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. Schmandt, ¶ 213.

4. <u>Dependent Claim 14</u>

[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.

The combination of Lane and Hisano teaches this limitation.

---

[17] A POSITA would also recognize that a hinge angle greater than 180 degrees may correspond to the frame mode as taught by Lane, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Hisano also 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, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 213.

As explained above for Claim 13, the portable computer of 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. *Supra*, Section X.C.3. Further, as explained, Hisano teaches a 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. *Id.*

5. Dependent Claim 16

[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.

The combination of Lane and Hisano teaches this limitation.

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 of a display housing to a separate housing, in order to determine the orientation of a displayed screen.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the portable computer device utilizing a dedicated sensor. Schmandt, ¶ 217. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art. *See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra,* Section VIII.K; Schmandt, ¶ 217. A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 217. Therefore, Hisano teaches the use of a sensor as a means for detecting the relative orientation of Hisano's display relative to a separate housing structure, such as a base.

Hisano also teaches its display orientation module configured to automatically adjust the orientation of displayed content responsive to the information from the mode sensor. Hisano, ¶ [0099] ("[T]he rotating angle . . . 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 . . . as the top."). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is performed by a display orientation module in the form of the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); Schmandt, ¶ 218.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1

6. Dependent Claim 20

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

The combination of Lane and Hisano teaches this limitation.

As explained above for claim 14, 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. *See supra*, Section X.C.4; Schmandt, ¶ 222.

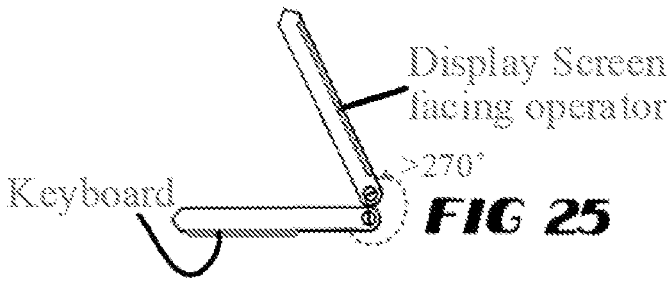
7. Dependent Claim 24

> [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.

The combination of Lane and Hisano teaches this limitation.

Lane discloses its portable computer including a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 224.

Lane's Frame Mode



Lane, Fig. 25 (with annotations).

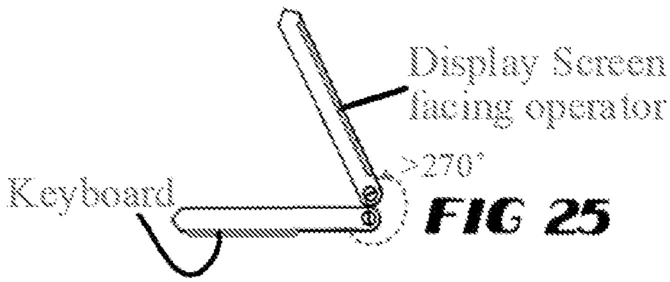
8. **Dependent Claim 25**

[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; 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.

The combination of Lane and Hisano teaches this limitation.

Lane discloses its portable computer including a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 224.

<u>Lane's Frame Mode</u>



Lane, Fig. 25 (with annotations).

As explained above for claim 13 it would have been obvious to a POSITA to perform an inversion of the display orientation upon detecting a transition from laptop mode to easel mode. *See supra,* Sections X.C.3. Specifically, a POSITA would recognize that upon a transition between laptop and easel modes, the top of the display screen becomes the bottom and vice-versa, as shown in the annotated figures below, and that the display orientation should be inverted to retain the displayed content as right-side-up relative to a viewer. Hisano, Figs. 1, 9; Schmandt, ¶ 225.

<u>**Annotated Hisano Fig. 1 (Laptop Mode)**</u> <u>**Annotated Hisano Fig. 9 (Easel Mode)**</u>

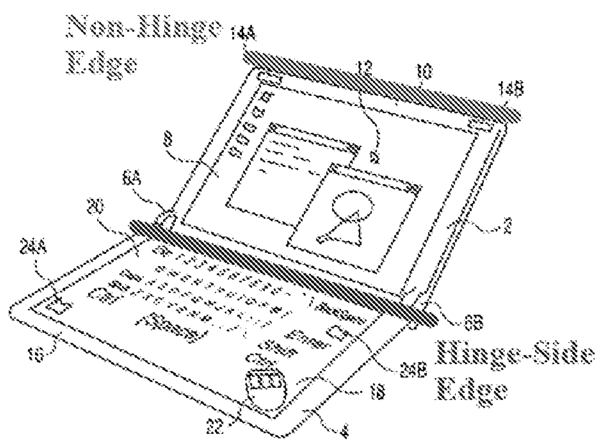


FIG. 1

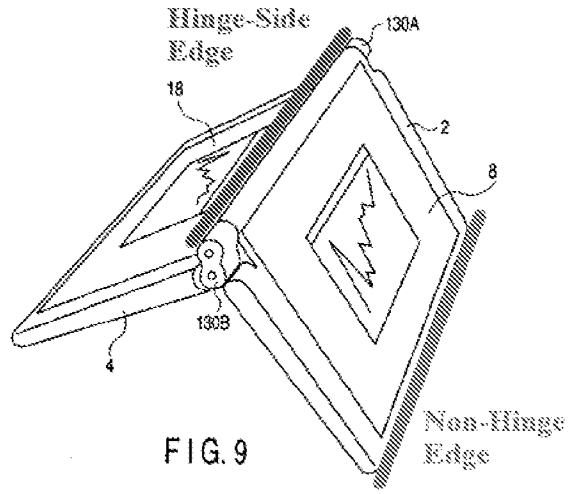
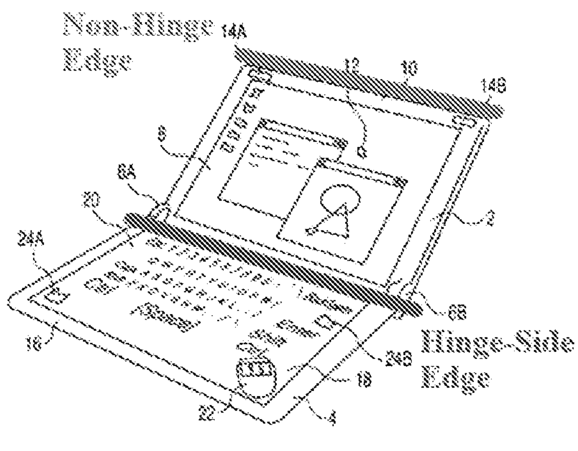
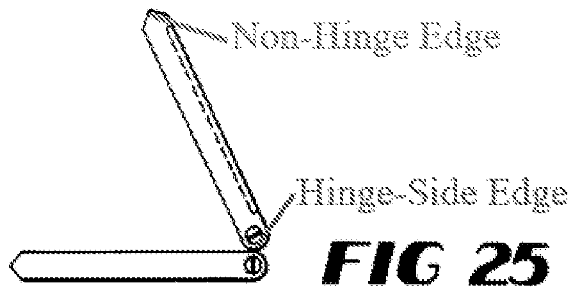


FIG. 9

Therefore, a POSITA would be motivated to implement the display orientation module of Hisano to effect a change in display orientation from a first content display orientation for laptop mode to a second content display orientation for easel mode. Schmandt, ¶ 226.

Likewise, a POSITA would recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Lane, Fig. 25; Schmandt, ¶ 227. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 227.

Annotated Hisano Fig. 1 (Laptop Mode)	**Annotated Lane Fig. 25 (Frame Mode)**
 FIG. 1	 FIG 25

Accordingly, a POSITA would recognize the need 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, i.e., to maintain the displayed content as right-side-up relative to a viewer despite the top and bottom edges of the display becoming inverted. Schmandt, ¶ 228. This is demonstrated by the annotated figures below. Hisano, Fig. 9; Lane, Fig. 259; Schmandt, ¶ 228.

Annotated Hisano Fig. 9 (Easel Mode)

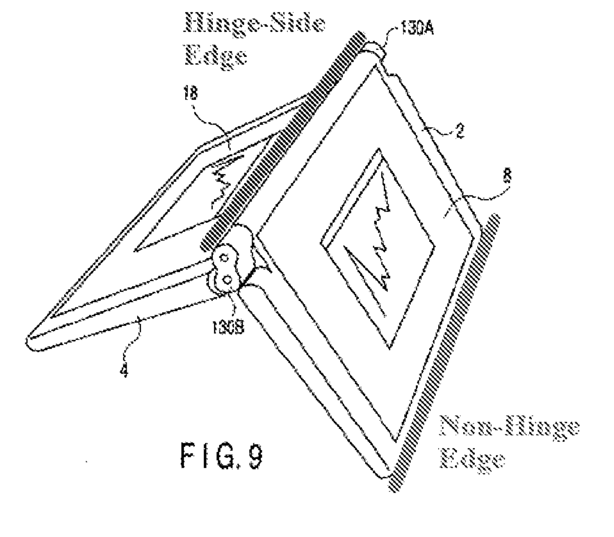


FIG. 9

Annotated Lane Fig. 25 (Frame Mode)

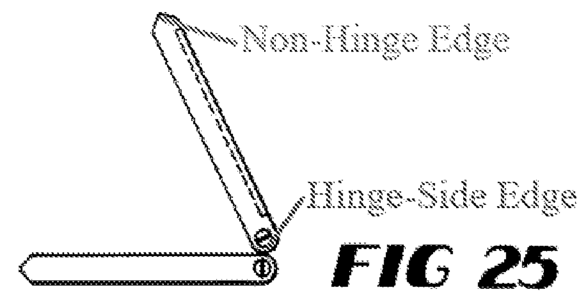


FIG 25

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.

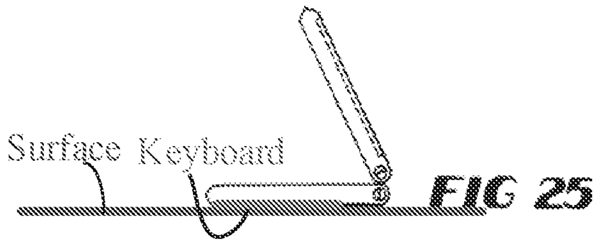
9. Dependent Claim 26

[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 teaches this limitation.

Lane explicitly discloses "render[ing] keys 36 of first module 14 inoperable when unused." Lane, 6:5-6. A POSITA would have understood that Lane's keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in Lane's frame mode. Specifically, as discussed above for element 24, a POSITA would have understood that Lane's keyboard ("keys 36") is placed face down on a surface in frame mode given how it is depicted in FIG. 25, thereby rendering them unused. Schmandt, ¶ 231.

Lane's Frame Mode



Lane, FIG. 25 (with annotations).

Thus, in accordance with Lane's prescription to render the keys 36 inoperable when the keys 36 are unused, the keys 36 would be rendered inoperable in the frame mode, since a POSITA would have understood that the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Schmandt, ¶ 232. In addition, a POSITA would recognize the utility of rendering its keyboard 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. *See e.g.*, Kam Schmandt, ¶ 232. Lane states that its functionality of rendering its keys inoperable is performed by "device 10 (and its associated software)." 5:35-6:6. Accordingly, a POSITA would understand the device's software performing this functionality to constitute a protection module. Schmandt, ¶ 232.

While, for purposes of this Request only, Requester submits that the term "protection module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). See *supra*, Section V.B. This element is also satisfied to the extent the Examiner finds or PO argues that the term "protection module" invokes 112(6), has adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: (1) determines that the portable computer is in frame mode (2) "prevent[s] keys from being pressed . . . when the portable computer is in the frame mode." '688 Patent, 16:13-17.

As disclosed above, Lane teaches a mechanism for performing this same function and it would have been obvious for a POSITA to implement a software algorithm in the portable computer of Lane to (1) utilize the computer's sensor input (as taught by Hisano) 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. Schmandt, ¶ 234.

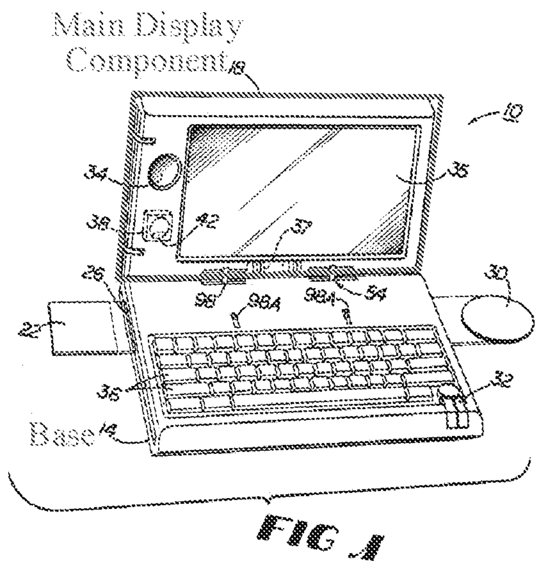
10. <u>Independent Claim 17</u>

[17.1] 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:

The combination of Lane and Hisano teaches this limitation.

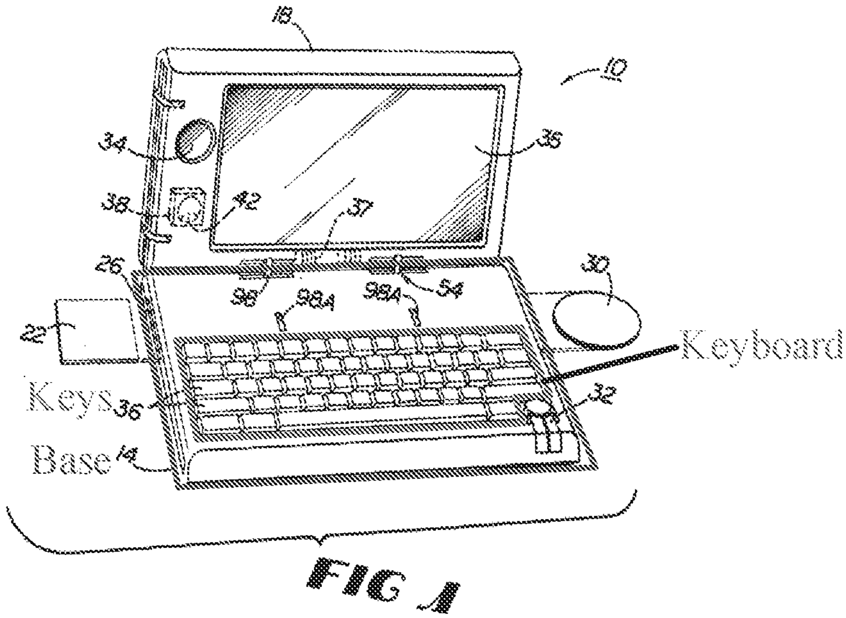
Lane discloses a portable computer comprising a body including a single display component with a display screen and including an integrated keyboard. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35"). Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

Lane's Main Display Component



Lane, FIG. 1 (with annotations). Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

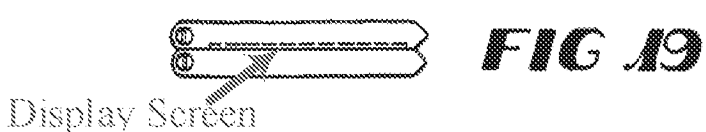
Lane's Base with Keyboard



Lane, FIG. 1 (with annotations).

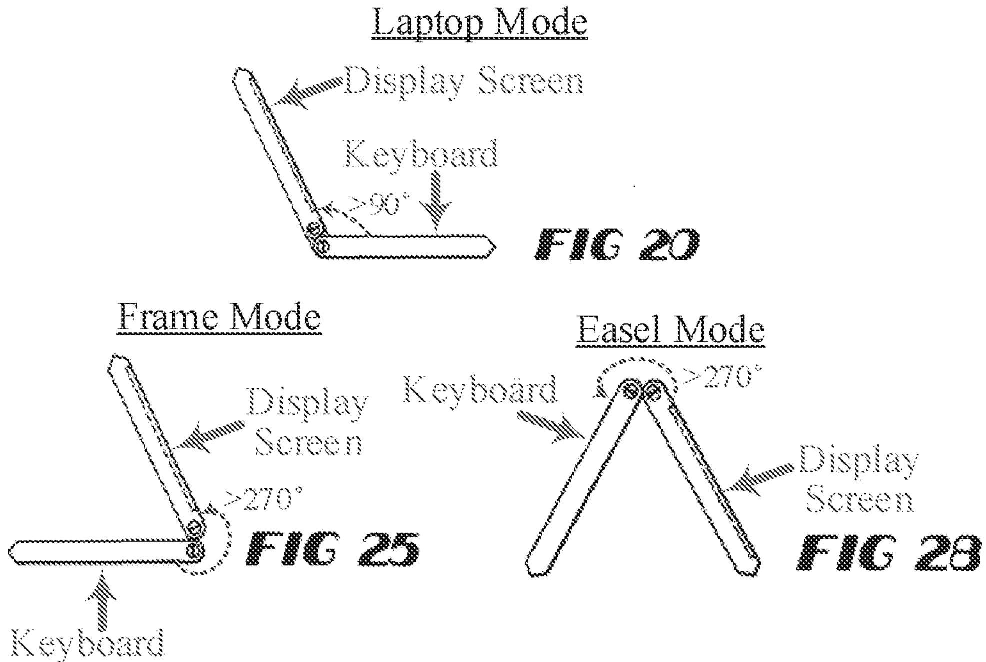
Lane discloses its "portable computer[]" (*e.g.*, Lane, 1:3-6) is configurable among a plurality of display modes. The computer is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Closed Configuration



Lane, FIG. 19 (with annotations).

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

[17.2] 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 this limitation.

Lane discloses rotating the display and base of its portable computer about a hinge assembly ("connector 54"). As shown in FIG. 3 of Lange, this hinge assembly is disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane, Fig. 3.

As shown in FIGS. 3, 25, and 28, and described in Lane, 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. *E.g.*, Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16.

> The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

Lane, 3:5-14. As shown in Figure 3, reproduced below, the hinge assembly is located at the interface between the base and the display.

Lane's Parallel Axes of Rotation

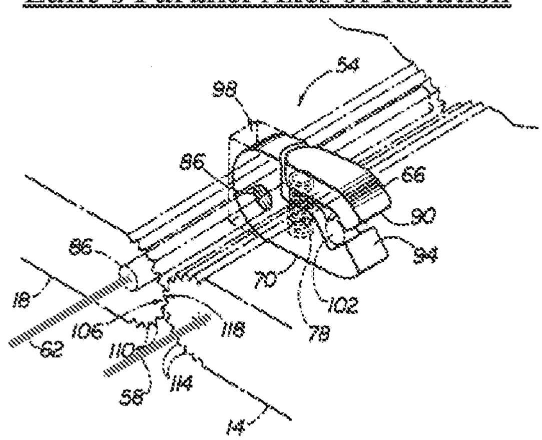


FIG 3

Lane, FIG. 3 (with annotations).

Thus, 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"). *E.g.*, Lane, 6:8-12, FIGS. 25, 28; Schmandt, ¶

241. Accordingly, Lane teaches rotating its display and base about longitudinal axis running along an interface between the display and the base.

[17.3] 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;

The combination of Lane and Hisano discloses this limitation.

Hisano teaches this limitation. 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art (*See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra*, Section VIII.K; Schmandt, ¶ 243). A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 243. Hisano therefore teaches detecting a degree of rotation of a display relative to a base structure.

Hisano teaches automatically adjusting the orientation of displayed content responsive to the information (i.e., a signal) from the mode sensor. Hisano, ¶ [0099] ("[T]he rotating angle . . . 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 . . . as the top."). A POSITA would recognize that the decision-making regarding when to change orientation of the display, along with generation of the computer's displayed screen, is performed by the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); Schmandt, ¶ 244. And a POSITA would understand 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. Schmandt, ¶ 244. Therefore, Hisano teaches the use of a sensor as for detecting a degree of Hisano's display relative to a separate housing structure, such as a base, as well as providing a signal representative of the degree of rotation.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

[17.4] 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;

The combination of Lane and Hisano discloses this limitation.

As explained above for claim [17.3], Hisano teaches detecting and providing a degree of rotation of a display component relative to a base.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

Further, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base compared to a threshold value for the hinge angle for at least the following reasons. To illustrate, 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 (reproduced below).

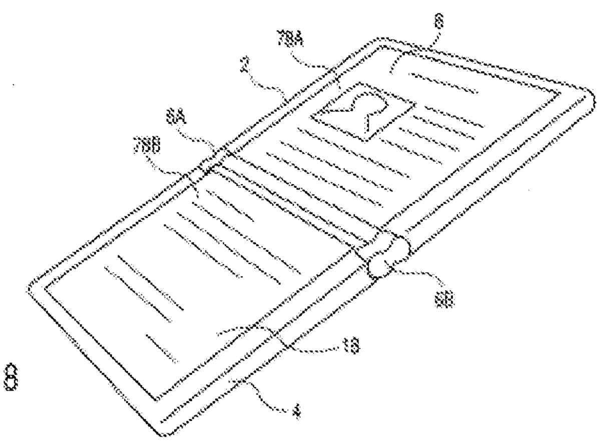


FIG. 8

A POSITA would recognize that 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, while if the hinge angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode. Schmandt, ¶ 250. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 250. Specifically, a POSITA would implement the teachings of Hisano to enable the portable computer of Kamikakai 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.

[17.5] generating a visual display of the content for the display screen;

The combination of Lane and Hisano discloses this limitation.

A POSITA understood that the purpose of a portable computer including a display screen, as disclosed in Lane, is to generate content to be visually displayed on the display screen. Schmandt, ¶ 252. A POSITA understood that the signals corresponding to the visual content was 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. Schmandt, ¶ 252. These processor and display components were conventional to portable computers as admitted by the '688 patent.

> Conventional portable computers most commonly have a "clam-shell" configuration, with a base including the keyboard, various ports, connectors and/or inputs (e.g., for power and connecting peripheral devices), and the majority of the electrical components (e.g., the central processing unit and memory), and a display component pivotably coupled to the base by a hinge.

'688 Patent, 1:21-27.

Lane confirms that its computer is configured for "information to appear on visual display" including in landscape or portrait orientations. Lane, 5:35-6:3.

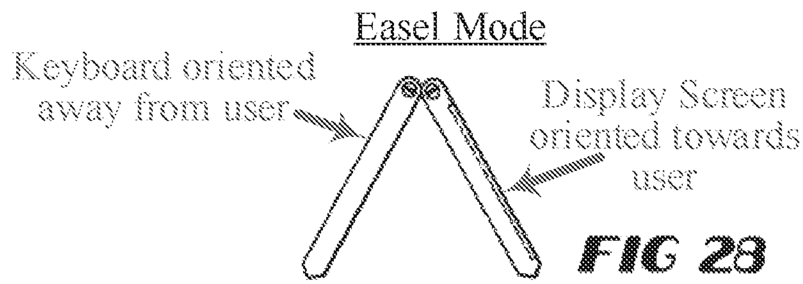
Accordingly, a POSITA would understand that a portable computer as taught by Lane generates a visual display of the content for its display screen.

[17.6] 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

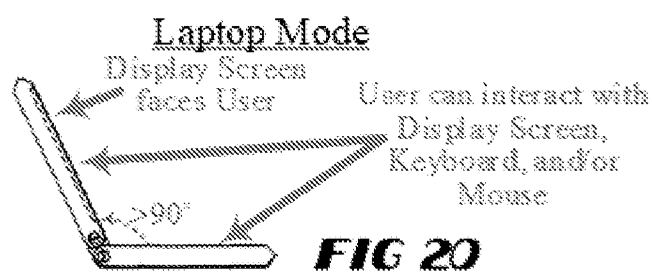
The combination of Lane and Hisano teaches this limitation.

As shown in FIG. 28 of Lane, in easel mode the main display component ("second module 18") is oriented towards the user and the keyboard is oriented away from the user.



Lane, FIG. 28 (with annotations).

As shown in FIG. 20 of Lane, in laptop mode the main display component ("second module 18") and the keyboard is oriented toward the user.



Lane, FIG. 20 (with annotations).

[17.7] 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: 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.

The combination of Lane Hisano discloses this limitation.

As explained above for claim [17.3], Hisano teaches detecting and providing a degree of rotation of a display component relative to a base. As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1

Further, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base compared to a threshold value for the hinge angle for at least the following reasons. To illustrate, 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 (reproduced below).

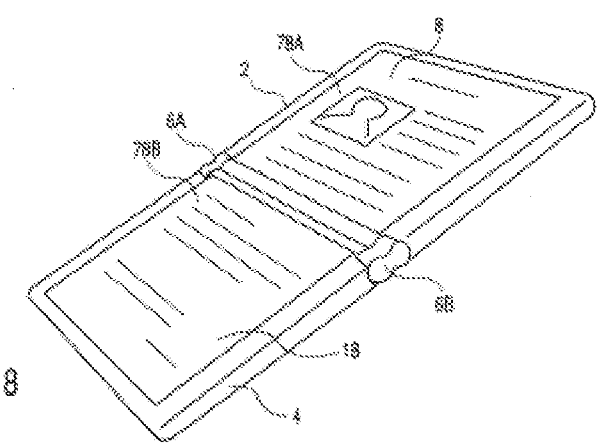


FIG. 8

A POSITA would recognize that 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, while if the hinge angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode. Schmandt, ¶ 261. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 261. Therefore, a POSITA would implement the teachings of Hisano 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.

11. Dependent Claim 18

[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.

The combination of Lane and Hisano teaches this limitation.

As explained above for claim [17.6], it would have been obvious to a POSITA modifying the portable computer of Lane to implement an inversion of the display screen upon a transition between laptop mode and that it would likewise have been obvious to have an orientation for laptop mode for a hinge angle below 180 degrees and to have an inverted orientation for easel mode for a hinge angle above 180 degrees so as to maintain the displayed content right-side-up relative to a user/operator. *See supra,* Section X.C.10, claim [17.6].

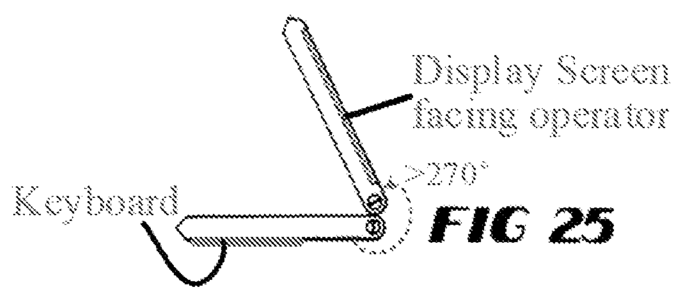
12. Dependent Claim 27

[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 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.

The combination of Lane and Hisano teaches this limitation.

Lane discloses its portable computer including a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 265.

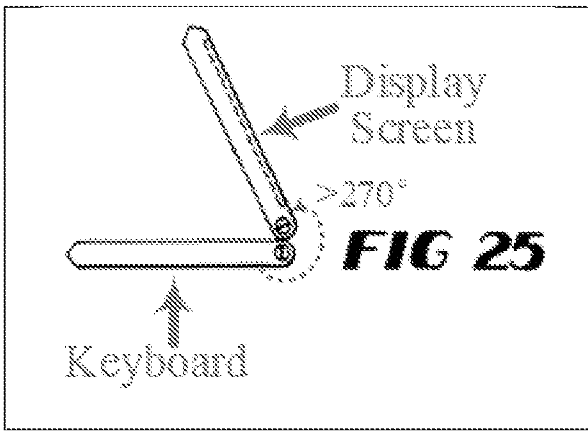
Lane's Frame Mode



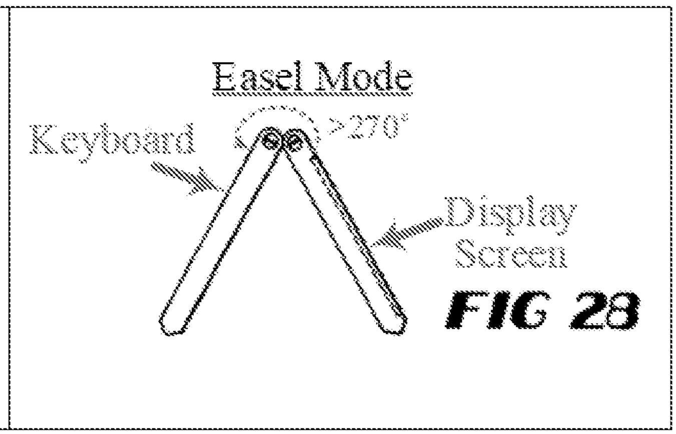
Lane, Fig. 25 (with annotations).

A POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. Schmandt, ¶ 266. For example, as explained for claims [17.3] and [17.7], Hisano teaches its orientation sensor is capable of measuring the hinge angle of a display relative to a base housing, and a POSITA would have recognized that this hinge angle may be used to detect a transition between a laptop and an easel mode. *See supra,* Sections X.C.10, claims [17.3], [17.7]. Specifically, POSITA would recognize that 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, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in either the easel mode, or the frame mode. *See supra,* Sections X.C.1; Schmandt, ¶ 266. A POSITA would also recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode, and the frame mode, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Schmandt, ¶ 266. This is demonstrated by comparing Figures 25 and 28 of Lane, reproduced below (with annotations).

Lane, Fig. 25 (Frame Mode)



Lane Fig. 28 (Easel Mode)



Hisano also 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]; Schmandt, ¶ 267. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 267.

A POSITA would also recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Lane, Fig. 25; Schmandt, ¶ 268. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 268.

Annotated Hisano Fig. 1 (Laptop Mode) **Annotated Lane Fig. 25 (Frame Mode)**

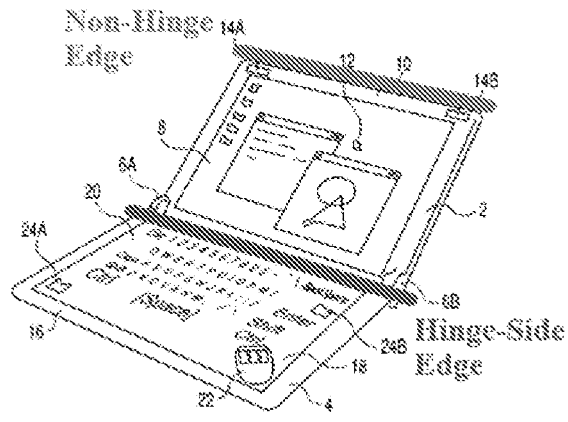


FIG. 1

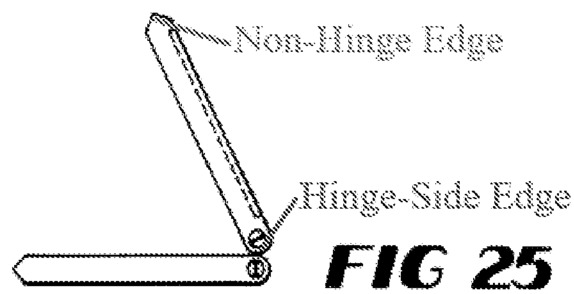


FIG 25

Accordingly, it would be obvious to a POSITA to display visual content in a first orientation when the sensor as taught by Hisano detects a degree of rotation greater than the threshold degree of 180 degrees and that the portable computer is oriented into frame mode.

13. Dependent Claim 28

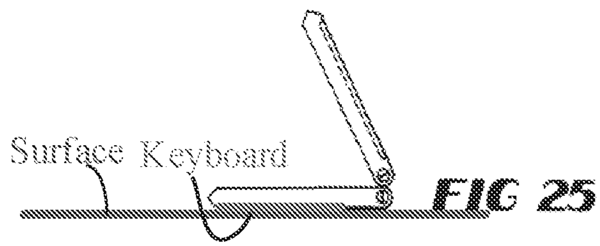
[28] The method of claim 17, further comprising an act of deactivating keyboard operation when the portable computer is configured in the frame mode.

Lane satisfies this limitation.

Lane explicitly discloses "render[ing] keys 36 of first module 14 inoperable when unused." Lane, 6:5-6. A POSITA would have understood that Lane's keys 36 are rendered inoperable in

Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in Lane's frame mode. Specifically, as discussed above for element 24, a POSITA would have understood that Lane's keyboard ("keys 36") is placed face down on a surface in frame mode given how it is depicted in FIG. 25, thereby rendering them unused. Schmandt, ¶ 271.

Lane's Frame Mode



Lane, FIG. 25 (with annotations).

Thus, in accordance with Lane's prescription to render the keys 36 inoperable when the keys 36 are unused, the keys 36 would be rendered inoperable in the frame mode, since a POSITA would have understood that the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Schmandt, ¶ 272.

14. Independent Claim 19

[19.1] A portable computer comprising:

Lane discloses this limitation.

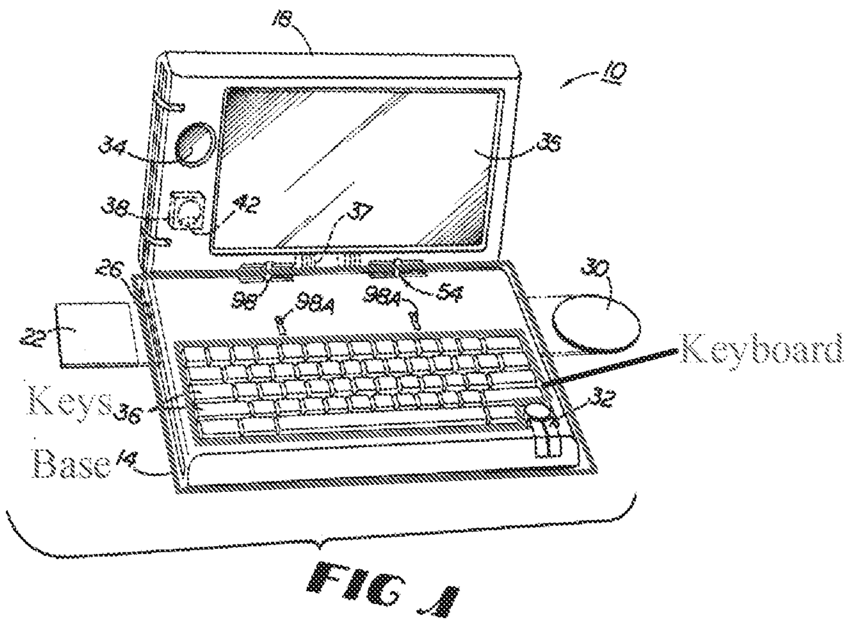
Lane discloses a "portable computer[]." Lane, 1:3-6.

[19.2] a base unit comprising an integrated keyboard;

Lane discloses this limitation. Specifically, Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane,

FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard

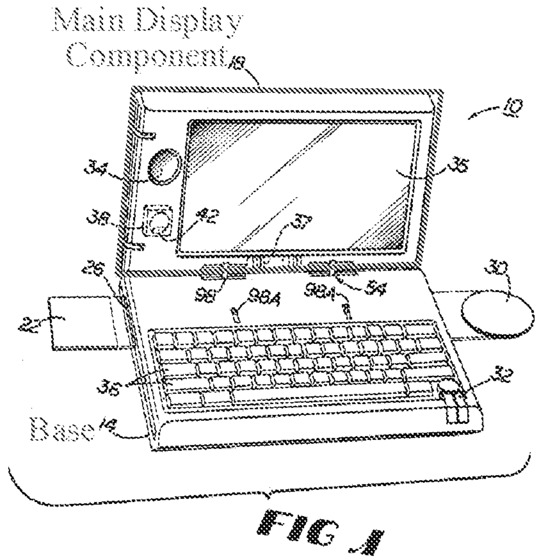


Lane, FIG. 1 (with annotations).

[19.3] a single display unit including a single display screen configured to display content;

Lane discloses this limitation. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35") that displays content. Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

Lane's Main Display Component



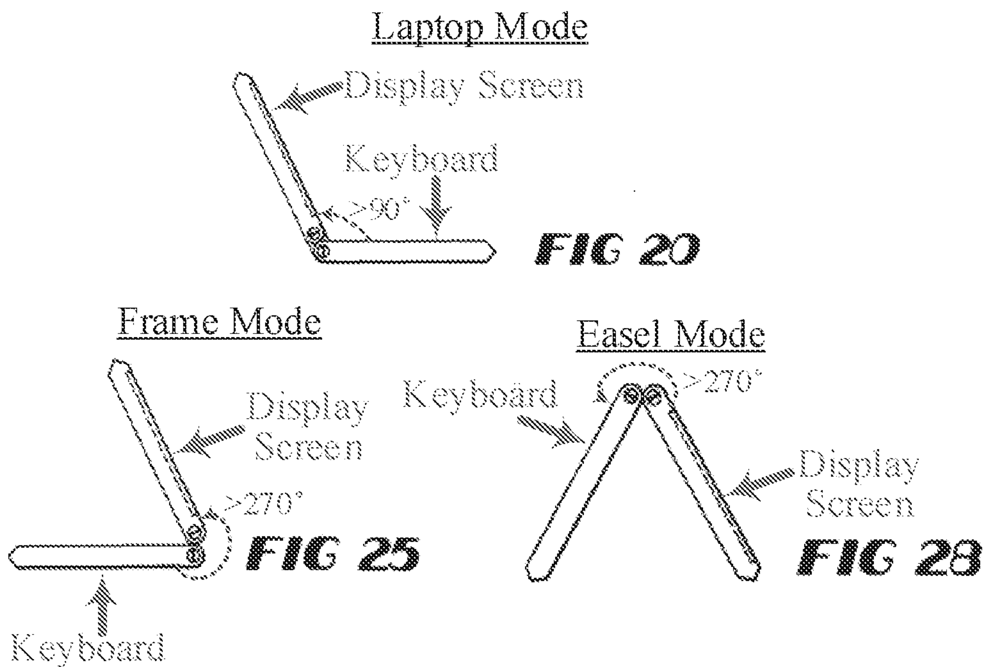
Lane, FIG. 1 (with annotations).

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

The combination of Lane and Hisano teaches this limitation.

Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is configurable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Hisano teaches an orientation sensor configured to detect a physical orientation 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 of a display housing relative to a separate housing component, in order to determine the orientation of a displayed screen.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. Numerous types of sensors for measuring the angle of a hinge were known in the art and a POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 279. Hisano discloses that its orientation sensor may also include "a sensor that senses the direction of gravity so as to automatically switch the top and bottom of the display screen. . . ." Hisano, ¶ [0099]. Therefore, Hisano teaches the use of a sensor as a means for detecting the relative orientation of Hisano's display relative to a separate housing structure, such as a base. As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

[19.5] 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;

The combination of Lane and Hisano teaches this limitation.

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.

> 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.***

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is performed by a display orientation module in the form of the computer's internal processor and associated logic. *See e.g.*, Hisano, [0026] ("a 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"); (Schmandt, ¶ 281).

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra*, Section V.A. This element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: that "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[18]

A POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base for at least the following reasons. To illustrate, 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 (reproduced below).

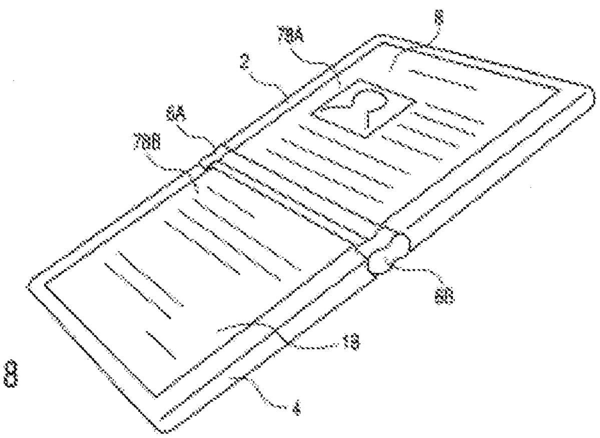


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device may be in easel mode, such as taught by Lane. Schmandt, ¶ 285.[19] Accordingly, a POSITA would know how to

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[18] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained above for Claim [19.4]. *Supra,* Section X.C.14, claim [19.4].

[19] A POSITA would also recognize that a hinge angle greater than 180 degrees may correspond to the frame mode as taught by Lane, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Hisano also discloses that its sensor may include a gravity sensor

program a portable computer to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 285. Specifically, a POSITA would implement the teachings of Hisano to program a portable computer 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. Schmandt, ¶ 285.

[19.6] 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:

The combination of Lane and Hisano teaches this limitation.

As explained above for claim [19.4], Lane teaches a portable computer having a laptop mode, a frame mode, and an easel mode. *See supra,* Section X.C.14, claim [19.4].

In addition, as explained for claim [19.4], Hisano teaches an orientation sensor which detects the physical orientation of the portable computer. *See supra,* Section X.C.14, claim [19.4]. A POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. Schmandt, ¶ 288. For

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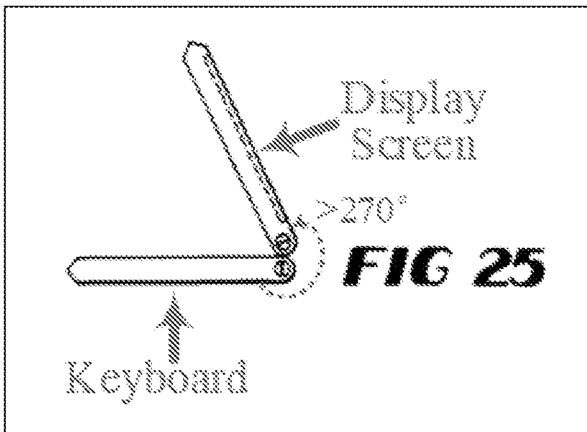
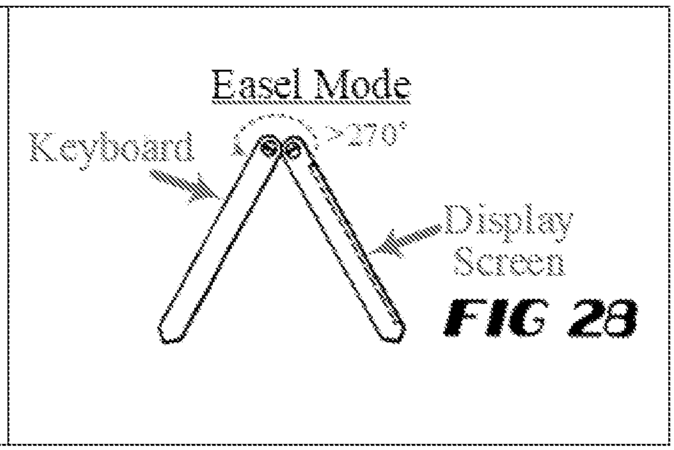
that is capable of distinguishing the portable computer's orientation "regardless of the angle of the hinges . . . or the placement of the personal computer." Hisano, ¶ [0099]. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 285.

example, as explained for claims [19.4] and [19.5], Hisano teaches its orientation sensor is capable of measuring the hinge angle of a display relative to a base housing, and a POSITA would have recognized that this hinge angle may be used to detect a transition between a laptop and an easel mode. *See supra,* Sections X.C.14, claims [19.4], [19.5]. Specifically, POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Lane would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in either the easel mode or frame mode. *See supra,* Sections X.C.1; Schmandt, ¶ 288. That is, POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode the frame mode and that both the easel and frame modes may utilize a similar hinge angle. Schmandt, ¶ 288. This is demonstrated by comparing Figures 25 and 28 of Lane, reproduced below (with annotations).

Lane, Fig. 25 (Frame Mode)



Lane Fig. 28 (Easel Mode)



Hisano also 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]; Schmandt, ¶ 289. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 289.

[19.7] 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.

The combination of Lane and Hisano teaches this limitation.

As explained above for claims [19.5] and [19.6], the display orientation module taught by Hisano 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 accordingly. *See supra,* Sections X.C.14, claims [19.5], [19.6]

As explained above for claim [19.5] it would have been obvious to a POSITA to perform an inversion of the display orientation upon detecting a transition from laptop mode to easel mode. *See supra,* Sections X.C.14, claim [19.5]. Specifically, a POSITA would recognize that upon a transition between laptop and easel modes, the top of the display screen becomes the bottom and vice-versa, as demonstrated in the annotated figures below, and that the display orientation should be inverted to retain the displayed content as right-side-up relative to a viewer. Hisano, Figs. 1, 9; Schmandt, ¶ 292.

Annotated Hisano Fig. 1 (Laptop Mode)

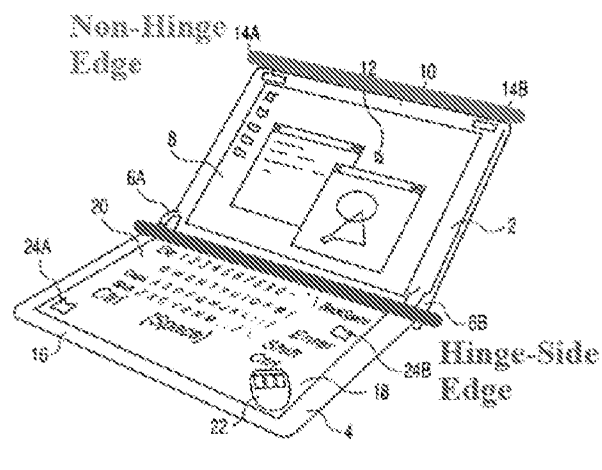


FIG. 1

Annotated Hisano Fig. 9 (Easel Mode)

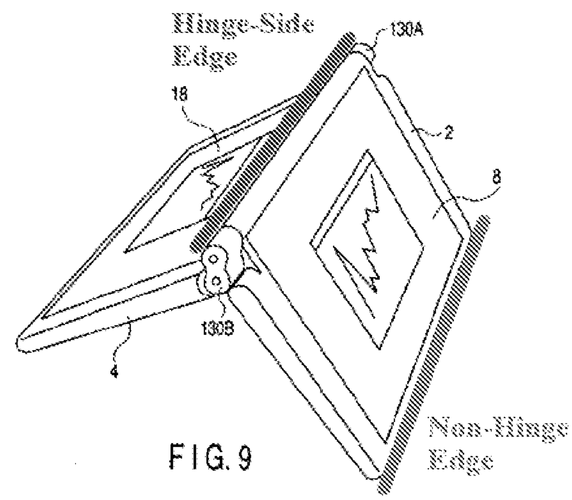
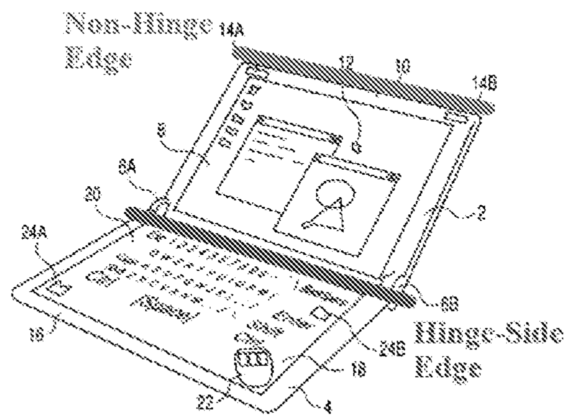
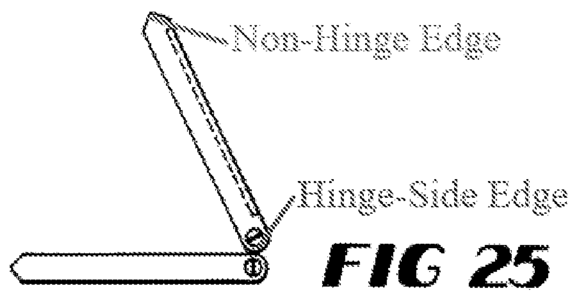


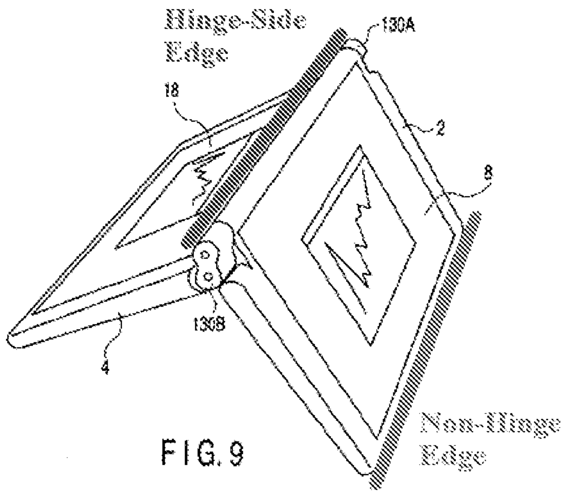
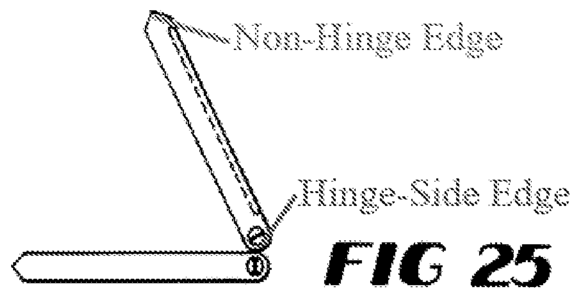
FIG. 9

Therefore, a POSITA would be motivated to implement the display orientation module of Hisano to effect a change in display orientation in the portable computer of Kamikakai from a first content display orientation for laptop mode to a second content display orientation for easel mode. Schmandt, ¶ 293.

