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(71) Applicant *(for all designated States except US)*: **INTEL CORPORATION** [US/US]; 2200 Mission College Boulevard, Santa Clara, California 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **WONG, Hong** [US/US]; 15878 N.w. Andalusia Way, Portland, Oregon 97229 (US). **WONG, Wah Yiu** [US/US]; 16397 Nw Somerset Drive, Beaverton, Oregon 97006 (US). **LAM, Hue** [US/US]; 3517 N. Halleck Street, Portland, Oregon 97217 (US).

(74) Agents: **VINCENT, Lester J.** et al.; Blakely Sokoloff Taylor & Zafman, 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 950025 (US).

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(54) **Title:** INTEGRATED INPUT AND DISPLAY DEVICE FOR A MOBILE COMPUTER

(57) **Abstract:** A device and system are disclosed. In one embodiment the device comprises a primary display unit, a base unit coupled to the primary display unit, and a touch-sensitive secondary display unit, coupled to the base unit, operable to receive input from a user and display information for the user.

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INTEGRATED INPUT AND DISPLAY DEVICE FOR A MOBILE COMPUTER

FIELD OF THE INVENTION

[0001] The invention relates to input and display devices in computers. More specifically, the invention relates to integrating an input device with a display device in a mobile computer.

BACKGROUND OF THE INVENTION

[0002] Chinese, Japanese, and Korean languages have thousands of characters. A standard keyboard input is impractical to use with these languages. There are many input devices on the market for these character sets. Many of the devices are external peripherals that combine a digitizer with a USB connection to allow for handwriting input into a computer. These devices have certain inherent disadvantages. One disadvantage is their extra cost, partially due to the additional materials involved in building an external device (i.e. the hard-shell exterior for the digitizer, the USB cabling, etc). The bulkiness of a separate device is another disadvantage. For example, if a user has a mobile computer, she would have to not only carry around the computer wherever she went, but she would also need to carry the USB digitizer input device if she wanted to have handwriting input capability.

[0003] Some mobile computer systems have recently been integrating a second display for additional visual output. These displays have commonly been used to obtain information when the computer system otherwise would be powered down. For example, a laptop computer that has wireless connectivity to a network could notify the user of a

new email even with the laptop's shell closed. The secondary display may be placed on the outer shell and may notify the user of such things as wireless network signal strength, incoming emails, battery life, etc. This benefit would allow a user to always be connected and aware of information relating to the computer that she would otherwise not be aware of until she opened up the laptop shell and viewed the information on the primary display screen.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] The present invention is illustrated by way of example and is not limited by the figures of the accompanying drawings, in which like references indicate similar elements, and in which:

[0005] **Figure 1A** is one embodiment of a mobile computer system with an integrated input and display device.

[0006] **Figure 1B** is a close-up view of one embodiment of the integrated input and display device in **Figure 1A**.

[0007] **Figure 2A** describes one embodiment of the components of an integrated input and display device.

[0008] **Figure 2B** describes another embodiment of the components of an integrated input and display device.

[0009] **Figure 3A** describes one embodiment of a digitizer pen used in combination with the integrated input and display device to write in script format.

[00010] **Figure 3B** describes one embodiment of a digitizer pen used in combination with the integrated input and display device to write characters in Chinese, Japanese, Korean, or another complex character-based language.

[00011] **Figure 3C** describes one embodiment of a digitizer pen used in combination with the integrated input and display device to create drawings.

[00012] **Figure 3D** describes one embodiment of a user interacting with the integrated input and display device with one or more fingers.

[00013] **Figure 4A** displays one embodiment of a rotatable integrated input and display device coupled to the base unit of a mobile computing device.

[00014] **Figure 4B** is a close-up view of one embodiment of the rotatable integrated input and display device coupled to the base unit.

[00015] **Figure 4C** is a detailed view of the opening in the base unit without the integrated input and display device in one embodiment.

[00016] **Figure 4D** is a view of one embodiment of the rotatable integrated input and display device without the accompanying base unit.

[00017] **Figure 5A** displays one embodiment of a rotatable integrated input and display device coupled to the base unit of a mobile computing device.

[00018] **Figure 5B** is a close-up view of another embodiment of the rotatable integrated input and display device coupled to the base unit.

[00019] **Figure 5C** is a detailed view of the opening in the base unit without the integrated input and display device in another embodiment.

[00020] **Figure 5D** is a view of another embodiment of the rotatable integrated input and display device without the accompanying base unit.

[00021] **Figure 6A** is one embodiment of a mobile computer system with an integrated input and display device in an open position.

[00022] **Figure 6B** is one **embodiment** of a mobile computer system with an integrated input and display device in a semi-closed position.

[00023] **Figure 6C** is one **embodiment** of a mobile computer system with an integrated input and display device in a closed position.

[00024] **Figure 6D** is another **embodiment** of a mobile computer system with an integrated input and display device in a closed position.

[00025] **Figure 6E** is one **embodiment** of a close-up view of the integrated input and display device in **Figure 6D**.

DETAILED DESCRIPTION OF THE INVENTION

[00026] Embodiments of an integrated input and display device for a mobile computer are disclosed. In the following description, numerous specific details are set forth. However, it is understood that embodiments may be practiced without these specific details. In other instances, well-known elements, specifications, and protocols have not been discussed in detail in order to avoid obscuring the present invention.