Likewise, a POSITA would also recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Lane, Fig.25; Schmandt, ¶ 294. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 294.

Annotated Hisano Fig. 1 (Laptop Mode)	**Annotated Lane Fig. 25 (Frame Mode)**
 FIG. 1	 FIG 25

Accordingly, a POSITA would recognize the need to effect 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, i.e., to maintain the displayed content as right-side-up relative to a viewer despite the top and bottom edges of the display becoming inverted. Schmandt, ¶ 295. This is demonstrated by the annotated figures below. Hisano, Fig. 9; Lane, Fig. 25; Schmandt, ¶ 295.

Annotated Hisano Fig. 9 (Easel Mode)	**Annotated Lane Fig. 25 (Frame Mode)**
 FIG. 9	 FIG 25

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.

15. Dependent Claim 21[20]

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

The combination of Lane and Hisano teaches this limitation.

[20] Requester believes that an error occurred regarding the dependency for dependent claims 21 and 22 during issuance of the '688 patent. While claims 21 and 22 depend from claim 18 in the '688 patent as-issued, during the patent's prosecution they depended from the independent claim that

As explained for claim [19.4], Hisano teaches an orientation sensor that detects a physical orientation of a display unit relative to a base. *See supra,* Section X.C.14, claim [19.4]. Hisano further teaches that its orientation sensor may include an accelerometer in the form of a "sensor that senses the direction of gravity." Hisano, ¶ [0099]; Schmandt, ¶ 298. A POSITA would have understood that Hisano's teaching of a gravity sensor would have implied an accelerometer, or at least rendered it obvious, as these were well-known inexpensive devices capable of determining acceleration with respect to the force of gravity. Schmandt, ¶ 298. A POSITA would be motivated to implement this accelerometer as taught by Hisano with the portable computer taught by Kamikakai in order to determine a transition between an easel mode and a frame mode. That is, a POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode as taught as well as the frame mode as taught by Lane, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Schmandt, ¶ 298. This is demonstrated by comparing Figures 25 and 28 of Lane.

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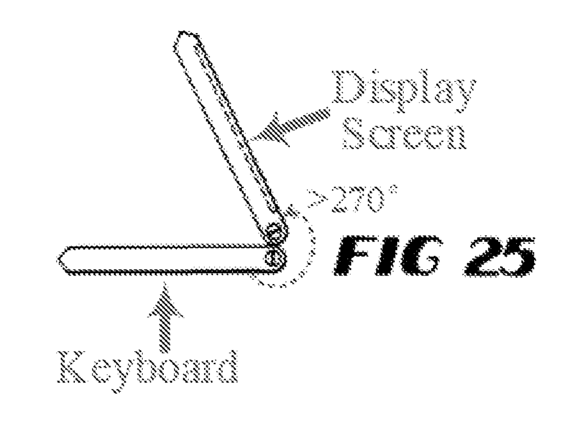
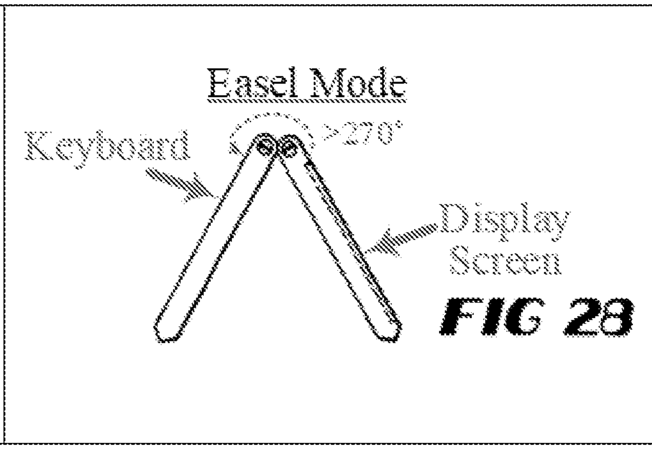
issued as claim 19. *See* Ex. 1002, 365-66 (as-presented claims 24 and 25 depending from claim 21), 411 (presented claim 21 issued as claim 19). Further, the language of claims 21 and 22 confirms that they are intended to depend from claim 19. Both claims 21 and 22 recite a preamble of a "portable computer," corresponding to the "portable computer" preamble of claim 19, rather than the "method" of claim 18. Accordingly, in this Request, Requester treats claims 21 and 22 as properly depending from claim 19 and analyzes them accordingly.

Lane, Fig. 25 (Frame Mode)	**Lane Fig. 28 (Easel Mode)**
	

Lane, FIGS 25, 28 (with annotations).

Hisano also teaches that its gravity 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]; Schmandt, ¶ 299. A POSITA would understand a gravity sensor to constitute an accelerometer. Schmandt, ¶ 299. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes, and therefore be able to provide an appropriate display orientation for each mode. Schmandt, ¶ 299.

16. Dependent Claim 22

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

The combination of Lane and Hisano teaches this limitation.

As explained for claims [19.4], [19.5], and [19.6], Hisano teaches detecting an angle of rotation about of hinge of a display unit relative to a base using an orientation sensor and a POSITA would utilize such a sensor 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. *See supra,* Section X.C.14, claims [19.4]-[19.6].

17. Independent Claim 29

[29.1] 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:

The combination of Lane and Hisano teaches this limitation.

Lane discloses a portable computer comprising a body including a single display component with a display screen and including an integrated keyboard. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes the display screen ("visual display 35"). Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

Lane's Main Display Component

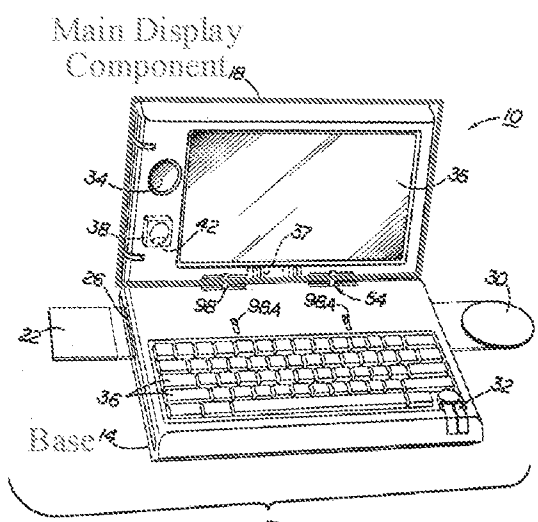
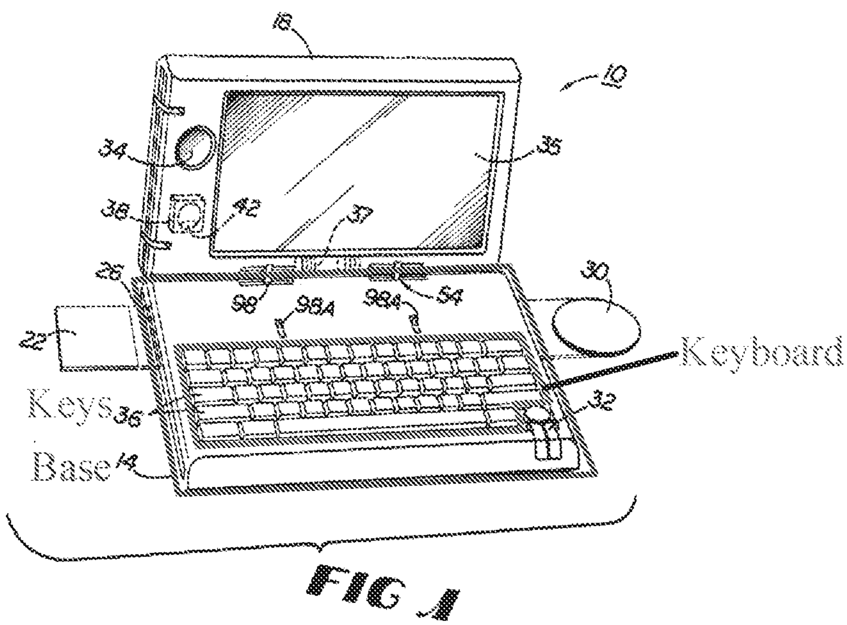


FIG 1

Lane, FIG. 1 (with annotations). Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard



Lane, FIG. 1 (with annotations).

Lane discloses that its portable computer comprises a hinge assembly ("connector 54"). As shown in FIG. 3 of Lange, this hinge assembly is disposed at least partially within the base ("first module 14") and the main display component ("second module 18"). Lane, Fig. 3. As shown in FIGS. 3, 25, and 28, and described in Lane, 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. *E.g.*, Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16.

> The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

Lane, 3:5-14.

Lane's Parallel Axes of Rotation

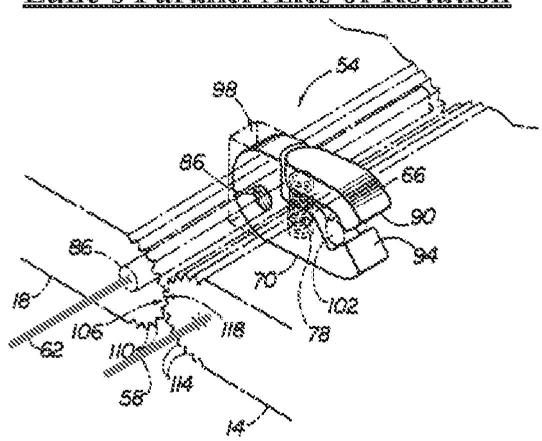
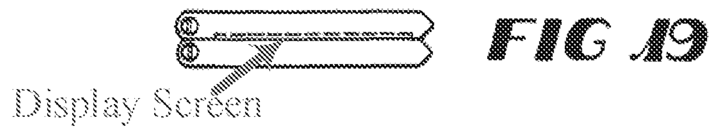


FIG 3

Lane, FIG. 3 (with annotations).

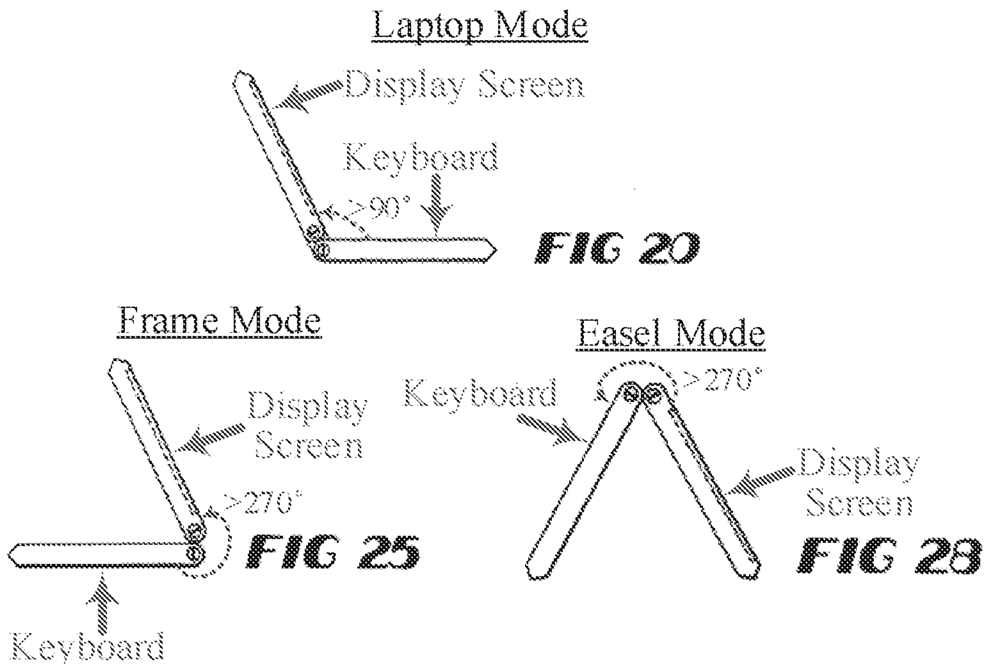
Lane discloses its "portable computer[]" (*e.g.*, Lane, 1:3-6) is configurable, via its hinge assembly, among a plurality of display modes. The computer is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Closed Configuration



Lane, FIG. 19 (with annotations).

Lane's Display Modes



Lane, FIGS. 20, 25, 28 (with annotations).

Hisano discloses a method of automatically orienting content between a plurality of display modes. 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.

> 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.***

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is automatically performed by the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 307).

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

[29.2] 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;

The combination of Lane and Hisano teaches this limitation.

As explained above for claim [29.1], 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.

As shown in Figure 3, reproduced below, the hinge assembly is located at the interface between the base and the display.

<u>Lane's Parallel Axes of Rotation</u>

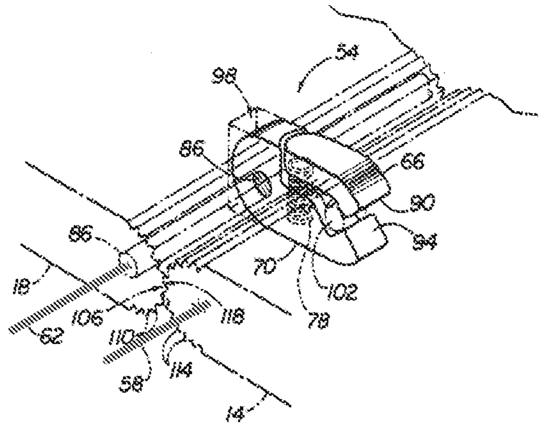


FIG 3

Lane, FIG. 3 (with annotations).

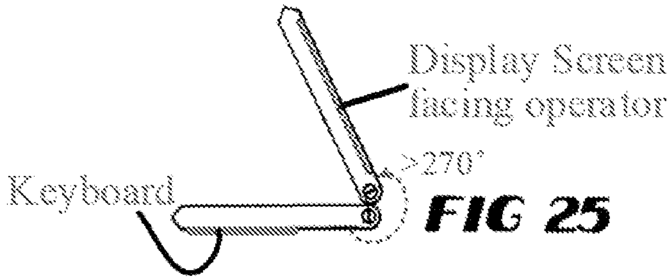
Lane's base ("first module 14") is rotatable about its longitudinal axis ("primary axis of rotation 58") and Lane's main display component ("second module 18") is rotatable about its longitudinal axis ("primary axis of rotation 62"). *E.g.*, Lane, 6:8-12, FIGS. 25, 28; Schmandt, ¶ 312. Accordingly, Lane teaches a hinge assembly configure to rotatably couple a display and base and defines a longitudinal axis running along an interface between the display and the base.

> [29.3] 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;

The combination of Lane and Hisano discloses this limitation.

As described for claim element [29.1], Lane discloses orientating a visual display into a laptop mode, as shown in Fig.25, below.

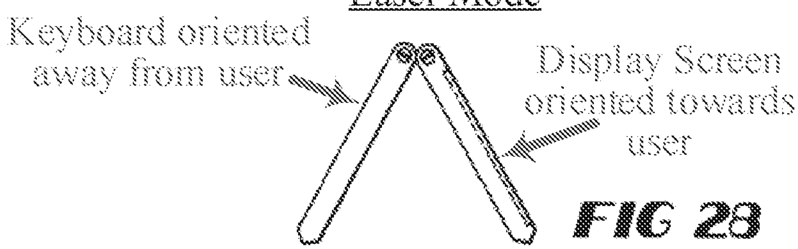
Lane's Frame Mode



Lane, FIG. 25 (with annotations).

As described for claim element [29.1] Lane discloses easel mode, wherein the portable computer's display is oriented toward a user and the computer's keyboard is oriented away, as shown in Fig. 28, below.

Easel Mode



Lane, FIG. 28 (with annotations).

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

The combination of Lane and Hisano discloses this limitation.

Hisano teaches this limitation. 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art (*See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra*, Section VIII.K; Schmandt, ¶ 318). A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 318.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1. Accordingly, a POSITA would be motivated to utilize the sensor of Hisano to determine a display mode corresponding to the physical orientation of the display of Kamikakai'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.

[29.5] 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.

The combination of Lane and Hisano discloses this limitation.

As explained above for claim [29.4], Hisano teaches determining a display mode based on measuring a degree of rotation of a display component relative to a base.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1. Also as explained in Section X.C.1, a POSITA 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. Schmandt, ¶ 322.

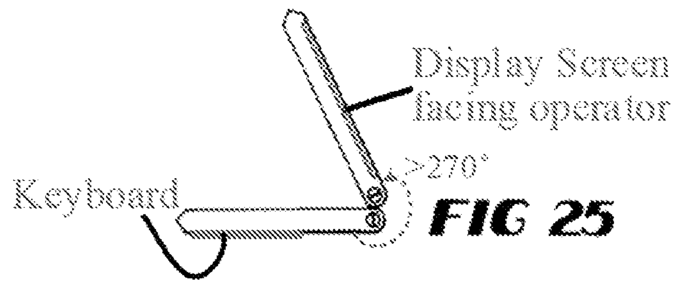
18. Dependent Claim 30

> [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.

The combination of Lane and Hisano discloses this limitation.

Lane discloses its portable computer configurable between a plurality of modes including a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIG. 25. Specifically, as shown in FIG. 25 of Lane, the keyboard ("keys 36") side of the base ("first module 14") faces down and the main display component ("first module 14") is oriented towards the operator with the single display screen ("visual display 35") facing up. *E.g.*, Lane, FIG. 25, 10:29-31; Schmandt, ¶ 324.

<u>Lane's Frame Mode</u>



Lane, Fig. 25 (with annotations).

19. <u>Dependent Claim 31</u>

[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.

The combination of Lane and Hisano discloses this limitation.

As explained above for claim [29.5], Lane teaches a laptop mode having a first content orientation. As explained above for claim 30, Lane teaches manipulating the physical configuration of a portable computer to place it into frame mode. *See supra,* Section X.C.17, claim [29.5].

As explained above in Section X.C.1, a POSITA would have been motivated to implement the 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, and a POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. *Supra,* Section X.C.1.

A POSITA would recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Lane, Fig. 25; Schmandt, ¶ 328. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 328.

Annotated Hisano Fig. 1 (Laptop Mode)

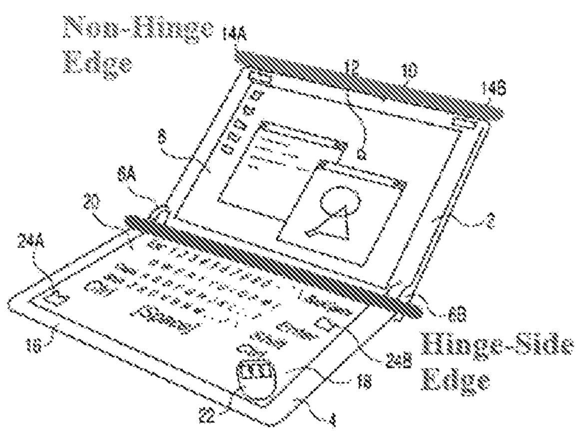


FIG. 1

Annotated Lane Fig. 25 (Frame Mode)

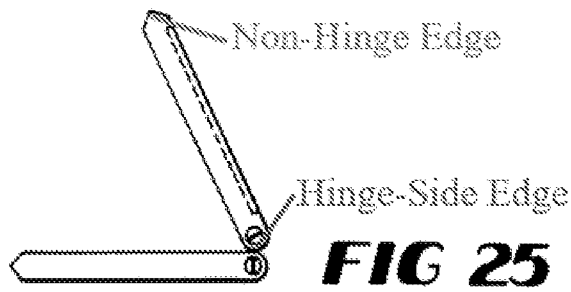


FIG 25

Accordingly, it would be obvious to a POSITA 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. Schmandt, ¶ 329.

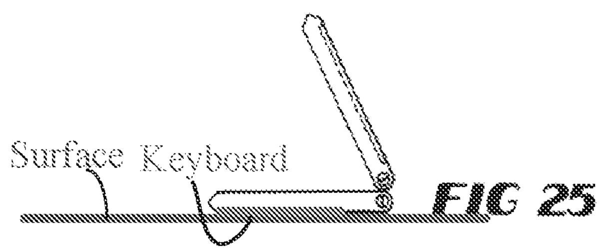
20. Dependent Claim 32

[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 satisfies this limitation.

Lane explicitly discloses "render[ing] the keys 36 of first module 14 inoperable when unused." Lane, 6:5-6. A POSITA would have understood that Lane's keys 36 are rendered inoperable in Lane's frame mode (shown in FIG. 25) because the keys 36 are unused in Lane's frame mode. Specifically, as discussed above for element 24, a POSITA would have understood that Lane's keyboard ("keys 36") is placed face down on a surface in frame mode given how it is depicted in FIG. 25, thereby rendering them unused. Schmandt, ¶ 331.

Lane's Frame Mode



Lane, FIG. 25 (with annotations).

Thus, in accordance with Lane's prescription to render the keys 36 inoperable when the keys 36 are unused, the keys 36 would be rendered inoperable in the frame mode, since a POSITA would have understood that the keys 36 are unused in frame mode due to their inaccessibility in this display mode. Schmandt, ¶ 332. In addition, a POSITA would recognize the utility of rendering its keyboard 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. Schmandt, ¶ 332.

D. Lane In View Of Hisano And Choi Renders Obvious Claim 11 Of The '688 Patent (Ground 4)

1. Combining Lane, Hisano, And Choi

As discussed above in Section X.C.1, a POSITA would have been motivated to combine the portable computer of Lane with Hisano's teachings regarding measuring the physical orientation of a portable computer and inverting the displayed content in response.

Lane further discloses that its portable computer comprises a hinge assembly ("connector 54"). As shown in FIGS. 3, 25, and 28, and described in Lane, the main display component and the base are rotatable about two axes of rotation to transition between the various display modes, including the laptop, easel, and frame modes. *E.g.*, Lane, FIGS. 3, 19-28, 3:5-14, 6:7-22, p. 12 (claim 2), 10:24-11:16.

> The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

Lane, 3:5-14. As shown in Figure 3, reproduced below, the hinge assembly is located at the interface between the base and the display.

<u>Lane's Parallel Axes of Rotation</u>

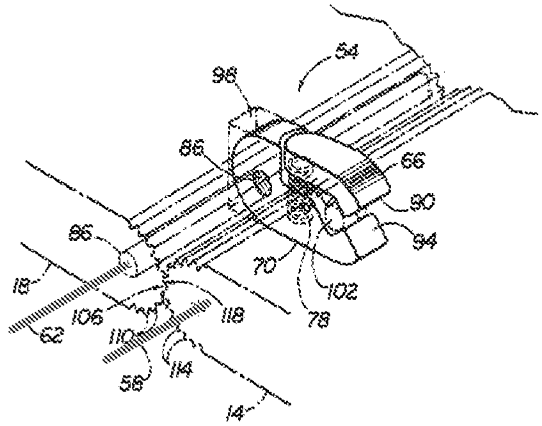
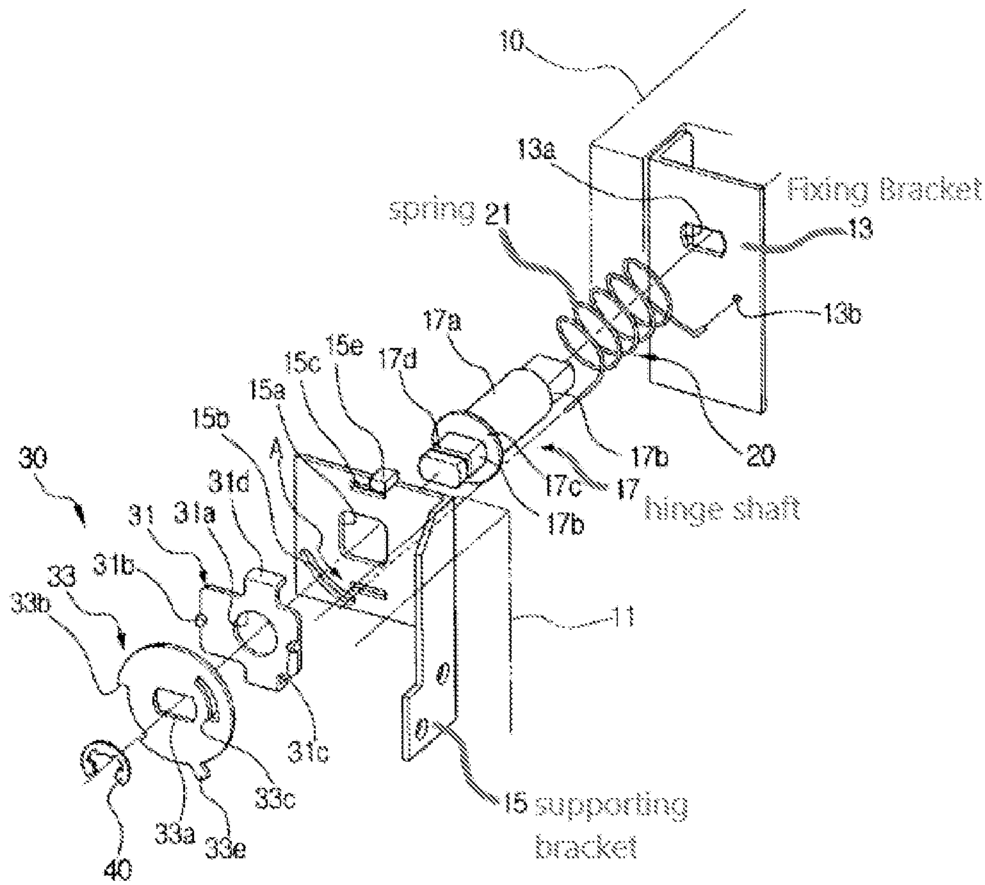


FIG 3

Lane, FIG. 3 (with annotations).

It would have been obvious to a POSITA to replace the dual-axis hinge assembly of Lane with a single-axis hinge assembly, such as that taught by Choi. Specifically, Choi discloses a "hinge apparatus . . . employed to connect a panel 11 to a body 10 of an appliance so that the panel 11 is opened and closed with respect to the body 10," and particularly for connecting a display to a body in a laptop computer. Choi, 3:36-50. Among other elements, the hinge apparatus includes fixing bracket 13 fixed onto a laptop computer body 10, supporting bracket 15 fixed to the panel 11 (i.e., a LCD panel), hinge shaft 17, and coil spring 21. *Id.*, 3:36-42, 52-56. These components are depicted in Fig. 2 of Choi, reproduced with annotations below.

Annotated Fig. 2 of Choi



The hinge of Choi enables rotation of a laptop display relative to a body as depicted in Fig. 5 and enables the display to open beyond 180 degrees relative to the base as depicted in Fig. 7 (depicting the display opened to approximately 210 degrees), reproduced and annotated below. *Id.*, 6:26-27, Figs. 5, 7.

FIG.5

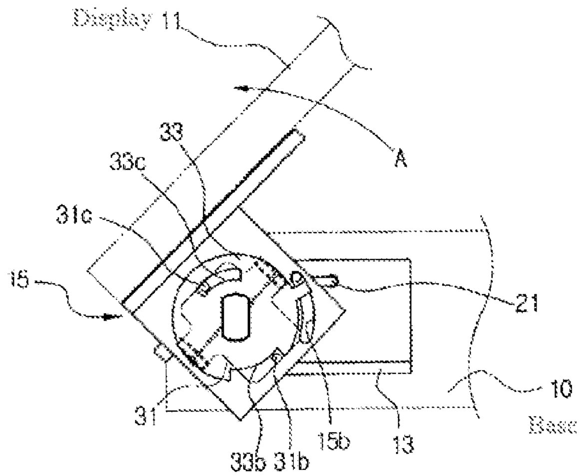
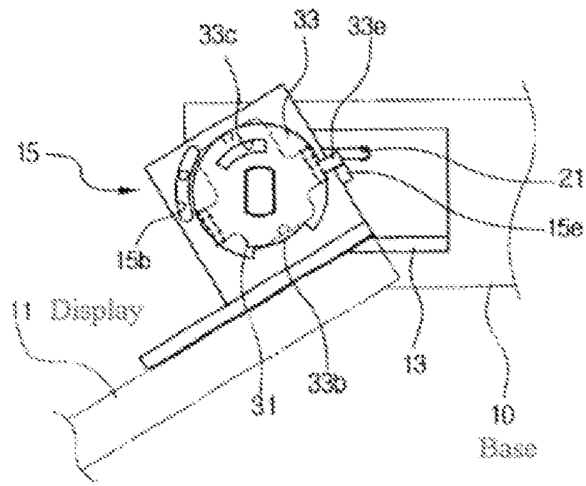


FIG.7



In addition to enabling rotation of a laptop display relative to a body, Choi also provides a mechanism for restricting rotation once the display is opened to a predetermined angle. Choi describes this mechanism as follows:

> Further provided is a pivoting angle restricting device to restrict the angle of rotation of the supporting bracket 15. The pivoting angle restricting device includes a locking portion 33*e* protruding from an outline of the frictional plate 33, and a locking projection 15*e* bent from an outline of the supporting bracket 15 to be locked with the locking portion 33*e* during rotation. The locking portion 33*e* is formed in a position that restricts a pivotal angle of the supporting bracket 15 at a predetermined degree of, for example, 210°.
>
> ***
>
> FIG. 7 shows the panel 11 being rotated by approximately 210°. Here, the locking projection 15*e* is locked with the locking portion 33*e*, thereby restricting the supporting bracket 15 from further rotation.

Id., 5:37-46, 6:26-31. While Choi describes its pivoting angle restricting device as restricting the hinge's pivot angle to a predetermined angle 210 degrees, Choi explicitly states that this predetermined angle is only exemplary (*Id.*, 5:44-46) and a POSITA would recognize that the restricting device may be implemented to allow for a larger degree of rotation. Schmandt, ¶ 338. It would be obvious to a POSITA to provide such an angle restricting device at an angle beyond 210 degrees. Schmandt, ¶ 338. Nothing in Choi's specification would prevent a POSITA from selecting a predetermined angle for the pivoting angle restriction device at an angle to allow for an easel mode configuration such as taught by Lane. Schmandt, ¶ 338. In fact, a POSITA would be motivated to implement such a pivoting angle restricting device at an angle suitable for use in an easel mode such as taught by Lane. Schmandt, ¶ 338.

A POSITA would have been motivated to modify the portable computer of Lane to replace its dual-axis hinge assembly with the single-axis hinge taught by Choi for several reasons. First, Lane and Choi (as well as Hisano) are contemporaneous references directed toward complementary solutions to highly analogous problems in the same fields of endeavor. Lane, Hisano, and Choi are all directed toward portable computers usable in various display modes via a rotatable hinge. Lane, 10:10-31, Figs. 20, 25, 28; Hisano, ¶¶ [0054], [0087], [0098], Figs. 1, 8, 9, Choi, 3:35-50 Figs. 5-7.

Second, a POSITA would have considered the replacement of the dual-axis hinge of the portable computer of Lane with the single-axis hinge of 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, a POSITA 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. Schmandt, ¶ 340. Hisano, for example, depicts and describes multiple examples of laptop computers with their two housing structures being rotatable about a single axis. Hisano, ¶¶ [0104], [0112], Figs. 13, 17 (reproduced below).

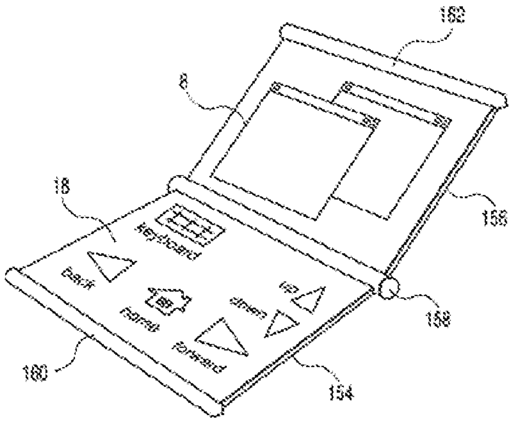


FIG. 13

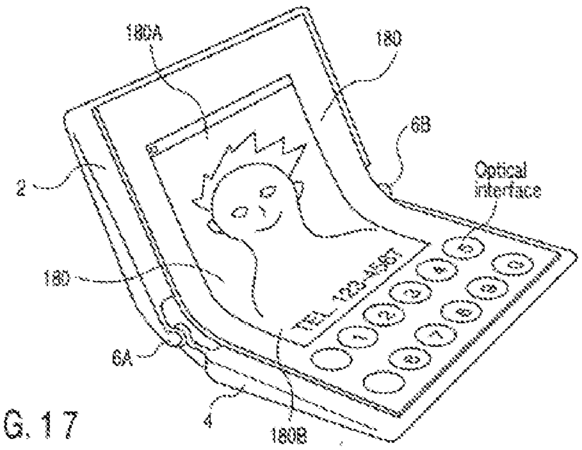


FIG. 17

Accordingly, a POSITA would have recognized that a dual-axis hinge could be replaced with a single-axis hinge in a portable computer to perform the same function. Schmandt, Schmandt, ¶ 341.

Third, a POSITA would recognize the benefits of using a single-axis hinge instead of a dual-axis hinge. For example, due to 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. Schmandt, ¶ 342. Having fewer components also allows a single-axis hinge to be less expensive to manufacture than a dual-axis hinge. Schmandt, ¶ 342. In addition, a POSITA would be motivated to implement the hinge of Choi at least partially disposed within the display and base housings in order to cover the movable components of the Choi 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. Schmandt, ¶ 342.

2. Independent Claim 11

[11.1] A portable computer comprising:

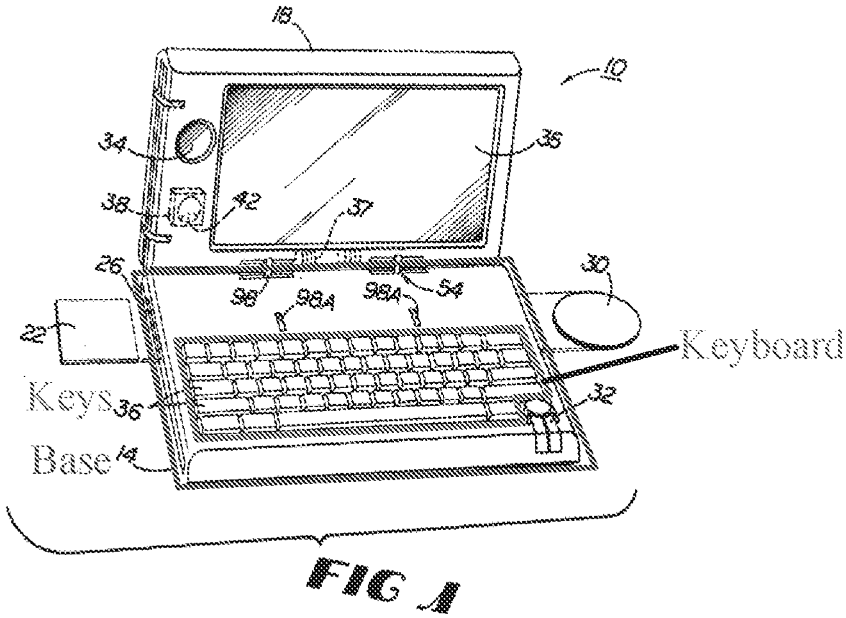
Lane discloses this limitation.

Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

[11.2] a base;

Lane discloses this limitation. Specifically, Lane's "first module 14" is the base of the Lane's computer and includes a plurality of "keys 36" that make up a keyboard. *See, e.g.*, Lane, FIG. 1, 5:15-17, 6:5-6, 8:22-23. Claim 12 of Lane confirms that the portable computer "comprises a keyboard having a plurality of keys." Lane, p. 14, claim 12.

Lane's Base with Keyboard

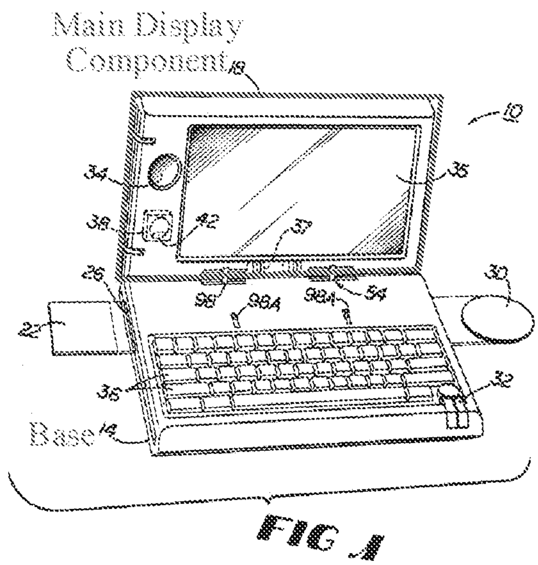


Lane, FIG. 1 (with annotations).

[11.3] a display component rotatably coupled to the base;

Lane discloses this limitation. Specifically, Lane's "second module 18" is the single main display component of Lane's computer as it includes a single display screen ("visual display 35") that is coupled to the base. Lane, 5:10-15. Lane refers to "second module 18" as a "display". *E.g.*, Lane, 5:6.

Lane's Main Display Component



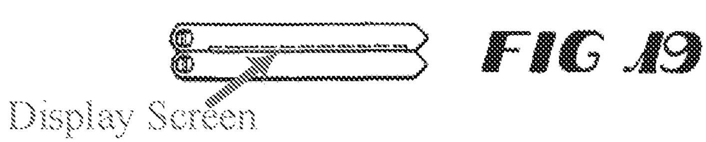
Lane, FIG. 1 (with annotations).

[11.4] 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;

The combination of Lane and Choi teaches this limitation.

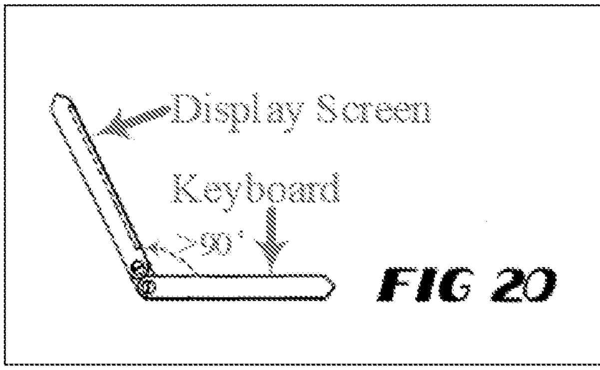
Lane discloses a "portable computer[]" (*e.g.*, Lane, 1:3-6) that is openable from a closed configuration (FIG. 19) to a plurality of display modes including a laptop mode and an easel mode, as well as a frame mode. *E.g.*, Lane, 3:5-14, 10:24-31, FIGS. 19, 20, 25, 28.

Lane's Closed Configuration

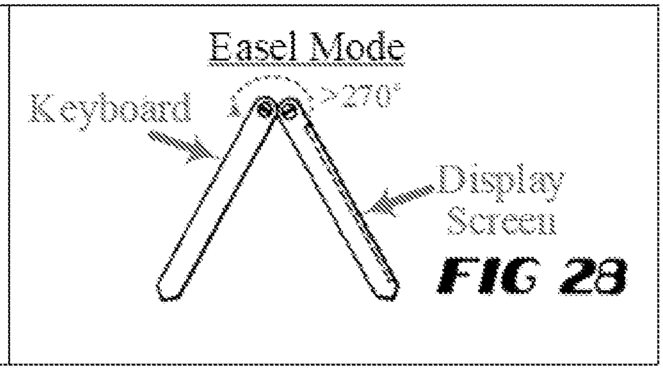


Lane, FIG. 19 (with annotations).

Lane, Fig. 20 (Laptop Mode)



Lane Fig. 28 (Easel Mode)



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

Lane does not expressly disclose a "means for rotating" as claimed according to 35 U.S.C. § 112(6) and described in the '688 patent's specification. As explained in the first sub-section above (*supra* Section X.D.1), however, a POSITA implementing Lane would have been motivated with a reasonable expectation of success to incorporate Choi's specific hinge apparatus. Choi discloses a hinge apparatus including a housing (fixed bracket 13),[21] a bracket having a member (supporting bracket 15 having a perpendicular plate member for inserting a shaft),[22] a shaft (hinge shaft 17), and springs (coil spring 21). Choi, 3:36-56. The below images show the hinge apparatus of Choi (Choi, Fig. 2.), compared to the hinge apparatus disclosed in the specification of the '688 patent ('688 patent, Fig. 10), with corresponding structures color-coded, showing that the hinge

[21] A POSITA would understand fixed bracket 13 to constitute a housing as it partially houses hinge shaft 17.

[22] The member of Choi constitutes a plate member extending perpendicularly from the remainder of supporting bracket 15. The '688 Patent teaches that its member "may be integral with or coupled to the bracket 140." '688 Patent, 10:36-38.

assembly of Choi contains the same components as the "means for rotating" claimed in the '688 patent (i.e., "housing 142, shaft 154, springs 156, member 158, bracket 140").

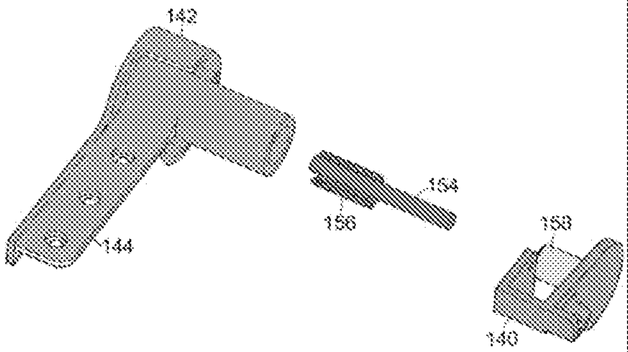
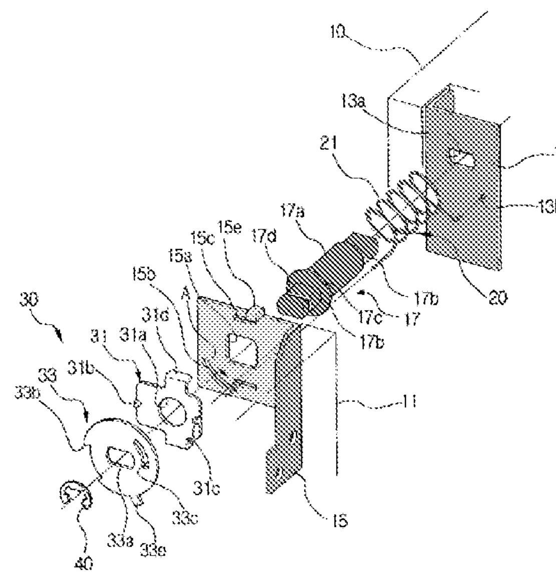


FIG. 10

'688 Patent

FIG.2



Choi

A POSITA would have been motivated to implement the hinge assembly Choi with the portable computer device of Lane for the reasons explained above in Section X.D.1.

> [11.5] 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, the first and second display orientations being 180 degrees relative to each other; and

Hisano teaches this limitation. Hisano discloses its portable computer switching content orientation in response to measuring the angle of the computer's hinges, i.e., the angle or rotation of the display relative to the base.

> 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.*

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that such an operation would be performed in order to maintain displayed content as right-side-up relative to a user viewing the portable computer. (Schmandt, ¶ 352). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen, is performed by a display orientation module in the form of the computer's internal processor and associated logic, constituting a display orientation module. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 352).

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: that "triggers a display inversion as appropriate" so that the

displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[23]

Specifically, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base for at least the following reasons. To illustrate, 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 (reproduced below).

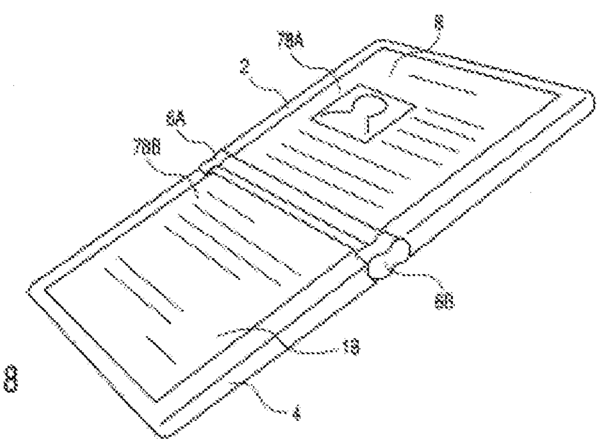


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in easel mode. Schmandt, ¶ 356. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 356. Specifically, a POSITA would implement the teachings of Hisano to program a portable computer with an algorithm to (1) determine "the rotating angle of the

[23] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained below for Claim [11.6]. *Infra,* Section X.D.2, claim [11.6].

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.

[11.6] 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.

Hisano teaches this limitation. Specifically, Hisano discloses a "means for detecting" as construed under 35 U.S.C. § 112(6) (*see Supra*, Section V.D) in that it discloses an angle-detection sensor. 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. Schmandt, ¶ 358. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art. *See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra*, Section VIII.K; Schmandt, ¶ 358. A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 358. Therefore, Hisano teaches the use of a sensor as a means for detecting the relative orientation of Hisano's display relative to a separate housing structure, such as a base.

As explained above in Section X.C.1, a POSITA would have been motivated 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. *Supra*, Section X.C.1.

Further, as explained for claim [11.5], it would be obvious a POSITA to use the measured angle from such an orientation sensor to determine the transition between laptop and easel mode based on a threshold value. *See supra,* claim [11.5]. That is, a POSITA would recognize that when the angle changes from less than to more than 180°, the device transitions from laptop to easel mode, and vice-versa and would initiate an inversion of the displayed content accordingly. Schmandt, ¶ 360.

E. Lane In View Of Hisano And Clapper Renders Obvious Claim 15 Of The '688 Patent (Ground 5)

1. Dependent Claim 15

[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.

The combination of Lane, Hisano, and Clapper teaches this limitation.

As explained above, the combination of Lane and Hisano renders obvious claim 14. *Supra*, Sections X.C.4. The addition of Clapper to the combination of Lane and Hisano further renders obvious claim 15 for the reasons explained below.

As explained above for Claims 13 and 14, Hisano teaches at least two orientations (i.e., a first and second orientation) relative to a longitudinal axis, with the two orientations inverted 180 degrees relative to each other. *Supra*, Sections X.C.3-4.

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.

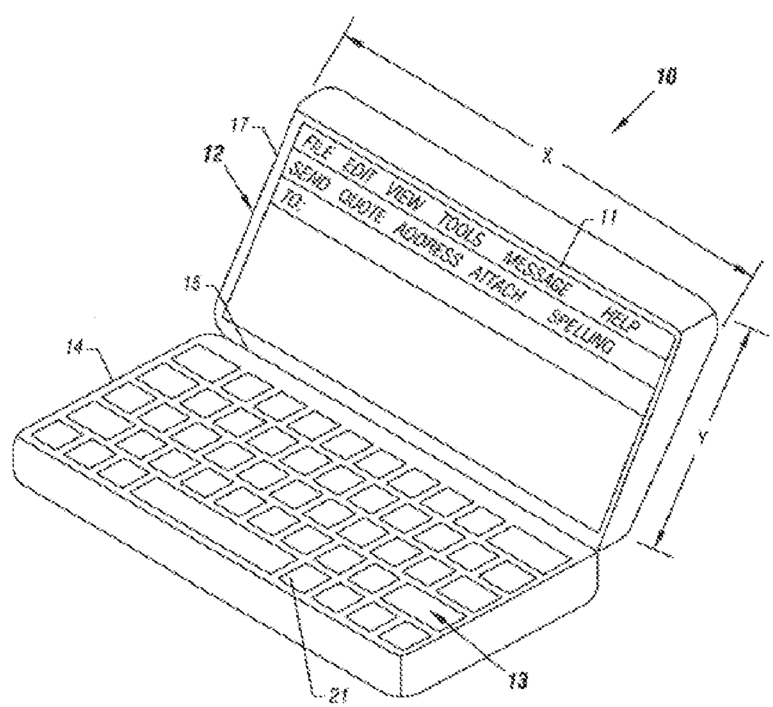


FIG. 1

Id., Fig. 1.

Clapper also discloses a third orientation in that it discloses rotating its computer 90 degrees about the plane of its display screen, and in response, rotating its display screen 90 degrees relative to a longitudinal axis.

> Referring to FIG. 2, the display 10 has been rotated approximately 90°. The housing 14 and the display 12 have been rotated to the right. Now the display 12 has a more upright configuration. Information displayed on the display 12 now uses the side edge 17 as the upper edge for purposes of displaying text. In other words, the textual information now extends up and down in the X axis and the across in the Y axis using the convention set forth in connection with FIG. 1.
>
> Thus, in one embodiment of the invention, the system 10 automatically changes the orientation of the displayed information in response to the detection of tilting or orientation of the system 10. These changes maybe implemented automatically in response to the detection of rotation of approximately 90° of the housing 10. Thus, if the user wishes to rotate the way information is displayed on the display 12, the user can do so by simply rotating the entire system 10 from the orientation shown in FIG. 1 to the orientation shown in FIG. 2.

Id., 2:18-37.

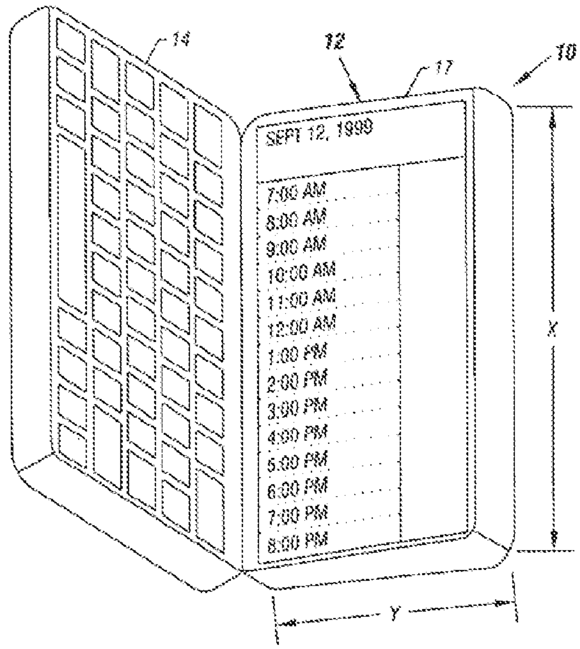


FIG. 2

Id., Fig. 2.

A POSITA would be motivated to combine the teachings of Clapper into the portable computer as taught by Lane. Specifically, a POSITA would 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. A POSITA would be motivated to implement such functionality because a POSITA would recognize that a portable computer, such as disclose by Lane, typically has a display with an aspect ratio that is wider than it is tall. Schmandt, ¶ 366. A POSITA would therefore 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 (such as shown in Fig. 2 of Clapper), and that a user may prefer using a different orientation for different uses. Schmandt, ¶ 366. 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. Schmandt, ¶ 366, a POSITA would implement the functionality of Clapper into the portable computer of Lane to improve usability of the portable computer.

F. Kamikakai In View Of Shimura And Hisano Renders Obvious Claims 12-14, 16-22, and 24-32 Of The '688 Patent (Ground 6)

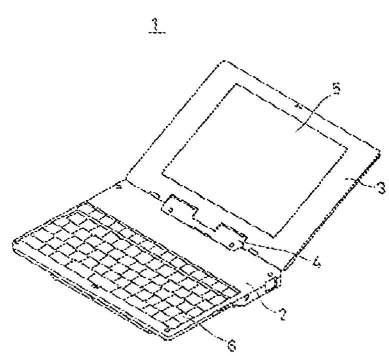
1. Combining Kamikakai, Shimura, And Hisano

A POSITA would have implemented Shimura's teachings of an easel mode into the portable computer of Kamikakai

Kamikakai discloses a 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).

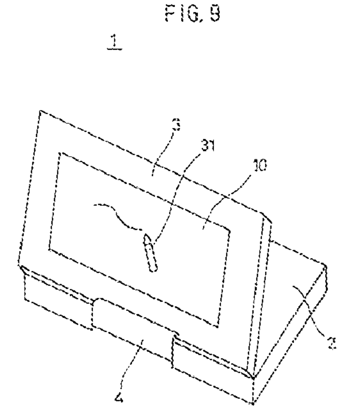
Laptop Mode

FIG. 3



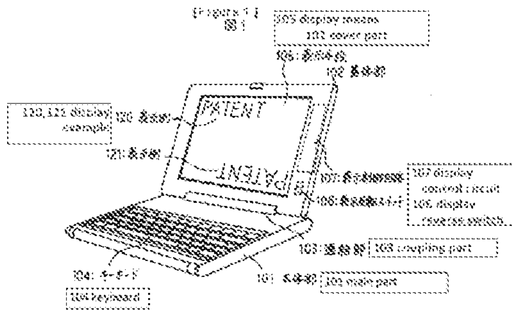
Frame Mode

FIG. 9

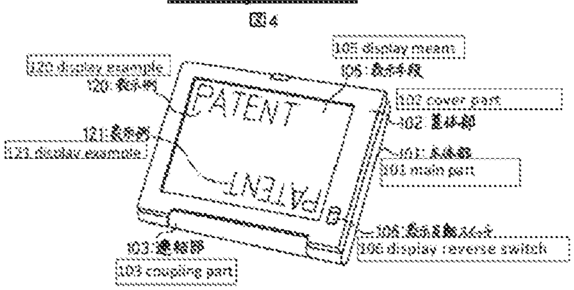


Shimura, similarly, discloses a portable computer configurable between a plurality of display modes, including an easel mode, as shown in Figure 5 of Shimura.

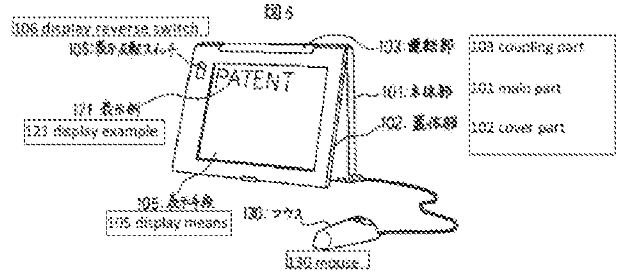
Laptop Mode



Pen Input Mode



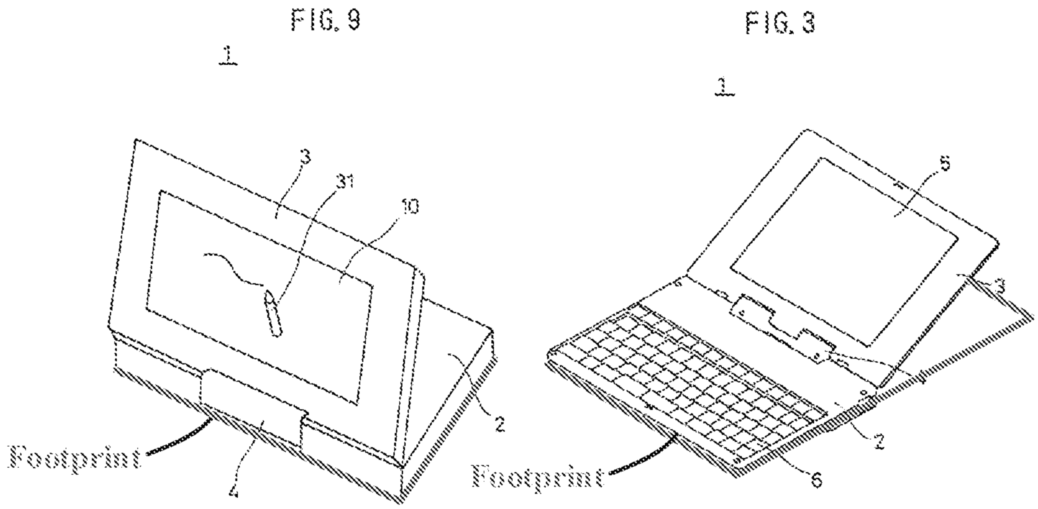
Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

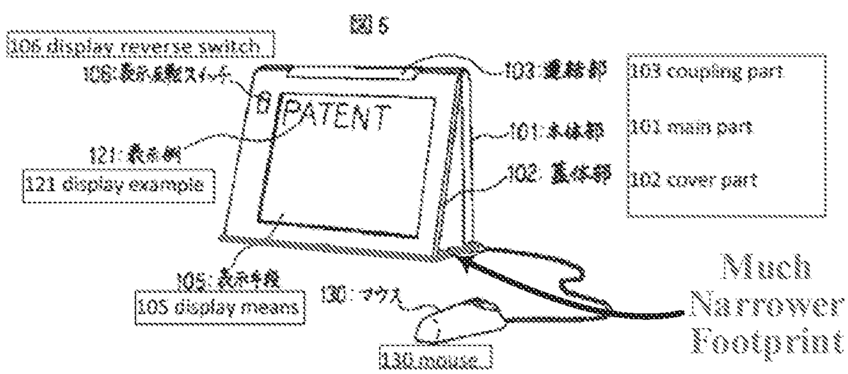
A POSITA would have been motivated to add the easel mode configuration as taught by Shimura to the portable computer taught by Kamikakai, and Shimura provides explicit motivation for including this display mode, namely space savings. As explained by Shimura, "the area taken up by the computer on the table can be greatly reduced" in the easel mode. *E.g.*, Shimura, ¶ [0017]. Thus, a POSITA would been motivated to ensure that Kamikakai's computer included an easel mode, since it provides a smaller footprint than Kamikakai's other display modes. Schmandt, ¶ 369. Specifically, in all of Kamikakai's display modes, the footprint of the computer is at least as big as the perimeter of the base since the base is oriented roughly horizontally in all of the display modes. *E.g.*, Kamikakai, FIGS. 3, 7-9.

Kamikakai's Frame Mode **Kamikakai's Laptop Mode**



Kamikakai, FIGS. 3, 9 (with annotations).

Shimura's Easel Mode



Shimura, FIG. 5 (with annotations).

However, as shown above in Figure 5 of Shimura, in easel mode, the footprint is much smaller than Kamikakai's other display modes because the computer is oriented vertically, such that the computer's footprint is only defined by the small angle between the display and base. Schmandt, ¶ 370. As such, the footprint is much narrower in easel mode than it is in the frame mode or laptop mode. Schmandt, ¶ 370. Thus, a POSITA would have been motivated to ensure that Kamikakai's computer can be configured to this easel mode in order to conserve counter space and/or to ensure that a user is still able to use and place the computer on a table, even when space is limited. Schmandt, ¶ 370.

Moreover, a POSITA would have looked to Shimura for motivation when modifying Kamikakai's device because of how similar Shimura's device is to Kamikakai's device. Not only are Shimura and Kamikakai's devices both laptops, but they are laptops that are openable by up to 360° via similar dual-axis hinge assemblies. Thus, given their level of similarity, a POSITA would have been motivated to share features between these two devices. As mentioned above, the easel mode would have been particularly obvious since Kamikakai's hinge assembly is capable of supporting that (and many other) positions. *E.g.*, Kamikakai, 3:52-64, 4:10-5:27; Schmandt, ¶ 371.

A POSITA would have reasonably expected Kamikakai's portable computer to be capable of achieving the easel mode for at least the reason that the hinge assembly ("connection part 4") is strong enough to hold the display component ("display part 3") up against the force of gravity in the frame mode. *E.g.*, Kamikakai, 3:52-64, 4:10-5:27, FIGS. 8-9; Schmandt, ¶ 372. Kamikakai confirms that the hinge assembly ("connection part 4") locks the base ("main body 2") and display component ("display part 3") at any arbitrary angle whenever a user stops actively turning them, due to the friction that exists between the components of the hinge assembly. *E.g.*, Kamikakai, 3:52-64, 4:10-5:27; Schmandt, ¶ 372.

> When the user stops turning the main body **2** or stops turning the connection part **4** with respect to the main body **2**, the main body **2** or the connection part **4** stops turning due to the friction between the bearing member **23** and the rotary shaft **21**. An angle formed between the main body **2** and the connection part **4** is fixed to that at the time when the rotary manipulation force is released, and the main body **2** and the connection part **4** are supported at this angular position.

Kamikakai, 5:1-8 (discussing how the base ("main body 2") is locked in position relative to the hinge assembly ("connection part 4") when a user stops actively turning them relative to one another).

> When the user stops turning the display part **3** or stops turning the connection part **4** with respect to the main body **2**, the display part **3** or the connection part **4** stops turning due to the friction between the bearing member **26** and the rotary shaft **24**. An angle formed between the display part **3** and the connection part **4** is fixed to that at the time when the rotary manipulation force is released, and the display part **3** and the connection part **4** are supported at this angular position.

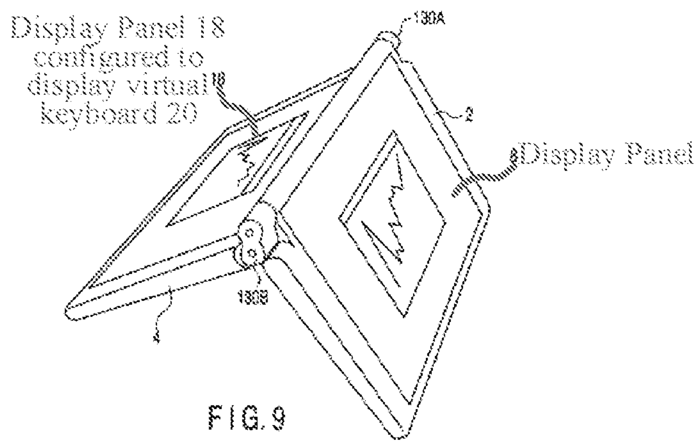
Kamikakai, 5:19-27 (discussing how the main display component ("display part 3") is locked in position relative to the hinge assembly ("connection part 4") when a user stops actively turning them relative to one another). For at least these reasons, a POSITA would have implemented the Kamikakai device (with its laptop and frame modes) to also include Shimura's easel mode. *See also* Schmandt, ¶ 372.

In addition to Shimura, an easel mode is also expressly taught by Hisano, further providing support to a POSITA to implement such a mode into the personal computer of Kamikakai. Hisano discloses a mode in which its two housing structures rotated about a hinge and placed so as to form a "character A."

> FIG. 9 shows a notebook personal computer comprising two-rotating-shaft hinges 130A and 130B each having two rotating shafts. The two housing 2 and 4 can be closed so that the LCD panels 8 and 18 sit opposite each other or that both LCD panels 8 and 18 face outward. The user can operate the personal computer on one of the LCD panels 8 and 18 while checking the state of the operation on the other LCD panel, by standing the LCD panels 8 and 18 on a desk between the housings 2 and 4 so that the maximum opening angle (at least 180°; for example, 270°) is set between the second housing 4 and the first housing 1 and that the LCD panels 8 and 18 both face outward and form the character Λ (capital lambda). The notebook personal computer used in such a form comprises a plurality of rubber feet at positions (not shown) where the housings 2 and 4 contact the desk surface when the LCD panels are stood on the desk while adjusting hinge angle so that the panels form the character Λ. The rubber feet are exposed from sides of the closed housings when the user carries the computer with him or her. The rubber feet can thus function as cushioning members when the apparatus is dropped owing to carelessness or the like.

Hisano, ¶ [0098]. This easel mode configuration is shown in Fig. 9, reproduced below with annotations. *E.g.*, Hisano, ¶¶ [0054], [0058], [0098], FIG. 9.

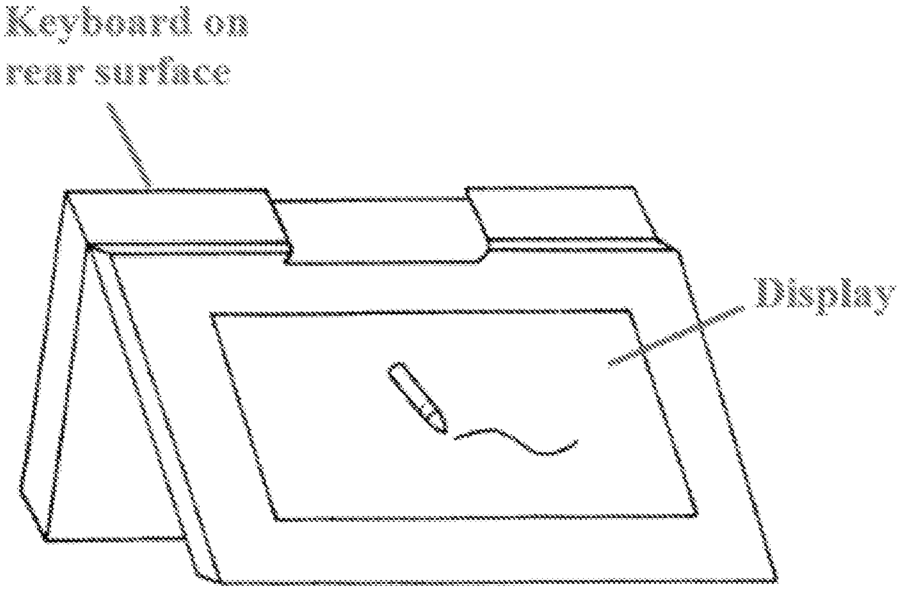
Hisano's Easel Mode-Like Position



Hisano, FIG. 9 (with annotations)

Further, the easel mode would have been an obvious design choice variation of Kamikakai's frame mode, since a user would have only had to rotate the entire device by approximately 90° from Kamikakai's frame mode to transition to the easel mode. Schmandt, ¶ 374. Kamikakai's main display component ("display part 3") and base ("main body 2") are at roughly the same relative angle in frame mode as in the claimed easel mode. All that is required to transition Kamikakai's computer to easel mode is to turn the entire computer approximately 90° until the base and display rest on edge on the table in a substantially vertical manner. Schmandt, ¶ 374. Moroever, Kamikakai's laptop would support such an easel mode, since it can support any arbitary rotary position of the display component relative to the base. *E.g.*, Kamikakai, 3:52-64, 4:10-5:27; Schmandt, ¶ 374. Accordingly, it would have been obvious for a POSITA to implement the easel mode teaching of Shimura to enable an easel mode for the portable computer of Kamikakai, as shown in the exemplary figure below with the computer in a "A" configuration, the display facing a user, and the keyboard on the surface facing away from the user.

Exemplary Easel Mode for Kamikakai Portable Computer



The obviousness of this easel mode is further evidenced by the multitude of references disclosing this easel-mode like position. *See, e.g.*, Shimura, FIG. 5; Hisano, ¶¶ [0054], [0098], FIG. 9; Podwalny, 4:16-26, FIG. 4; Schweizer, 1:49-2:4, FIGS. 2, 4, 6; *supra,* Section VIII.K. Thus, given how little is required to transition Kamikakai's computer from the frame mode to the easel mode, and given how well known this easel mode was in the art before the alleged priority date of the '688 patent, it would have been an obvious design choice variation to Kamikakai's existing display modes. Schmandt, ¶ 375.

A POSITA would have implemented Hisano's teachings of measuring the physical orientation of a portable computer and, in response, inverting the displayed content into the portable computer of Kamikakai

Hisano teaches means for detecting the physical orientation of a personal computer and, in response, performing an inversion of displayed content in order to maintain the content as right-side-up for a user of the computer. Hisano discloses determining an angle of rotation of the hinges of the laptop, which corresponds to the hinge angle of the housings relative to one another:

> 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.

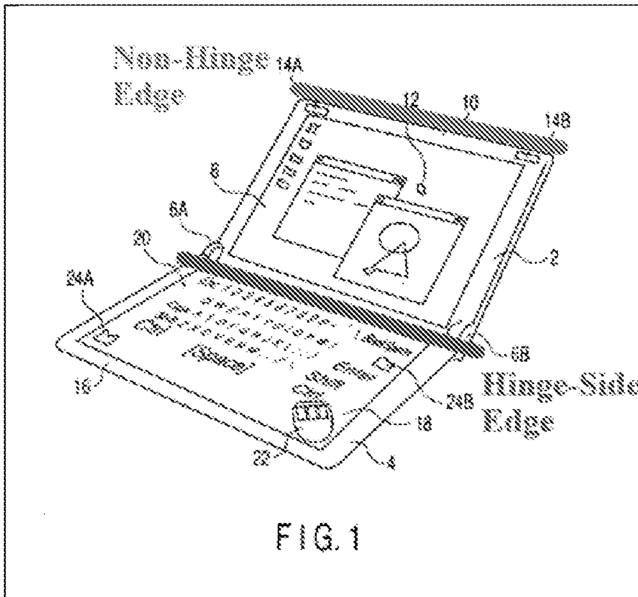
Hisano, ¶ [0099]. Hisano also discloses using a sensor in the form of an accelerometer (i.e., a "gravity sensor") to detect the orientation of the computer. Hisano, ¶¶ [0099-100].[24] Hisano discloses that its sensor may include a gravity sensor that is capable of distinguishing the portable computer's orientation "regardless of the angle of the hinges . . . or the placement of the personal computer." Hisano, ¶ [0099].

It would have been obvious to a POSITA to combine the teachings of Hisano regarding detecting the orientation of a portable computer and, in response, inverting displayed content, with the portable computer and corresponding display modes of Kamikakai. Specifically, it would be obvious to a POSITA that a visual display on a computer screen should be displayed right-side-up relevant to the intended viewer of the display. Numerous prior art references recognize the need to change orientation of a computer's displayed content in response to changing the orientation of a display relative to a user. *See, e.g.,* Shimura ¶¶ [0008], [0012], [0016-18]; additional references discussed above in Section VIII.K; Schmandt, ¶ 378. Moreover, a POSITA would also recognize

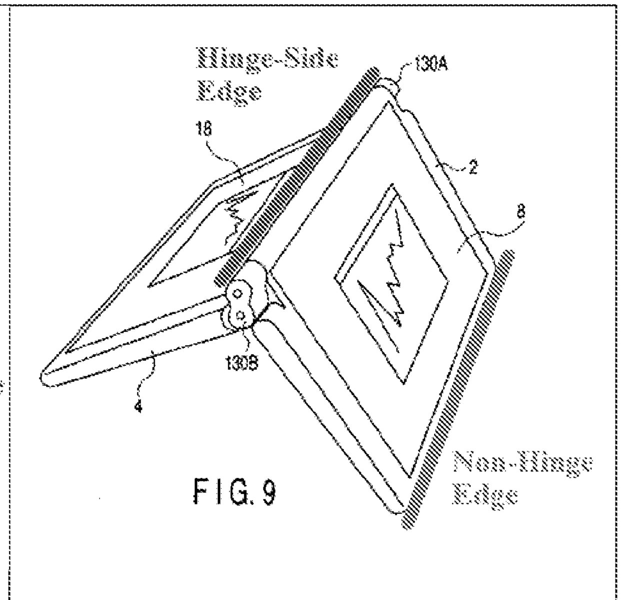
[24] A POSITA would have understood that Hisano's teaching of a gravity sensor would have implied an accelerometer, as these were inexpensive devices capable of determining acceleration with respect to the force of gravity. Schmandt, ¶ 377.

that in transition from a laptop mode to an easel mode, as demonstrated in annotated Figs. 1 and 9 of Hisano below, the top and bottom edges of a display become inverted, so that what was the top edge in laptop mode is at the bottom in easel mode, and vice-versa. Hisano, FIGS. 1, 9; Schmandt, ¶ 378.

Annotated Hisano Fig. 1 (Laptop Mode)

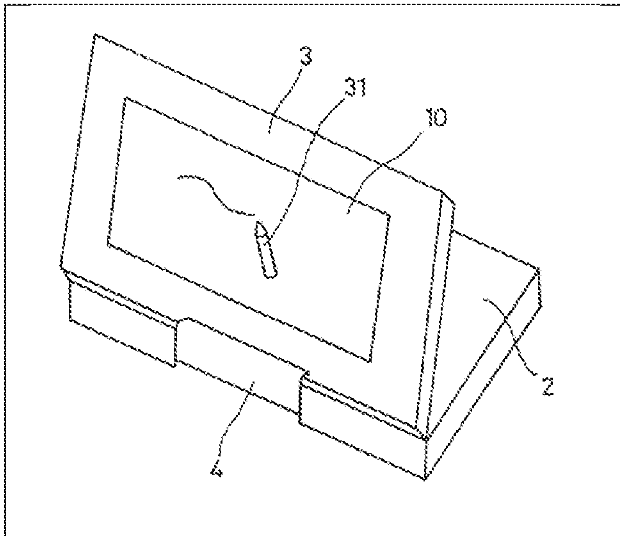
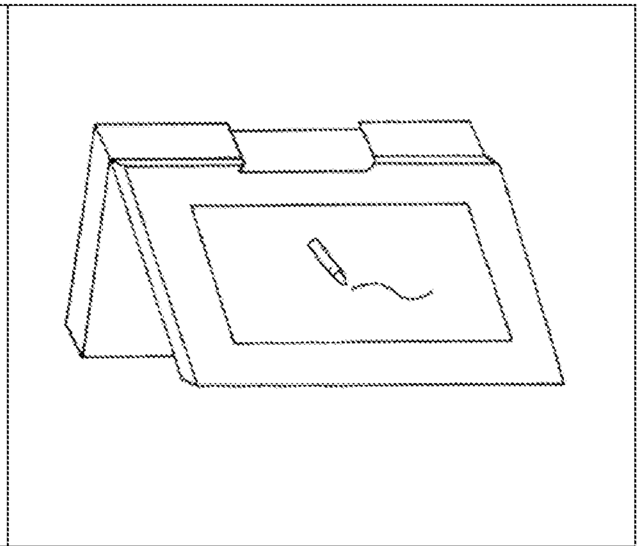


Annotated Hisano Fig. 9 (Easel Mode)



A POSITA would recognize that if the displayed screen remained the same upon transitioning from laptop to easel mode, the screen would be displayed upside-down and therefore difficult to read to the intended view. Schmandt, ¶ 379. A POSITA would therefore recognize the need to change the orientation of the displayed content by 180° upon transitioning from laptop to easel mode (and vice-versa) in order to present the displayed content right-side-up to the intended viewer and would therefore implement this functionality as taught by Hisano into the personal computer of Kamikakai. Schmandt, ¶ 379.

A POSITA would also recognize that in a personal computer implementing both an easel mode and a frame mode, a determination of only a computer hinge angle would not be sufficient to distinguish between an easel mode and a frame mode. That is, POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode and that both the easel and frame modes may utilize a similar hinge angle. Schmandt, ¶ 380. This is demonstrated by comparing Figure 9 of Kamikakai, showing a frame mode, with the exemplary figure depicted below showing the portable computer of Kamikakai oriented into an easel mode.

Kamikakai, Fig. 9 (Frame Mode)	**Exemplary Easel Mode for Kamikakai**
	

Hisano specifically 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]; Schmandt, ¶ 381. Accordingly, a POSITA would be able to utilize the sensors disclosed in Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 381.

2. Independent Claim 12

[12.1] A portable computer configurable between a plurality of modes including a laptop mode and an easel mode, the portable computer comprising:

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

Kamikakai discloses a portable computer.

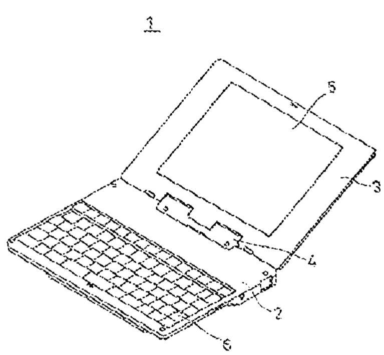
> The present invention generally relates to portable information processing apparatuses and, more particularly, to an information processing apparatus having a display part which includes a display panel and a pen input part formed on the display panel, a main body which includes a keyboard, and a connection part which connects the display part and the main body.
>
> ***
>
> The portable information processing apparatus 1 may be a lap-top computer, a palm-top computer, a notebook type word processor, a portable communication tool such as a communication terminal, or the like.

(Kamikakai, 1:6-12, 3:48-51.)

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

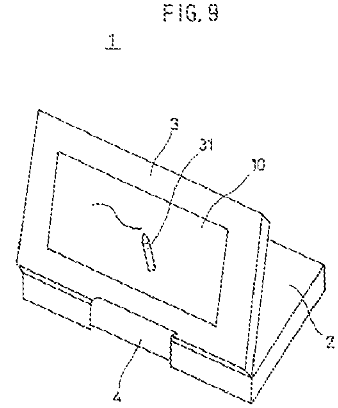
Laptop Mode

FIG. 3



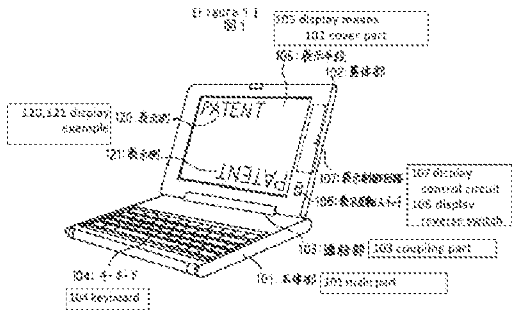
Frame Mode

FIG. 9

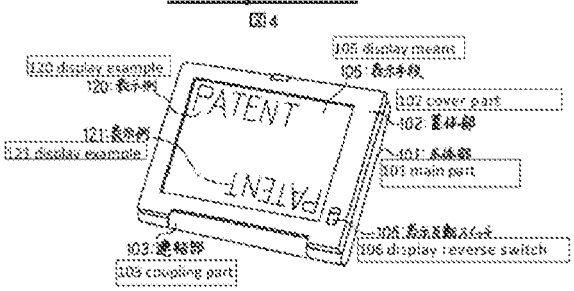


Shimura discloses the easel mode. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, FIGS. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

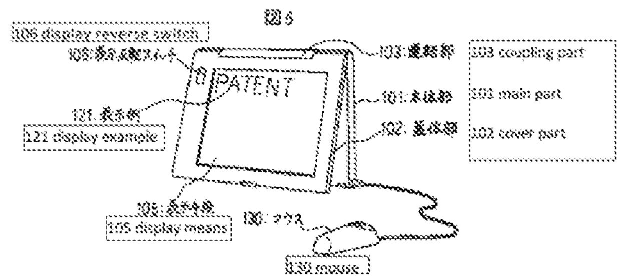
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

A POSITA would have been motivated to combine the easel mode of Shimura into the portable computer of Kamikakai for the reasons explained above in Section X.F.1. *Supra*, Section X.F.1.

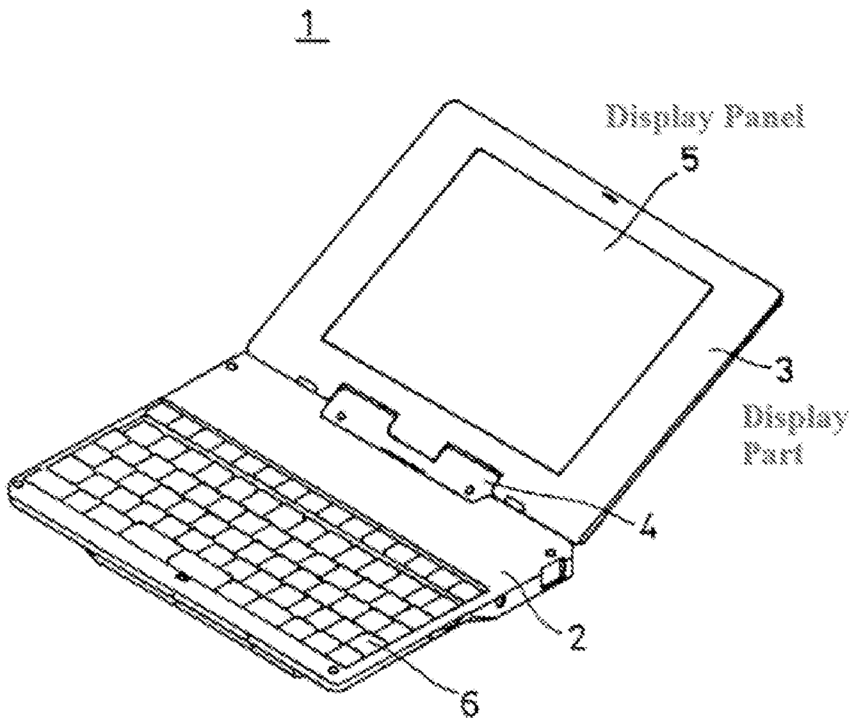
[12.2] a single display component;

Kamikakai discloses this limitation. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a single display component ("display part 3") including the single display screen ("display panel 5") that displays content. *E.g.*, Kamikakai, 3:43-46 (reproduced below), FIGS. 3, 9.

> On the other hand, the display part 3 includes a liquid crystal display panel 5, and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.

Kamikakai, 3:43-46.

FIG. 3



Kamikakai, FIG. 3 (with annotations).

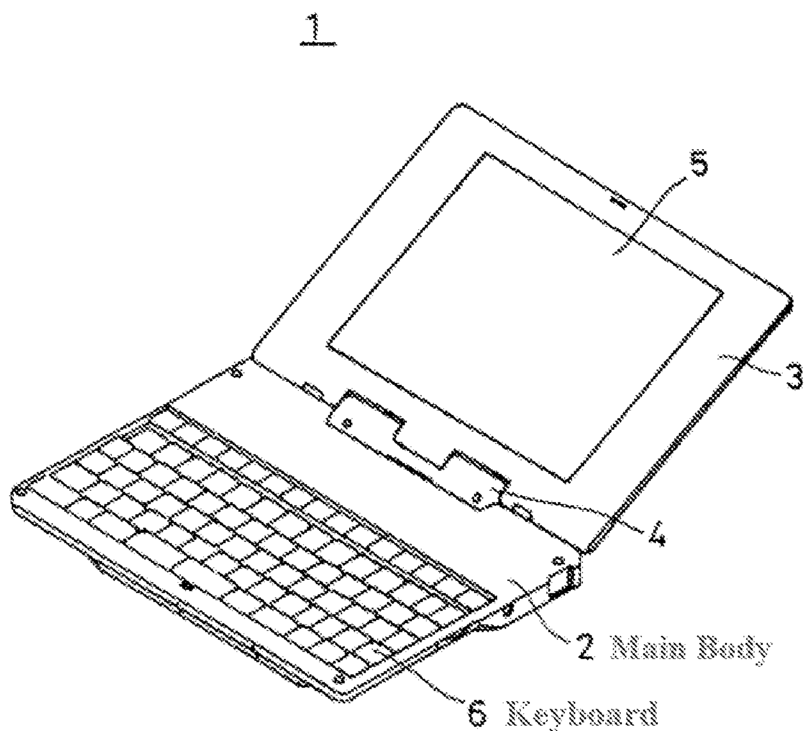
[12.3] a base including an integrated keyboard;

Kamikakai discloses this limitation. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a base ("main body 2") including a keyboard ("keyboard 6"). *E.g.*, Kamikakai, 3:39-43 (reproduced below), FIG. 3 (reproduced below with annotations).

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4. The main body 2 includes a keyboard 6 for inputting data.

Kamikakai, 3:39-43.

FIG. 3



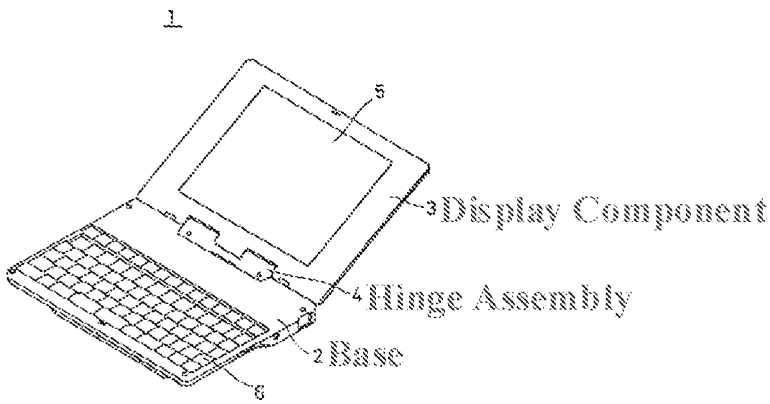
Kamikakai, FIG. 3 (with annotations).

[12.4] 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 this limitation.

Kamikakai discloses that its portable computer comprises a hinge assembly ("connection part 4"). As shown in FIG. 3 of Kamikakai, this hinge assembly is disposed at least partially within the base ("main body 2") and the main display component ("display part 3"). Kamikakai, Fig. 3 (reproduced below with annotations).

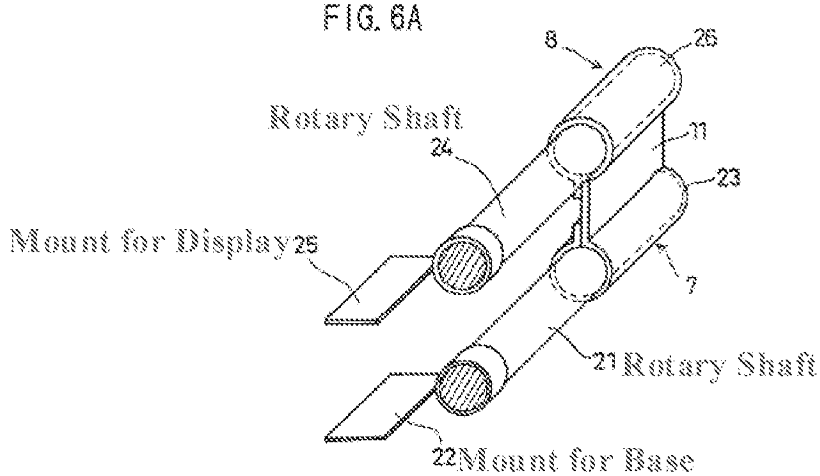
FIG. 3



Kamikakai's Description of the Preferred Embodiments confirms that the hinge assembly is at least partially disposed within the base ("main body 2") since "[a] part of the [hinge assembly's] rotary shaft 21 is mounted on the main body 2 via a mounting part 22." Kamikakai, 4:11-12. Kamikakai's Description of the Preferred Embodiments also confirms that the hinge assembly is at least partially disposed within the main display component ("display part 3") since "[a] part of the [hinge assembly's] rotary shaft 24 is mounted on the display part 3 via a mounting part 25." Kamikakai, 4:28-29.

Kamikakai's Hinge Assembly

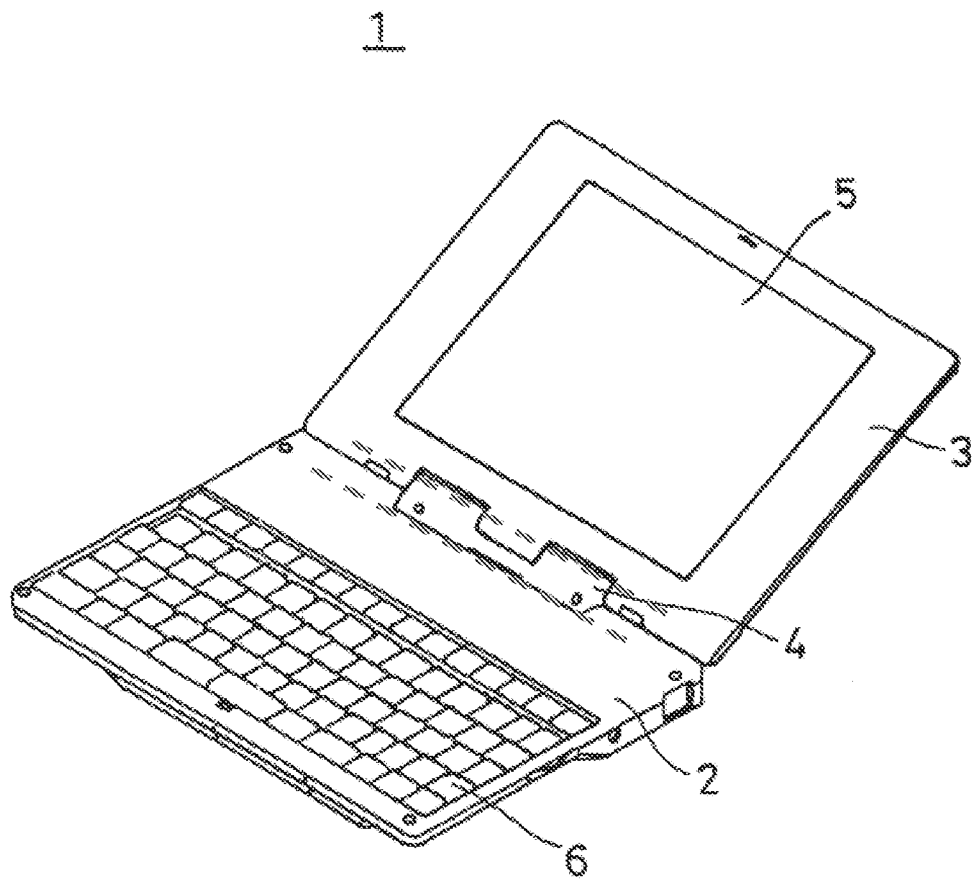
FIG. 6A



Kamikakai, FIG. 6A (with annotations).

Kamikakai further describes that its connection part includes a "support part 9," which supports "first and second rotary parts 7 and 8." Kamikakai, 4:4-6, Fig. 6B. These first and second rotary parts 7 and 8, support rotary shafts 22 and 24, that mount to the base and display, respectively. *Id.*, 4:11-29. As shown in Fig. 6A, above, rotary shafts 22 and 24 extend laterally from rotary parts 7 and 8. *Id.*, Fig. 6A. As shown in Fig. 3, reproduced and annotated below, portions of the display are positioned directly laterally to connector part 4. *Id.*, Fig. 3. Accordingly, a POSITA would understand that the rotary shafts extend laterally from the connector part to extend partially within the display so as to enable the base and display components to rotate about the hinges. Schmandt, ¶ 392.

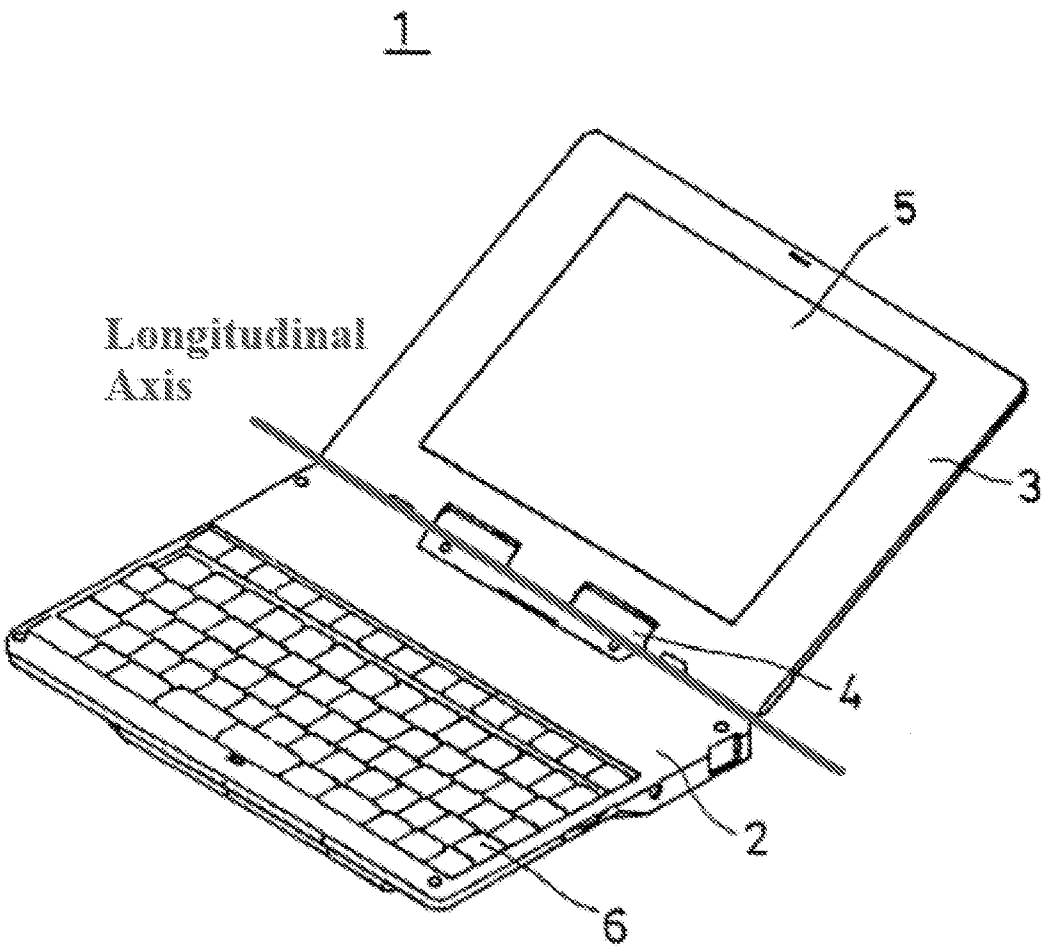
FIG. 3



Kamikakai, FIG. 3 (with annotations).

The hinge assembly of Kamikakai (connection part 4) defines a longitudinal axis running along the interface between the single display component and base, as shown in annotated Fig. 3, below. Kamikakai, Fig. 3; Schmandt, ¶ 393.

FIG. 3



[12.5] 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;

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

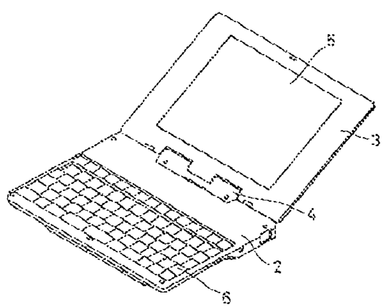
Kamikakai discloses its portable computer in a laptop mode and Shimura discloses an easel mode. *Supra* claim [12.1].

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).