[00027] **Figure 1A** is one embodiment of a mobile computer system with an integrated input and display device. The mobile computer system **100** includes a base unit **102**. Future references in the specification to base unit locations can be referred to in Table 1.

Table 1. Base Unit Locations

Base Unit Location	Figure 1A Element Number
Top	104
Bottom	106
Left	108
Right	110
Front	112
Back	114

The surfaces of the left, top, and back sides are not visible in **Figure 1A**, although the element number arrows referring to those sides in the Figure do point to an edge of each of

their respective surfaces. For further clarification, the left side of the base unit is the side that faces the opposite direction as the right side, the top side of the base unit is the side that faces the opposite direction as the bottom side, and the back side of the base unit is the side that faces the opposite direction as the front side. In one embodiment, a keyboard **116** is coupled to the front side of the base unit **102**. In one embodiment, the base unit **102** also contains a central processing unit, a motherboard, system memory, a graphics controller, among other components. In one embodiment, a primary display **118** is coupled to the base unit **102**. Additionally, in one embodiment, an integrated input and display device **120** is coupled to the base unit **102**.

[00028] **Figure 1B** is a close-up view of one embodiment of the integrated input and display device in **Figure 1A**. In one embodiment, the integrated input and display device (**120** in **Figure 1A**) has a touch-sensitive display screen **122** and buttons **124** to function similarly to computer mouse buttons. In different embodiments, there may be one, two, three, or any other number of buttons **124**. In another embodiment, there may be no buttons **124** and entering input can be accomplished by certain finger or pen-based tapping strokes applied directly to the touch-sensitive display screen **122**.

[00029] **Figure 2A describes one embodiment of the components of an integrated input** and display device. In this embodiment, the exterior surface of the touch-sensitive display screen, the surface that the user actually comes in contact with, is a transparent protective layer **204**. Immediately below the transparent protective layer **204** is a digitizer grid layer **202**. Then immediately below the digitizer grid layer **202** is the display screen **200**. In this embodiment, the digitizer grid layer **202** must be transparent to allow visual data from the display screen to be seen by a user through both the digitizer grid layer **202** and the transparent protective layer **204**. In different embodiments, the display screen **200** may be an active thin-film transistor (TFT) screen, another form of

liquid crystal display (LCD) screen, an organic light emitting diode (LED) screen, or one of any number of types of display screens.

[00030] In one embodiment, the digitizer grid layer **202** is pressure sensitive. Thus, it senses objects, such as a pen or a finger, that make contact with the transparent protective layer **204**. The digitizer grid layer **202** converts the point touched on the grid to digital coordinates. The coordinates are then used in one or more functions associated with the integrated input and display device. In one embodiment, the transparent protective layer **204** is flexible to allow contact pressure to permeate through to the pressure-sensitive grid layer **202**. The buttons **208** associated with the integrated input and display device provide additional user input. These buttons **208** function similarly to computer mouse buttons. In different embodiments, there may be any number of buttons associated with the integrated input and display device (including zero).

[00031] Once the digitizer grid layer **202** senses an object applying pressure at a point on the grid, it sends the digital coordinates of that point (or points) to the digitizer – touch pad controller logic and interface (hereafter referred to as the "digitizer controller") **206**. In one embodiment, the digitizer grid layer **202** samples all of its X-Y grid positions at a predetermined time interval (e.g. 30 times per second) to send any external pressure input to the digitizer controller **206**. In another embodiment, the digitizer grid layer **202** operates on an interrupt routine and sends pressure input to the digitizer controller as soon as the input is available. In one embodiment, input from the buttons **208** is also sent to the digitizer controller **206** in the same fashion. In one embodiment, the digitizer controller **206** first converts the pressure input digital coordinates and the button input into data that can be sent to bus interface **210**. In another embodiment, data received from the digitizer grid layer **202** and the buttons **208** is already in a format compatible with the bus interface.

Thus, in this embodiment, the digitizer controller **206** sends the data to the bus interface **210** when it receives the data.

[00032] The bus interface **210** routes data sent from the digitizer controller **206** to one or more appropriate destination. The destination (or destinations) of the data may depend on what is creating the pressure input. In one embodiment, if the pressure input is from a finger, the display screen **200** is not used because the integrated input and display device is being utilized in a touchpad function mode. In this mode, the integrated input and display device is substituting for an external mouse peripheral device and no special display functionality is needed on the display screen **200**. Thus, in this embodiment, the bus interface **210** routes data to the rest of the computer system connected to the integrated input and display device via bus **214**. In different embodiments, bus **214** may be a Universal Serial Bus (USB), a Peripheral Component Interconnect (PCI) bus, a 1394 bus, or any other bus capable of transmitting data from the integrated input and display device to the connected computer system.

[00033] In another embodiment, if the pressure input is from a digitizer pen, the display screen **200** is used because the user is writing on the integrated input and display device and the display screen **200** will then display the recorded pen strokes (this function will attempt to closely mimic a person writing with a normal pen on a piece of paper). In this embodiment, the bus interface **210** routes data both to the rest of the computer system connected to the integrated input and display device via bus **214** as well as to display unit controller logic and interface (hereafter referred to as the "display controller") **212**. The display controller **212** then interprets the coordinate data sent from digitizer controller **206** and sends display data to the display screen **200** to activate the pixels on the display screen **200** that correspond with the coordinate data.