Laptop Mode

FIG. 3

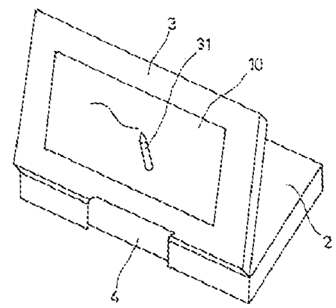
1



Frame Mode

FIG. 9

1



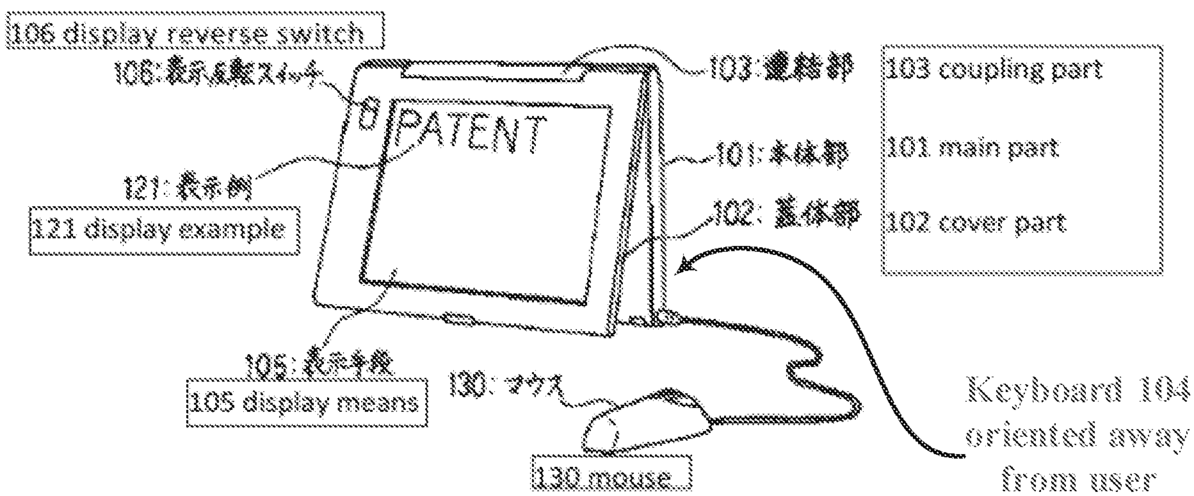
A POSITA would understand that the hinge assembly of Kamikakai (connector part 4), which enables rotation from a laptop mode to a frame mode, likewise enables rotation from a laptop to an easel mode because both the frame mode as disclosed in Kamikakai and the easel mode disclosed by Shimura have a similar hinge angle (i.e, the display has an angle greater than 180 degrees relative to the base). Schmandt, ¶ 397. As the '688 Patent admits, "[i]n the frame mode, the display component 102 may be at a similar orientation, and angle 134, with respect to the base component 104 as in the easel mode." '688 Patent, 16:5-8. Therefore, a POSITA would recognize that a hinge assembly that enables a frame mode also enables an easel mode.

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

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As shown in Figure 5 of Shimura below, in easel mode the display is oriented towards (i.e., is facing) the user and the keyboard is oriented away from the operator, on the backside of the computer.

Annotated FIG. 5 of Shimura



Shimura, FIG. 5 (with annotations).

[12.7] 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.

The combination of Kamikakai, Shimura, and Hisano discloses this limitation. All of Kamikakai, Shimura and Hisano disclose an integrated navigation hardware control in the form of a touch-sensitive screen.

Kamikakai teaches a touch sensitive pen input component on its display. Specifically, Kamikakai discloses the following:

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection

> part 4. The main body 2 includes a keyboard 6 for inputting data. On the other hand, the display part 3 includes a liquid crystal display panel 5, ***and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.***

Kamikakai, 3:39-47 (emphasis added). As Kamikakai discusses the pen input part with respect to Fig. 3, showing the portable computer in laptop mode, a POSITA would understand that the pen input part is accessible to a user in laptop mode. Kamikakai further discloses its pen input part as accessible in other configurations, including its frame mode as shown in Figs. 8-9.

> In this case, the surface 2*b* of the main body 2, forming the bottom surface of the portable information processing apparatus 1 in the folded state of the display part 3, and the surface 3a of the display part 3, forming the top surface of the portable information processing apparatus 1 in the folded state of the display part 3, face each other as shown in FIG. 8. ***In addition, the pen input part 10 is easily accessible by the user, because the area occupied by the portable information processing apparatus 1 in this state is not much different from that in the folded state of the display part 3 and the portable information processing apparatus 1 can easily be maintained in a stable state. Accordingly, the user can easily input data from the pen input part 10 by manipulating a pen (not shown) with respect to the pen input part.***

Kamikakai, 6:37-50 (emphasis added). A POSITA would understand that since the touch-sensitive pen input part of Kamikakai is accessible in its frame mode, the pen input would also be available when the computer is oriented into easel mode, as the display is likewise oriented toward a user in both modes, only with the screen inverted ~180 degrees. Schmandt, ¶ 401. Shimura also discloses its display as enabling touch input.

> [Practical Embodiment] A practical embodiment of the present invention will be explained based on figures. Figure 1 is an inclined view of the portable personal computer which applies the present invention. Main part 101 is used to store the electronic circuit of the computer. Cover part 102 is provided with computer display means 105 around the entire surface. When in use, the display means which is pulled up faces the user. ***Display means 105 is the display part of the computer. It is also an input means when used in a pen input environment.*** Keyboard 104 is a computer input part and serves as an input part which is the center when used in the prior art.

Shimura, ¶ [0011] (emphasis added).

To the extent patent owner argues that Kamikakai is somehow lacking in its disclosure of a touch-sensitive user interface, a POSITA would have been motivated to implement the teachings of Hisano of a touch panel display including a virtual mouse into the portable computer of Kamikakai. *See Hisano*, ¶ [0059]. A POSITA would be motivated to do so 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. Schmandt, ¶ 402. A POSITA implementing Kamikakai would have naturally turned to Hisano and its "touch panel" teachings. Schmandt, ¶ 402. As described, Kamikakai discloses a touch panel for controlling the device when the keyboard is inaccessible. Schmandt, ¶ 402. As Kamikakai does not provide specific details on the use of this touch display, a POSITA would have sought out other teachings on how to implement such displays in configurable devices. In doing so, the POSITA would have naturally encountered Hisano and appreciated the value of its teachings on touch panel displays. Schmandt, ¶ 402. Hisano teaches, in the context of a similar configurable computer, a hardware "touch panel" that provides a "virtual mouse" for navigation of the user interface in the same way a common computer mouse would.

> Notebook personal computers are also commercially available which have an electromagnetic or pressure-sensitive touch panel lying on top of an LCD panel so that direct touch with the screen enables the position on the screen to be input.
>
> ***
>
> The second housing 4 has a touch panel-installed LCD panel 18 installed in its frame 16. The touch panel-installed LCD panel 18 includes a pressure-sensitive touch panel laminated to an LCD panel (liquid crystal display device) used to display images, characters, and the like.
>
> ***
>
> ***The touch panel-installed LCD panel 18 displays not only the virtual keyboard 20 but also a virtual mouse 22 operated similarly*** to ***a common mouse to move a pointer position or make any icon active.*** That is, an image corresponding to the mouse 22 is displayed in a screen on which the keyboard 20 is displayed. The user uses his or her hand to touch and depress a part of the touch panel corresponding to the displayed position of the virtual mouse 22, to move the virtual mouse 22.

Hisano, ¶¶ [0009], [0057], [0059] (emphasis added). A POSITA would have been motivated to incorporate these Hisano features of a touch screen with "virtual mouse" and keyboard into the Kamikakai system, at least because doing so would provide intuitive user control of the device. Schmandt, ¶ 402. A POSITA would have experienced no technical difficulties in doing so, as

Kamikakai already discloses pen-based computing, which would have required a touch-sensitive display; Hisano notes that such displays were "commercially available." Hisano, ¶ [0009].

3. Dependent Claim 13

[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.

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

Kamikakai discloses a single display component comprising a display screen configured to display content. *See supra*, claim [12.2].

Hisano teaches a display orientation module performing the claimed functionality. 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.

> 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.***

Hisano, ¶ [0099] (emphasis added). In other words, based on the hinge rotation angle, the system of Hisano inverts the displayed content 180 degrees relative a longitudinal axis. Schmandt, ¶ 405. A POSITA would recognize that such an operation would be performed in order to maintain displayed content as right-side-up relative to a user viewing the portable computer. (Schmandt, ¶ 405). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is performed by a display orientation module in the form of the computer's internal processor and associated logic, constituting a display orientation module. *See e.g.*, Hisano, ¶ [0026] ("a 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"); Schmandt, ¶ 405.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: that "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[25]

A POSITA would recognize that whether the portable computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base for at least the

[25] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained below for Claim 16. *Infra,* Section X.F.5.

following reasons. To illustrate, 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 (reproduced below).

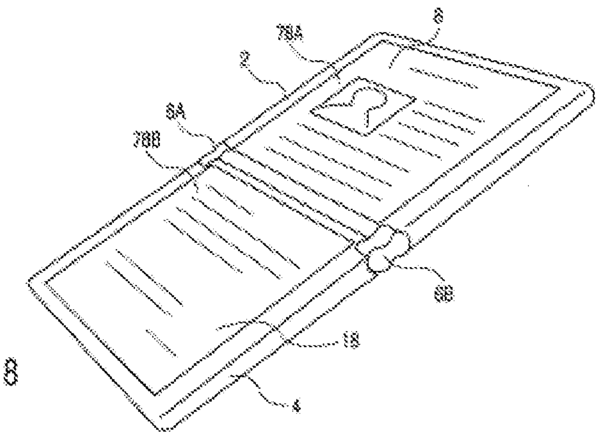


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device may be in easel mode, such as taught by Shimano. Schmandt, ¶ 409.[26] Accordingly, a POSITA would know how to program a portable computer to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 409. Specifically, a POSITA would implement the teachings of Hisano to program the portable computer of

[26] A POSITA would also recognize that a hinge angle greater than 180 degrees may correspond to the frame mode as taught by Kamikakai, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Hisano also 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, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 409.

Kamikakai 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. Schmandt, ¶ 409.

4. <u>Dependent Claim 14</u>

> [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.

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

As explained above for Claim 13, the portable computer of 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. *Supra*, Section X.F.3. Further, as explained, Hisano teaches a 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. *Id.*

5. **Dependent Claim 16**

[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.

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

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 of a display housing to a separate housing, in order to determine the orientation of a displayed screen.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the portable computer device utilizing a dedicated sensor. Schmandt, ¶ 413. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art. *See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra,* Section VIII.K; Schmandt, ¶ 413. A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 413. Therefore, Hisano teaches the use of a sensor as a means for detecting the relative orientation of Hisano's display relative to a separate housing structure, such as a base.

Hisano also teaches its display orientation module configured to automatically adjust the orientation of displayed content responsive to the information from the mode sensor. Hisano, ¶ [0099] ("[T]he rotating angle . . . 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 . . . as the top."). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is performed by a display orientation module in the form of the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); Schmandt, ¶ 414.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

6. <u>Dependent Claim 20</u>

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

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

As explained above for claim 14, 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. *See supra*, Section X.F.4.

7. Dependent Claim 24

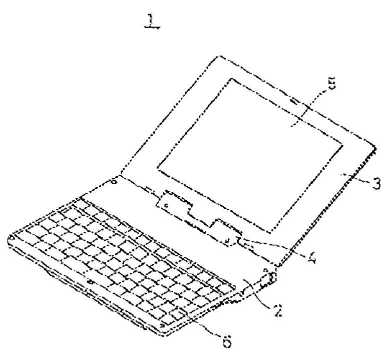
[24] The portable computer of claim 12, wherein the plurality of modes includes a frame mode in which the single display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface.

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

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

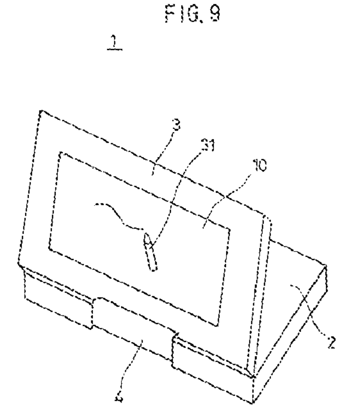
Laptop Mode

FIG. 3



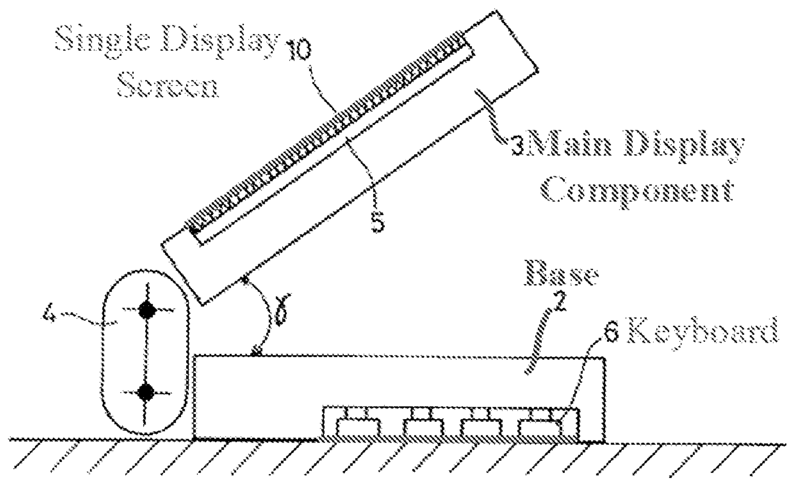
Frame Mode

FIG. 9



As shown in FIG. 8 of Kamikakai, the base ("main body 2") contacts a substantially horizontal surface with the keyboard ("keyboard 6") facing down towards 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.

Kamikakai's Frame Mode



Kamikakai, FIG. 8 (with annotations).

> In FIG. 8, the main body 2 is set up on the flat set-up surface with the keyboard 6 facing down, and the display part 3 and the main body 2 form an angle within an angular range of 270° to 360° in this, state. Hence, an angle γ formed between the surface 3a of the display part 3, opposite to the surface 3b provided with the liquid crystal display panel 5 and the pen input part 10, and the surface 2a of the main body 2, opposite to the surface 2b provided with the keyboard 6, is within an angular range of 0° to 90°.

Kamikakai, 6:27-36.

8. Dependent Claim 25

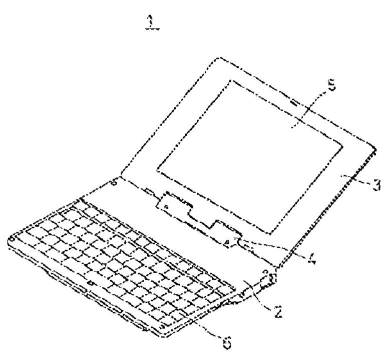
[25] The portable computer of claim 13, wherein the plurality of modes includes a frame mode in which the single display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the keyboard is directed towards the substantially horizontal surface, and wherein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

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

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

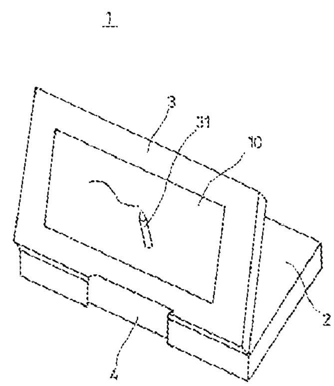
Laptop Mode

FIG. 3



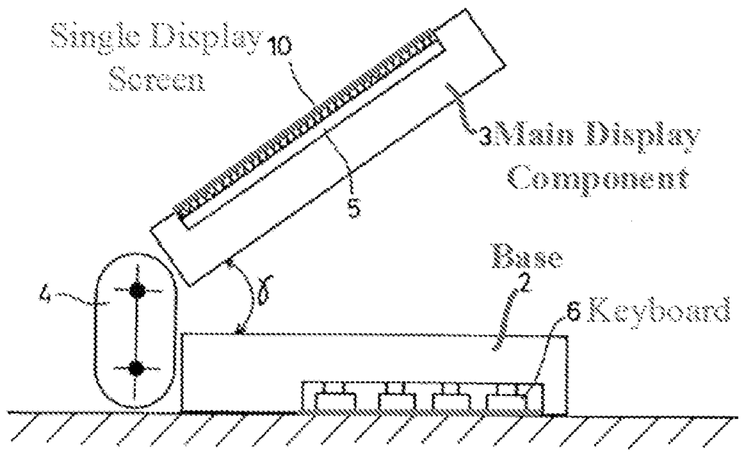
Frame Mode

FIG. 9



As shown in FIG. 8 of Kamikakai, the base ("main body 2") contacts a substantially horizontal surface with the keyboard ("keyboard 6") facing down towards 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.

Kamikakai's Frame Mode



Kamikakai, FIG. 8 (with annotations).

> In FIG. 8, the main body 2 is set up on the flat set-up surface with the keyboard 6 facing down, and the display part 3 and the main body 2 form an angle within an angular range of 270° to 360° in this, state. Hence, an angle γ formed between the surface 3*a* of the display part 3, opposite to the surface 3*b* provided with the liquid crystal display panel 5 and the pen input part 10, and the surface 2*a* of the main body 2, opposite to the surface 2*b* provided with the keyboard 6, is within an angular range of 0° to 90°.

Kamikakai, 6:27-36.

As explained above for claim 13 it would have been obvious to a POSITA to perform an inversion of the display orientation upon detecting a transition from laptop mode to easel mode. *See supra,* Sections X.F.3. Specifically, a POSITA would recognize that upon a transition between laptop and easel modes, the top of the display screen becomes the bottom and vice-versa, as shown in the annotated figures below, and that the display orientation should be inverted to retain the displayed content as right-side-up relative to a viewer. Hisano, Figs. 1, 9; Schmandt, ¶ 624.

Annotated Hisano Fig. 1 (Laptop Mode)	**Annotated Hisano Fig. 9 (Easel Mode)**

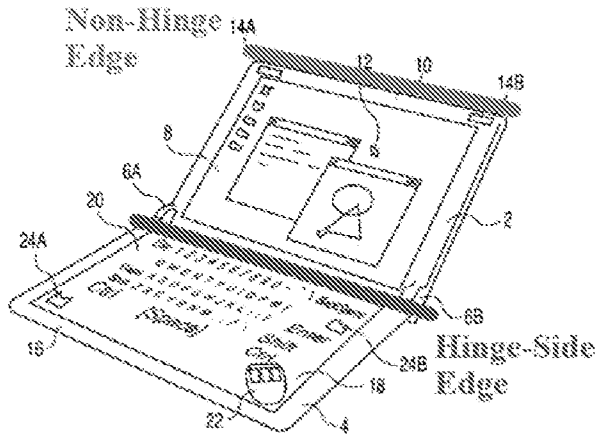


FIG. 1

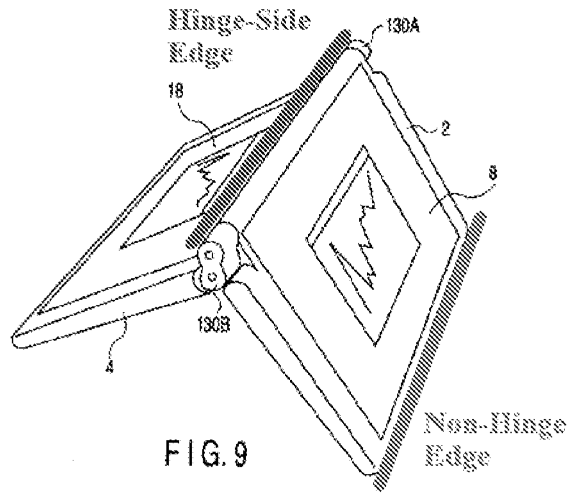
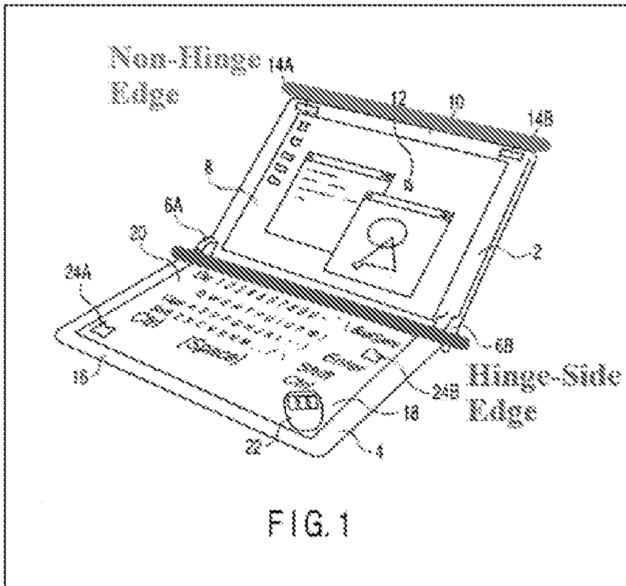


FIG. 9

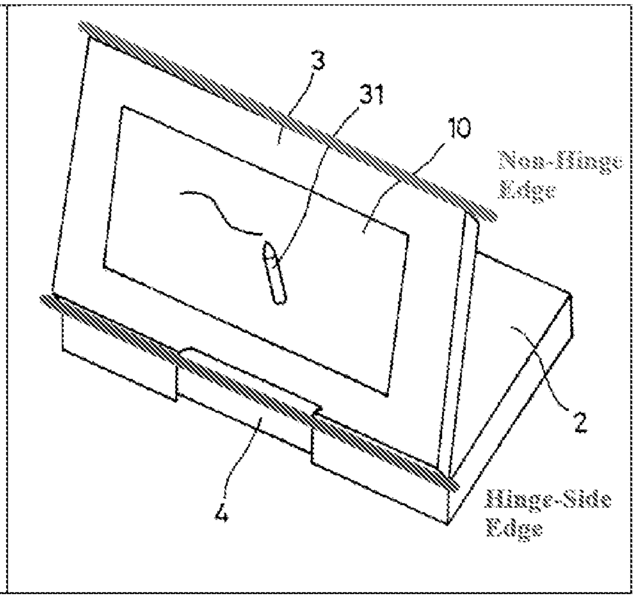
Therefore, a POSITA would be motivated to implement the display orientation module of Hisano to effect a change in display orientation from a first content display orientation for laptop mode to a second content display orientation for easel mode. Schmandt, ¶ 425.

Likewise, a POSITA would recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Kamikakai, Fig. 9; Schmandt, ¶ 426. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 426.

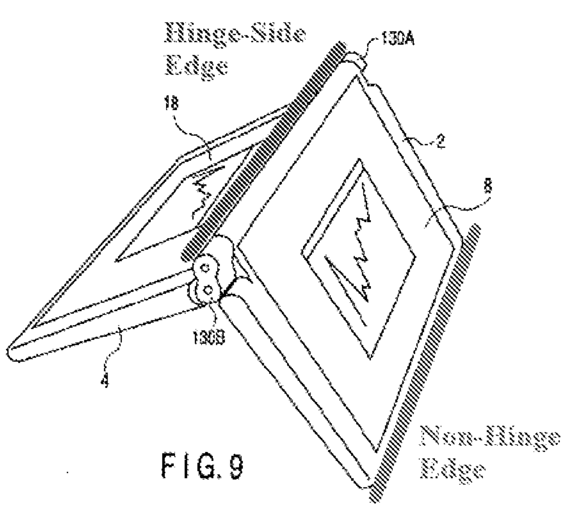
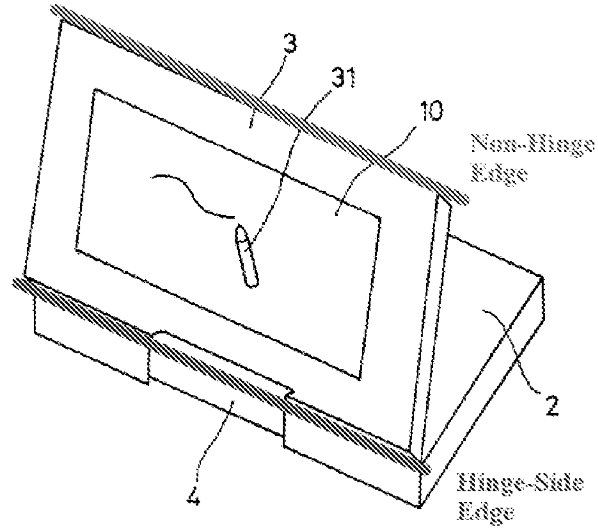
Annotated Hisano Fig. 1 (Laptop Mode)



Annotated Kamikakai Fig. 9 (Frame Mode)



Accordingly, a POSITA would recognize the need 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, i.e., to maintain the displayed content as right-side-up relative to a viewer despite the top and bottom edges of the display becoming inverted. Schmandt, ¶ 427. This is demonstrated by the annotated figures below. Hisano, Fig. 9; Kamikakai, Fig. 9; Schmandt, ¶ 427.

Annotated Hisano Fig. 9 (Easel Mode)	**Annotated Kamikakai Fig. 9 (Frame Mode)**
 FIG. 9	

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.

9. Dependent Claim 26

> [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 teaches this limitation.

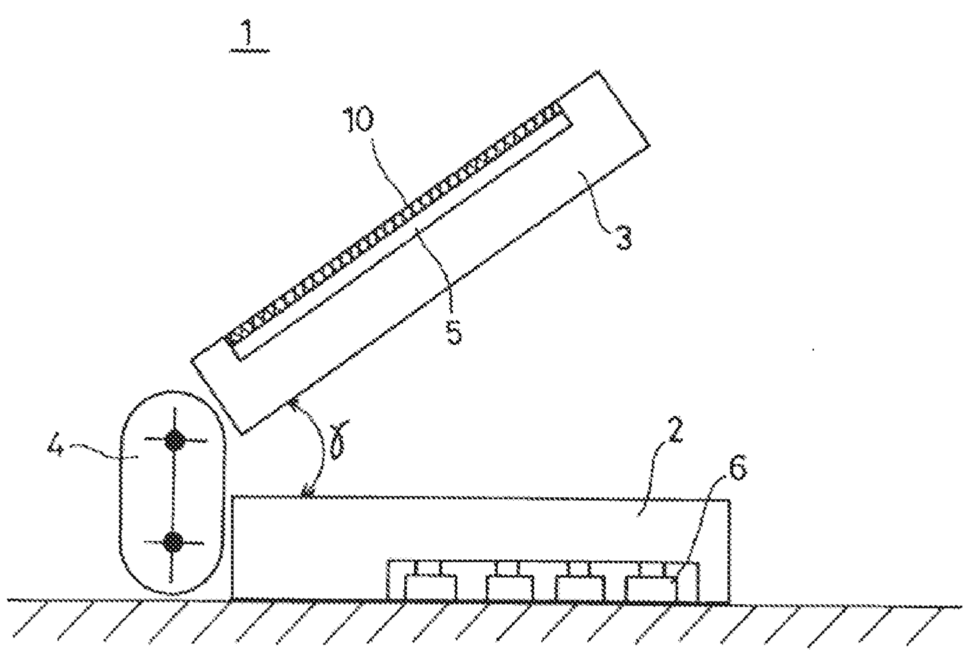
Kamikakai teaches a mechanism that disables its keyboard when the portable computer is in frame mode and the keyboard faces a horizontal surface as shown in Figures 8 and 9.

> Preferably, the portable information processing apparatus 1 is provided with a mechanism for disabling the keyboard 6 when the

> angle γ formed between the surface, 3*a* of the display part 3, opposite to the surface 3*b* provided with the pen input part 10, and the surface 2*a* of the main body 2, opposite to the surface 2*b* provided with the keyboard 6, is within an angular range of 0° to 90°, so that the data input is only possible from the pen input part 10. A mechanism similar to a known mechanism for turning OFF power of the portable information processing apparatus 1 when the display part 3 is folded and closed with respect to the main body 2 may be used to disable the keyboard 6. In this case, it [sic] possible 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.

Kamikakai, 6:51-67.

FIG. 8



Kamikakai, Fig. 8. A POSITA would also recognize that although Kamikakai discloses disabling its keyboard based on a measured hinge angle, this could result in disabling the keyboard when the computer is also placed into an easel mode, as easel mode and frame mode may utilize a similar hinge angle. Schmandt, ¶ 431. However, this would not dissuade a POSITA from utilizing such a feature because in easel mode the keyboard is directed away from a user and the user would be able to provide user input using the pen input of Kamikakai. Schmandt, ¶ 431. Additionally, a POSITA would be able to also 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. Schmandt, ¶ 431.

While, for purposes of this Request only, Requester submits that the term "protection module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). This element is also satisfied to the extent the Examiner finds or PO argues that the term "protection module" invokes 112(6), has adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: (1) determines that the portable computer is in frame mode (2) "prevent[s] keys from being pressed . . . when the portable computer is in the frame mode." '688 Patent, 16:13-17.

As explained above, Kamikakai teaches the function of disabling a computer's keyboard when it is in frame mode and it would have been obvious for a POSITA to program the associated software for 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. Schmandt, ¶ 433.

10. Independent Claim 17

[17.1] 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:

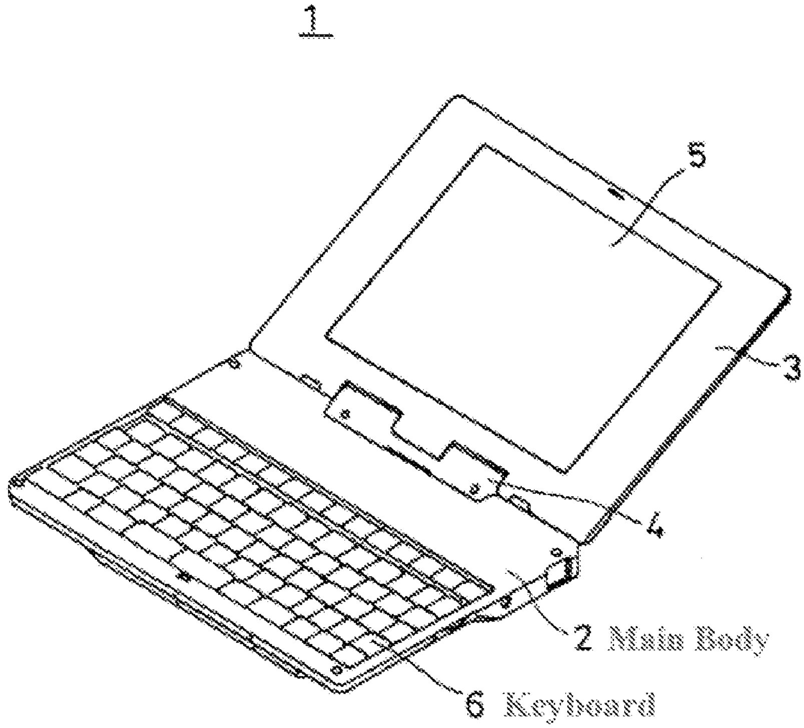
The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

Kamikakai discloses a portable computer comprising a body including a single display component with a display screen and including an integrated keyboard. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a base ("main body 2") including a keyboard ("keyboard 6"). *E.g.*, Kamikakai, 3:39-43 (reproduced below), FIG. 3 (reproduced below with annotations).

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4. The main body 2 includes a keyboard 6 for inputting data.

Kamikakai, 3:39-43.

FIG. 3

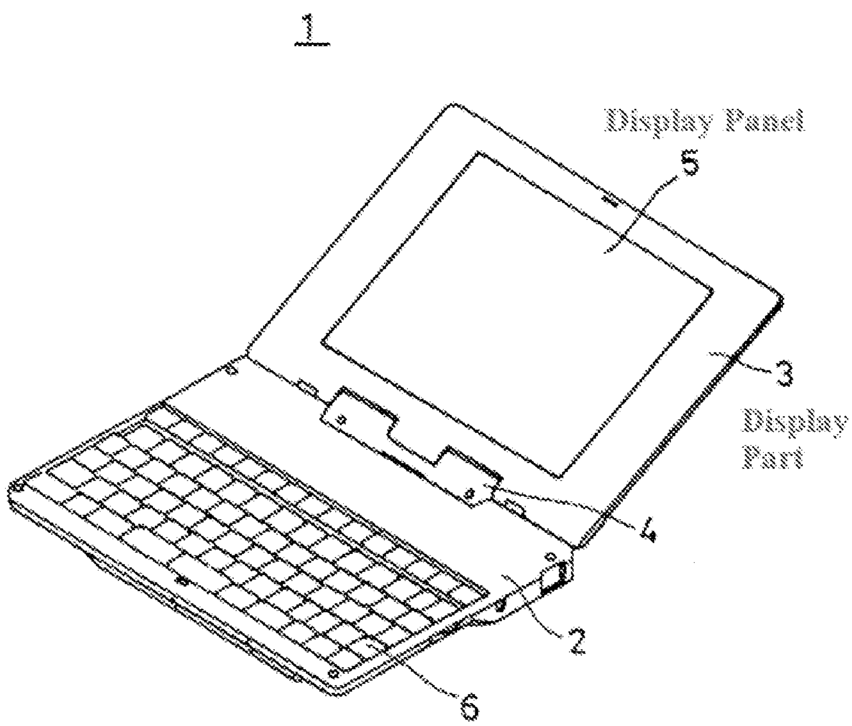


Kamikakai, FIG. 3 (with annotations). Kamikakai discloses that the portable computer comprises a single display component ("display part 3") including the single display screen ("display panel 5") that displays content. *E.g.*, Kamikakai, 3:43-46 (reproduced below), FIGS. 3, 9.

> On the other hand, the display part 3 includes a liquid crystal display panel 5, and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.

Kamikakai, 3:43-46.

FIG. 3

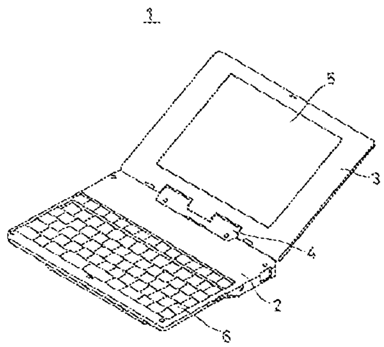


Kamikakai, FIG. 3 (with annotations).

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

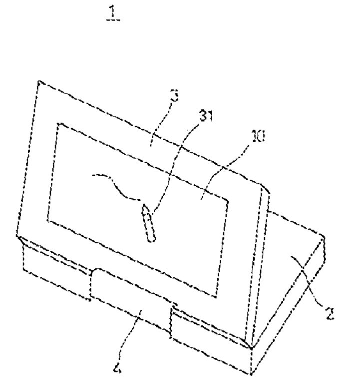
Laptop Mode

FIG. 3



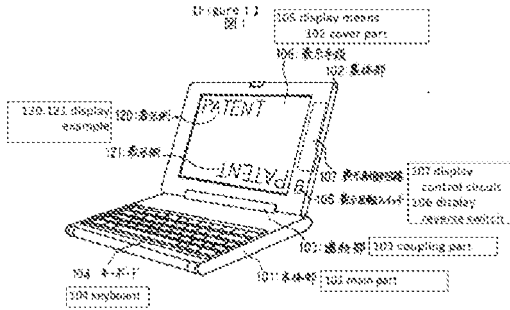
Frame Mode

FIG. 9

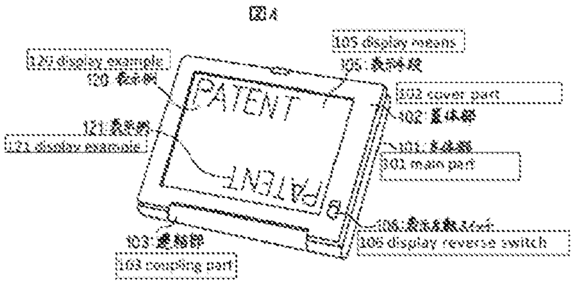


Shimura discloses an additional easel mode. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, FIGS. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

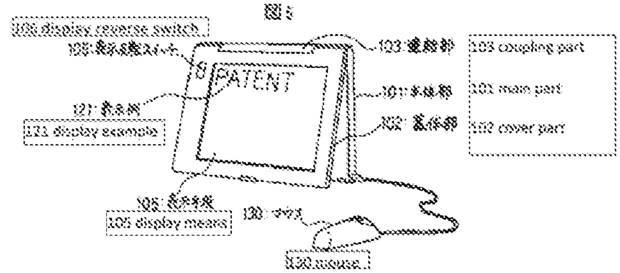
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

A POSITA would have been motivated to combine the easel mode of Shimura into the portable computer of Kamikakai for the reasons explained above in Section X.F.1. *Supra*, Section X.F.1.

Hisano also discloses a method of automatically orienting content between a plurality of display modes. 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.

> 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.*

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is automatically performed by the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 439).

[17.2] 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 this limitation.

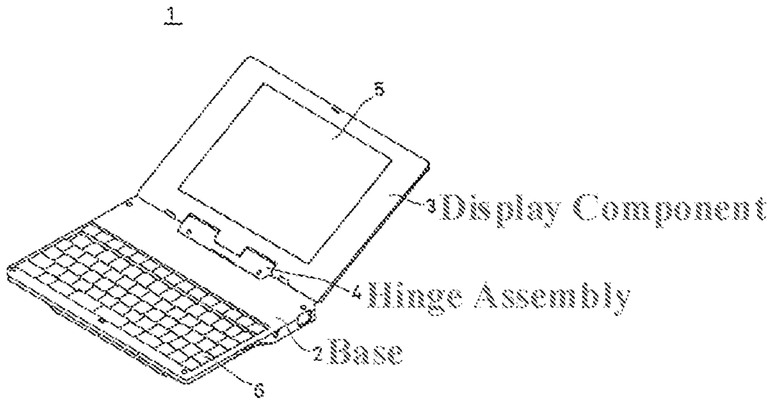
Kamikakai discloses that its portable computer comprises rotating its display part using a hinge assembly ("connection part 4").

> As may be seen from FIG. 2, the connection part 56 enables the display part 53 to be opened to the open position with respect to the main body 55 when using the portable information processing apparatus 51, and to be closed to the folded position with respect to the main body 55 when not using the portable information processing apparatus 51, that is, when carrying the portable information processing apparatus 51. As shown in FIG. 2, the connection part 56 has a single axis structure 57.

Kamikakai, 1:54-62.

As shown in FIG. 3 of Kamikakai, this hinge assembly is disposed at least partially within the base ("main body 2") and the main display component ("display part 3"). *Id.*, Fig. 3.

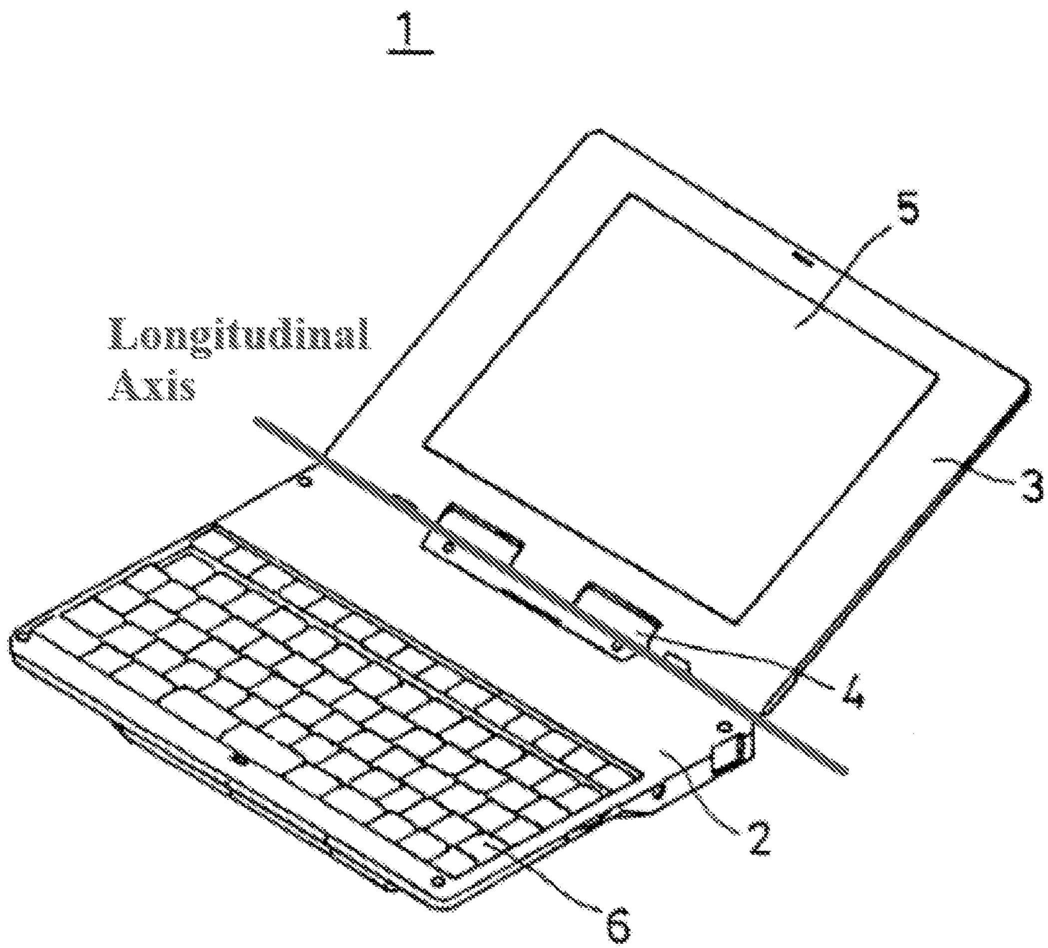
FIG. 3



Kamikakai, FIG. 3 (with annotations).

The hinge assembly of Kamikakai (connection part 4) defines a longitudinal axis running along the interface between the single display component and base, as shown in annotated Fig. 3, below. Kamikakai, Fig. 3; Schmandt, ¶ 443.

FIG. 3



[17.3] 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;

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

Hisano teaches this limitation. 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art (*See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra,* Section VIII.K; Schmandt, ¶ 445). A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 445. Hisano therefore teaches detecting a degree of rotation of a display relative to a base structure.

Hisano teaches automatically adjusting the orientation of displayed content responsive to the information (i.e., a signal) from the mode sensor. Hisano, ¶ [0099] ("[T]he rotating angle . . . 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 . . . as the top."). A POSITA would recognize that the decision-making regarding when to change orientation of the display, along with generation of the computer's displayed screen, is performed by the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); Schmandt, ¶ 446. And a POSITA would understand 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. Schmandt, ¶ 446. Therefore, Hisano teaches the use of a sensor as for detecting a degree of Hisano's display relative to a separate housing structure, such as a base, as well as providing a signal representative of the degree of rotation.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

[17.4] 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;

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As explained above for claim [17.3], Hisano teaches detecting and providing a degree of rotation of a display component relative to a base.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

Further, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base compared to a threshold value for the hinge angle for at least the following reasons. To illustrate, 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 (reproduced below).

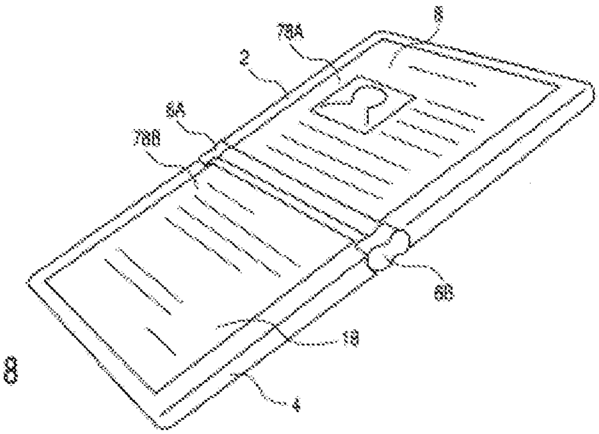


FIG. 8

A POSITA would recognize that 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, while if the hinge angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode. Schmandt, ¶ 452. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 452. Specifically, a POSITA would implement the teachings of Hisano to enable the portable computer of Kamikakai 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.

[17.5] generating a visual display of the content for the display screen;

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

A POSITA understood that the purpose of a portable computer including a display screen, as disclosed in Kamikakai, is to generate content to be visually displayed on the display screen. Schmandt, ¶ 454. A POSITA understood that the signals corresponding to the visual content was 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. Schmandt, ¶ 454. These processor and display components were conventional to portable computers as admitted by the '688 patent.

> Conventional portable computers most commonly have a "clam-shell" configuration, with a base including the keyboard, various ports, connectors and/or inputs (e.g., for power and connecting peripheral devices), and the majority of the electrical components (e.g., the central processing unit and memory), and a display component pivotably coupled to the base by a hinge.

'688 Patent, 1:21-27.

Hisano also discloses such display hardware for receiving an image display signal from a computer's processor and generating a corresponding visual display of content for a display screen.

> With the circuit shown in FIG. 3, when the notebook personal computer is powered on, an image display command is provided to a graphics s CPU 40. In response to the command, the CPU 40 transfers image data on the virtual keyboard 20 from a graphics s ROM 42 to a frame memory 44. The frame memory 44 then expands the transferred image data on the virtual keyboard 20 into a bitmap, which is provided to a display circuit section 46 on a line-by-line basis. The display circuit 46 processes and converts the image line signal into a row driving signal and a column driving signal. The display circuit 46 then supplies the row and column driving signals to a row driver 48 and a column driver 50, respectively. The drivers 48 and 50 convert the respective driving signals into signals driving the display signal in accordance with the driving signals.

Hisano, ¶ [0070].

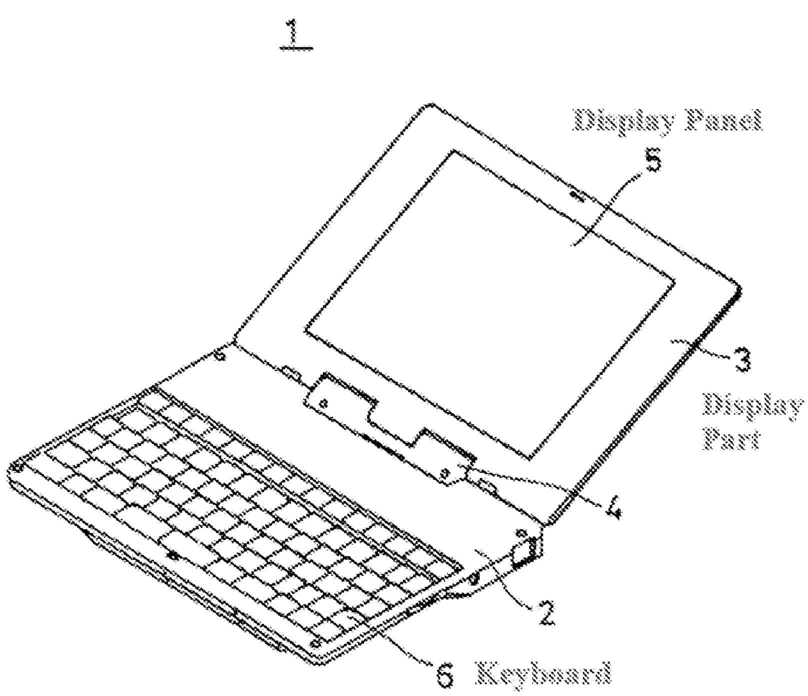
Accordingly, a POSITA would understand that a portable computer as taught by Kamikakai generates a visual display of the content for its display screen.

[17.6] 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

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As described for claim element [17.1], Kamikakai discloses orientating a visual display into a laptop mode, as shown in Fig. 3, below.

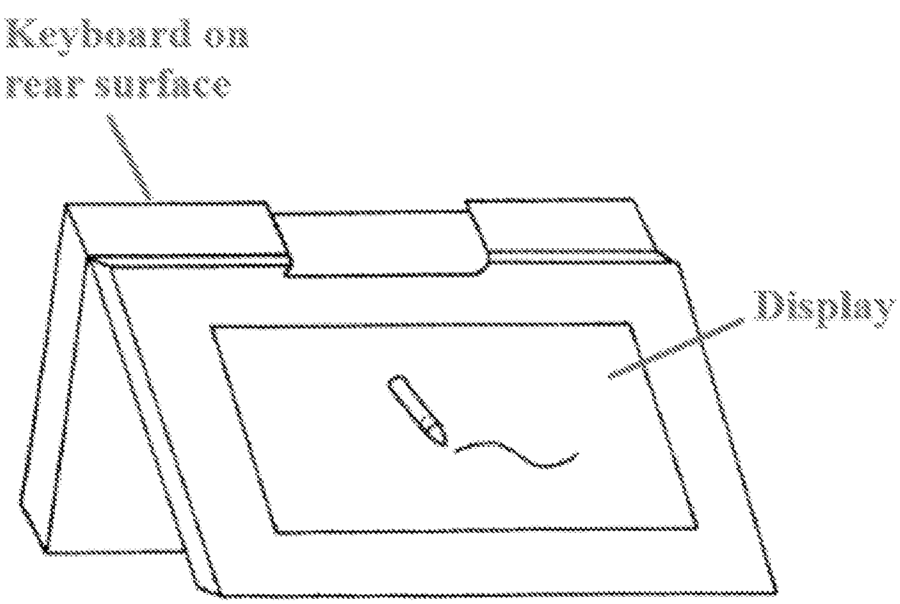
FIG. 3



Kamikakai, FIG. 3 (with annotations). A POSITA would understand that in laptop mode, the opened display panel and keyboard would be oriented toward an operator so that the operator can interface with the keyboard and clearly see the content displayed on the screen. Schmandt, ¶ 459.

As described for claim element [17.1], Shimura discloses orientating a visual display into a laptop mode. A POSITA would understand that the portable computer of Kamikakai, when oriented into easel mode would have its single display directed toward a viewer/operator (just as it is in Kamikakai's frame mode), and accordingly the keyboard would be directed away from the viewer/operator. Schmandt, ¶ 460. This is shown in the exemplary figure below, showing the portable computer of Kamikakai re-oriented from frame mode (as shown in Fig. 9) so as to be in easel mode as would be seen from the view of a viewer/operator. Schmandt, ¶ 460.

Exemplary Easel Mode for Kamikakai Portable Computer



[17.7] 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: 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.

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As explained above for claim [17.3], Hisano teaches detecting and providing a degree of rotation of a display component relative to a base. As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

Further, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base compared to a threshold value for the hinge angle for at least the following reasons. To illustrate, 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 (reproduced below).

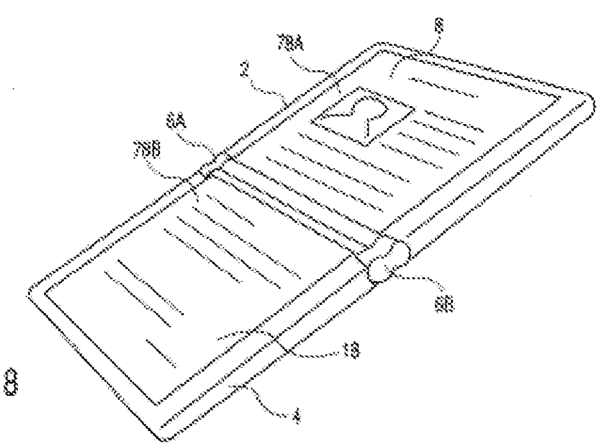


FIG. 8

A POSITA would recognize that 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, while if the hinge angle is greater than 180 degrees then the display surfaces face away from each-other enabling an easel mode. Schmandt, ¶ 464. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 464. Therefore, a POSITA would implement the teachings of Hisano 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.

11. **Dependent Claim 18**

[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.

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

As explained above for claim [17.6], it would have been obvious to a POSITA modifying the portable computer of Kamikakai to implement an inversion of the display screen upon a transition between laptop mode and that it would likewise have been obvious to have an orientation for laptop mode for a hinge angle below 180 degrees and to have an inverted orientation for easel mode for a hinge angle above 180 degrees so as to maintain the displayed content right-side-up relative to a user/operator. *See supra,* Section X.F.10.

12. **Dependent Claim 27**

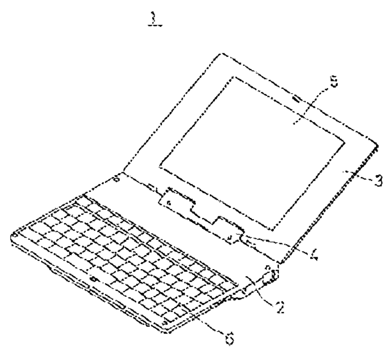
[27] The method of claim 17, wherein the plurality of display modes includes a frame mode wherein in the frame mode the display component is oriented towards the operator, the base contacts a substantially horizontal surface, and the integrated keyboard is directed towards the substantially horizontal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

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

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

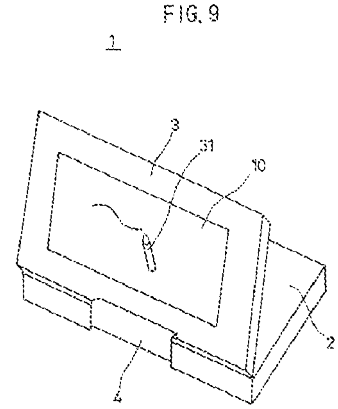
Laptop Mode

FIG. 3



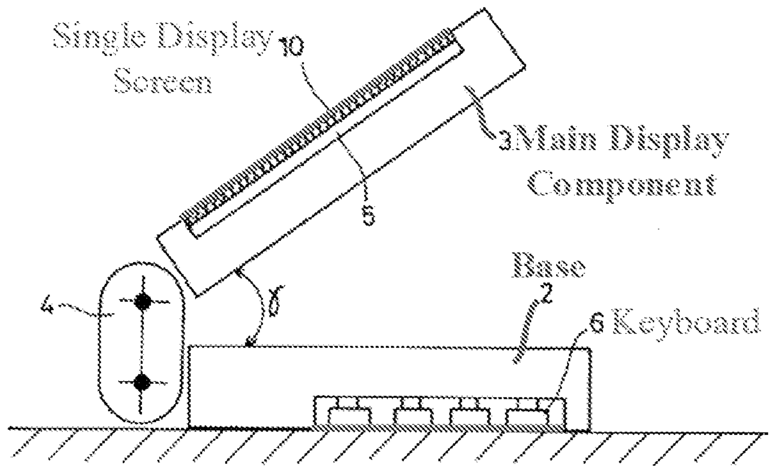
Frame Mode

FIG. 9



As shown in FIG. 8 of Kamikakai, the base ("main body 2") contacts a substantially horizontal surface with the keyboard ("keyboard 6") facing down towards 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.

Kamikakai's Frame Mode

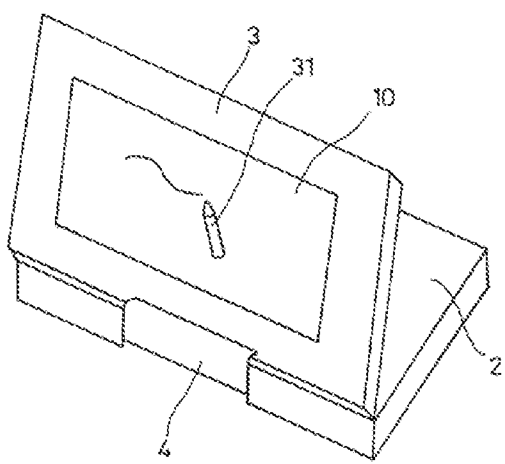
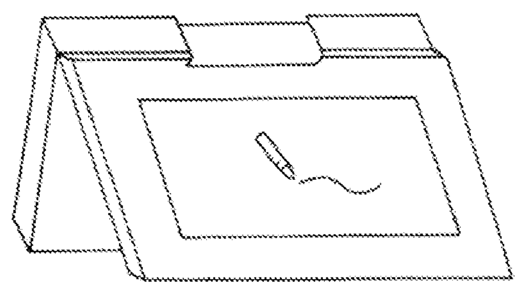


Kamikakai, FIG. 8 (with annotations).

> In FIG. 8, the main body 2 is set up on the flat set-up surface with the keyboard 6 facing down, and the display part 3 and the main body 2 form an angle within an angular range of 270° to 360° in this, state. Hence, an angle γ formed between the surface 3*a* of the display part 3, opposite to the surface 3*b* provided with the liquid crystal display panel 5 and the pen input part 10, and the surface 2*a* of the main body 2, opposite to the surface 2*b* provided with the keyboard 6, is within an angular range of 0° to 90°.

Kamikakai, 6:27-36.

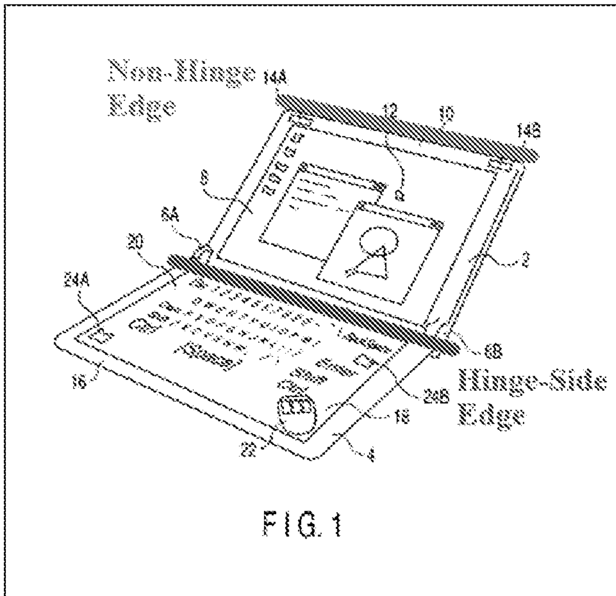
A POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. Schmandt, ¶ 470. For example, as explained for claims [17.3] and [17.7], Hisano teaches its orientation sensor is capable of measuring the hinge angle of a display relative to a base housing, and a POSITA would have recognized that this hinge angle may be used to detect a transition between a laptop and an easel mode. *See supra,* Section X.F.10. Specifically, POSITA would recognize that 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, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in either the easel mode, such as taught by Shimura, or the Frame mode as taught by Kamikakai. *See supra,* Sections X.F.1; Schmandt, ¶ 470. A POSITA would also recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode, such as taught by Shimura, and the frame mode as taught by Kamikakai, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Schmandt, ¶ 470. This is demonstrated by comparing Figure 9 of Kamikakai, showing a frame mode, with the exemplary figure depicted below showing the portable computer of Kamikakai oriented into an easel mode.

<u>Kamikakai, Fig. 9 (Frame Mode)</u>	**<u>Exemplary Easel Mode for Kamikakai</u>**
	

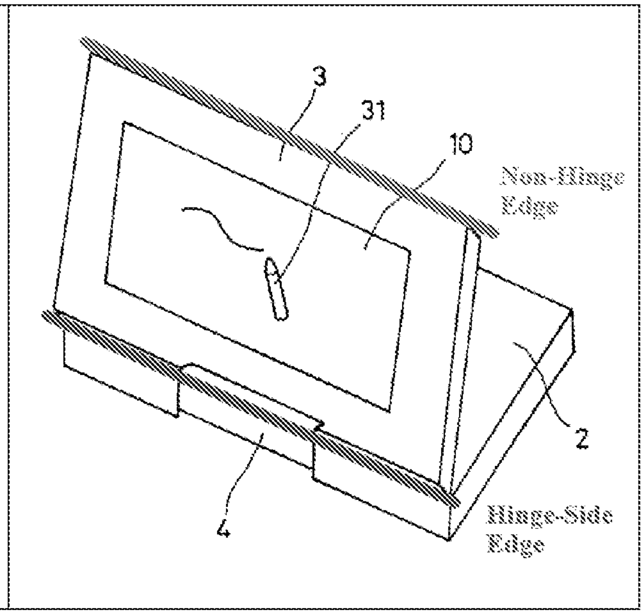
Hisano also teaches that its orientation sensor is capable of distinguishing between a frame and easel mode. Hisano discloses that its sensor may include a gravity sensor that is capable of distinguishing the portable computer's orientation "regardless of the angle of the hinges . . . or the placement of the personal computer." Hisano, ¶ [0099]; Schmandt, ¶ 471. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 471.

A POSITA would also recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Kamikakai, Fig. 9; Schmandt, ¶ 472. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 472.

Annotated Hisano Fig. 1 (Laptop Mode)



Annotated Kamikakai Fig. 9 (Frame Mode)



Accordingly, it would be obvious to a POSITA to display visual content in a first orientation when the sensor as taught by Hisano detects a degree of rotation greater than the threshold degree of 180 degrees and that the portable computer is oriented into frame mode.

13. Dependent Claim 28

[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 discloses this limitation.

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.

> Preferably, the portable information processing apparatus 1 is provided with a mechanism for disabling the keyboard 6 when the angle γ formed between the surface, *3a* of the display part 3, opposite to the surface *3b* provided with the pen input part 10, and the surface *2a* of the main body 2, opposite to the surface *2b* provided with the keyboard 6, is within an angular range of 0° to 90°, so that the data input is only possible from the pen input part 10. A mechanism similar to a known mechanism for turning OFF power of the portable information processing apparatus 1 when the display part 3 is folded and closed with respect to the main body 2 may be used to disable the keyboard 6. In this case, it [sic] possible 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.

Kamikakai, 6:51-67.

14. Independent Claim 19

[19.1] A portable computer comprising:

Kamikakai discloses this limitation.

Kamikakai discloses a portable computer.

> The present invention generally relates to portable information processing apparatuses and, more particularly, to an information

> processing apparatus having a display part which includes a display panel and a pen input part formed on the display panel, a main body which includes a keyboard, and a connection part which connects the display part and the main body.
>
> ***
>
> The portable information processing apparatus 1 may be a lap-top computer, a palm-top computer, a notebook type word processor, a portable communication tool such as a communication terminal, or the like.

(Kamikakai, 1:6-12, 3:48-51.)

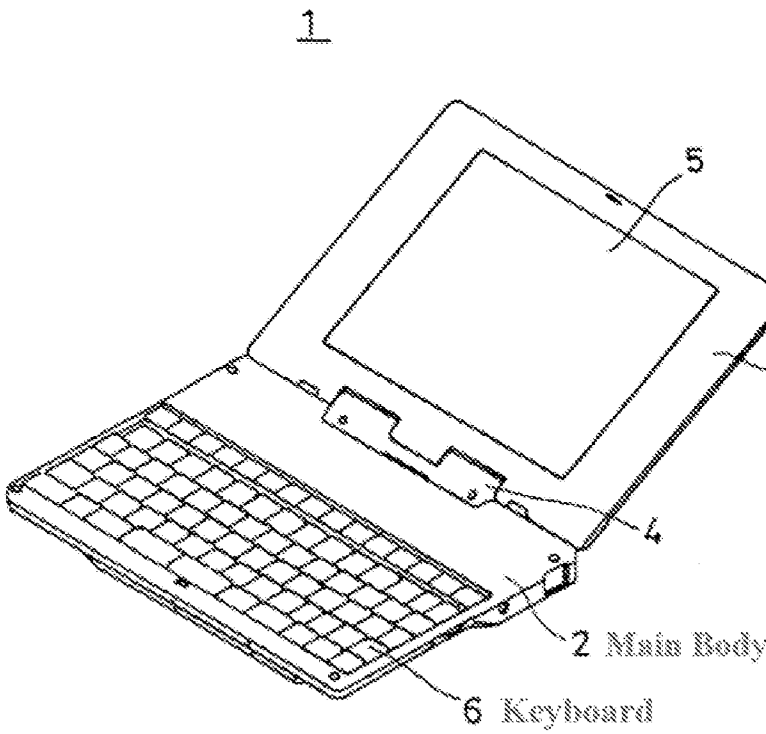
[19.2] a base unit comprising an integrated keyboard;

Kamikakai discloses this limitation. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a base ("main body 2") including a keyboard ("keyboard 6"). *E.g.*, Kamikakai, 3:39-43 (reproduced below), FIG. 3 (reproduced below with annotations).

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4. The main body 2 includes a keyboard 6 for inputting data.

Kamikakai, 3:39-43.

FIG. 3



Kamikakai, FIG. 3 (with annotations).

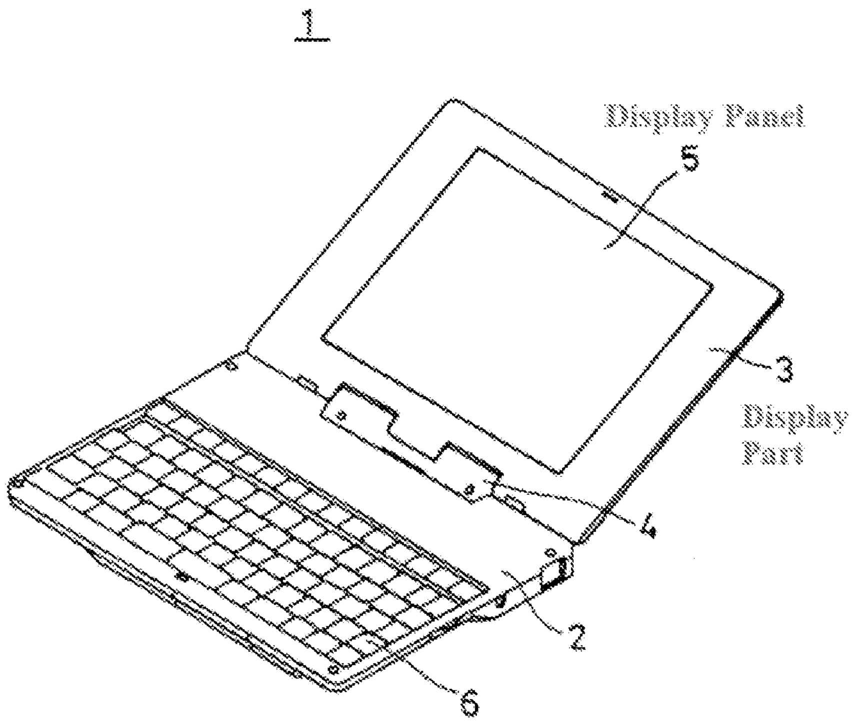
[19.3] a single display unit including a single display screen configured to display content;

Kamikakai discloses this limitation. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a single display component ("display part 3") including the single display screen ("display panel 5") that displays content. *E.g.*, Kamikakai, 3:43-46 (reproduced below), FIGS. 3, 9.

> On the other hand, the display part 3 includes a liquid crystal display panel 5, and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.

Kamikakai, 3:43-46.

FIG. 3



Kamikakai, FIG. 3 (with annotations).

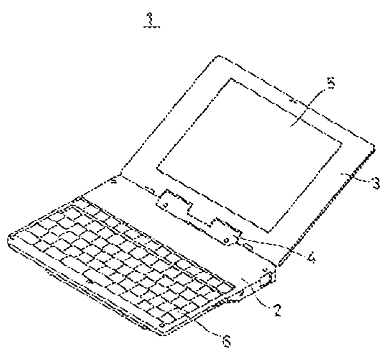
[19.4] an orientation sensor which detects a physical orientation of the single display unit relative to the base unit; and

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

Kamikakai, Shimura, and Hisano teach changing between a plurality of physical orientations of a portable computer. 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). Kamikakai, FIGS. 3, 9 (reproduced below).

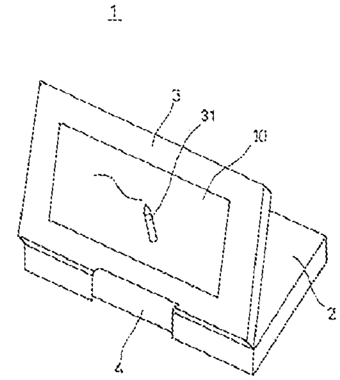
Laptop Mode

FIG. 3



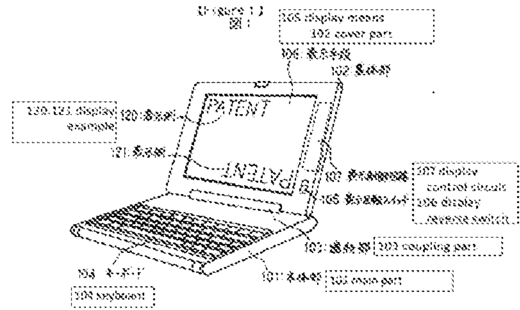
Frame Mode

FIG. 9

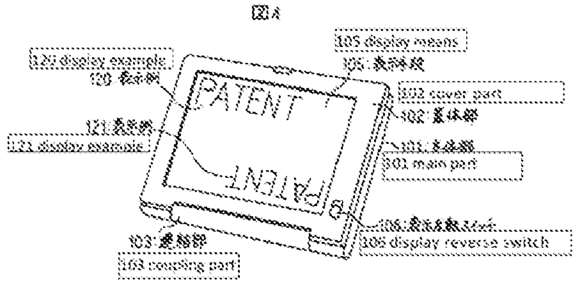


Shimura discloses an easel mode. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, FIGS. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

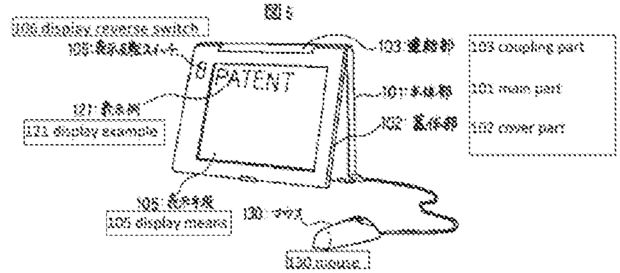
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

A POSITA would have been motivated to combine the easel mode of Shimura into the portable computer of Kamikakai for the reasons explained above in Section X.F.1. *Supra,* Section X.F.1.

[19.5] 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;

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

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.

> 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.***

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is performed by a display orientation module in the form of the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 486).

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that: that "triggers a display inversion as appropriate" so that the

displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[27]

Specifically, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base for at least the following reasons. To illustrate, 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 (reproduced below).

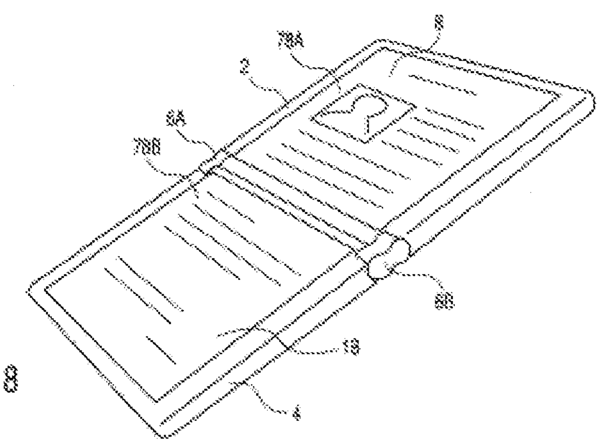


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device may be in easel mode, such as taught by Shimura. Schmandt, ¶ 490.[28] Accordingly, a POSITA would know how

[27] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained above for Claim [19.4]. *Infra,* Section X.F.14, claim [19.4].

[28] A POSITA would also recognize that a hinge angle greater than 180 degrees may correspond to the frame mode as taught by Kamikakai, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Hisano also discloses that its sensor may include a gravity

to program a portable computer to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 490. Specifically, a POSITA would implement the teachings of Hisano to program a portable computer 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. Schmandt, ¶ 490.

[19.6] 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:

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

As explained above for claim [19.4], Kamikakai teaches a portable computer having a laptop mode and a frame mode and Shimura teaches an easel mode, and it would have been obvious to a POSITA 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. *See supra*, Section X.F.1.

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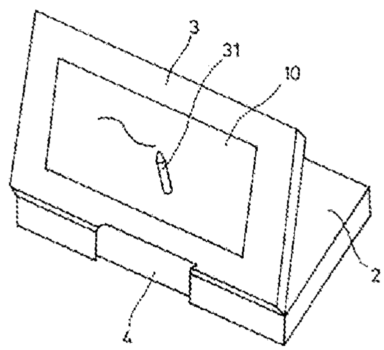
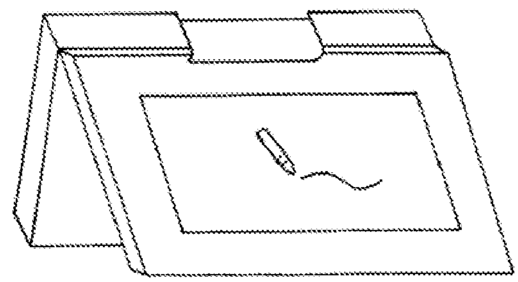
sensor that is capable of distinguishing the portable computer's orientation "regardless of the angle of the hinges . . . or the placement of the personal computer." Hisano, ¶ [0099]. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 490.

In addition, as explained for claim [19.4], Hisano teaches an orientation sensor which detects the physical orientation of the portable computer. *See supra,* Section X.F.14, claim [19.4]. A POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. Schmandt, ¶ 493. For example, as explained for claims [19.4] and [19.5], Hisano teaches its orientation sensor is capable of measuring the hinge angle of a display relative to a base housing, and a POSITA would have recognized that this hinge angle may be used to detect a transition between a laptop and an easel mode. *See supra,* Section X.F.14, claims [19.4], [19.5]. Specifically, POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in either the easel mode as taught by Shimura or the frame mode as taught by Kamikakai. *See supra,* Sections Section X.F.14, claims [19.4], [19.5]. That is, POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode as taught by Shimura and the frame mode as taught by Kamikakai and that both the easel and frame modes may utilize a similar hinge angle. Schmandt, ¶ 493. This is demonstrated by comparing Figure 9 of Kamikakai, showing a frame mode, with the exemplary figure depicted below showing the portable computer of Kamikakai oriented into an easel mode.

Kamikakai, Fig. 9 (Frame Mode)	**Exemplary Easel Mode for Kamikakai**
	

Hisano also 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]; Schmandt, ¶ 494. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes. Schmandt, ¶ 494.

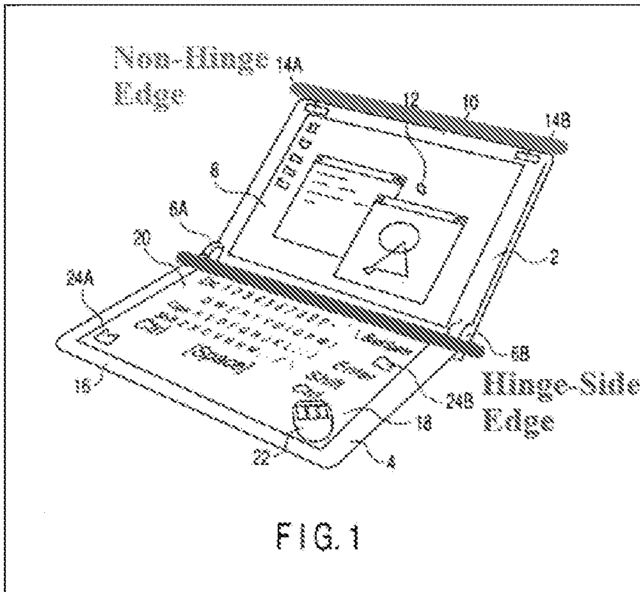
[19.7] trigger a display inversion from one of the first and second content display orientations to the other of the first and second content display orientations responsive to the orientation sensor detecting the change between the laptop mode and the easel mode, trigger a display inversion from one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

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

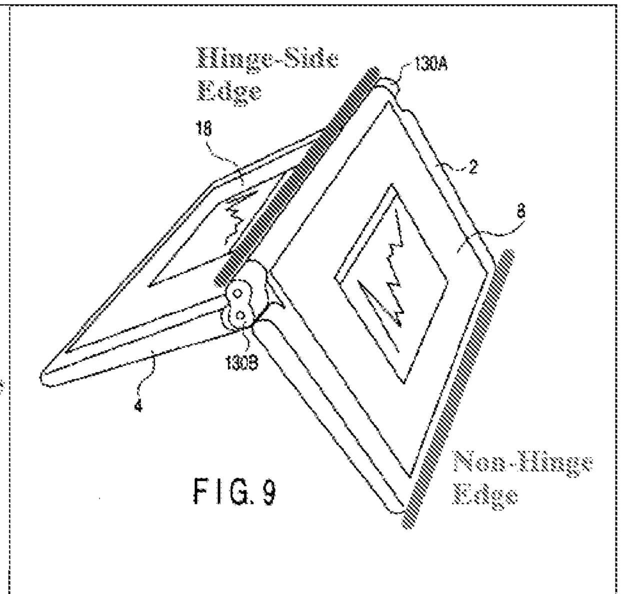
As explained above for claims [19.5] and [19.6], the display orientation module taught by Hisano is capable of detecting a transition between all three of a laptop mode, an easel mode, and a frame mode to initiate an inversion of the display orientation accordingly. *See supra,* Sections X.F.14, claims [19.5], [19.6].

As explained above for claim [19.5] it would have been obvious to a POSITA to perform an inversion of the display orientation upon detecting a transition from laptop mode to easel mode. *See supra,* Sections X.F.14, claim [19.5]. Specifically, a POSITA would recognize that upon a transition between laptop and easel modes, the top of the display screen becomes the bottom and vice-versa, as demonstrated in the annotated figures below, and that the display orientation should be inverted to retain the displayed content as right-side-up relative to a viewer. Hisano, Figs. 1, 9; Schmandt, ¶ 497.

Annotated Hisano Fig. 1 (Laptop Mode)



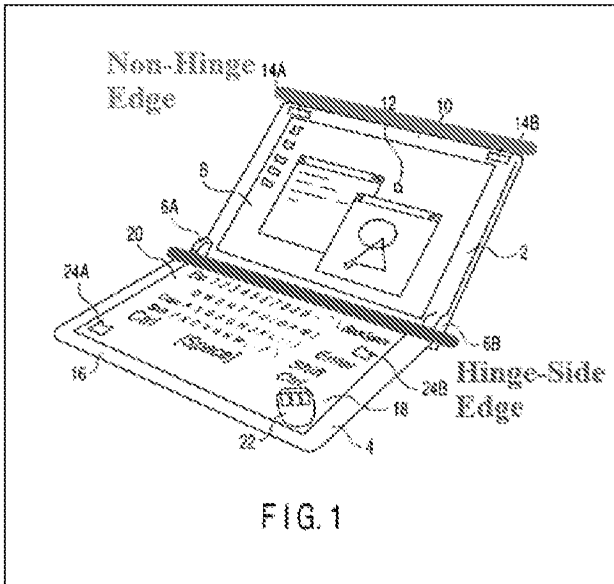
Annotated Hisano Fig. 9 (Easel Mode)

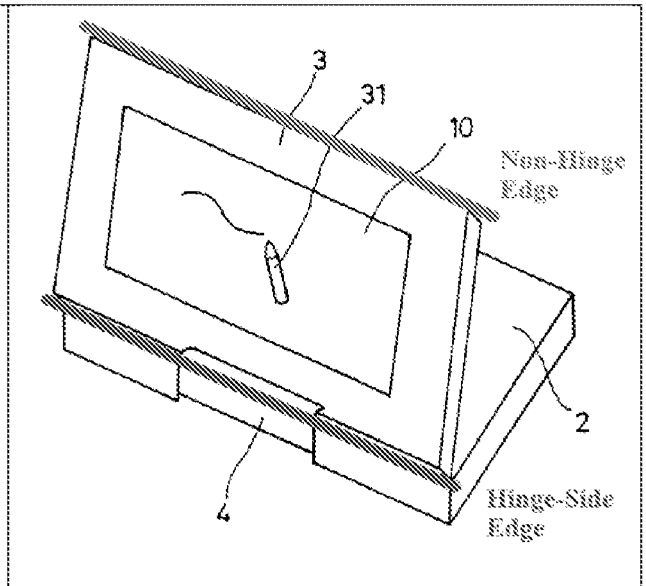


Therefore, a POSITA would be motivated to implement the display orientation module of Hisano to effect a change in display orientation in the portable computer of Kamikakai from a first content display orientation for laptop mode to a second content display orientation for easel mode. Schmandt, ¶ 498.

Likewise, a POSITA would recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Kamikakai, Fig. 9; Schmandt, ¶ 499. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 499.

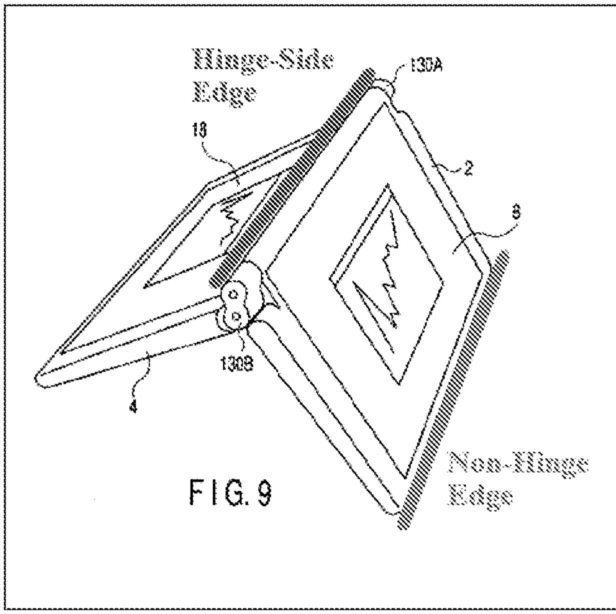
Annotated Hisano Fig. 1 (Laptop Mode) **Annotated Kamikakai Fig. 9 (Frame Mode)**

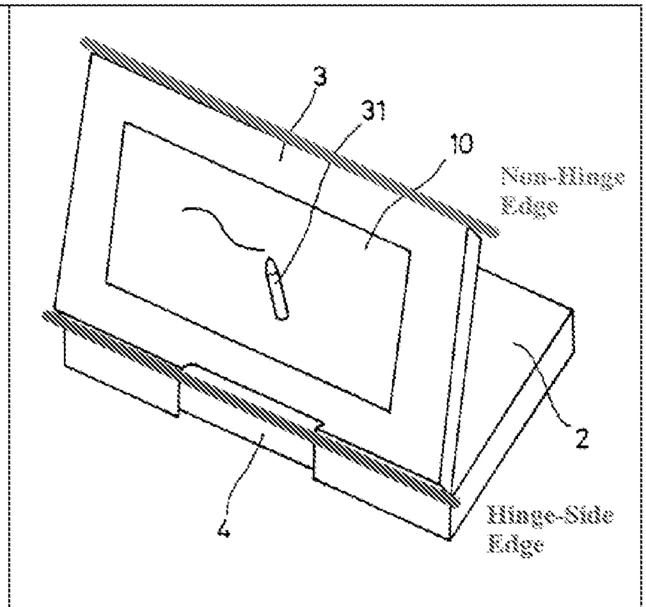




Accordingly, a POSITA would recognize the need to effect a display inversion between the first content orientation to the second content orientation when transitioning between frame mode and easel mode, for the same reasons as the transition between laptop and easel mode, i.e., to maintain the displayed content as right-side-up relative to a viewer despite the top and bottom edges of the display becoming inverted. Schmandt, ¶ 500. This is demonstrated by the annotated figures below. Hisano, Fig. 9; Kamikakai, Fig. 9; Schmandt, ¶ 500.

Annotated Hisano Fig. 9 (Easel Mode) **Annotated Kamikakai Fig. 9 (Frame Mode)**





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.

15. Dependent Claim 21[29]

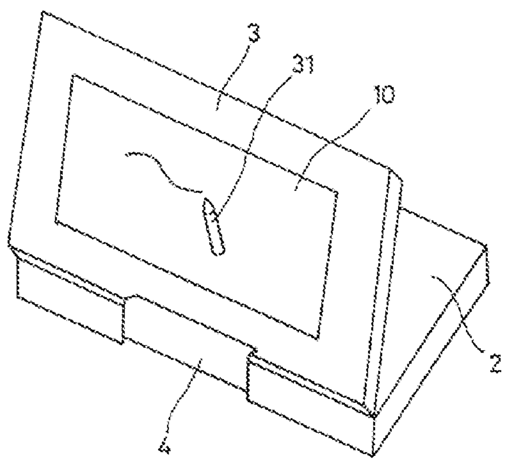
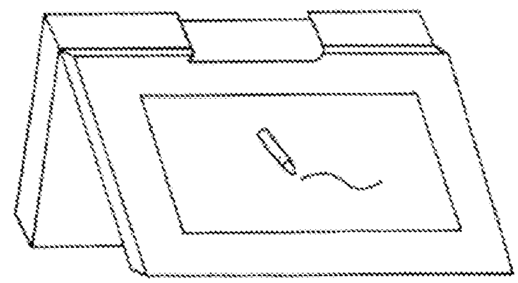
[21] The portable computer of claim 18, wherein the orientation sensor includes an accelerometer.

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

[29] Requester believes that an error occurred regarding the dependency for dependent claims 21 and 22 during issuance of the '688 patent. While claims 21 and 22 depend from claim 18 in the '688 patent as-issued, during the patent's prosecution they depended from the independent claim that

As explained for claim [19.4], Hisano teaches an orientation sensor that detects a physical orientation of a display unit relative to a base. *See supra,* Sections X.F.14, claim [19.4]. Hisano further teaches that its orientation sensor may include an accelerometer in the form of a "sensor that senses the direction of gravity." Hisano, ¶ [0099]; Schmandt, ¶ 503. A POSITA would be motivated to implement this accelerometer as taught by Hisano with the portable computer taught by Kamikakai in order to determine a transition between an easel mode and a frame mode. That is, a POSITA would recognize that a hinge angle greater than 180 degrees may correspond to both the easel mode as taught by Shimura as well as the frame mode as taught by Kamikakai, as both the easel and frame modes utilize a similar hinge angle, i.e., greater than 180 degrees. Schmandt, ¶ 503. This is demonstrated by comparing Figure 9 of Kamikakai, showing a frame mode, with the exemplary figure depicted below showing the portable computer of Kamikakai oriented into an easel mode.

issued as claim 19. *See* Ex. 1002, 365-66 (as-presented claims 24 and 25 depending from claim 21), 411 (presented claim 21 issued as claim 19). Further, the language of claims 21 and 22 confirm that they are intended to depend from claim 19. Both claims 21 and 22 recite a preamble of a "portable computer," corresponding to the "portable computer" preamble of claim 19, rather than the "method" of claim 18. Accordingly, in this Request, Requester treats claims 21 and 22 as properly depending from claim 19 and evaluates them accordingly.

Kamikakai, Fig. 9 (Frame Mode)	**Exemplary Easel Mode for Kamikakai**
	

Hisano also teaches that its gravity 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]; Schmandt, ¶ 504. A POSITA would understand a gravity sensor to constitute an accelerometer. Schmandt, ¶ 504. Accordingly, a POSITA would be able to utilize the sensor of Hisano to detect the transitions between all three of the laptop, easel, and frame modes, and therefore be able to provide an appropriate display orientation for each mode. Schmandt, ¶ 504.

16. Dependent Claim 22

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

The combination of Kamikakai, Shimura, and Hisano teaches this limitation. As explained for claims [19.4], [19.5], and [19.6], Hisano teaches detecting an angle of rotation about of hinge of a display unit relative to a base using an orientation sensor and a POSITA would utilize such a sensor 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. *See supra, See supra,* Sections X.F.14, claims [19.4]-[19.6].

17. Independent Claim 29

[29.1] 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:

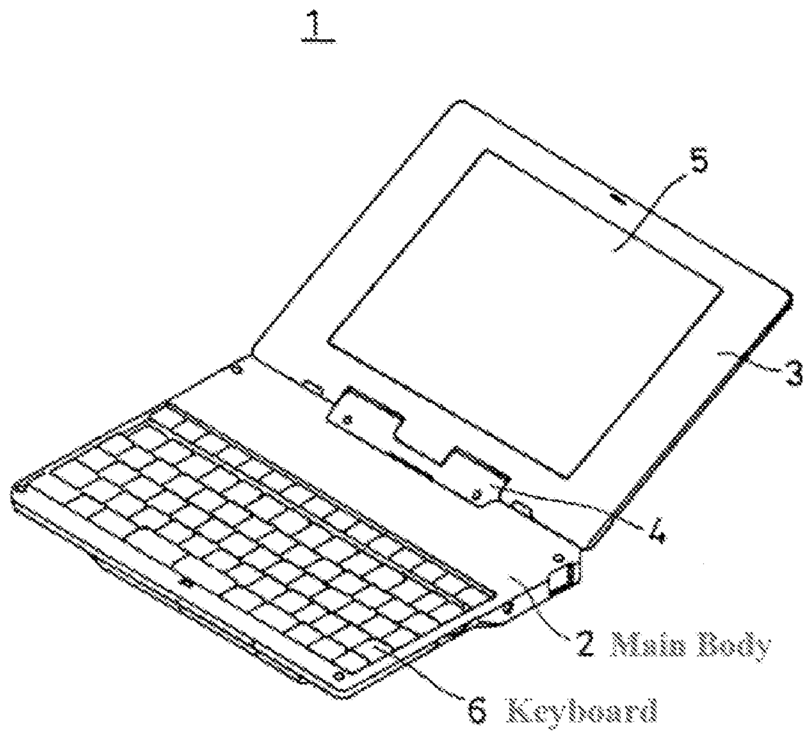
The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

Kamikakai discloses a portable computer comprising a body including a single display component with a display screen and including an integrated keyboard. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a base ("main body 2") including a keyboard ("keyboard 6"). *E.g.*, Kamikakai, 3:39-43 (reproduced below), FIG. 3 (reproduced below with annotations).

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4. The main body 2 includes a keyboard 6 for inputting data.

Kamikakai, 3:39-43.

FIG. 3

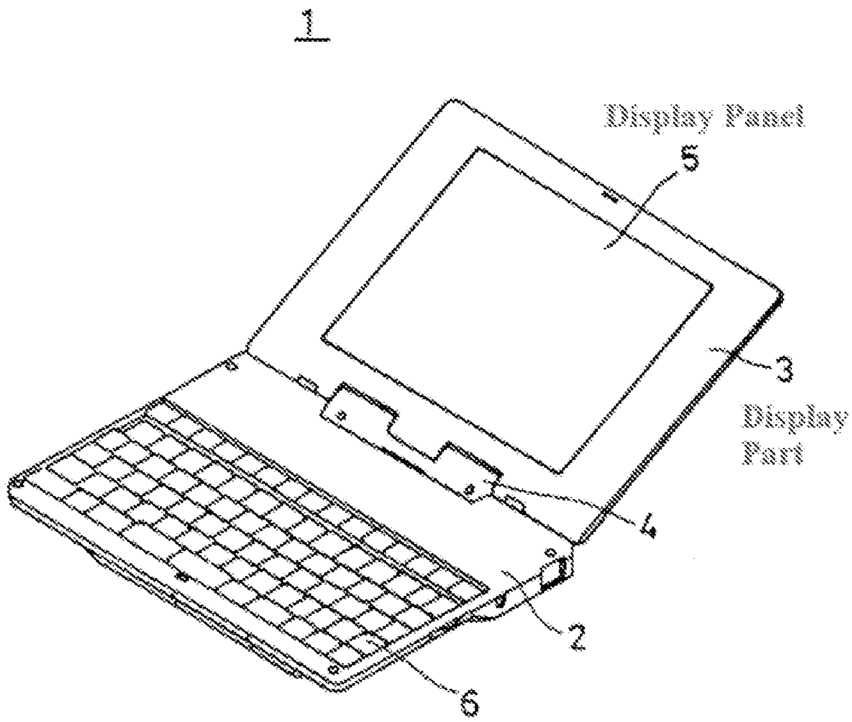


Kamikakai, FIG. 3 (with annotations). Kamikakai discloses that the portable computer comprises a single display component ("display part 3") including the single display screen ("display panel 5") that displays content. *E.g.*, Kamikakai, 3:43-46 (reproduced below), FIGS. 3, 9.

> On the other hand, the display part 3 includes a liquid crystal display panel 5, and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.

Kamikakai, 3:43-46.

FIG. 3



Kamikakai, FIG. 3 (with annotations).

Kamikakai discloses that the portable computer comprises rotating its display part using a hinge assembly ("connection part 4").

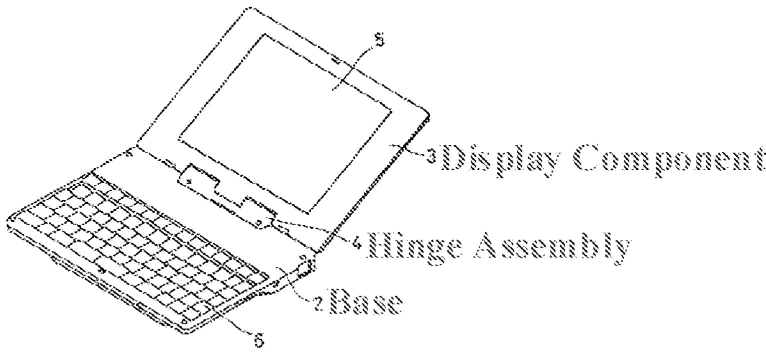
> As may be seen from FIG. 2, the connection part 56 enables the display part 53 to be opened to the open position with respect to the main body 55 when using the portable information processing apparatus 51, and to be closed to the folded position with respect to the main body 55 when not using the portable information processing apparatus 51, that is, when carrying the portable information processing apparatus 51. As shown in FIG. 2, the connection part 56 has a single axis structure 57.

Kamikakai, 1:54-62.

As shown in FIG. 3 of Kamikakai, this hinge assembly enables relative rotation of the base ("main body 2") and the main display component ("display part 3"). *Id.*, Fig. 3.

FIG. 3

1



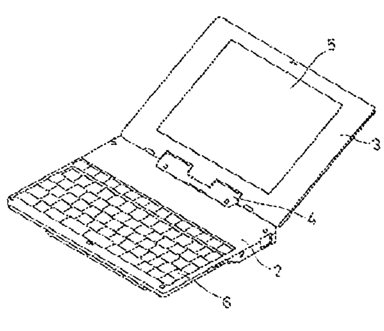
Kaimikakai, FIG. 3 (with annotations).

Kamikakai discloses its portable computer configurable, via its hinge assembly, 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).

Laptop Mode

FIG. 3

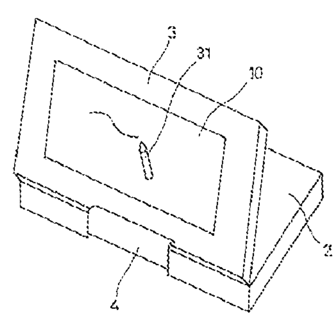
1



Frame Mode

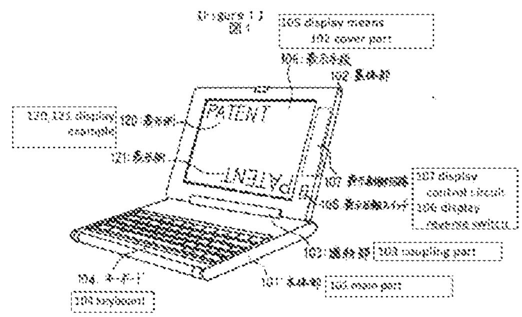
FIG. 9

1

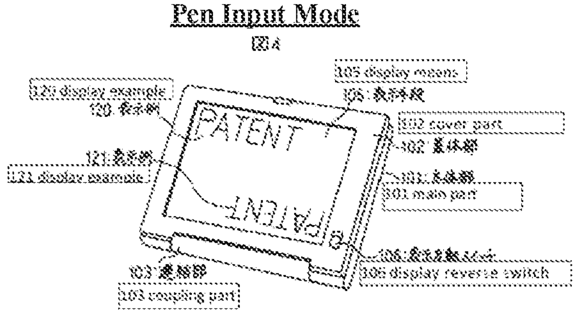


Shimura discloses an additional easel mode. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, FIGS. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

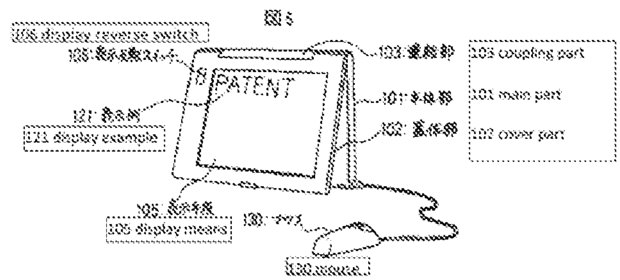
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

A POSITA would have been motivated to combine the easel mode of Shimura into the portable computer of Kamikakai for the reasons explained above in Section X.F.1. *Supra*, Section X.F.1.

Hisano discloses a method of automatically orienting content between a plurality of display modes. 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.

> 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.***

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen is automatically performed by the computer's internal processor and associated logic. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 515).