[00034] In order to function properly, the integrated input and display device needs to be aware of the instrument being used for pressure input. In one embodiment, one of the buttons **208** is used to switch between the touch pad input function and the pen stroke digitizer input function. In this embodiment, the user can notify the digitizer controller which type of input (i.e. finger or pen) is being currently used by pressing the button. In another embodiment, the digitizer controller **206** dynamically determines whether a finger or a pen is creating the pressure on the digitizer grid layer **202**. In this embodiment, the digitizer controller discerns the number of adjacent X-Y grid locations where pressure is simultaneously applied. If a low number of adjacent grid locations have simultaneous pressure applied, then the determination is made that a pen is contacting the grid. Otherwise, if a high number of adjacent grid locations have simultaneous pressure applied, then the determination is made that a fingertip is contacting the grid.

[00035] **Figure 2B** describes another embodiment of the components of an integrated input and display device. Unless specified, each particular component described in **Figure 2A** has the same functionality as the corresponding component in **Figure 2B**. Thus for a detailed description of the functionality of a component in **Figure 2B** please refer to the respective component discussed in the specification above referring to **Figure 2A**. In this embodiment, the exterior surface of the touch-sensitive display screen, the surface that the user actually comes in contact with, is a transparent protective layer **224**. Immediately below the transparent protective layer **224** is the display screen **222**. Then immediately below the display screen **222** is a digitizer grid layer **220**. In this embodiment, the transparent protective layer **224** and the display screen **222** allows capacitive or electro-magnetic signals be permeated through to the digitizer grid layer **220**. The buttons **228** associated with the integrated input and display device send additional user input.

[00036] Once the digitizer grid layer **220** senses an object applying capacitance or electro-magnetic signal at a point on the grid, it sends the digital coordinates of that point (or points) to the digitizer controller **226**. Additionally, the digitizer controller **226** also receives button input data from the user's interaction with the buttons **228**. The digitizer controller **226** sends the digital coordinates and the button input data to the bus interface **230**. In different embodiments, the digitizer controller **226** may or may not convert the data received to a certain bus format.

[00037] The bus interface 230 routes data sent from the digitizer controller 226 to one or more appropriate destinations. In one embodiment, the data is sent solely to the rest of the computer system connected to the integrated input and display device via bus **234**. In another embodiment, the bus interface **230** routes data both to the rest of the computer system connected to the integrated input and display device via bus **234** as well as to the display controller **232**. The display controller **232** then interprets the coordinate data sent from digitizer controller **226** and sends display data to the display screen **222** to activate the pixels on the display screen **222** that correspond with the coordinate data.

[00038] **Figure 3A-3D** display four separate functions of one embodiment of the integrated input and display device. These functions are illustrative of some of the capabilities of the integrated input and display device but they are not an exhaustive list of possible functions. In **Figure 3A** a digitizer pen is used in combination with the integrated input and display device in one embodiment to write in script format. In one embodiment, a computer system coupled to the integrated input and display device is capable of handwriting recognition. Thus, the user would be able to input words and sentences in a standard pen-based writing style instead of typing them in using a keyboard. In one embodiment, the integrated input and display device inputs the writing into the computer system and displays the writing in real time on the device's display screen.

[00039] In **Figure 3B** a digitizer pen is used in combination with the integrated input and display device in one embodiment to write characters in Chinese, Japanese, Korean, or another complex character-based language. In one embodiment, a computer system coupled to the integrated input and display device is capable of complex character language recognition (such as Chinese). Thus, the user would be able to use a standard pen-based writing style to input words and sentences of Chinese, Japanese, Korean or another complex character-based language into the computer system. In one embodiment, the integrated input and display device inputs the writing into the computer system and displays the writing in real time on the device's display screen.

[00040] In **Figure 3C** a digitizer pen is used in combination with the integrated input and display device in one embodiment to create drawings. In one embodiment, the integrated input and display device inputs the drawing strokes into the computer system and displays the drawing strokes in real time on the device's display screen.

[00041] In **Figure 3D** a user interacts with the integrated input and display device in one embodiment with one or more fingers. In one embodiment, the integrated input and display device functions the same as a standard touchpad input device to move a cursor and interact with the computer system's primary display screen.

[00042] **Figure 4A** displays one embodiment of a rotatable integrated input and display device coupled to the base unit of a mobile computing device. In one embodiment, the base unit **400** is coupled to an integrated input and display device **402**. In one embodiment, the integrated input and display device **402** is rotatable in relationship to the base unit **400**.

[00043] **Figure 4B** is a close-up view of one embodiment of the rotatable integrated input and display device coupled to the base unit. In one embodiment, the integrated input and display device **402** can rotate **404** around an axis **406** in an opening in the base unit.

The axis **406** runs parallel to the bottom side of the base unit (refer to **Table 1** and **Figure 1A** for reference to the bottom side of the base unit).

[00044] **Figure 4C** is a detailed view of the opening in the base unit without the integrated input and display device in one embodiment. In one embodiment, a left shaft **408** is located in the left side wall **410** of the opening and a right shaft **412** is located in the right side wall **414** of the opening. The two shafts are in line with axis **406**.

[00045] **Figure 4D** is a view of one embodiment of the rotatable integrated input and display device without the accompanying base unit. In one embodiment, a left pin **416** is protruding out of the left side of the rotatable integrated input and display device **402** and a right pin **418** is protruding out of the right side of the rotatable integrated input and display device **402**. The two pins are in line with the axis **406** and allow the rotatable integrated input and display device **402** to rotate **404** around the axis **406**.

[00046] In one embodiment, the left and right pins (**416** and **418** in **Figure 4D**) are placed into the left and right shafts (**408** and **412** in **Figure 4C**) to couple the rotatable integrated input and display device to the base unit in the opening. The result of this coupling is shown in **Figures 4A** and **4B**. In one embodiment, the diameter of each pin is slightly less than the diameter of each respective shaft. In this embodiment, the pins fit securely in the shafts but also are loose enough to allow for their rotation (**404** in **Figure 4B**) around the axis (**406** in **Figure 4B**). The rotatable integrated input and display device (**402** in **Figure 4A**) is additionally coupled to the base unit (**400** in **Figure 4A**) with one or more electrical and bus communication lines. The lines allow the rotatable integrated input and display device to receive power and communicate with the base unit. In one embodiment, these one or more lines run from an internal location within the rotatable integrated input and display device through one pin and into the base unit through an opening in the base of the respective shaft (i.e. the deep end of the shaft away from the

opening). In another embodiment, the lines run through both pins and through openings in the base of both shafts.

[00047] **Figure 5A** displays one embodiment of a rotatable integrated input and display device coupled to the base unit of a mobile computing device. In one embodiment, the base unit **500** is coupled to an integrated input and display device **502**. In one embodiment, the integrated input and display device **502** is rotatable in relationship to the base unit **500**.

[00048] **Figure 5B** is a close-up view of another embodiment of the rotatable integrated input and display device coupled to the base unit. In one embodiment, the integrated input and display device **502** can rotate **504** around an axis **506** in an opening in the base unit. The axis **506** runs parallel to the left and right sides of the base unit (refer to **Table 1** and **Figure 1A** for reference to the left and right sides of the base unit).

[00049] **Figure 5C** is a detailed view of the opening in the base unit without the integrated input and display device in another embodiment. In one embodiment, a top shaft **508** is located in the top wall **510** of the opening. The shaft is in line with axis **506**.

[00050] **Figure 5D** is a view of another embodiment of the rotatable integrated input and display device without the accompanying base unit. In one embodiment, a top pin **512** is protruding out of the top side of the rotatable integrated input and display device **502**. The pin is in line with the axis **506** and allows the rotatable integrated input and display device **502** to rotate **504** around the axis **506**.

[00051] In one embodiment, the top pin (**512** in **Figure 5D**) is placed into the top shaft (**508** in **Figure 4C**) to couple the rotatable integrated input and display device to the base unit in the opening. The result of this coupling is shown in **Figures 5A** and **5B**. In one embodiment, the diameter of the pin is slightly less than the diameter the shaft. In this embodiment, the pin fits securely in the shaft but is loose enough to allow for its rotation

(**504** in **Figure 5B**) around the axis (**506** in **Figure 5B**). The rotatable integrated input and display device (**502** in **Figure 5A**) is additionally coupled to the base unit (**500** in **Figure 5A**) with one or more electrical and bus communication lines. The lines allow the rotatable integrated input and display device to receive power and communicate with the base unit. In one embodiment, these one or more lines run from an internal location within the rotatable integrated input and display device through the pin and into the base unit through an opening in the base of the shaft (i.e. the deep end of the shaft away from the opening).

[00052] In some embodiments, the integrated input and display device, that is coupled to a mobile computing device, may function when the mobile computing device is closed. **Figures 6A-6D** display one embodiment of a sequence allowing the integrated input and display device to be utilized when the mobile computing device is closed.

[00053] **Figure 6A** is one embodiment of a mobile computer system with an integrated input and display device in an open position. The mobile computer system **600** includes a base unit **602**. In one embodiment, a keyboard **604** is coupled to the front side of the base unit **602**. In one embodiment, a primary display **606** is coupled to the top side of the base unit **602** with one or more hinges (refer to **Table 1** and **Figure 1A** for reference to the top side of the base unit). Additionally, in one embodiment, an integrated input and display device **608** is coupled to the base unit **602**.

[00054] **Figure 6B** is one embodiment of a mobile computer system with an integrated input and display device in a semi-closed position. The primary display **606** is in a partially closed position in relationship to the base unit **602**. In **Figure 6B** the side of the integrated input and display device (**608**) with the display screen and buttons (referred to in **Figure 1B**) has been substantially rotated to a position facing the back side of the base unit (refer to **Table 1** and **Figure 1A** for reference to the back side of the base unit).

[00055] **Figure 6C** is one embodiment of a mobile computer system with an integrated input and display device in a closed position. The primary display **606** is in a completely closed position in relationship to the base unit **602**. In **Figure 6C** the side of the integrated input and display device (**608**) with the display screen and buttons (referred to in **Figure 1B**) has been fully rotated to a position facing the back side of the base unit (refer to **Table 1** and **Figure 1A** for reference to the back side of the base unit).