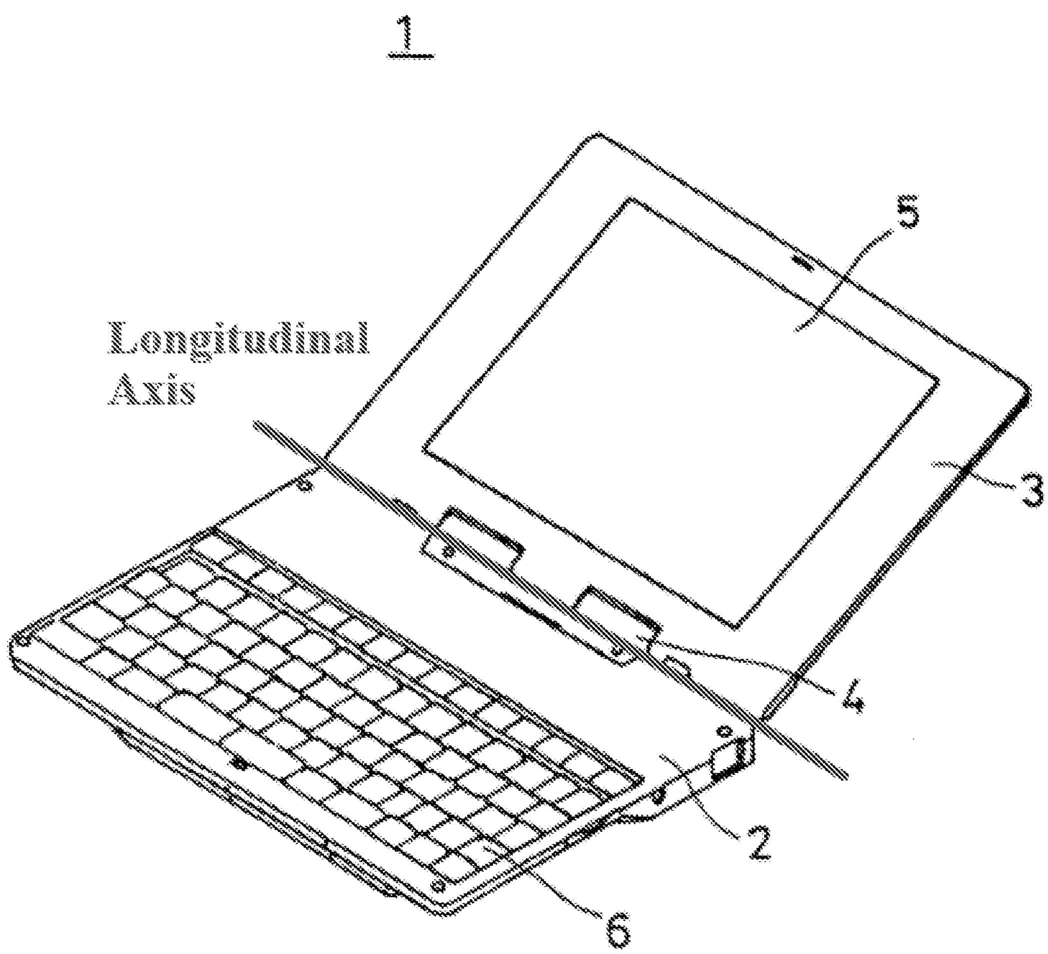
[29.2] manipulating a physical configuration of the single display component relative to the base to transition the portable computer between a plurality of display modes, wherein the act of manipulating includes an act of rotating the single display component of the portable computer about a longitudinal 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;

The combination of Kamikakai, Shimura, and Hisano teaches this limitation.

As explained above for claim [29.1], Kamikakai and Shimura disclose 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.

The combination also teaches that such an act of manipulating includes rotating the display component about a longitudinal axis running along an interface between the display and the base. Specifically, the hinge assembly of Kamikakai (connection part 4) defines a longitudinal axis running along the interface between the single display component and base, as shown in annotated Fig. 3, below. Kamikakai, Fig. 3; Schmandt, ¶ 518.

FIG. 3



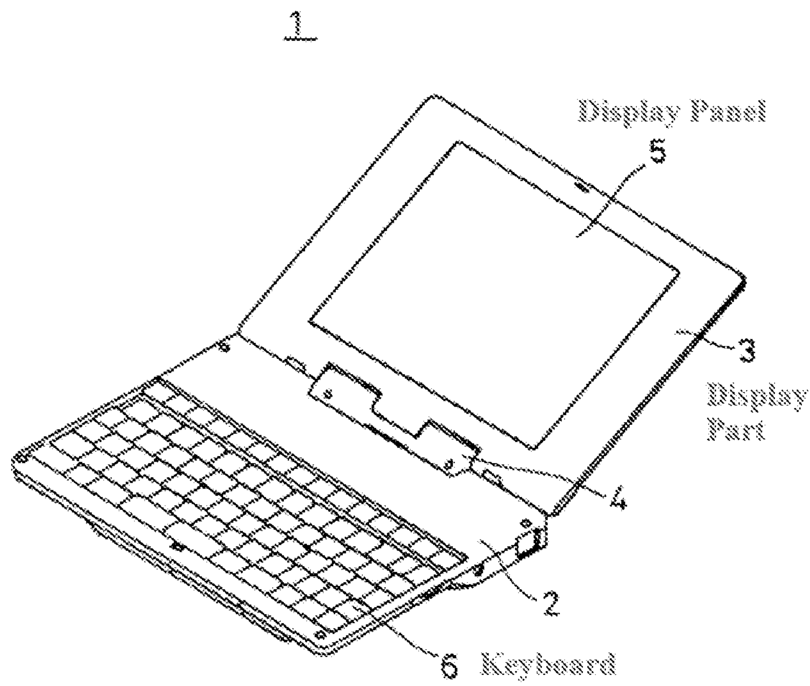
Kamikakai FIG. 3 (with annotations)

[29.3] 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;

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As described for claim element [29.1], Kamikakai discloses orientating a visual display into a laptop mode, as shown in Fig. 3, below.

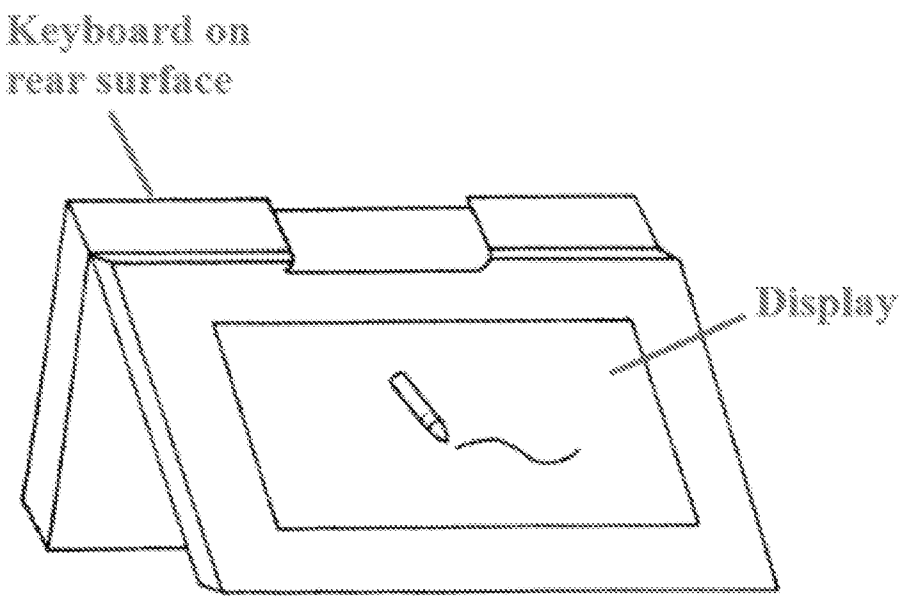
FIG. 3



Kamikakai, FIG. 3 (with annotations). A POSITA would understand that in laptop mode, the opened display panel and keyboard would be oriented toward an operator so that the operator can interface with the keyboard and clearly see the content displayed on the screen. Schmandt, ¶ 521.

As described for claim element [29.1] Shimura discloses easel mode, wherein the portable computer's display is oriented toward a user and the computer's keyboard is oriented away. A POSITA would understand that the portable computer of Kamikakai, when oriented into easel mode would have its single display directed toward a viewer/operator (just as it is in Kamikakai's frame mode), and accordingly the keyboard would be directed away from the viewer/operator. Schmandt, ¶ 522. This is shown in the exemplary figure below, showing the portable computer of Kamikakai re-oriented from frame mode (as shown in Fig. 9) so as to be in easel mode as would be seen from the view of a viewer/operator. Schmandt, ¶ 522.

Exemplary Easel Mode for Kamikakai Portable Computer



> [29.4] determining a display mode responsive to the physical configuration of the single display component relative to the base;

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

Hisano teaches this limitation. 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art (*See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra,* Section VIII.K; Schmandt, ¶ 524). A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 524.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1.

[29.5] 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.

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As explained above for claim [29.5], Hisano teaches determining a display mode based on measuring a degree of rotation of a display component relative to a base.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.F.1 Also as explained in Section X.F.1, a POSITA 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.

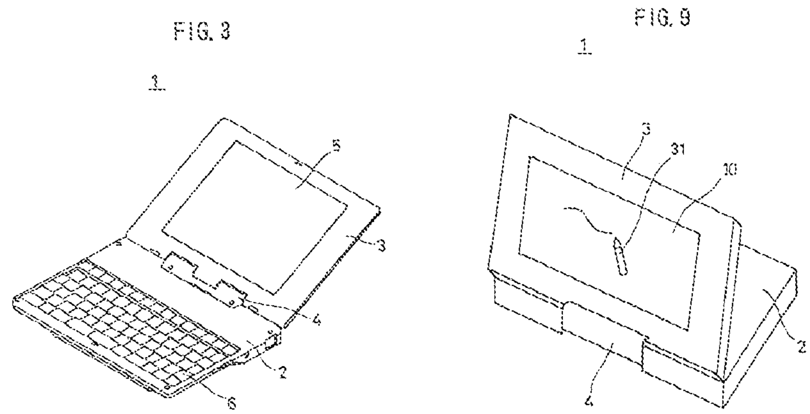
18. Dependent Claim 30

> [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.

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

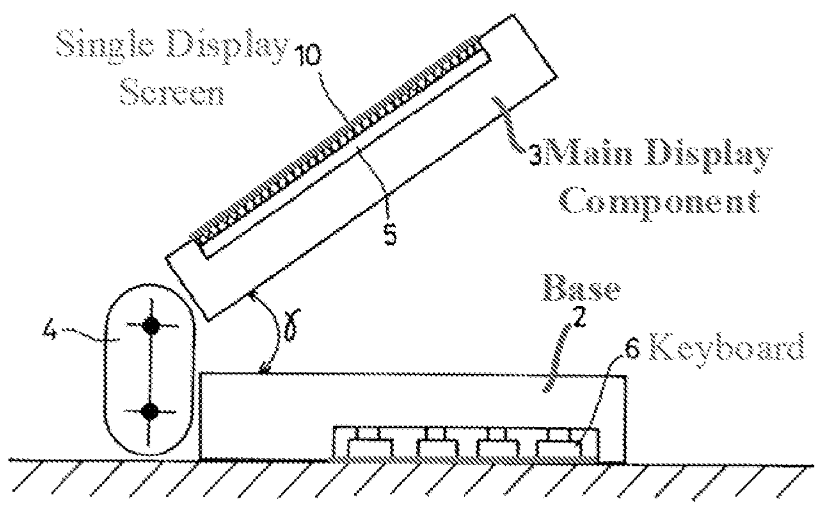
Kamikakai discloses its portable computer configurable between a plurality of display modes including a laptop mode (FIG. 3) and a frame mode (FIGS. 8-9) and manipulating the physical configuration of the portable computer to place it into frame mode. Kamikakai, FIGS. 3, 9 (reproduced below).

Laptop Mode **Frame Mode**



As shown in FIG. 8 of Kamikakai, the base ("main body 2") contacts a substantially horizontal surface with the keyboard ("keyboard 6") facing down towards 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.

Kamikakai's Frame Mode



Kamikakai, FIG. 8 (with annotations).

> In FIG. 8, the main body 2 is set up on the flat set-up surface with the keyboard 6 facing down, and the display part 3 and the main

> body 2 form an angle within an angular range of 270° to 360° in this, state. Hence, an angle γ formed between the surface 3*a* of the display part 3, opposite to the surface 3*b* provided with the liquid crystal display panel 5 and the pen input part 10, and the surface 2*a* of the main body 2, opposite to the surface 2*b* provided with the keyboard 6, is within an angular range of 0° to 90°.

Kamikakai, 6:27-36.

19. <u>Dependent Claim 31</u>

[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.

The combination of Kamikakai, Shimura, and Hisano discloses this limitation.

As explained above for claim 30, Kamikakai teaches manipulating the physical configuration of a portable computer to place it into frame mode. *See supra,* Section X.F.18.

A POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. Schmandt, ¶ 534. For example, as explained for claims [29.4] and [29.5], Hisano teaches its orientation sensor is capable of measuring the hinge angle of a display relative to a base housing, and a POSITA would have recognized that this hinge angle may be used to detect a transition between a laptop and an easel mode. *See supra,* Section X.F.17; Schmandt, ¶ 534.

As explained above in Section X.F.1, a POSITA would have been motivated to implement the teachings of Hisano into the portable computer of Kamikai 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, and a POSITA would have recognize that the orientation sensor of Hisano is capable of detecting orientation transitions between all three of laptop, frame, and easel modes. *Supra,* Section X.F.1.

A POSITA would also recognize that the display orientation of the laptop mode and the frame modes would be the same, i.e., a first orientation, as demonstrated by the annotated figures below. Hisano, Fig. 1; Kamikakai, Fig. 9; Schmandt, ¶ 536. That is, in both orientations, the display edge closest to the portable computer's hinge is oriented downward while the non-hinge edge is oriented upward. Schmandt, ¶ 536.

Annotated Hisano Fig. 1 (Laptop Mode)

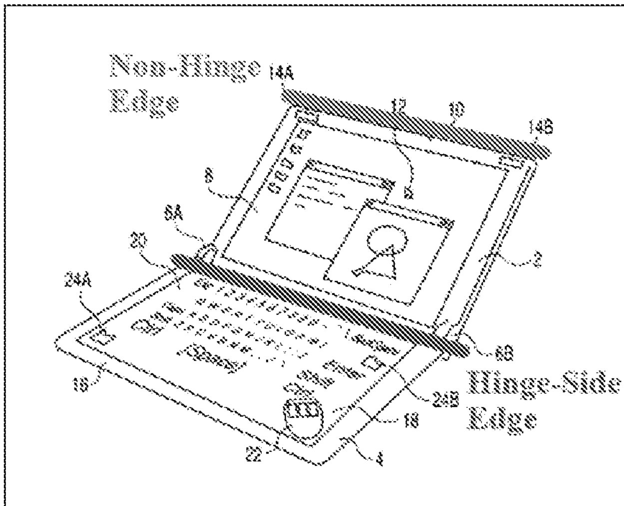
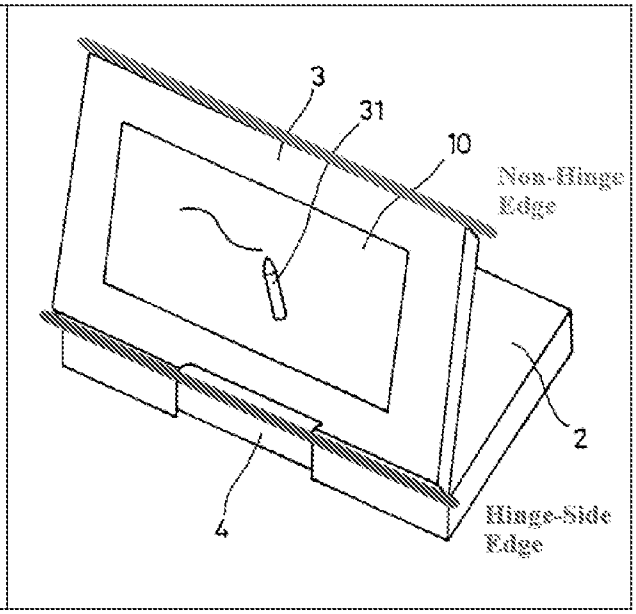


FIG. 1

Annotated Kamikakai Fig. 9 (Frame Mode)



Accordingly, it would be obvious to a POSITA 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. Schmandt, ¶ 537.

20. Dependent Claim 32

[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.

Kamikakai teaches this limitation.

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.

> Preferably, the portable information processing apparatus 1 is provided with a mechanism for disabling the keyboard 6 when the angle γ formed between the surface, 3*a* of the display part 3, opposite to the surface 3*b* provided with the pen input part 10, and the surface 2*a* of the main body 2, opposite to the surface 2*b* provided with the keyboard 6, is within an angular range of 0° to 90°, so that the data input is only possible from the pen input part 10. A mechanism similar to a known mechanism for turning OFF power of the portable information processing apparatus 1 when the display part 3 is folded and closed with respect to the main body 2 may be used to disable the keyboard 6. In this case, it [sic] possible 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.

Kamikakai, 6:51-67.

G. Kamikakai In View Of Shimura, Hisano, And Choi Renders Obvious Claim 11 Of The '688 Patent (Ground 7)

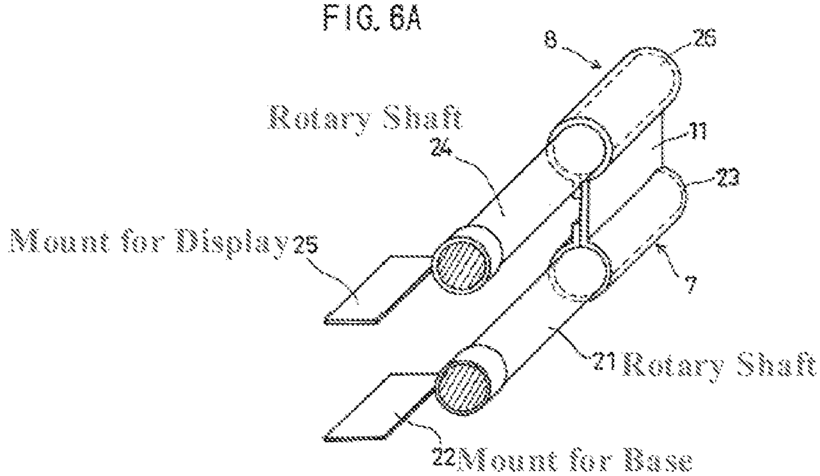
1. Combining Kamikakai, Shimura, Hisano, And Choi

As discussed above in Section X.F.1, a POSITA would have been motivated to combine the portable computer of Kamikakai with Shimura's teaching of an easel mode and Hisano's teachings regarding measuring the physical orientation of a portable computer and inverting the displayed content in response.

Kamikakai further discloses that its portable computer comprises a hinge assembly defining to separate axes. Kamikakai explicitly discloses its hinge assembly as defining two separate axes. Kamikakai's Description of the Preferred Embodiments section confirms that the hinge assembly is at least partially disposed within the base ("main body 2") since "[a] part of the [hinge assembly's] rotary shaft 21 is mounted on the main body 2 via a mounting part 22." Kamikakai, 4:11-12. The same section of Kamikakai also confirms that the hinge assembly is at least partially disposed within the main display component ("display part 3") since "[a] part of the [hinge assembly's] rotary shaft 24 is mounted on the display part 3 via a mounting part 25." Kamikakai, 4:28-29.

Kamikakai's Hinge Assembly

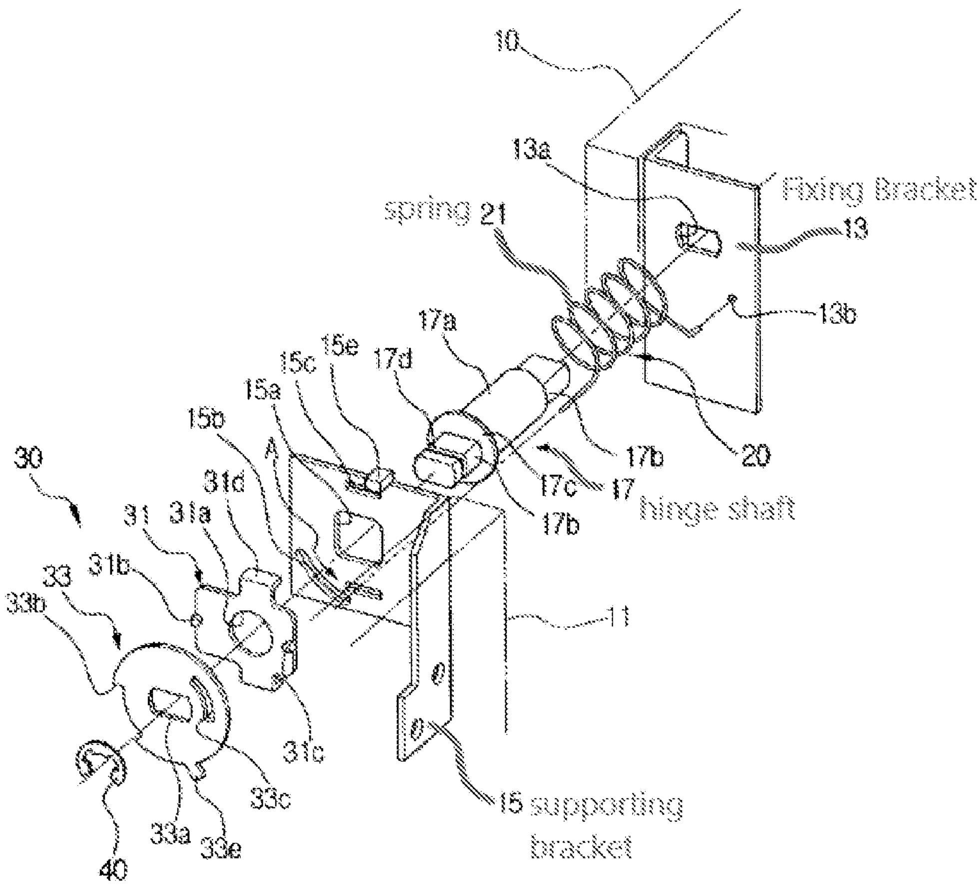
FIG. 6A



Kamikakai FIG. 6A (with annotations).

It would have been obvious to a POSITA to replace the dual-axis hinge assembly of Kamikakai with a single-axis hinge assembly, such as that taught by Choi. Specifically, Choi discloses a "hinge apparatus . . . employed to connect a panel 11 to a body 10 of an appliance so that the panel 11 is opened and closed with respect to the body 10," and particularly for connecting a display to a body in a laptop computer. Choi, 3:36-50. Among other elements, the hinge apparatus includes fixing bracket 13 fixed onto a laptop computer body 10, supporting bracket 15 fixed to the panel 11 (i.e., a LCD panel), hinge shaft 17, and coil spring 21. *Id.*, 3:36-42, 52-56. These components are depicted in Fig. 2 of Choi, reproduced with annotations below.

Annotated Fig. 2 of Choi



The hinge of Choi enables rotation of a laptop display relative to a body as depicted in Fig. 5 and enables the display to open beyond 180 degrees relative to the base as depicted in Fig. 7 (depicting the display opened to approximately 210 degrees), reproduced and annotated below. *Id.*, 6:26-27, Figs. 5, 7.

FIG.5

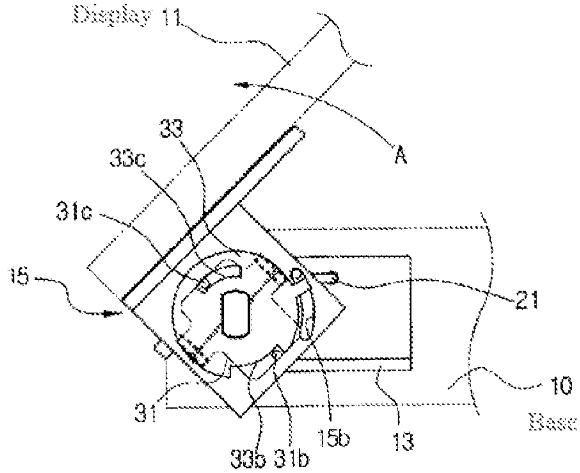
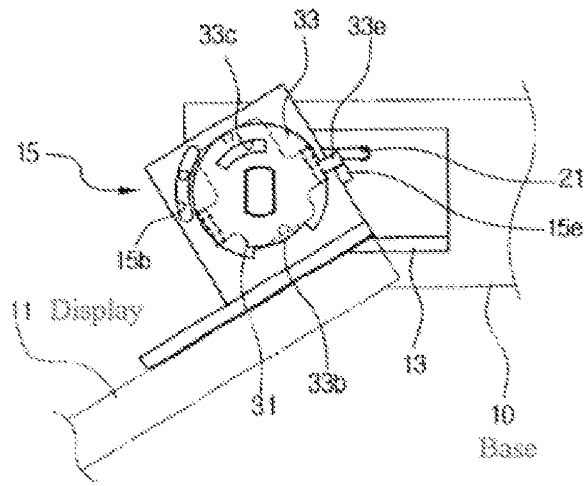


FIG.7



In addition to enabling rotation of a laptop display relative to a body, Choi also provides a mechanism for restricting rotation once the display is opened to a predetermined angle. Choi describes this mechanism as follows:

> Further provided is a pivoting angle restricting device to restrict the angle of rotation of the supporting bracket 15. The pivoting angle restricting device includes a locking portion 33*e* protruding from an outline of the frictional plate 33, and a locking projection 15*e* bent from an outline of the supporting bracket 15 to be locked with the locking portion 33*e* during rotation. The locking portion 33*e* is formed in a position that restricts a pivotal angle of the supporting bracket 15 at a predetermined degree of, for example, 210°
>
> ***
>
> FIG. 7 shows the panel 11 being rotated by approximately 210°. Here, the locking projection 15*e* is locked with the locking portion 33*e*, thereby restricting the supporting bracket 15 from further rotation.

Id., 5:37-46, 6:26-31. While Choi describes its pivoting angle restricting device as restricting the hinge's pivot angle to a predetermined angle 210 degrees, Choi explicitly states that this predetermined angle is only exemplary (*Id.*, 5:44-46) and a POSITA would recognize that the restricting device may be implemented to allow for a larger degree of rotation. Schmandt, ¶ 544. It would be obvious to a POSITA to provide such an angle restricting device at an angle beyond 210 degrees. Schmandt, ¶ 544. Nothing in Choi's specification would prevent a POSITA from selecting a predetermined angle for the pivoting angle restriction device at an angle to allow for an easel mode configuration such as taught by Shimura. Schmandt, ¶ 544. In fact, a POSITA would be motivated to implement such a pivoting angle restricting device at an angle suitable for use in an easel mode such as taught by Shimura (e.g., up to 340 degrees). Shimura, ¶¶ [0010], [0017], FIG. 5; Schmandt, ¶ 544.

A POSITA would have been motivated to modify the portable computer of Kamikakai to replace its dual-axis hinge assembly with the single-axis hinge taught by Choi for several reasons. First, Kamikakai and Choi (as well as Hisano) are contemporaneous references directed toward complementary solutions to highly analogous problems in the same fields of endeavor. Kamikakai, Hisano, and Choi are all directed toward portable computers usable in various display modes via a rotatable hinge. Kamikakai, 10:10-31, Figs. 20, 25, 28; Hisano, ¶¶ [0054], [0087], [0098], Figs. 1, 8, 9, Choi, 3:35-50 Figs. 5-7.

Second, a POSITA would have considered the replacement of the dual-axis hinge of the portable computer of Kamikakai with the single-axis hinge of 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, a POSITA 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. Schmandt, ¶ 546. Hisano, for example, depicts and describes multiple examples of laptop computers with their two housing structures being rotatable about a single axis. Hisano, ¶¶ [0104], [0112], Figs. 13, 17 (reproduced below).

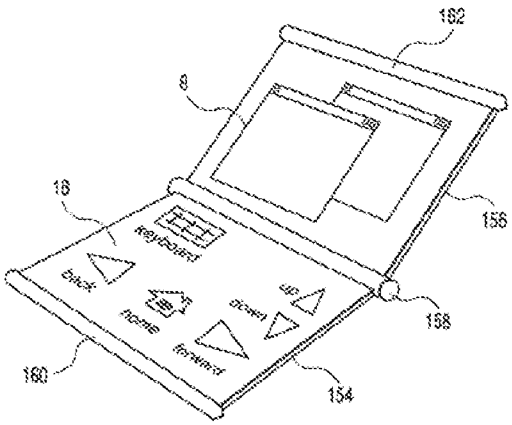


FIG. 13

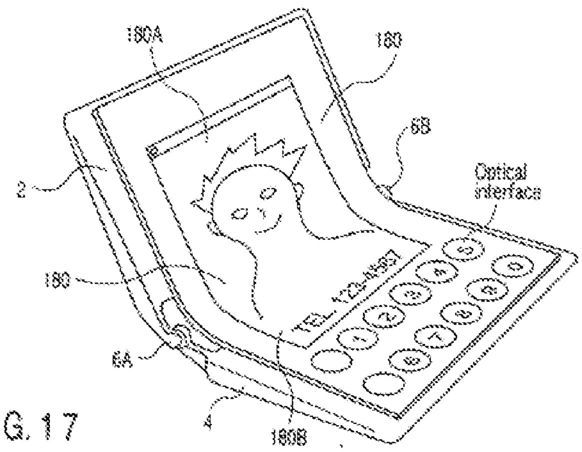


FIG. 17

Accordingly, a POSITA would have recognized that a dual-axis hinge could be replaced with a single-axis hinge in a portable computer to perform the same function. Schmandt, ¶ 547.

Third, a POSITA would recognize the benefits of using a single-axis hinge instead of a dual-axis hinge. For example, due to 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. Schmandt, ¶ 548. Having fewer components also allows a single-axis hinge to be less expensive to manufacture than a dual-axis hinge. Schmandt, ¶ 548. In addition, a POSITA would be motivated to implement the hinge of Choi at least partially disposed within the display and base housings in order to cover the movable components of the Choi 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. Schmandt, ¶ 548.

Finally, a POSITA would have a reasonable expectation of success in implementing the single-axis hinge of Choi in the portable computer of Kamikakai. Choi explicitly teaches that it is intended for use to connect a display and base in a laptop computer. Choi, 3:36-50; Schmandt, ¶ 549. In addition, Choi teaches that its hinge allows movement of a display relative to a hinge beyond 180 degrees, thereby enabling a frame mode as well as a easel mode as taught by Kamikakai. Choi, 6:26-27, Fig. 7; Schmandt, ¶ 549. Choi also teaches a mechanism for restricting rotation of the display at a predetermined angle. Choi, 5:37-46, 6:26-31. A POSITA would have recognized that this mechanism would make Choi suitable for use in the portable computer of Kamikakai, as it would allow the hinge to be locked at an angle corresponding to the frame mode or easel mode of Kamikakai) thereby allowing the computer to be maintained in such an orientation. Schmandt, ¶ 549.

2. Independent Claim 11

[11.1] A portable computer comprising:

Kamikakai discloses this limitation. Kamikakai discloses a portable computer.

> The present invention generally relates to portable information processing apparatuses and, more particularly, to an information processing apparatus having a display part which includes a display panel and a pen input part formed on the display panel, a main body which includes a keyboard, and a connection part which connects the display part and the main body.

***

> The portable information processing apparatus 1 may be a lap-top computer, a palm-top computer, a notebook type word processor, a portable communication tool such as a communication terminal, or the like.

(Kamikakai, 1:6-12, 3:48-51.)

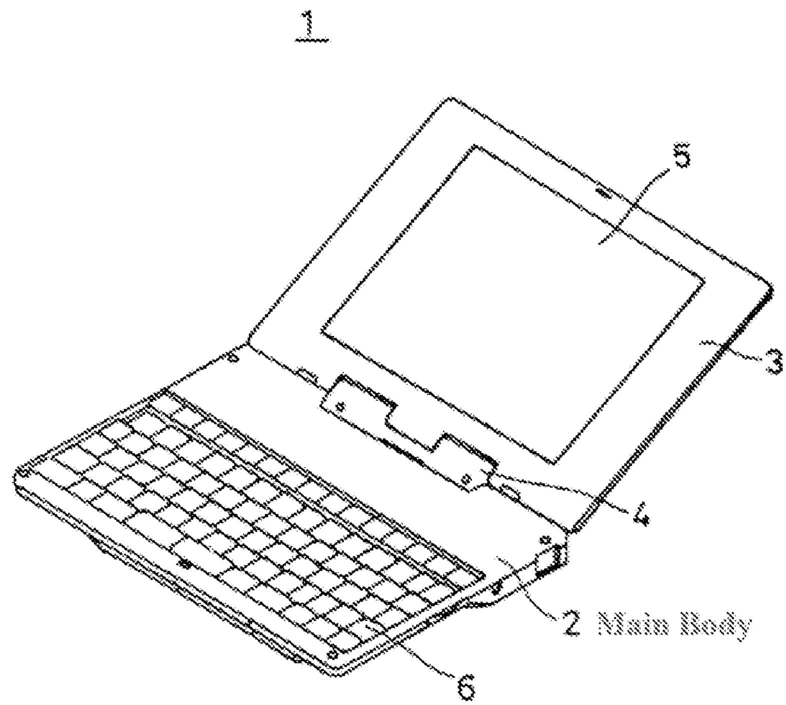
[11.2] a base;

Kamikakai discloses this limitation. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a base ("main body 2") including an integrated keyboard ("keyboard 6"). *E.g.*, Kamikakai, 3:39-43 (reproduced below), FIG. 3 (reproduced below with annotations).

> As shown in FIGS. 3 through 5, a portable information processing apparatus 1 generally includes a main body 2, a display part 3 which can open and close with respect to the main body 2, and a connection part 4. The main body 2 includes a keyboard 6 for inputting data.

Kamikakai, 3:39-43.

FIG. 3



Kamikakai, FIG. 3 (with annotations).

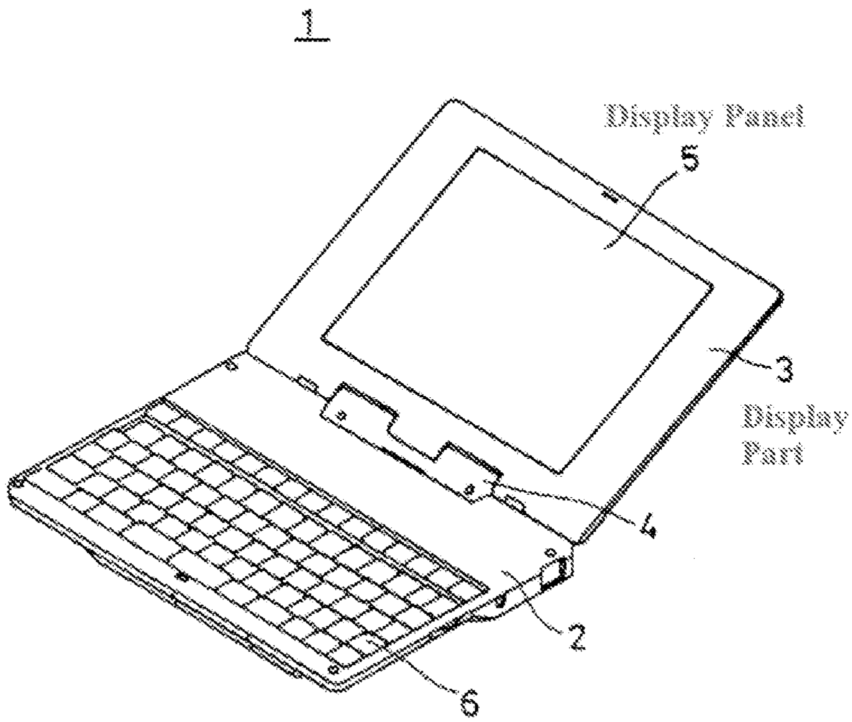
[11.3] a display component rotatably coupled to the base;

Kamikakai discloses this limitation. Specifically, Kamikakai discloses that the portable computer ("portable information processing apparatus 1") comprises a display component ("display part 3") including the single display screen ("display panel 5") that displays content. *E.g.*, Kamikakai, 3:43-46 (reproduced below), FIGS. 3, 9.

> On the other hand, the display part 3 includes a liquid crystal display panel 5, and a pen input part 10 which is formed on the surface of the liquid crystal display panel 5.

Kamikakai, 3:43-46.

FIG. 3



Kamikakai, FIG. 3 (with annotations).

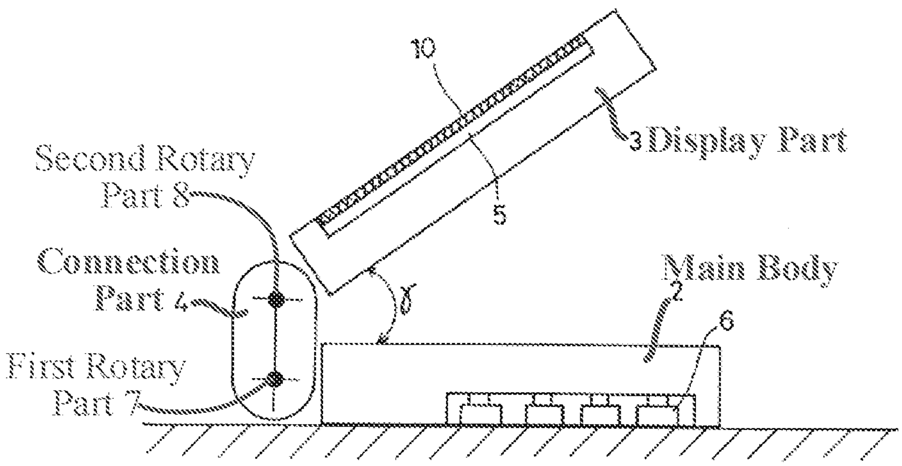
Kamikakai's display component also is rotatably coupled to the base via a dual-axis hinge assembly ("connection part 4"). *E.g.*, Kamikakai, 3:52-64, 4:10-42, FIGS. 3, 5-9.

> The display part 3 and the main body 2 are connected via the connection part 4. The connection part 4 is linked to related ends or edges, of the display part 3 and the main body 2 which confront each other in a folded or closed state of the display part 3. The connection part 4 includes a first rotary part 7 and a second rotary part 8. The first rotary part 7 is linked to the main body 2, and enables turning of the main body 2 when a rotary manipulation force greater than or equal to a predetermined value is applied on the main body 2. On the other hand, the second rotary part 8 is linked to the display part

> 3, and enables turning of the display part 3 when a rotary manipulation force greater than or equal to a predetermined value is applied on the display part 3.

Kamikakai, 3:52-64.

Annotated FIG. 8 of Kamikakai



Kamikakai, FIG. 8 (with annotations)

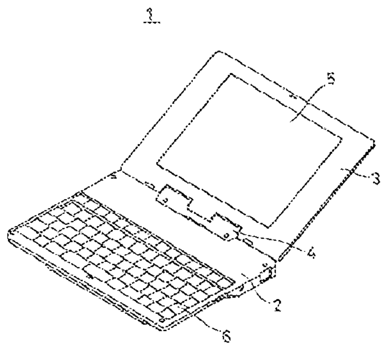
[11.4] means for rotating the display component in a single direction relative to the base to configure the portable computer between a laptop mode and an easel mode;

The combination of Kamikakai, Shimura, Hisano, and Choi teach this limitation.

Kamikakai discloses a 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).

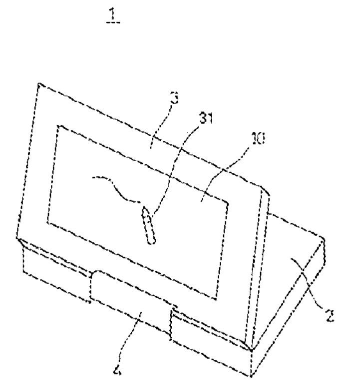
Laptop Mode

FIG. 3



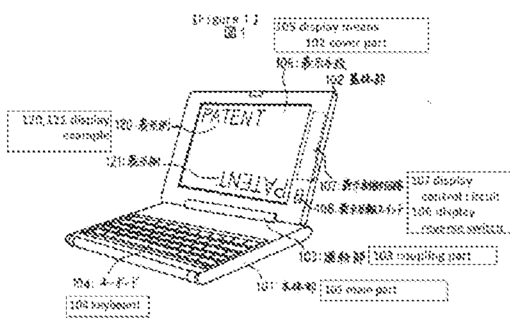
Frame Mode

FIG. 9

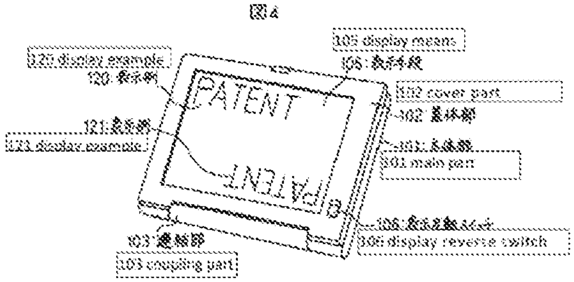


Shimura discloses the easel mode. Specifically, Shimura discloses a portable computer ("personal computer") configurable between a plurality of display modes including a laptop mode (Figure 1), easel mode (Figure 5), and pen input mode (Figure 4). *E.g.*, Shimura, FIGS. 1, 4, 5 (reproduced below), ¶ [0014] (laptop mode), ¶ [0016] (pen input mode), ¶ [0017] (easel mode).

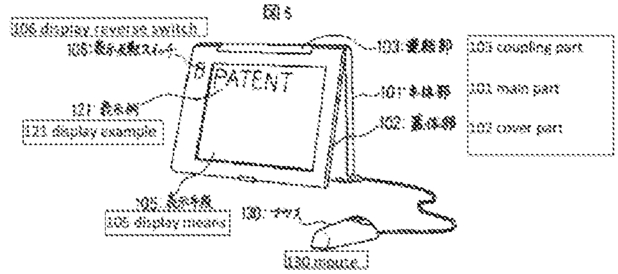
Laptop Mode



Pen Input Mode



Easel Mode



Shimura, FIGS. 1, 4, and 5 (with annotations).

A POSITA would have been motivated to combine the easel mode of Shimura into the portable computer of Kamikakai for the reasons explained above in Section X.G.1. *Supra*, Section X.G.1.

Kamikakai does not expressly disclose a "means for rotating" as claimed according to 35 U.S.C. § 112(6) and described in the '688 patent's specification. *See Supra*, Section V.C. However, a "means for rotating" is taught by Choi. Choi discloses a hinge apparatus including a **housing** (fixed bracket 13),[30] a **bracket** having a **member** (supporting bracket 15 having a perpendicular plate member for inserting a shaft),[31] a **shaft** (hinge shaft 17), and **springs** (coil spring 21). Choi, 3:36-56. The below images show the hinge apparatus of Choi (Choi, Fig. 2.), compared to the hinge apparatus disclosed in the specification of the '688 patent ('688 patent, Fig. 10), with corresponding structures color-coded, showing that the hinge assembly of Choi contains the same components as the "means for rotating" claimed in the '688 patent (i.e., "**housing** 142, **shaft** 154, **springs** 156, **member** 158, **bracket** 140").

[30] A POSITA would understand fixed bracket 13 to constitute a housing as it partially houses hinge shaft 17.

[31] The member of Choi constitutes a plate member extending perpendicularly from the remainder of supporting bracket 15. The '688 Patent teaches that its member "may be integral with or coupled to the bracket 140." '688 Patent, 10:36-38.

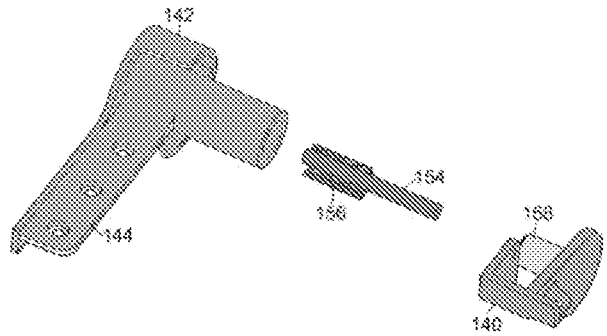
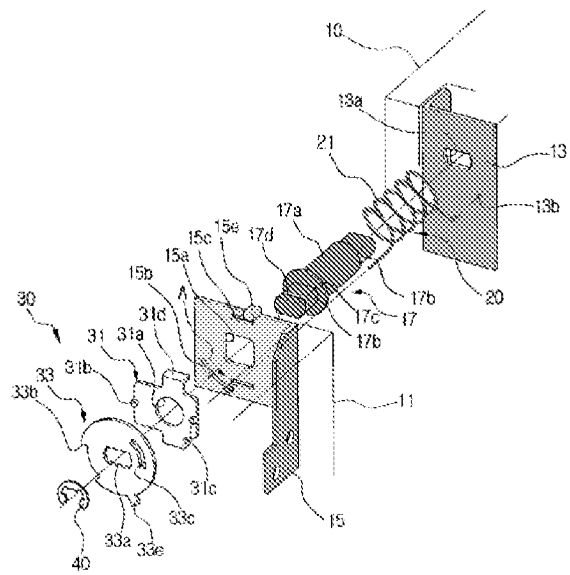


FIG. 10

FIG.2



'688 Patent | **Choi**

A POSITA would have been motivated to implement the hinge assembly Choi with the portable computer device of Kamikakai for the reasons explained above in Section X.G.1.

> [11.5] 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, the first and second display orientations being 180 degrees relative to each other; and

Hisano teaches this limitation. Hisano discloses its portable computer switching content orientation in response to measuring the angle of the computer's hinges, i.e., the angle or rotation of the display relative to the base.

> 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.***

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that such an operation would be performed in order to maintain displayed content as right-side-up relative to a user viewing the portable computer. (Schmandt, ¶ 560). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen, is performed by a display orientation module in the form of the computer's internal processor and associated logic, constituting a display orientation module. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 560).

As explained above in Section X.G.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra*, Section X.G.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that "triggers a display inversion as appropriate" so that the

displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[32]

Specifically, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base, for at least the following reasons. To illustrate, 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 (reproduced below).

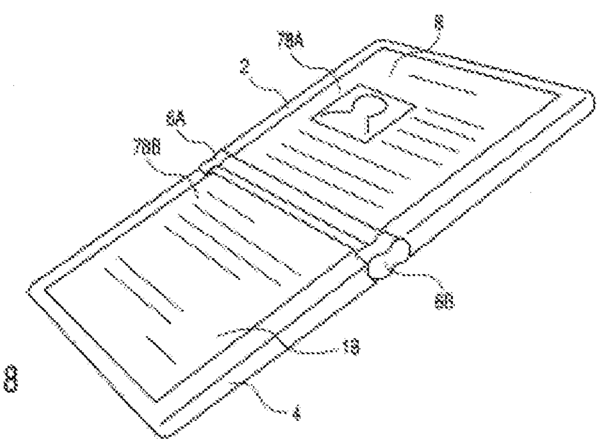


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in easel mode. Schmandt, ¶ 564. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 564. Specifically, a POSITA would implement the teachings of Hisano to program a portable computer with an algorithm to (1) determine "the rotating angle of the

[32] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained below for Claim [11.6]. *Infra,* Section X.G.2, claim [11.6]

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.

[11.6] 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.

Hisano teaches this limitation. Specifically, Hisano discloses a "means for detecting" as construed under 35 U.S.C. § 112(6) (*see Supra*, Section V.D) in that it teaches an angle-detection sensor. Specifically, 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. Schmandt, ¶ 365. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art. *See e.g.*, Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra,* Section VIII.K; Schmandt, ¶ 365. A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 365. Therefore, Hisano teaches the use of a sensor as a means for detecting the relative orientation of Hisano's display relative to a separate housing structure, such as a base.

As explained above in Section X.G.1, a POSITA would have been motivated to implement the above teachings of 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. *Supra,* Section X.G.1.

Further, as explained for claim [11.5], it would be obvious a POSITA to use the measured angle from such an orientation sensor to determine the transition between laptop and easel mode based on a threshold value. *See supra,* claim [11.5]. That is, a POSITA would recognize that when the angle changes from less than to more than 180°, the device transitions from laptop to easel mode, and vice-versa and would initiate an inversion of the displayed content accordingly. Schmandt, ¶ 366.

H. Kamikakai In View Of Shimura, Hisano And Clapper <u>Renders Obvious Claim 15 Of The '688 Patent (Ground 8)</u>

1. <u>Dependent Claim 15</u>

[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.

The combination of Kamikakai, Shimura, Hisano, and Clapper teaches this limitation. As explained above, a POSITA would have been motivated with a reasonable expectation of success to combine Kamikakai, Shimura, and Hisano. *Supra* X.F.1. As explained in the following paragraphs, the POSITA further would have been motivated with a reasonable expectation of success to also add Clapper's teachings to that combination.[1]

As explained above, the combination of Kamikakai, Shimura, and Hisano renders obvious claim 14. *Supra*, Sections X.F.4. The addition of Clapper to the combination of Kamikakai, Shimura, and Hisano further renders obvious claim 15 for the reasons explained below.

As explained above for Claims 13 and 14, Hisano teaches at least two orientations (i.e., a first and second orientation) relative to a longitudinal axis, with the two orientations inverted 180 degrees relative to each other. *Supra*, Sections X.F.3-4.

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.

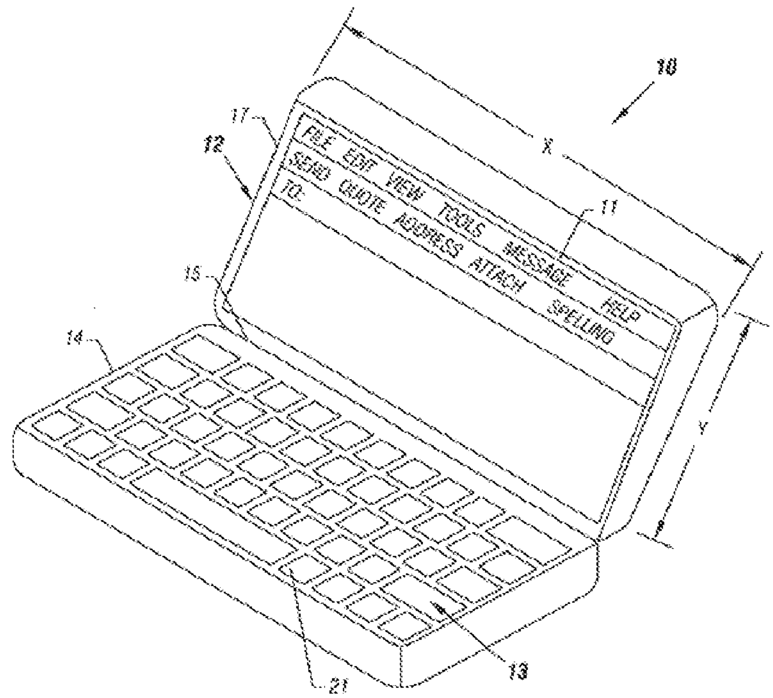


FIG. 1

Id., Fig. 1.

Clapper also discloses a third orientation in that it discloses rotating its computer 90 degrees about the plane of its display screen, and in response, rotating its display screen 90 degrees relative to a longitudinal axis.

> Referring to FIG. 2, the display 10 has been rotated approximately 90°. The housing 14 and the display 12 have been rotated to the right. Now the display 12 has a more upright configuration. Information displayed on the display 12 now uses the side edge 17 as the upper edge for purposes of displaying text. In other words, the textual information now extends up and down in the X axis and the across in the Y axis using the convention set forth in connection with FIG. 1.

> Thus, in one embodiment of the invention, the system 10 automatically changes the orientation of the displayed information in response to the detection of tilting or orientation of the system 10. These changes maybe implemented automatically in response to the detection of rotation of approximately 90° of the housing 10. Thus, if the user wishes to rotate the way information is displayed on the display 12, the user can do so by simply rotating the entire system 10 from the orientation shown in FIG. 1 to the orientation shown in FIG. 2.

Id., 2:18-37.

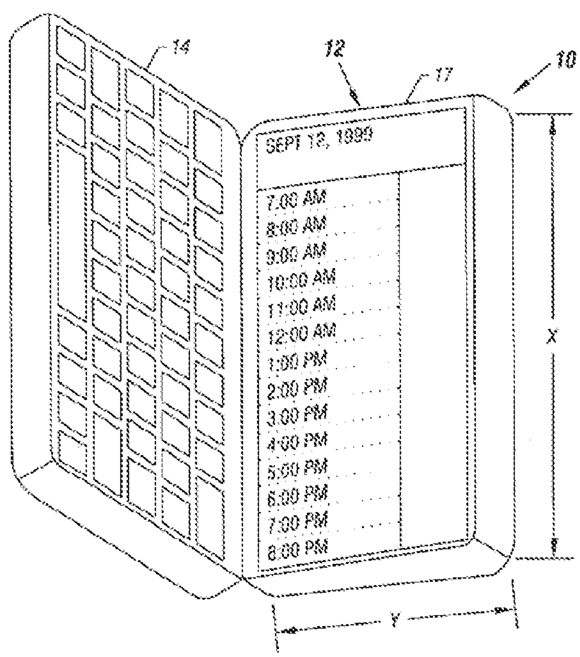


FIG. 2

Id., Fig. 2.

As explained above in Section X.F.1 a POSITA would be motivated to implement a portable computer combining the teachings of Kamikakai, Shimura, and Hisano. A POSITA would be further motivated to combine the teachings of Clapper into this portable computer as explained below. Specifically, a POSITA would 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. A POSITA would be motivated to implement such functionality because a POSITA would recognize that a portable computer, such as disclose by Kamikakai, typically has a display with an aspect ratio that is wider than it is tall. Schmandt, ¶ 573. A POSITA would therefore 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 (such as shown in Fig. 2 of Clapper), and that a user may prefer using a different orientation for different uses. Schmandt, ¶ 573. 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. Schmandt, ¶ 573. Accordingly, a POSITA would implement the functionality of Clapper into the portable computer of Kamikakai to improve usability of the portable computer.

I. CN '170 In View Of Misawa And Shigeo <u>Renders Obvious Claim 11 Of The '688 Patent (Ground 9)</u>

1. <u>Combining CN '170, Misawa, And Shigeo</u>

A POSITA would have implemented Misawa's teaching of a single-axis hinge in the portable computer of CN '170

CN '170 discloses a portable computer that is configurable into a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19. In the easel mode, the screen 91 and operating surface 92 are rotated beyond an angle of 180 degrees and the laptop is vertically oriented in an inverted "V" configuration. *E.g.*, CN '170, FIG. 19, 5:43-44, 7:11-14. CN '170's Figure 4 (annotated) and Figure 19 (annotated) are reproduced below, respectively showing the disclosed laptop and easel modes. *Id.*, Figs. 4, 9.

CN '170's Laptop Mode

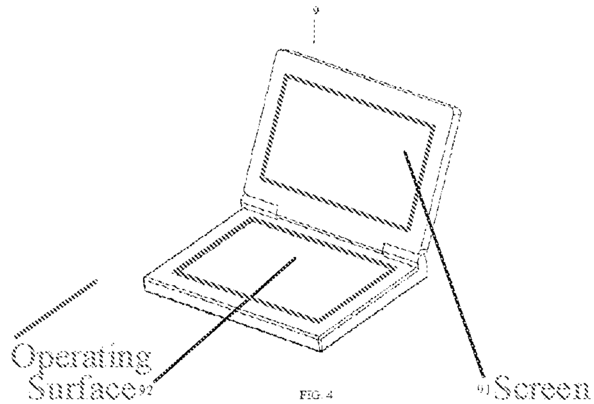


FIG. 4

CN '170's Easel Mode

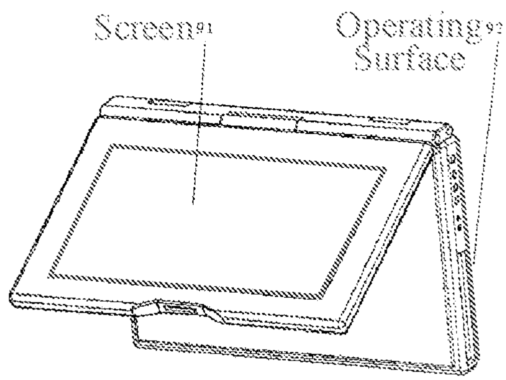


FIG. 19

The screen of CN '170's portable computer is capable of rotating more than 180 degrees relative to the operating surface by means of a "double hinge structure" as shown in Figure 7, reproduced below. *Id.*, Abstract, 6:13-14, Fig. 7.

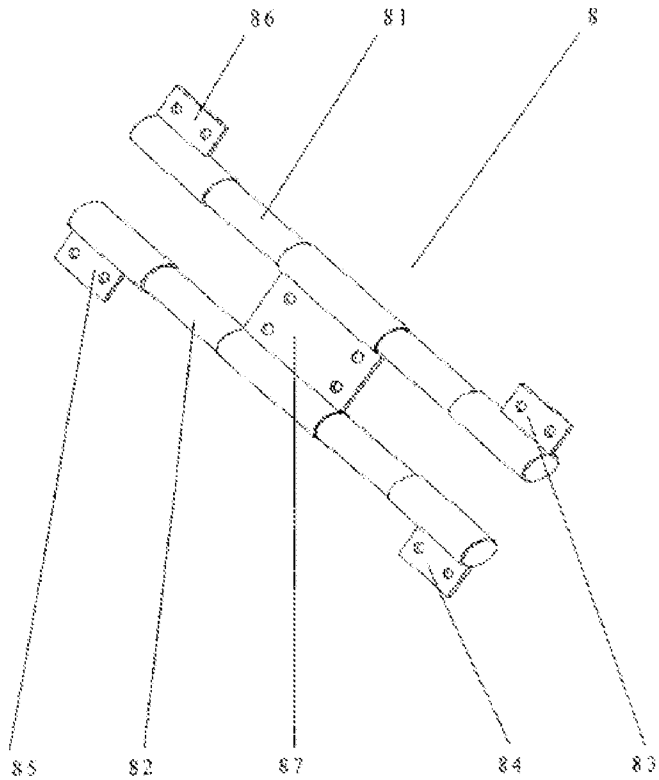
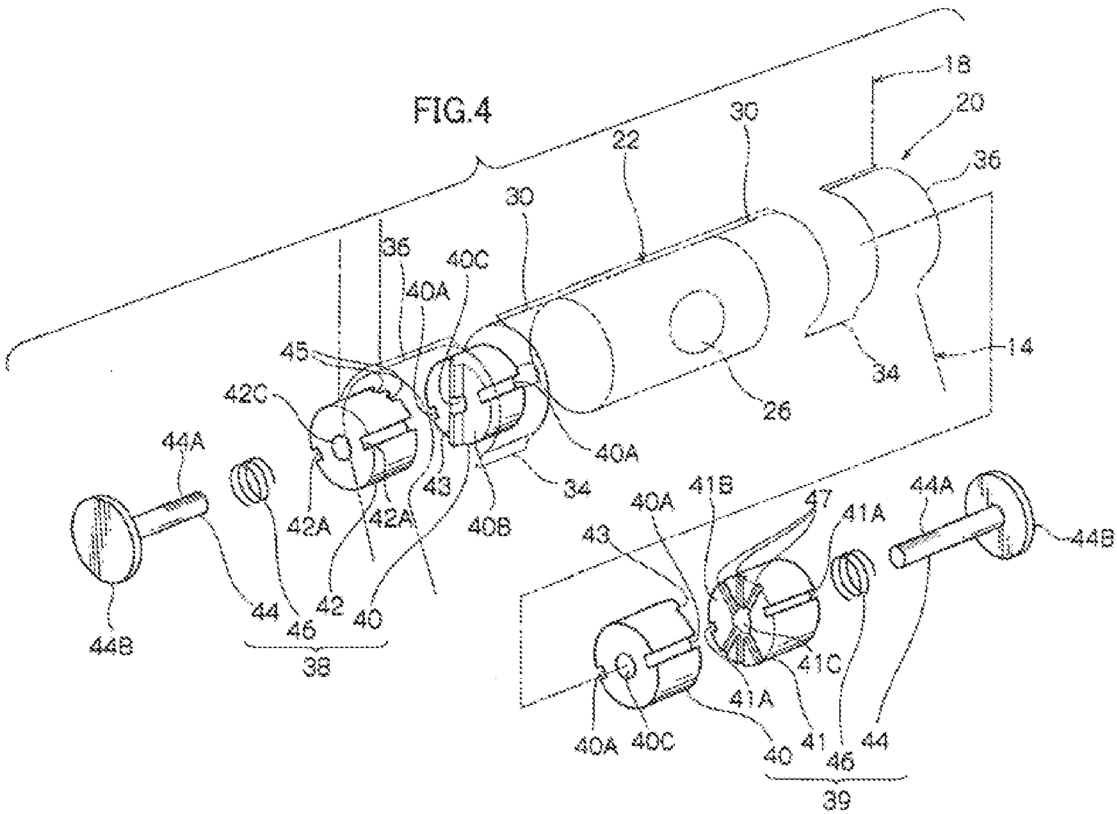


FIG. 7

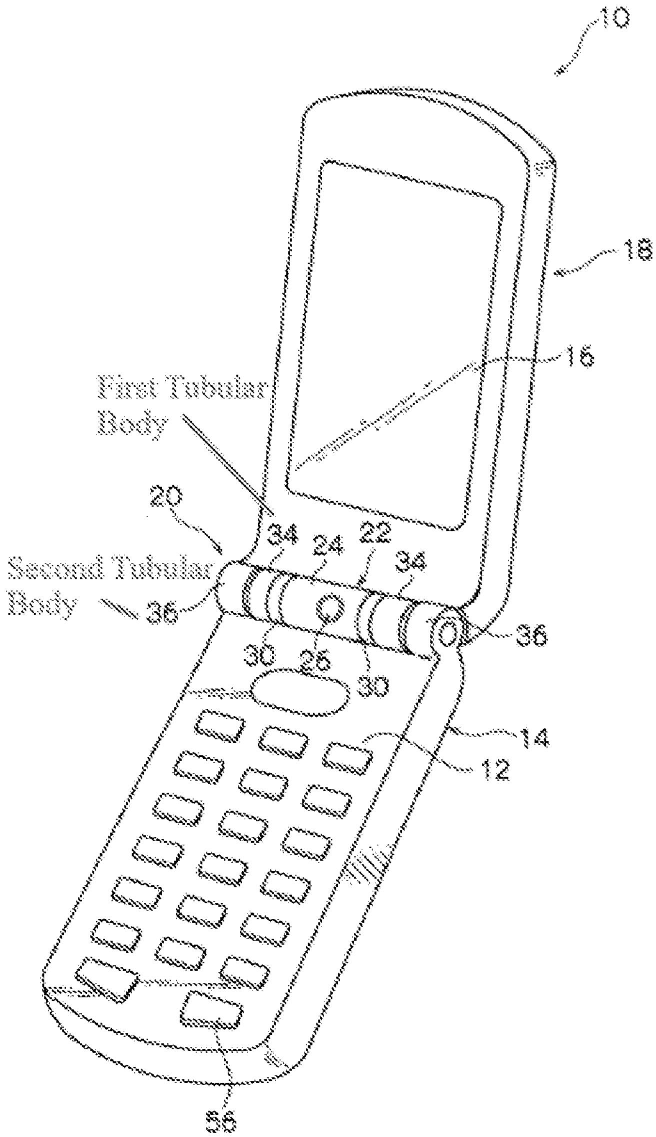
It would have been obvious to a POSITA to replace the dual-axis hinge assembly of CN '170 with a single-axis hinge assembly, such as that taught by Misawa. Specifically, Misawa discloses a single-axis hinge assembly for hinged portable devices including "notebook computers," i.e., laptops. Misawa, ¶ [0075]. The hinge assembly of Misawa includes two inline "[h]inges 38 and 39." Misawa, ¶ [0037]. Each of the two hinges 38 and 39 include a first hinge component (40), a second hinge component (41, 42), a rotation shaft (44), and a compression coil spring (46). *Id.* Further, each rotation shaft 44 includes a threaded screw portion 44A. *Id.*, ¶ [0041]. These two hinges, are inline about the same axis are depicted in Fig. 4, reproduced below. *Id.*, Fig. 4.

FIG.4



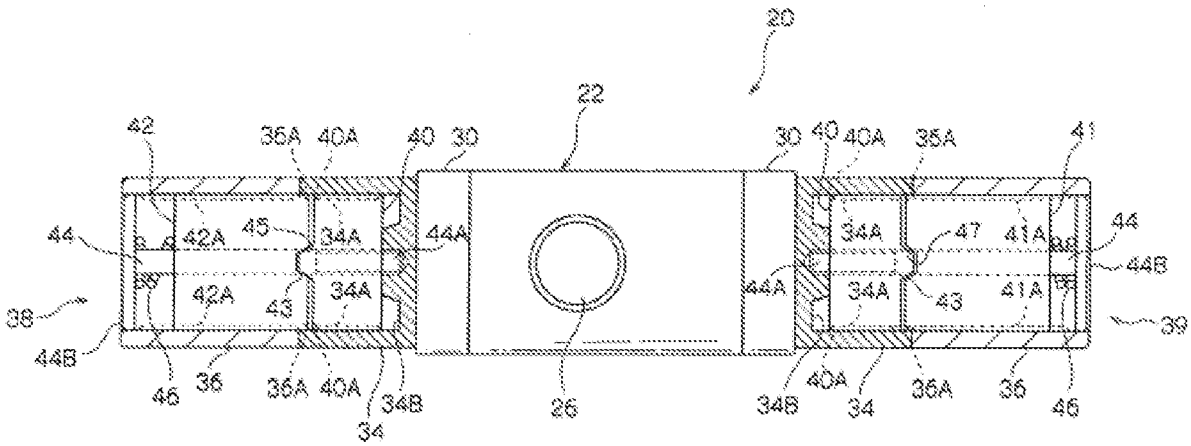
The portable device of Misawa includes a "first casing body 14" (i.e., a base) and a "second casing body 18" (i.e., a display/monitor). *Id.*, ¶ [0029]. The first casing body 14 has attached two "second tubular bodies 36," while the second casing body 18 has attached two "first tubular bodies 34." *Id.*, ¶ [0036]. These first tubular bodies 34 (attached to the display casing) and second tubular bodies 36 (attached to the base casing) are located side-by-side with one of each the first and second tubular bodies on both the left and right side of the device, as shown in Figure 1, reproduced below. *Id.*, Fig. 1 (with annotations).

FIG.1



The hinges 38 and 39 are inserted into the cavity formed by the first tubular body 34 and second tubular body 36, with one of the hinges inserted on the left side of the device and the other inserted on the right, thereby enabling opening and closing of the two casings (i.e., display and body) of the device. *Id.*, ¶ [0037], Fig. 5. The screw portion 44A of each of hinges 38 and 39 screws into base faces 34B of the respective first tubular bodies 34. *Id.*, ¶ [0041]. Figure 5, reproduced below, shows a cross section of the hinges 38 and 39 inserted into the first and second tubular bodies (34 and 36, respectively). *Id.*, ¶ [0017], Fig. 5.

FIG.5



In addition to enabling rotation of a laptop display relative to a body, Misawa also provides a mechanism for restricting rotation once the display is opened to a predetermined angle. Misawa describes this mechanism as follows, with regard to the rotation restricting components of hinge 38 (which includes first hinge 40 and second hinge 42):

> A cam 43 and cams 45 are formed at, respectively, an abutting face 40B of the first hinge 40 and an abutting face 42B of the second hinge 42. The cam 43 is a protrusion with a taper form in cross-section, and the cams 45 are grooves with taper forms in cross-section, which engage with the cam 43.

Id., ¶ [0043]. Hinge 39 has equivalent restricting cam structures on its components. *Id.*, ¶ [0047]. As explained in Misawa, and shown in Figs. 6A and 7A below, cam 43 takes the form of a protrusion while cams 45 take the form of three grooves that engage with cam 43. *Id.*, ¶ [0043], Figs. 6A, 7A.

FIG.6A

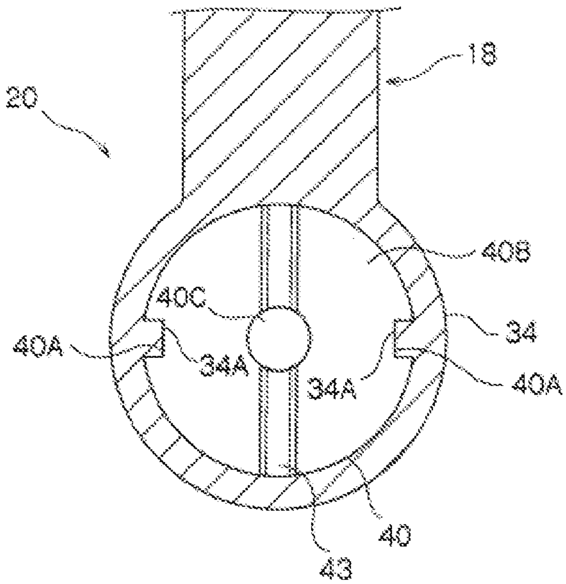
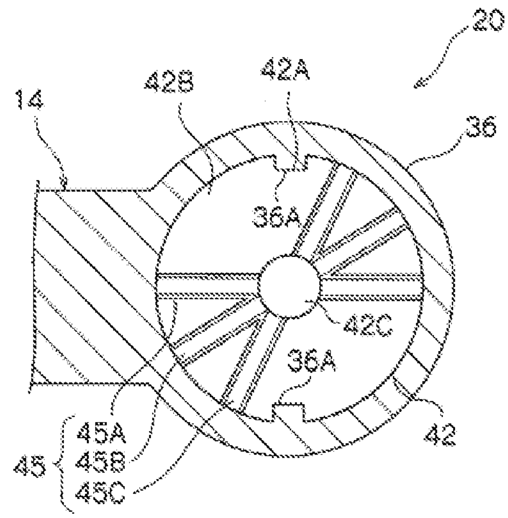


FIG.7A



As these hinge elements rotate relative to one another, the protrusion of cam 43 engages with the grooves of cam 45, with each of the grooves of cam 45 engaging cam 43 at a different angle, and thereby allowing the first and second device casings (i.e., the body and display) to be locked at specific angles of rotation relative to each other. *Id.*, ¶¶ [0050-54]. Misawa teaches one of these angles for locking the hinge rotation as 300 degrees, whereby "the first casing body 14 and second casing body 18 can be invertedly stood on a flat surface G with the hinge portion 20 oriented upward." *Id.*, ¶ [0054]. Thus, Misawa teaches its hinge assembly as enabling its portable device to stand in an inverted easel-mode like position. Schmandt, ¶ 580. This orientation is shown in Figures 8 and 9 of Misawa, reproduced and annotated below. Misawa, FIGS. 8, 9.

FIG.8

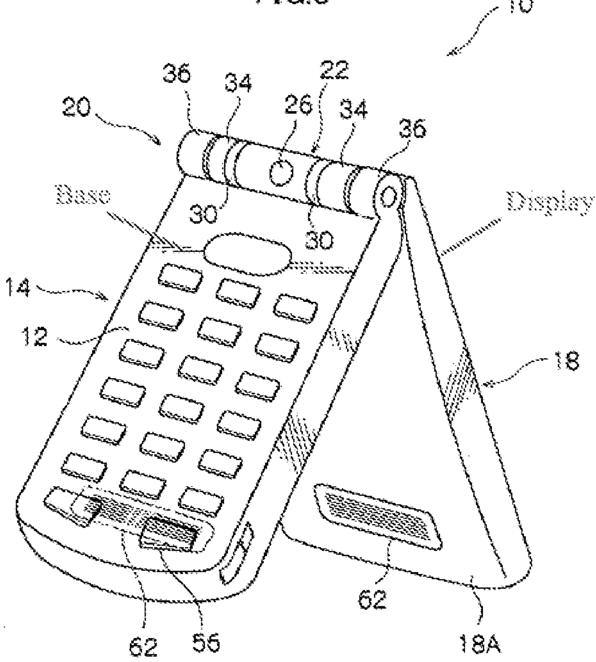
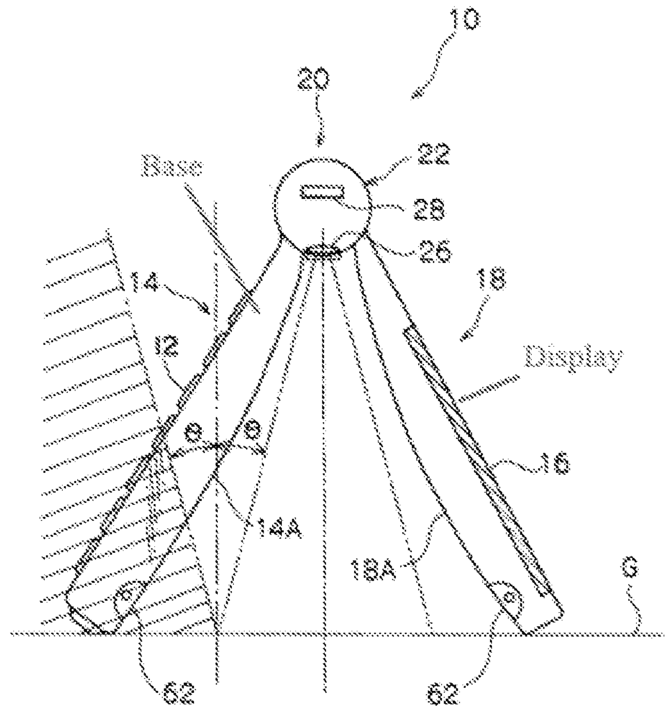

10
20
36
34
22
26
34
36
Base
30
30
Display
14
12
18
62
62
56
18A

FIG.9


10
20
22
Base
28
26
14
18
12
Display
θ
θ
16
14A
18A
G
62
62

A POSITA would have been motivated to modify the portable computer of CN '170 to replace its dual-axis hinge assembly with the single-axis hinge taught by Misawa for several reasons. First, CN '170 and Misawa are contemporaneous references directed toward complementary solutions to highly analogous problems in the same fields of endeavor. CN '170 and Misawa are both directed toward portable computers usable in various orientations via a rotatable hinge. E.g., CN '170, Abstract, 4:22-5:10, 7:7-19; Misawa, ¶¶ [0050-54], Figs. 1, 8, 9.

Second, a POSITA would have considered the replacement of the dual-axis hinge of the portable computer of CN '170 with the single-axis hinge of 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, a POSITA 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. Schmandt, ¶ 582.

Third, a POSITA would recognize the benefits of using a single-axis hinge instead of a dual-axis hinge. For example, due to 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. Schmandt, ¶ 583. Having fewer components also allows a single-axis hinge to be less expensive to manufacture than a dual-axis hinge. Schmandt, ¶ 583. In addition, a POSITA would be motivated to implement the hinge of Misawa at least partially disposed within the display and base housings in order to cover the movable components of the Misawa 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. Schmandt, ¶ 583.

Fourth, while CN '170 teaches its portable computer being operable in multiple different orientations, it does not explicitly disclose a means to retain the computer's display relative to its body and thereby retaining the computer in a set orientation. Schmandt, ¶ 584. Therefore, a POSITA would look to a separate reference, such as Misawa, which teaches a means for locking a portable computer's hinge at a specific rotation angle. Schmandt, ¶ 584. Misawa discloses a rotation restriction mechanism for locking a portable computer into several separate orientations having different hinge angles, including in an easel-mode orientation. Misawa, ¶¶ [0050-54]. A POSITA would have been motivated to implement the hinge of Misawa, including its rotation restriction mechanism, to enable locking the portable computer of CN '170 when the computer is placed into an easel mode. Schmandt, ¶ 584. A POSITA would further recognize that the rotation restriction provided by Misawa's mechanism would also be useful in other modes requiring the hinge to be retained in place, such as the frame mode orientation taught by CN '170. *See* CN '170, 5:41-42, Fig. 18; Schmandt, ¶ 584.

Finally, a POSITA would have a reasonable expectation of success in implementing the single-axis hinge of Misawa in the portable computer of CN '170. Misawa explicitly teaches that it is intended for use to connect a display and base in a notebook computer. Misawa, ¶ [0075]. In addition, Misawa teaches that its hinge allows movement of a display relative to a hinge beyond 180 degrees, thereby enabling an easel mode as taught by CN '170. Misawa, ¶ [0054], Figs. 8, 9. Misawa also teaches a mechanism for restricting rotation of the display at a predetermined angle. Misawa, ¶¶ [0050-54], [0073]. A POSITA would have recognized that this mechanism would make Misawa suitable for use in the portable computer of CN '170, as it would allow the hinge to be locked at an angle corresponding to the easel mode of CN '170) thereby allowing the computer to be maintained in such an orientation. Schmandt, ¶ 585.

Patent Owner may argue that a POSITA would not be motivated to combine Misawa with CN '170, because Misawa also describes enabling its hinge to open beyond 180 degrees, allowing the device to be invertedly stood on a flat surface with its hinge oriented upward, to enable close-up photography using an integrated camera. *See e.g.*, Misawa, Abstract, ¶ [0068], Fig. 13. However, for the reasons explained above, a POSITA would recognize the utility of the hinge mechanism of Misawa for allowing a portable to be oriented to and retained in an easel mode orientation and would therefore utilize such a hinge mechanism with the portable computer of CN '170 regardless of whether CN '170 includes an integrated camera. Schmandt, ¶ 586.

A POSITA would have further implemented Shigeo's teaching of a hinge-angle sensor and processing logic for inverting displayed content in response to a measured hinge angle

As explained, CN '170 discloses a portable computer configurable between a laptop and easel mode as shown in annotated Figures 4 and 19, below. CN '170, FIGS. 4, 19.

<u>CN '170's Laptop Mode</u>

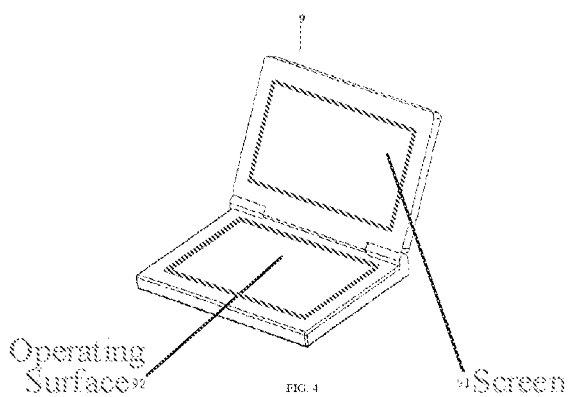


FIG. 4

<u>CN '170's Easel Mode</u>

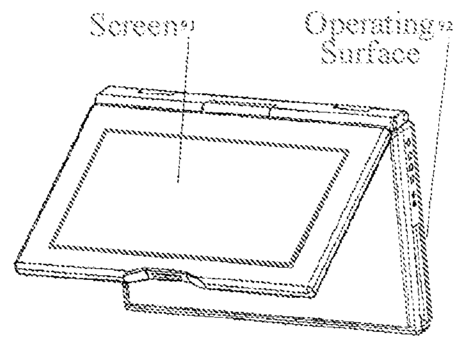


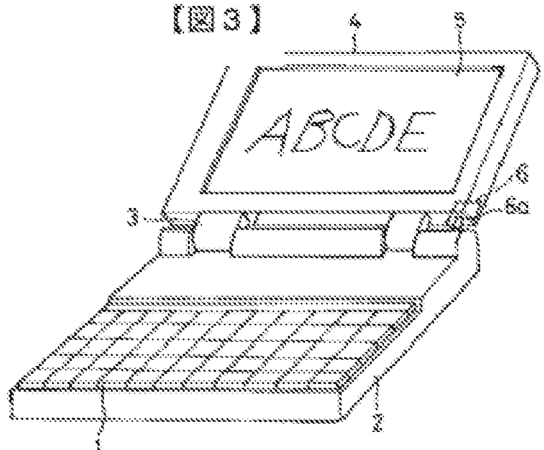
FIG. 19

A POSITA implementing CN '170 would have recognized that upon transitioning from a laptop to an easel mode, the bottom edge of the display (i.e., closest to the hinge) would become the top edge of the display, while the top edge of the display (i.e., furthest from the hinge) would become the bottom. Thus, the POSITA would recognize the need to invert the displayed content in order to maintain the content as right-side-up for a user viewing the display. Orienting content in any other way (e.g., upside down) would be nonsensical, as it would needlessly make it difficult, if not impossible, for a user to view the displayed content. Schmandt, ¶ 588.

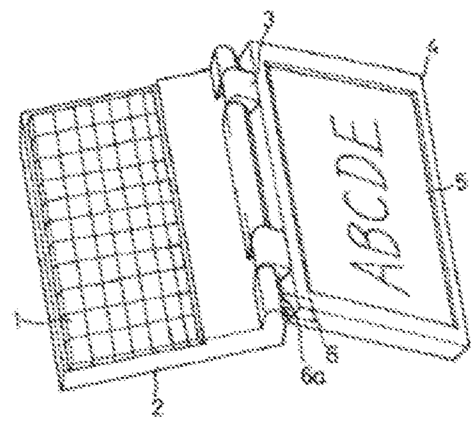
Shigeo also discloses transitioning a portable computer from a laptop mode orientation to an easel-mode like orientation. In the laptop mode, shown in Figure 1 below, the bottom of the display is close to the hinge and the top of the display is furthest from the hinge. In the easel-mode like orientation, the bottom of the display is furthest from the hinge while the top edge of the display is close to the hinge. Shigeo, FIGS. 1, 2 (reproduced below).

【図1】 1]

【図3】



【図2 2]



Shigeo also recognizes the need to invert displayed content when performing the above-described transition between computer orientations. Specifically, Shigeo teaches a sensor for detecting the hinge angle (i.e., the angle of rotation of the computer's display relative to its base). Shigeo, Abstract, ¶¶ [0010-12]. Shigeo discloses the following:

> The keyboard 1 is connected to the input processing unit 9; and sensing signals from the opening-angle sensor 6 are input into the input processing unit 9 as well. The opening angle sensor 6 is

> configured so that, when the lid 4 is opened to an angle equal to or greater than 180 degrees, the projection 6a is retracted so as to close the switch 6b, thereby providing an opening-angle sensing signal to the input processing unit 9. . . . It should be noted that the opening-angle sensor 6 is not limited to this configuration, but may be configured with the use of a mechanical or electric means that detects a wide opening-angle. . . . ***Upon the input of the opening-angle sensing signal from the opening-angle sensor 6, the CPU 7 will output a 180°-rotation display command signal together with the display data if the display data is currently output to the display processing unit 10. In response thereto, the display processing unit 10 changes the view on the display 5 to a state in which the view is rotated by 180 degrees from the previous display state, i. e., a state in which the display is inverted upside down.***

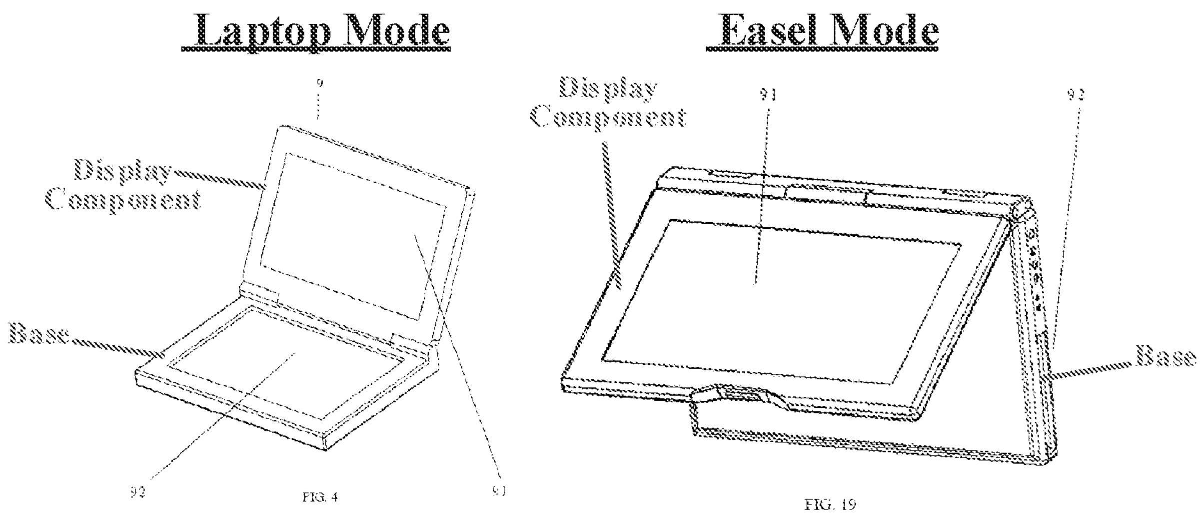
Id., ¶¶ [0010-12] (emphasis added).

Accordingly, a POSITA would be motivated to implement an opening-angle sensor as disclosed by Shigeo in the combined portable computer of CN '170-Misawa. A POSITA would do so in order to invert displayed content when transitioning between a laptop mode and an easel mode so as to maintain the content in a right-side-up orientation relative to a user viewing the display. Schmandt, ¶ 591. And a POSITA would have a reasonable expectation of success in doing so as Shigeo relates to transitioning a portable computer from a laptop mode to an easel-mode like orientation and a POSITA would implement the same teachings of Shigeo in the same way to transition from a laptop mode to an easel mode in the CN '170-Misawa portable computer. Schmandt, ¶ 591.

2. Independent Claim 11

[11.1] A portable computer comprising:

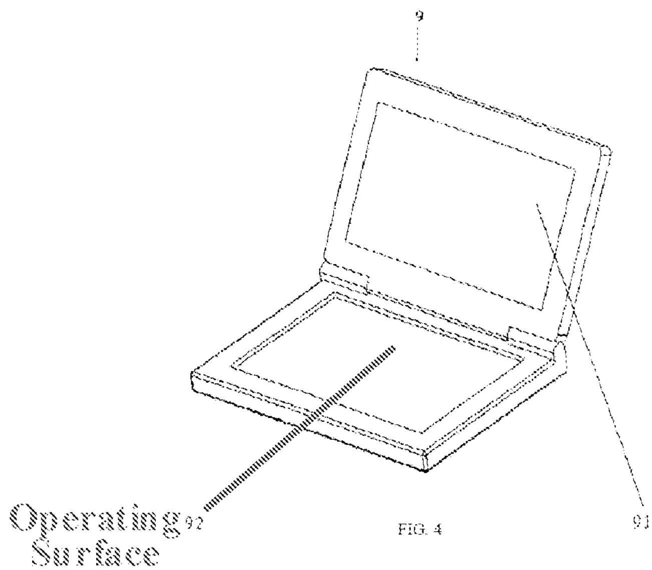
To the extent the preamble is limiting, CN '170 discloses it. Specifically, CN '170 discloses a portable computer ("electronic product such as a notebook computer") that is configurable between a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18.



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

[11.2] a base;

CN '170 discloses this claim limitation. In its drawings, CN '170 shows a base including an operating surface 92. *E.g.*, *see generally*, CN '170, FIGS. 4-6, 10-11, 13, 15, 17-21. CN '170 describes the operating surface as including a keyboard, referring to it as a "key operating surface." CN '170, 4:10, Abstract. CN '170 also describes how a "user makes appropriate operations through the operating surface 92" (CN '170, 6:12-13), including "through buttons set on the product body" (CN '170, 4:14). Schmandt, ¶ 593.



CN '170, FIG. 4 (with annotations).

[11.3] a display component rotatably coupled to the base;

CN '170 discloses this claim limitation. Specifically, the main display component and base are rotatable relative to one another via a hinge assembly, as evidenced by the various angles and display modes to which the main display component can be opened. *See e.g.*, CN '70, FIGS. 4, 13, 15, and 17-21.

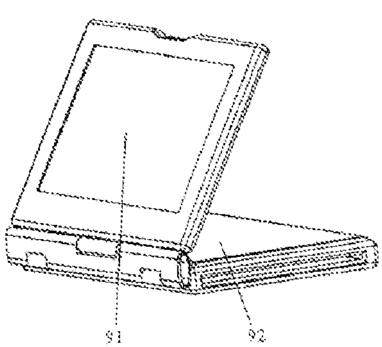


FIG. 17

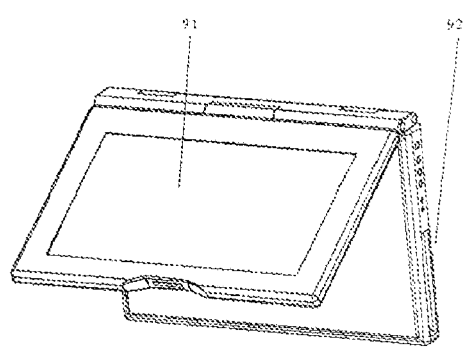


FIG. 19

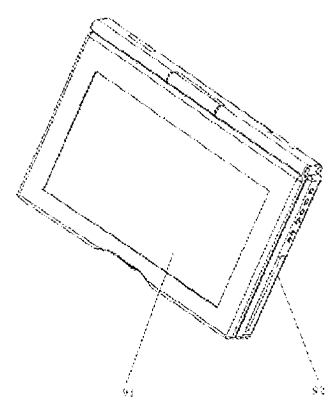


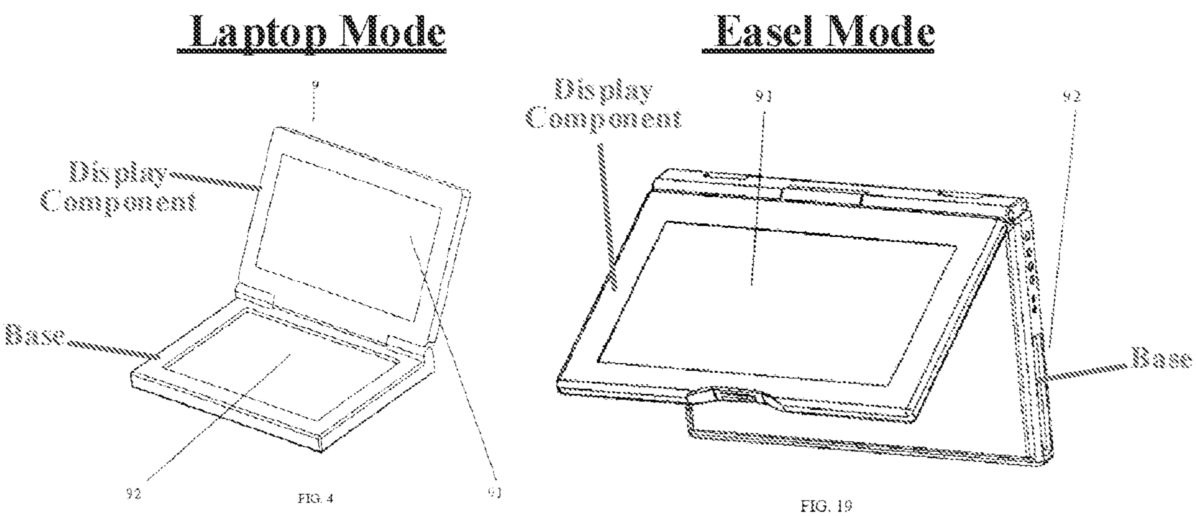
FIG. 20

CN '170, FIGS. 17, 19, 20.

[11.4] 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;

The combination of CN '170 and Misawa teaches this limitation.

CN '170 discloses a portable computer ("electronic product such as a notebook computer") that is configurable between a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18.



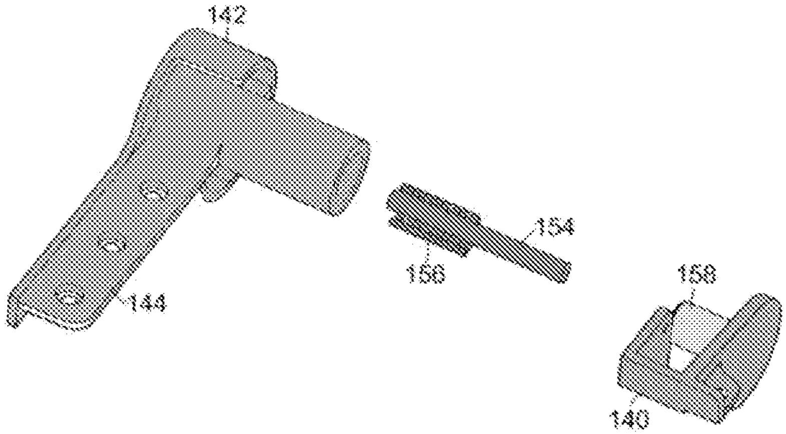
CN '170, FIGS. 4, 19 (with annotations).

CN '170 does not expressly disclose a "means for rotating" as claimed according to 35 U.S.C. § 112(6) and described in the '688 patent's specification. *See Supra*, Section V.C. However, a "means for rotating" is taught by Misawa. Misawa discloses a hinge apparatus including a housing (second tubular body 36),[33] a bracket (first tubular body 34)[34] having a member (supporting bracket 15 having a perpendicular plate member for inserting a shaft),[35] a shaft (rotation shaft 44), and springs (compression coil spring 46). Misawa, ¶¶ [0036-37], [0041], Figs. 4, 5. The below images show the hinge apparatus of Misawa (Misawa, Fig. 5), compared to the hinge apparatus disclosed in the specification of the '688 patent ('688 patent, Fig. 10), with corresponding structures color-coded, showing that the hinge assembly of Misawa contains the same components as the "means for rotating" claimed in the '688 patent (i.e., "housing 142, shaft 154, springs 156, member 158, bracket 140").

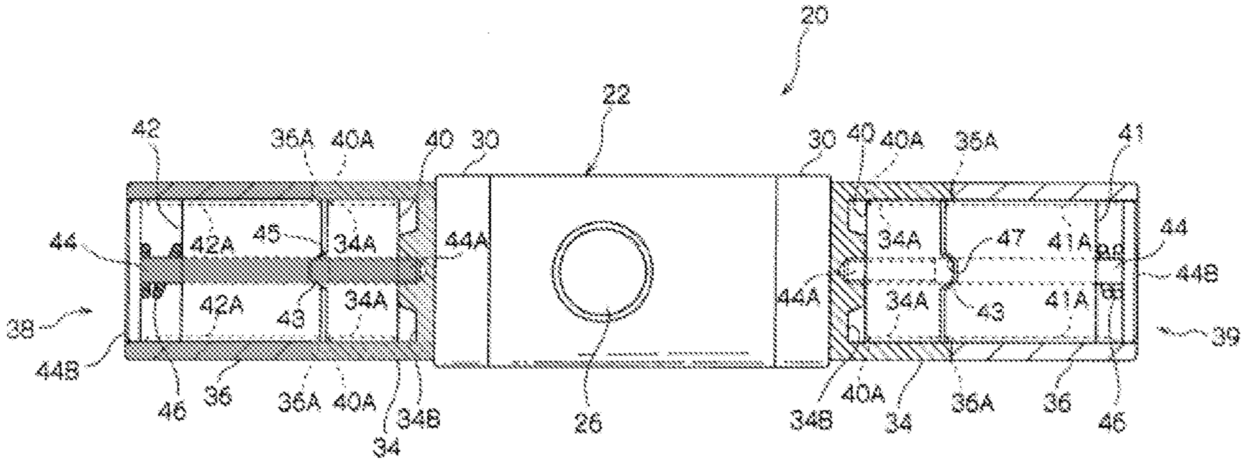
[33] A POSITA would understand second tubular body 36 to constitute a housing, or an equivalent thereof, as it partially houses hinge 38. Schmandt, ¶ 597.

[34] A POSITA would understand first tubular body 34 to constitute a bracket, or an equivalent thereof. A bracket is a generic term to refer to any structure designed to support the weight of another structure or hold a structure in place. Schmandt, ¶ 597. In Misawa, the first tubular body 34 acts as a bracket as it holds the weight of second body casing 18 (i.e., the device's display) and connects the display to hinge 38 via rotation shaft 44. Misawa, ¶ [0036], Figs. 2, 4; Schmandt, ¶ 597.