[00056] **Figure 6D** is another embodiment of a mobile computer system with an integrated input and display device in a closed position. As in **Figure 6C**, the primary display **606** is in a completely closed position in relationship to the base unit **602**. Though, in this embodiment, the entire mobile computing device has been rotated **610** so that the back side of the base unit **602** is visible (refer to **Table 1** and **Figure 1A** for reference to the back side of the base unit). Additionally, the side of the integrated input and display device (**608**) with the display screen and buttons (referred to in **Figure 1B**) has been fully rotated to a position facing the back side of the base unit. Thus, the display screen and buttons of the integrated input and display device are also visible.

[00057] **Figure 6E** is one embodiment of a close-up view of the integrated input and display device in **Figure 6D**. Once the mobile computer system is closed the integrated input and display device **608** may have many different functionalities. In different embodiments, the integrated input and display device **608** may be operable to display information such as wireless network signal strength, incoming emails, reminders for meetings, and battery life among many other functions.

[00058] Thus, embodiments of an integrated input and display device for a mobile computer are disclosed. **These** embodiments have been described with reference to specific exemplary embodiments thereof. It will, however, be evident to persons having the benefit of this disclosure that various modifications and changes may be made to these

embodiments without departing from the broader spirit and scope of the embodiments described herein. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

What is claimed is:

1. A device, comprising:

a primary display unit;

a base unit coupled to the primary display unit;

a touch-sensitive secondary display unit, coupled to the base unit, operable to receive input from a user and display information for the user.

2. The device of claim 1, wherein the base unit further comprises an opening operable to house at least a portion of the secondary display unit in a recessed location.

3. The device of claim 2, wherein the secondary display unit further comprises:

a touch-sensitive display screen located on the front side of the unit; and

a protective housing located on the back side of the unit.

4. The device of claim 3, further comprising one or more pivot shafts, the one or more pivot shafts are operable to couple the secondary display unit to the base unit at one or more locations in the opening.

5. The device of claim 4, wherein the one or more pivot shafts are further operable to allow at least a portion of the secondary display unit to rotate in the opening.

6. The device of claim 5, further comprising one pivot shaft, wherein the pivot shaft couples the center of the top of the secondary display unit to the top of the opening.

7. The device of claim 5, further comprising two pivot shafts, wherein a first pivot shaft couples the center of the left side of the secondary display unit to the left side of the opening and a second pivot shaft couples the center of the right side of the secondary display unit to the right side of the opening.

8. The device of claim 5, wherein the base unit further comprises:

a front side, the front side including a keyboard; and

a back side.

9. The device of claim 8, further operable to allow the secondary display unit to be operational when the display screen is facing the same direction as the front side of the base unit and when the display screen is facing the same direction as the back side of the base unit.

10. The device of claim 9, further comprising a hinge, the hinge coupling the bottom of the primary display unit to the top of the base unit, to allow the primary display unit to close and attach to the front side of the base unit.

11. The device of claim 10, further operable to allow the secondary display unit to be operational when the display screen is facing the same direction as the back side of the base unit only if the primary display unit is closed and attached to the front side of the base unit.

12. The device of claim 1, wherein the secondary display unit is further operable to provide movement input for a mouse cursor on the primary display unit.

13. The device of claim 1, wherein the touch-sensitive display screen is further operable to accept handwriting input.

14. A device, comprising:

a keyboard;

a touch-sensitive display screen; and

a bus, the bus operable to transmit information keyed into the keyboard and information input on the touch-sensitive display to an I/O bus in a computer system.

15. The device of claim 14, wherein the touch-sensitive display screen is operable to provide cursor movement input for transmission across the bus.

16. The device of claim 14, wherein the touch-sensitive display screen is operable to provide handwriting input for transmission across the bus.

17. The device of claim 14, wherein the touch-sensitive display screen is operable to display information input on the device.

18. A system, comprising:

a bus;

a primary display unit;

a computer base unit coupled to the primary display unit and to the bus; and

a touch-sensitive secondary display unit, coupled to the bus, operable to receive input from a user and display information for the user.

19. The system of claim 18, wherein the base unit further comprises an opening operable to house at least a portion of the secondary display unit in a recessed location.

20. The system of claim 19, wherein the secondary display unit further comprises:

a touch-sensitive display screen located on the front side of the unit; and

a protective housing located on the back side of the unit.

21. The system of claim 20, further comprising one or more pivot shafts, the one or more pivot shafts are operable to:

couple the secondary display unit to the base unit at one or more locations in the opening; and

house at least a portion of the bus.

22. The system of claim 21, wherein the one or more pivot shafts are further operable to allow at least a portion of the secondary display unit to rotate in the opening.

23. The system of claim 22, further comprising one pivot shaft, wherein the pivot shaft couples the center of the top of the secondary display unit to the top of the opening.

24. The system of claim 22, further comprising two pivot shafts, wherein a first pivot shaft couples the center of the left side of the secondary display unit to the left side of the opening and a second pivot shaft couples the center of the right side of the secondary display unit to the right side of the opening.

25. The system of claim 22, wherein the base unit further comprises:

a front side, the front side including a keyboard; and

a back side.

26. The system of claim 25, wherein the system is further operable to allow the secondary display unit to be operational when the display screen is facing the same direction as the front side of the base unit and when the display screen is facing the same direction as the back side of the base unit.

27. The system of claim 18, wherein the secondary display unit is further operable to provide movement input for a mouse cursor on the primary display unit.

28. The system of claim 18, wherein the secondary display unit is further operable to provide handwriting input.

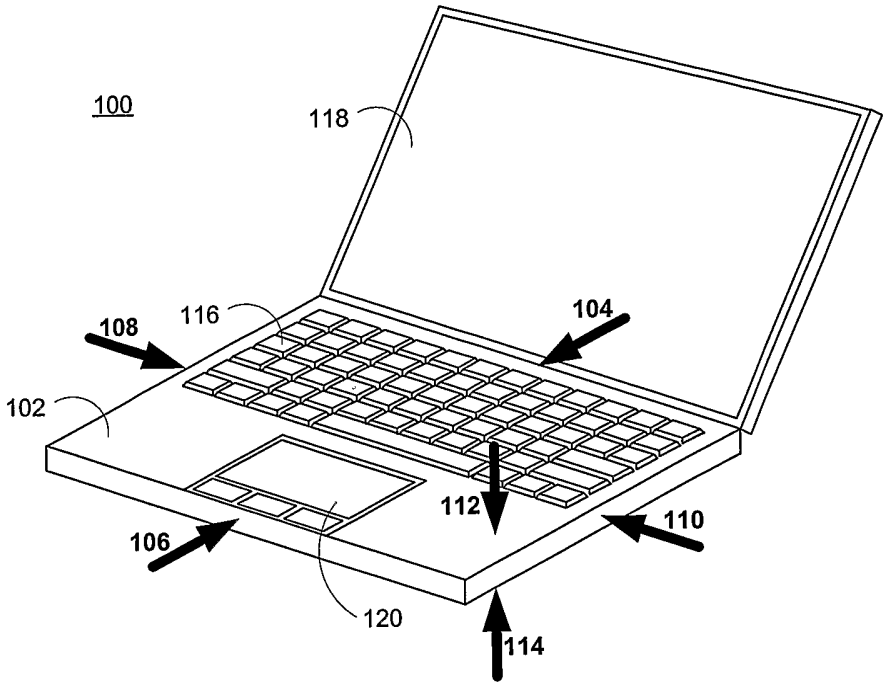

FIG. 1A

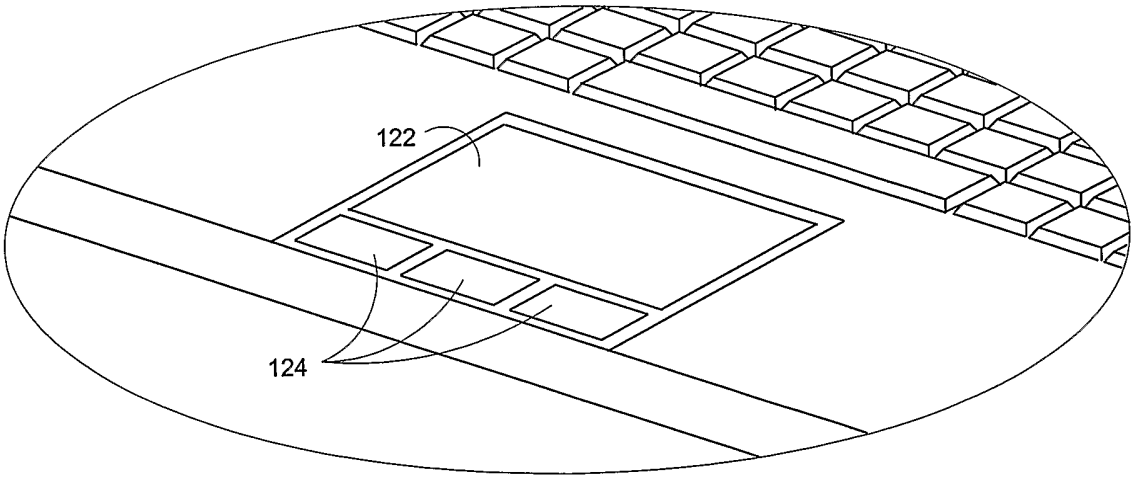

FIG. 1B

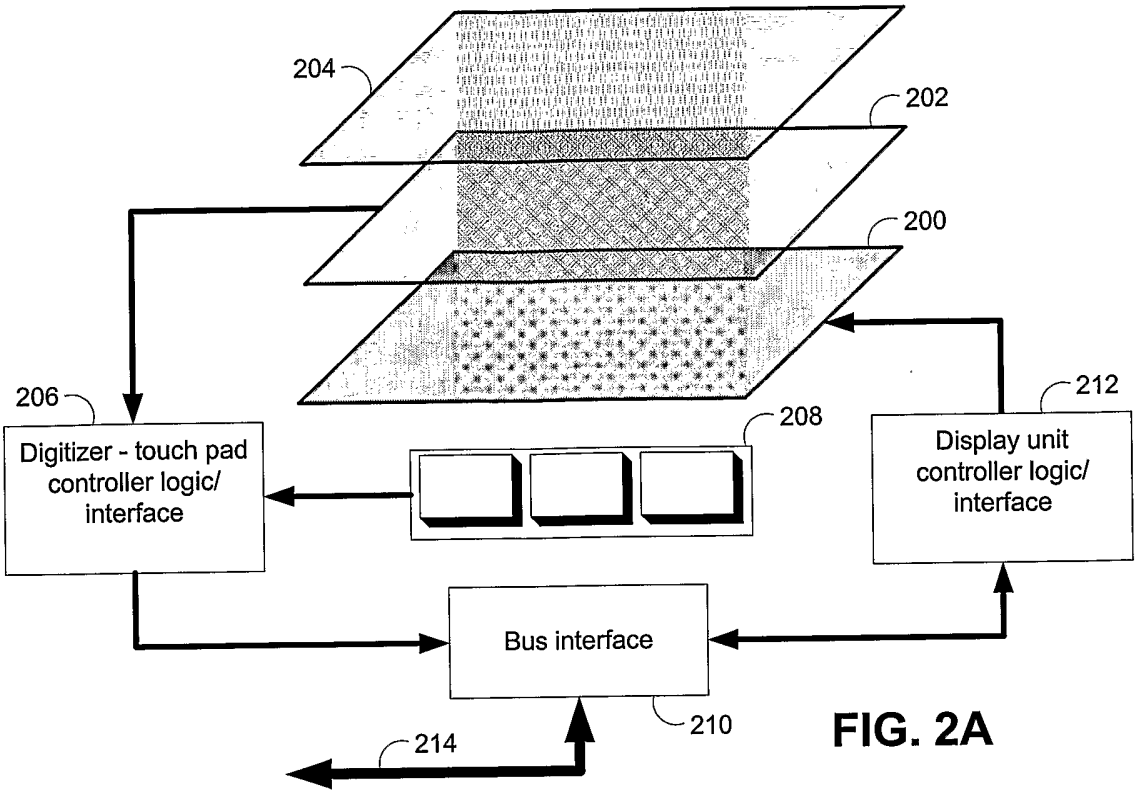
204
202
200
206
Digitizer - touch pad controller logic/ interface
208
212
Display unit controller logic/ interface
Bus interface
210
214

FIG. 2A

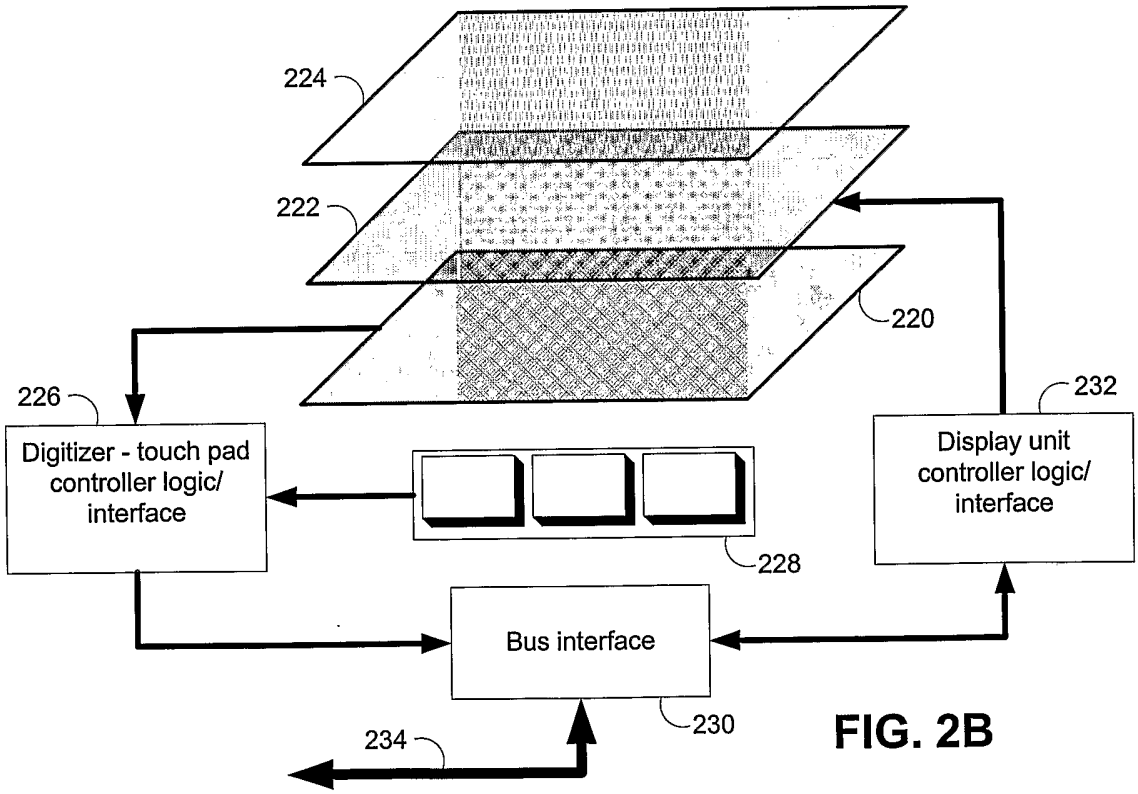
224
222
220
226
Digitizer - touch pad controller logic/ interface
232
Display unit controller logic/ interface
228
Bus interface
230
234