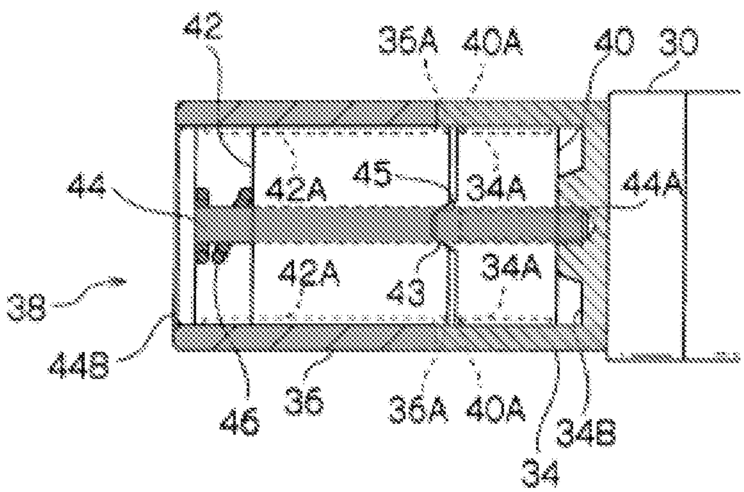
[35] The member of Misawa constitutes a base face 34B having a protrusion which rotation shaft 44 screws into to hold the shaft in place. Misawa, ¶ [0041]. The '688 Patent teaches that its member "may be integral with or coupled to the bracket 140." '688 Patent, 10:36-38. A POSITA would recognize base face 34B of Misawa to be a member, or an equivalent thereof, as it is a protrusion from the bracket (i.e., first tubular body 34) and performs the same function as the member of the '688 patent, i.e., coupling to the hinge shaft. '688 Patent, 10:35-36; Schmandt, ¶ 597.



'688 Patent, Figure 10



Misawa, Figure 5



Misawa, Figure 5 (enlarged excerpt)

A POSITA would have been motivated to implement the hinge assembly Misawa with the portable computer device of CN '170 for the reasons explained above in Section X.I.1.

[11.5] 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, the first and second display orientations being 180 degrees relative to each other; and

Shigeo teaches this limitation. Shigeo discloses a portable computer having a "central processing unit (CPU) 7," with a hinged "display 5," and an "opening-angle sensor 6." Shigeo, ¶¶ [0008-9]. Shigeo also discloses a "display processing part 10 that performs the control operation so as to cause the display data from the CPU 7 to be displayed on the display 5." *Id.*, ¶ [0009]. As explained above in Section X.I.1, Shigeo teaches that, upon a transition from a laptop mode to an easel-mode like orientation (*see Shigeo*, Figs. 1, 2*)*, its CPU receives an opening-angle sensing signal from the opening-angle sensor, and in response causes its display processing unit to invert displayed content on the display. *Supra* Section X.I.1, Shigeo ¶ [0012]. Shigeo states the following:

> Upon the input of the opening-angle sensing signal from the opening-angle sensor 6, the CPU 7 will output a 180°-rotation display command signal together with the display data if the display data is currently output to the display processing unit 10. In response thereto, the display processing unit 10 changes the view on the display 5 to a state in which the view is rotated by 180 degrees from the previous display state, i. e., a state in which the display is inverted upside down.

Id., ¶ [0012]. Thus, Shigeo's CPU and display processing unit constitute a display orientation module. As explained above in Section X.I.1, it would have been obvious to a POSITA to program the processor and display output logic of the portable computer of CN '170 to implement the functionality of Shigeo to perform a display inversion on a transition from between a laptop and easel mode in order to maintain the displayed content as right-side-up for a user. *Supra* Section X.I.1.

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. For the reasons explained above, this element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.[36]

[11.6] 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.

Shigeo teaches this limitation.

Specifically, Shigeo discloses a "means for detecting" as construed under 35 U.S.C. § 112(6) (*see Supra*, Section V.D) in that it discloses an angle-detection sensor. Shigeo discloses an opening-angle sensor that detects a transition between a laptop mode and easel-like mode based on the measured hinge angle opening beyond a stored threshold angle of 180 degrees. Shigeo, ¶¶ [0010-11]. Shigeo states the following:

[36] To the extent the Examiner finds the term to also require a sensor, that too would have been obvious to a POSITA, as explained below for Claim [11.6]. *Infra,* Section X.I.2, claim [11.6].

> The opening angle sensor 6 is configured so that, when the lid 4 is opened to an angle equal to or greater than 180 degrees, the projection 6a is retracted so as to close the switch 6b, thereby providing an opening-angle sensing signal to the input processing unit 9. . . . It should be noted that the opening-angle sensor 6 is not limited to this configuration, but may be configured with the use of a mechanical or electric means that detects a wide opening-angle.

Id. Similarly, Shigeo's Abstract describes an "opening-angle sensor that detects when the opening angle of the display reaches a predetermined value or goes beyond the predetermined value." *Id.*, Abstract.

As explained above in Section X.I.1, a POSITA would have been motivated to implement the above teachings of Shigeo regarding its opening angle sensor and associated programming logic into the portable computer of CN '170 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. *Supra*, Section X.I.1.

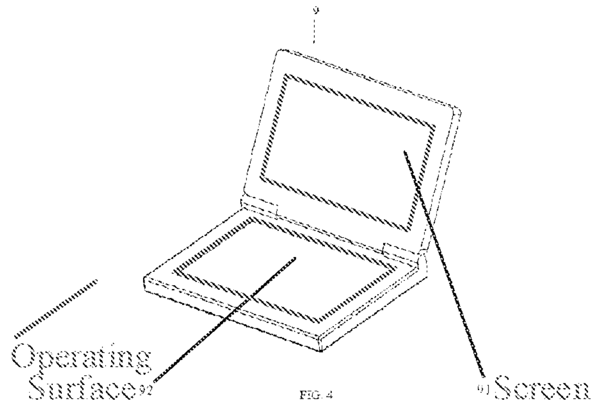
J. CN '170 In View Of Hisano And Choi <u>Renders Obvious Claim 11 Of The '688 Patent (Ground 10)</u>

1. <u>Combining CN '170, Hisano, And Choi</u>

A POSITA would have implemented Choi's teaching of a single-axis hinge in the portable computer of CN '170

CN '170 discloses a portable computer that is configurable into a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19. In the easel mode, the screen 91 and operating surface 92 are rotated beyond an angle of 180 degrees and the laptop is vertically oriented in an inverted "V" configuration. *E.g.*, CN '170, FIG. 19, 5:43-44, 7:11-14. CN '170's Figure 4 (annotated) and Figure 19 (annotated) are reproduced below, respectively showing the disclosed laptop and easel modes. *Id.*, Figs. 4, 9.

CN '170's Laptop Mode



CN '170's Easel Mode

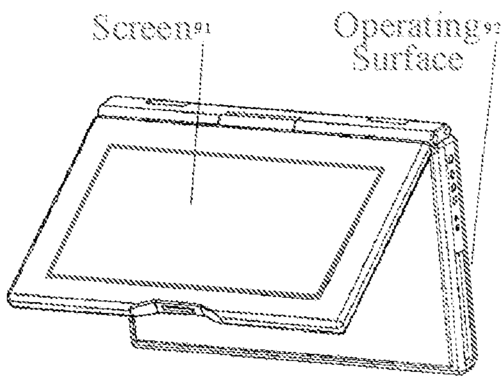


FIG. 19

The screen of CN '170's portable computer is capable of rotating more than 180 degrees relative to the operating surface by means of a "double hinge structure" as shown in Figure 7, reproduced below. *Id.*, Abstract, 6:13-14, Fig. 7.

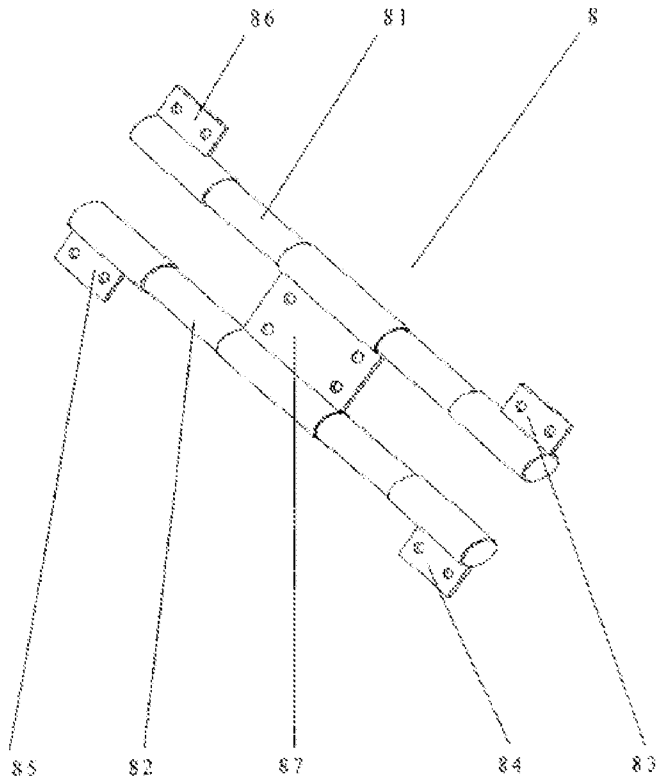
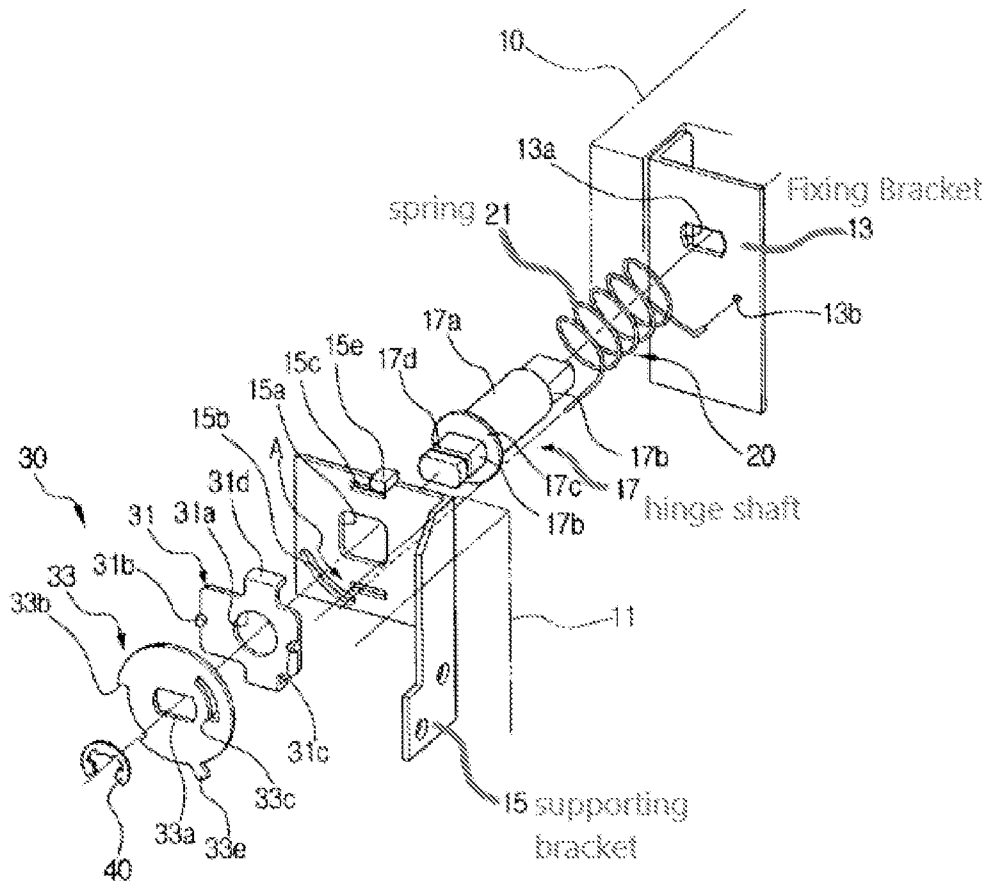


FIG. 7

It would have been obvious to a POSITA to replace the dual-axis hinge assembly of CN'170 with a single-axis hinge assembly, such as that taught by Choi. Specifically, Specifically, Choi discloses a "hinge apparatus . . . employed to connect a panel 11 to a body 10 of an appliance so that the panel 11 is opened and closed with respect to the body 10," and particularly for connecting a display to a body in a laptop computer. Choi, 3:36-50. Among other elements, the hinge apparatus includes fixing bracket 13 fixed onto a laptop computer body 10, supporting bracket 15 fixed to the panel 11 (i.e., a LCD panel), hinge shaft 17, and coil spring 21. *Id.*, 3:36-42, 52-56. These components are depicted in Fig. 2 of Choi, reproduced with annotations below.

Annotated Fig. 2 of Choi



The hinge of Choi enables rotation of a laptop display relative to a body as depicted in Fig. 5 and enables the display to open beyond 180 degrees relative to the base as depicted in Fig. 7 (depicting the display opened to approximately 210 degrees), reproduced and annotated below. *Id.*, 6:26-27, Figs. 5, 7.

FIG.5

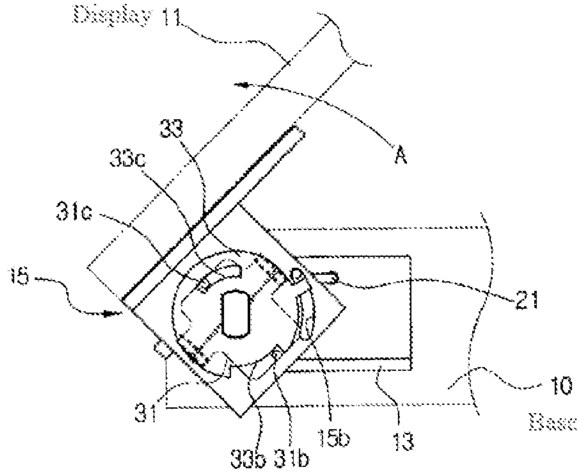
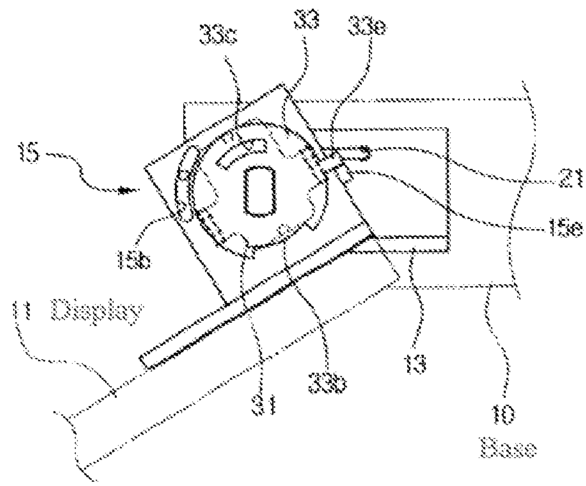


FIG.7



In addition to enabling rotation of a laptop display relative to a body, Choi also provides a mechanism for restricting rotation once the display is opened to a predetermined angle. Choi describes this mechanism as follows:

> Further provided is a pivoting angle restricting device to restrict the angle of rotation of the supporting bracket 15. The pivoting angle restricting device includes a locking portion 33 e protruding from an outline of the frictional plate 33, and a locking projection 15 e bent from an outline of the supporting bracket 15 to be locked with the locking portion 33 e during rotation. The locking portion 33 e is formed in a position that restricts a pivotal angle of the supporting bracket 15 at a predetermined degree of, for example, 210°
>
> ***
>
> FIG. 7 shows the panel 11 being rotated by approximately 210°. Here, the locking projection 15 e is locked with the locking portion 33 e, thereby restricting the supporting bracket 15 from further rotation.

Id., 5:37-46, 6:26-31. While Choi describes its pivoting angle restricting device as restricting the hinge's pivot angle to a predetermined angle 210 degrees, Choi explicitly states that this predetermined angle is only exemplary (*Id.*, 5:44-46) and a POSITA would recognize that the restricting device may be implemented to allow for a larger degree of rotation. Schmandt, ¶ 610. It would be obvious to a POSITA to provide such an angle restricting device at an angle beyond 210 degrees. Schmandt, ¶ 610. Nothing in Choi's specification would prevent a POSITA from selecting a predetermined angle for the pivoting angle restriction device at an angle to allow for an easel mode configuration such as taught by CN '170. Schmandt, ¶ 610. In fact, a POSITA would be motivated to implement such a pivoting angle restricting device at an angle suitable for use in an easel mode such as taught by CN '170. E.g., CN '170, Fig. 19; Schmandt, ¶ 610.

A POSITA would have been motivated to modify the portable computer of CN '170 to replace its dual-axis hinge assembly with the single-axis hinge taught by Choi for several reasons. First, CN '170 and Choi (as well as Hisano) are contemporaneous references directed toward complementary solutions to highly analogous problems in the same fields of endeavor. CN '170, Hisano, and Choi are all directed toward portable computers usable in various display modes via a rotatable hinge. CN '170, FIGS. 4, 13, 15, 17-19; Hisano, ¶¶ [0054], [0087], [0098], Figs. 1, 8, 9, Choi, 3:35-50, Figs. 5-7.

Second, a POSITA would have considered the replacement of the dual-axis hinge of the portable computer of CN '170 with the single-axis hinge of 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, a POSITA 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. Schmandt, ¶ 612. Hisano, for example, depicts and describes multiple examples of laptop computers with their two housing structures being rotatable about a single axis. Hisano, ¶¶ [0104], [0112], Figs. 13, 17 (reproduced below).

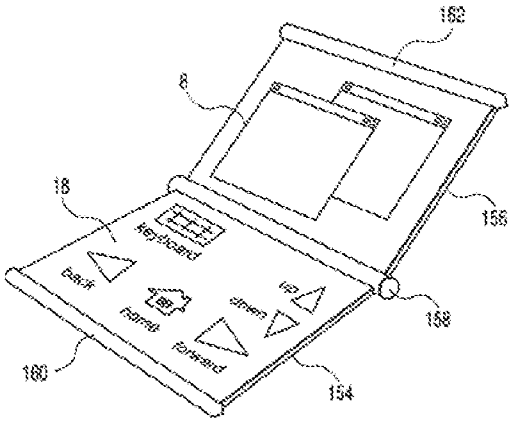


FIG. 13

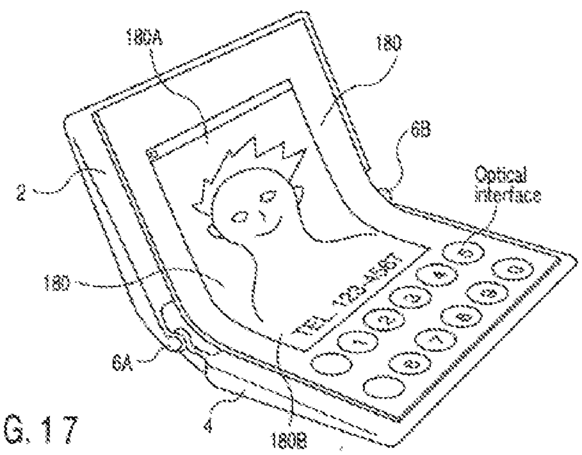


FIG. 17

Accordingly, a POSITA would have recognized that a dual-axis hinge could be replaced with a single-axis hinge in a portable computer to perform the same function. Schmandt, ¶ 613.

Third, a POSITA would recognize the benefits of using a single-axis hinge instead of a dual-axis hinge. For example, due to 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. Schmandt, ¶ 614. Having fewer components also allows a single-axis hinge to be less expensive to manufacture than a dual-axis hinge. Schmandt, ¶ 614. In addition, a POSITA would be motivated to implement the hinge of Choi at least partially disposed within the display and base housings in order to cover the movable components of the Choi 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. Schmandt, ¶ 614.

Finally, a POSITA would have a reasonable expectation of success in implementing the single-axis hinge of Choi in the portable computer of CN '170. Choi explicitly teaches that it is intended for use to connect a display and base in a laptop computer. Choi, 3:36-50; Schmandt, ¶ 615. In addition, Choi teaches that its hinge allows movement of a display relative to a hinge beyond 180 degrees, thereby enabling a frame mode as well as a easel mode as taught by CN '170. Choi, 6:26-27, Fig. 7; Schmandt, ¶ 615. Choi also teaches a mechanism for restricting rotation of the display at a predetermined angle. Choi, 5:37-46, 6:26-31. A POSITA would have recognized that this mechanism would make Choi suitable for use in the portable computer of CN '170, as it would allow the hinge to be locked at an angle corresponding to the frame mode or easel mode of CN '170) thereby allowing the computer to be maintained in such an orientation. Schmandt, ¶ 615.

A POSITA would have further implemented Hisano's teaching of a hinge-angle sensor and processing logic for inverting displayed content in response to a measured hinge angle

As explained, CN '170 discloses a portable computer configurable between a laptop and easel mode as shown in annotated Figures 4 and 19, below. CN '170, Figs. 4, 19.

CN '170's Laptop Mode

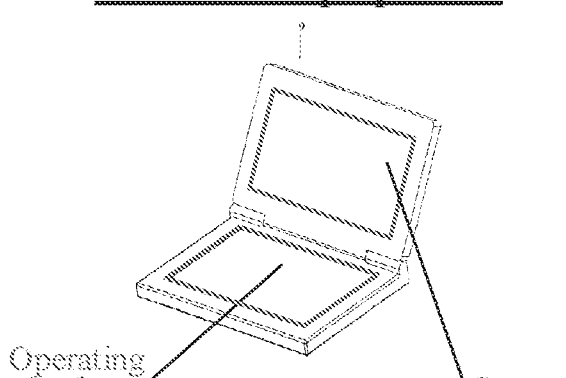


FIG 4

CN '170's Easel Mode

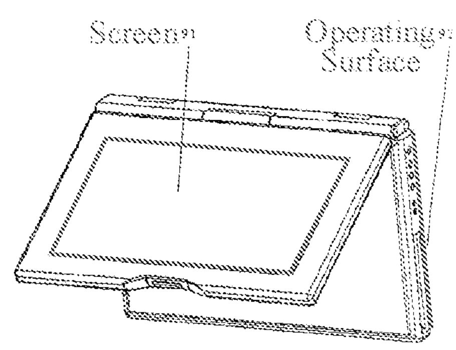


FIG. 19

A POSITA implementing CN '170 would have recognized that upon transitioning from a laptop to an easel mode, the bottom edge of the display (i.e., closest to the hinge) would become the top edge of the display, while the top edge of the display (i.e., furthest from the hinge) would become the bottom. Thus, the POSITA would recognize the need to invert the displayed content in order to maintain the content as right-side-up for a user viewing the display. Orienting content in any other way (e.g., upside down) would be nonsensical, as it would needlessly make it difficult, if not impossible, for a user to view the displayed content. Schmandt, ¶ 617.

Hisano teaches means for detecting the physical orientation of a personal computer and, in response, performing an inversion of displayed content in order to maintain the content as right-side-up for a user of the computer. Hisano discloses determining an angle of rotation of the hinges of the laptop, which corresponds to the hinge angle of the housings relative to one another:

> 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.

Hisano, ¶ [0099]. Hisano also teaches using a sensor in the form of an accelerometer (i.e., a "gravity sensor") to detect the orientation of the computer. Hisano, ¶¶ [0099-100].[37]

It would have been obvious to a POSITA to combine the teachings of Hisano regarding detecting the orientation of a portable computer and, in response, inverting displayed content, with the portable computer and corresponding display modes of CN '170. Specifically, it would be obvious to a POSITA that a visual display on a computer screen should be displayed right-side-up

[37] A POSITA would have understood that Hisano's teaching of a gravity sensor would have implied an accelerometer, as these were inexpensive devices capable of determining acceleration with respect to the force of gravity. Schmandt, ¶ 618.

relevant to the intended viewer of the display. Numerous prior art references recognize the need to change orientation of a computer's displayed content in response to changing the orientation of a display relative to a user. *See, e.g.*, Shimura ¶¶ [0008], [0012], [0016-18]; additional references discussed above in Section VIII.K; Schmandt, ¶ 619. Moreover, a POSITA would also recognize that in transition from a laptop mode to an easel mode, as demonstrated in annotated Figs. 1 and 9 of Hisano below, the top and bottom edges of a display become inverted, so that what was the top edge in laptop mode is at the bottom in easel mode, and vice-versa. Hisano, Figs. 1, 9; Schmandt, ¶ 619.

Annotated Hisano Fig. 1 (Laptop Mode)

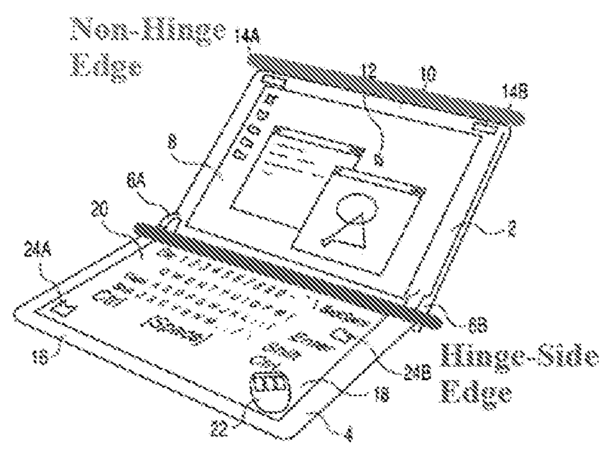


FIG. 1

Annotated Hisano Fig. 9 (Easel Mode)

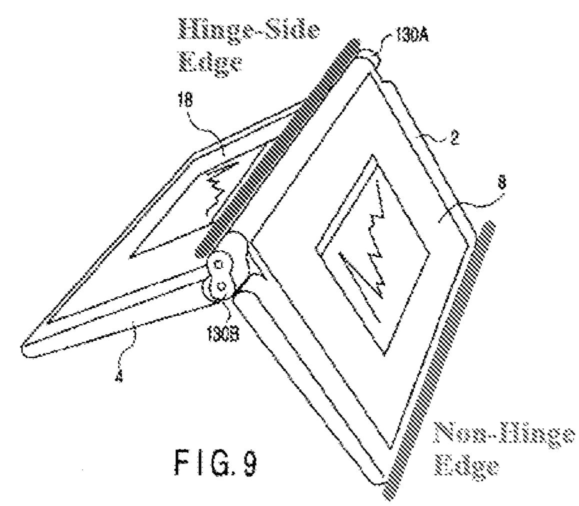


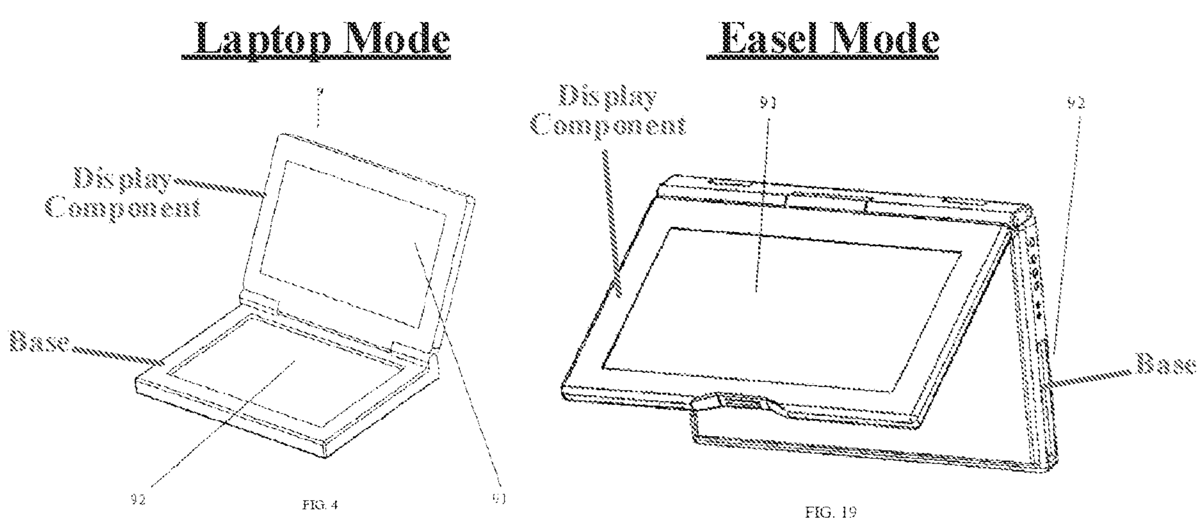
FIG. 9

A POSITA would recognize that if the displayed screen remained the same upon transitioning from laptop to easel mode, the screen would be displayed upside-down and therefore difficult to read to the intended view. Schmandt, ¶ 620. A POSITA would therefore recognize the need to change the orientation of the displayed content by 180° upon transitioning from laptop to easel mode (and vice-versa) in order to present the displayed content right-side-up to the intended viewer and would therefore implement this functionality as taught by Hisano into the personal computer of CN '170. Schmandt, ¶ 620.

2. Independent Claim 11

[11.1] A portable computer comprising:

To the extent the preamble is limiting, CN '170 discloses it. Specifically, CN '170 discloses a portable computer ("electronic product such as a notebook computer") that is configurable between a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18.



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

[11.2] a base;

CN '170 discloses this claim limitation. In its drawings, CN '170 shows a base including an operating surface 92. *E.g., see generally,* CN '170, FIGS. 4-6, 10-11, 13, 15, 17-21. CN '170 describes the operating surface as including a keyboard, referring to it as a "key operating surface." CN '170, 4:10, Abstract. CN '170 also describes how a "user makes appropriate operations through the operating surface 92" (CN '170, 6:12-13), including "through buttons set on the product body" (CN '170, 4:14). Schmandt, ¶ 622.

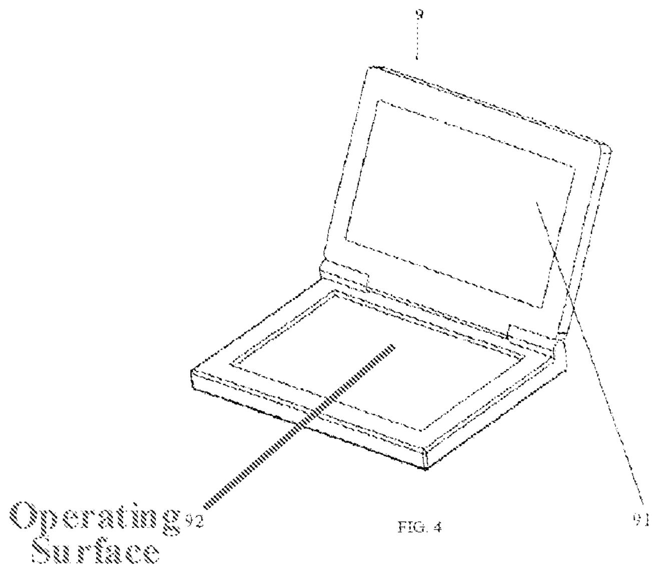
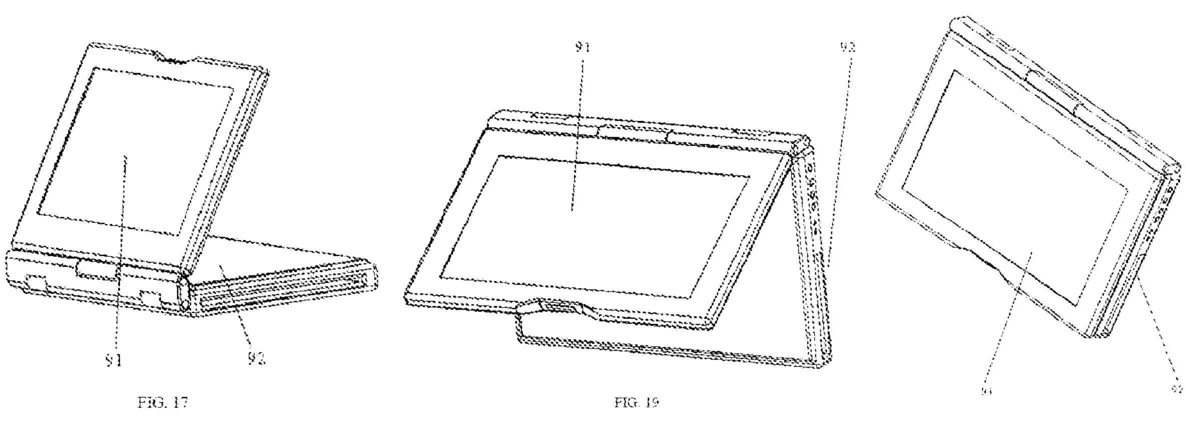


FIG. 4

CN '170, FIG. 4 (with annotations).

[11.3] a display component rotatably coupled to the base;

CN '170 discloses this claim limitation. Specifically, the main display component and base are rotatable relative to one another via a hinge assembly, as evidenced by the various angles and display modes to which the main display component can be opened. *See e.g.*, CN '70, FIGS. 4, 13, 15, and 17-21.



CN '170, FIGS. 17, 19, 20.

[11.4] 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;

The combination of CN '170 and Choi teaches this limitation.

CN '170 discloses a portable computer ("electronic product such as a notebook computer") that is configurable between a plurality of display modes including a laptop mode and an easel mode. *E.g.*, CN '170, FIGS. 4, 13, 15, 17-19, 6:8-13, 7:11-18.

Laptop Mode

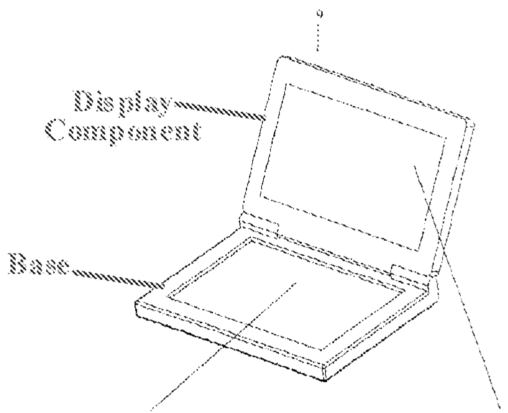


FIG. 4

Easel Mode

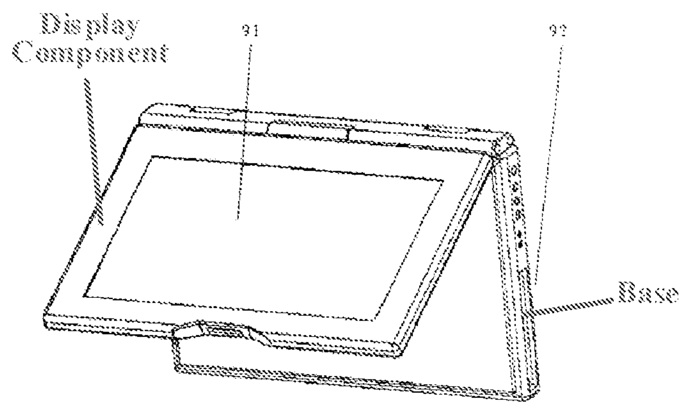


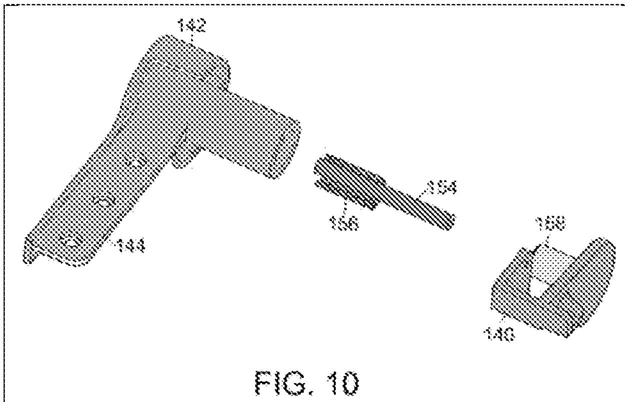
FIG. 19

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

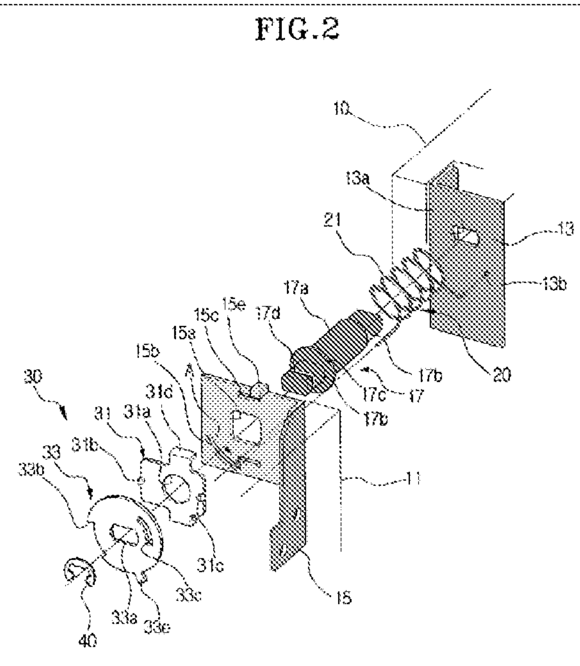
CN '170 does not expressly disclose a "means for rotating" as claimed according to 35 U.S.C. § 112(6) and described in the '688 patent's specification. *See Supra*, Section V.C. However, a "means for rotating" is taught by Choi. Choi discloses a hinge apparatus including a housing (fixed bracket 13),[38] a bracket having a member (supporting bracket 15 having a perpendicular

[38] A POSITA would understand fixed bracket 13 to constitute a housing as it partially houses hinge shaft 17.

plate member for inserting a shaft),[39] a shaft (hinge shaft 17), and springs (coil spring 21). Choi, 3:36-56. The below images show the hinge apparatus of Choi (Choi, Fig. 2.), compared to the hinge apparatus disclosed in the specification of the '688 patent ('688 patent, Fig. 10), with corresponding structures color-coded, showing that the hinge assembly of Choi contains the same components as the "means for rotating" claimed in the '688 patent (i.e., "housing 142, shaft 154, springs 156, member 158, bracket 140").



'688 Patent



Choi

A POSITA would have been motivated to implement the hinge assembly Choi with the portable computer device of CN '170 for the reasons explained above in Section X.J.1.

[11.5] 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

[39] The member of Choi constitutes a plate member extending perpendicularly from the remainder of supporting bracket 15. The '688 Patent teaches that its member "may be integral with or coupled to the bracket 140." '688 Patent, 10:36-38.

mode, 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

Hisano teaches this limitation. Hisano discloses its portable computer switching content orientation in response to measuring the angle of the computer's hinges, i.e., the angle or rotation of the display relative to the base.

> 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.***

Hisano, ¶ [0099] (emphasis added). A POSITA would recognize that such an operation would be performed in order to maintain displayed content as right-side-up relative to a user viewing the portable computer. (Schmandt, ¶ 629). A POSITA would recognize that generation of the computer's displayed screen, including the orientation of the screen, is performed by a display orientation module in the form of the computer's internal processor and associated logic, constituting a display orientation module. *See e.g.*, Hisano, ¶ [0026] ("a 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"); (Schmandt, ¶ 629).

As explained above in Section X.J.1, a POSITA would have been motivated to implement the above teachings of Hisano into the portable computer of CN '170 in order to display content right-side-up to a user regardless of the orientation of the computer's display relative to its base. *Supra*, Section X.J.1

While, for purposes of this Request only, Requester submits that the term "display orientation module" need not be construed under 35 U.S.C. §112, ¶ 6, Patent Owner may argue or the Examiner may find that the term invokes 112(6). *See supra,* Section V.A. This element is also satisfied to the extent the Examiner finds or PO argues that the term "display orientation module" and the claimed associated functionality invoke 112(6), have adequate linked structure in the patent's specification, and that the linked structure is a processor programmed with an algorithm that "triggers a display inversion as appropriate" so that the displayed "information appears 'right-way-up' based on a determined display mode." '688 Patent, 8:7-34.

Specifically, a POSITA would recognize that whether the computer is in laptop or easel mode can be determined based on the hinge angle of the display relative to the base for at least the following reasons. To illustrate, 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 (reproduced below).

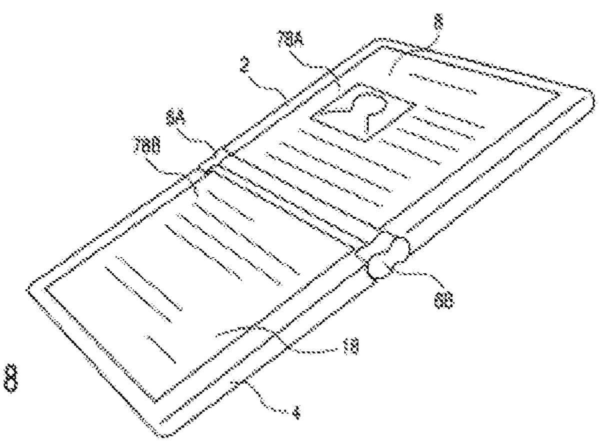


FIG. 8

A POSITA would recognize that if the hinge angle is less than 180° then the display surfaces of Hisano would face each-other and therefore be in laptop mode, while if the hinge angle is greater than 180° then the display surfaces face away from each-other and the device would then be in easel mode. Schmandt, ¶ 633. Accordingly, a POSITA would know how to implement Hisano's teachings that the displayed screen may be inverted based on the measured hinge angle. Hisano, ¶ [0099], Schmandt, ¶ 633. Specifically, a POSITA would implement the teachings of Hisano to program a portable computer 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°, 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.

[11.6] 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.

Hisano teaches this limitation. Specifically, Hisano discloses a "means for detecting" as construed under 35 U.S.C. § 112(6) (*see Supra*, Section V.D) in that it teaches an angle-detection sensor. Specifically, 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.

> 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.

Hisano, ¶ [0099]. A POSITA would recognize that this rotating angle of the hinges would be measured by the device utilizing a dedicated sensor. Schmandt, ¶ 635. 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, ¶¶ [0099-100]), and numerous types of sensors for measuring the angle of a hinge were known in the art. *See e.g.,* Lane, 5:23-6:6; Shigeo, Abstract, ¶¶ [0004], [0014-16]; Tsuji, ¶ [0061]; Schweizer, 5:28-33; *supra,* Section VIII.K; Schmandt, ¶ 635. A POSITA would recognize that it would be impractical to measure the hinge angle manually and therefore a sensor would be implemented in the portable computer of Hisano to measure it automatically by use of an integrated sensor. Schmandt, ¶ 635. Therefore, Hisano teaches the use of a sensor as a means for detecting the relative orientation of Hisano's display relative to a separate housing structure, such as a base.

As explained above in Section X.J.1, a POSITA would have been motivated to implement the above teachings of Hisano into the portable computer of CN '170 in order to display content right-side-up to a user regardless of the orientation of the computer's display relative to its base. *Supra*, Section X.J.1.

Further, as explained for claim [11.5], it would be obvious a POSITA to use the measured angle from such an orientation sensor to determine the transition between laptop and easel mode based on a threshold value. *See supra,* claim [11.5]. That is, a POSITA would recognize that when the angle changes from less than to more than 180°, the device transitions from laptop to easel mode, and vice-versa and would initiate an inversion of the displayed content accordingly. Schmandt, ¶ 637.

XI. NO SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

Requester is aware of no secondary considerations of non-obviousness, such as commercial success, industry praise, long felt but unsolved needs, or failure of others. *See, e.g.*, MPEP § 2145. Patent Owner may attempt to show commercial success or other factors, e.g., based on the LiTL Webbook, but any such attempt should be rejected. To support non-obviousness, the law requires "hard evidence of commercial success" of an article or product that is covered by the claims, and that the claimed invention drive that commercial success. MPEP § 2145.

The LiTL Webbook's lack of any commercial success is reflected in, *e.g.*, a 2010 article titled, "Litl Webbook plummets from $699 to $399, still can't catch an eye." Ex. 1029 at 1; *also see* Ex. 1028 at 1–2. Moreover, any minor press attention that the Webbook received was focused on aspects that either were already established in the prior art or not reflected in—and thus not coextensive with—the claims. *E.g.*, *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1328 (Fed. Cir. 2008) (finding claims obvious and rejecting supposed evidence of praise because the alleged praise focused on aspects of the device not reflected in the claims, and thus *lacked the requisite nexus to the claimed invention*).

For example, one review from November 2009 noted that, while it "looks exciting," the LiTL webbook was no more than an over-priced "'web-only' netbook." Ex. 1025 at 2. That review concluded by suggesting that consumers "wait for the first ChromeOS PC." *Id.* In response, LiTL touted the brightness and viewing of the LiTL LCD screen, the case and keyboard, and the "stylish, high quality device." Ex. 1025 at 5. It further touted that the LiTL webbook was "a new platform for our users to access web content." *Id.* None of these alleged benefits (e.g., a high-end LCD screen) are recited in the claims of the '688 patent, and some are not even patentable features ("stylish, high quality device").

Another review explained "all it does is web. And it does it fairly well." (Ex. 1026 at 2.) "Fairly well" falls far short of praise. Some reviews mentioned the "easel" mode (*Id.* at 4.), describing it as an "interesting display option[]" (Ex. 1027 at 2), but such an easel mode was already a well-known prior art concept, (*see, e.g.*, Lane, FIG. 28; Hisano, ¶¶ [0054], [0098], FIG. 9; Schweizer, 1:49–2:4, FIGS. 2, 4, 6). And that review warned consumers that "Litl Offers Simplicity But Not Without Sacrifice," concluding that the LiTL webbook "will really only be good as a second computer for a busy household." Ex. 1027 at 2.

Thus, LiTL cannot show any secondary considerations supporting non-obviousness. Even if LiTL were, for argument's sake, able to muster evidence of secondary considerations, such evidence would still be insufficient to overcome the strong *prima facie* case of obviousness presented in this Request. *E.g.*, *Leapfrog Enterprises Inc. v. Fisher-Price Inc.*, 485 F.3d 1157, 1162, 82 U.S.P.Q.2d 1687, 1692 (Fed. Cir. 2007) ("[G]iven the strength of the *prima facie* obviousness showing, the evidence on secondary considerations was inadequate to overcome a final conclusion [of obviousness].") (emphasis added).

XII. CONCLUSION

The prior art references presented in this Request were either not previously considered by the Office or are now being presented in a new light pursuant to MPEP § 2242(II)(A). The prior art references cited herein teach the subject matter of the '688 patent in a manner such that substantial new questions of patentability for all these claims are raised by this Request. Additionally, claims 11-22 and 24-32 of the '688 patent are not patentable over the prior art references cited herein. Accordingly, the Office is respectfully requested to grant this Request and to initiate reexamination.

Based upon the disclosures herein and the references upon which reexamination is requested, the Requester respectfully submits that all of the foregoing claims are obvious in view of the prior art and should be rejected. Accordingly, the Office is respectfully requested to reject all of the foregoing claims in view of the art cited herein.

With the filing of this petition an electronic payment of $12,600.00 is being charged to deposit account no. 02-4550. 37 C.F.R. § 1.20. Any fee adjustments may be debited/credited to the deposit account.

Dated: May 24, 2022

Respectfully submitted,

By: /Andrew M. Mason/

Andrew M. Mason (Reg. No. 64,034)
andrew.mason@klarquist.com
Cameron Clawson (Reg. No. 73,509)
cameron.clawson@klarquist.com
KLARQUIST SPARKMAN, LLP
One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Tel: 503-595-5300
Fax: 503-595-5301

Counsel for Requester
Lenovo (United States) Inc.

CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 1.510

This Request complies with the requirements as set forth in 37 C.F.R. § 1.510.

Dated: May 24, 2022

By: /Andrew M. Mason/

Andrew M. Mason (Reg. No. 64,034)
andrew.mason@klarquist.com
Cameron Clawson (Reg. No. 73,509)
cameron.clawson@klarquist.com
KLARQUIST SPARKMAN, LLP
One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Tel: 503-595-5300
Fax: 503-595-5301

Counsel for Requester
Lenovo (United States) Inc.