FIG. 2B

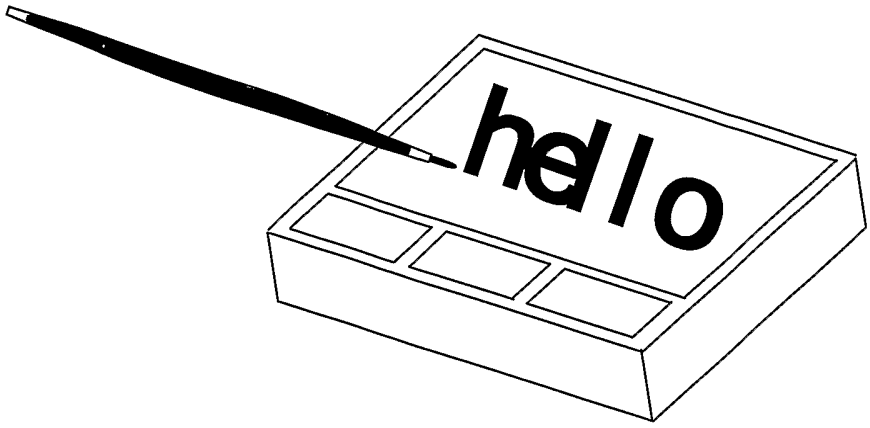

FIG. 3A

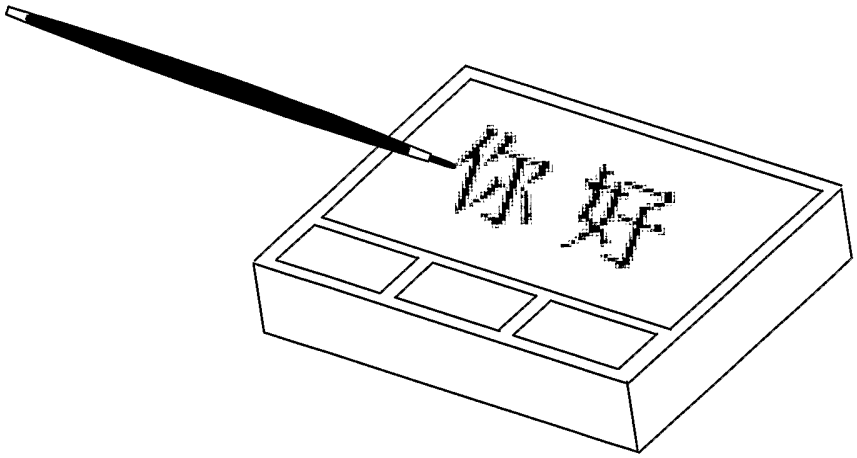

FIG. 3B

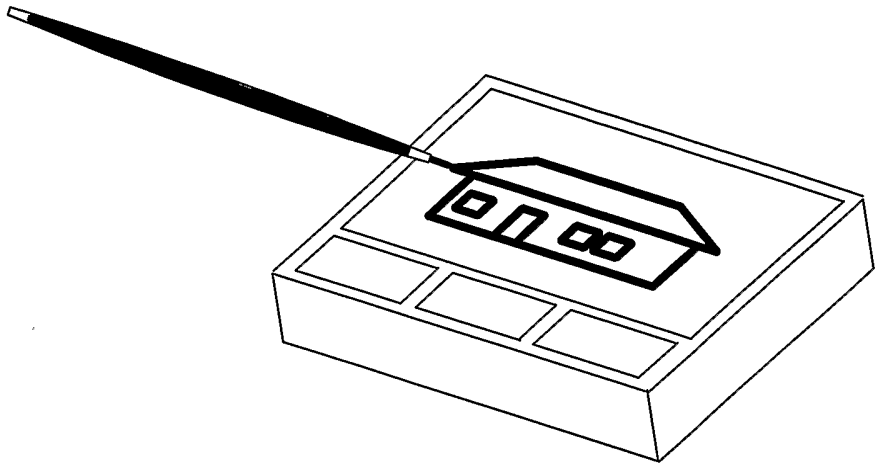

FIG. 3C

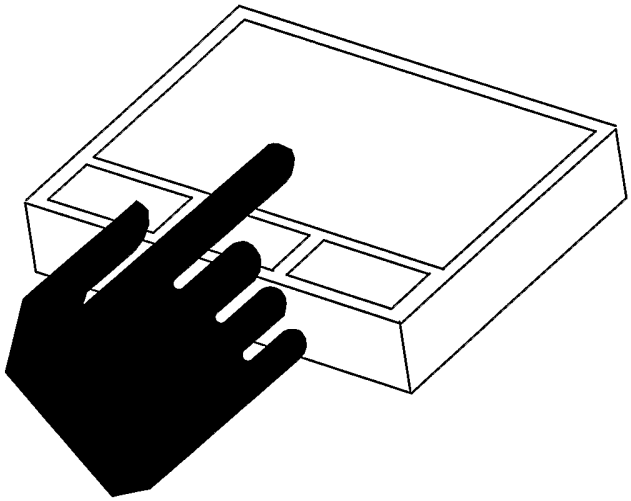

FIG. 3D

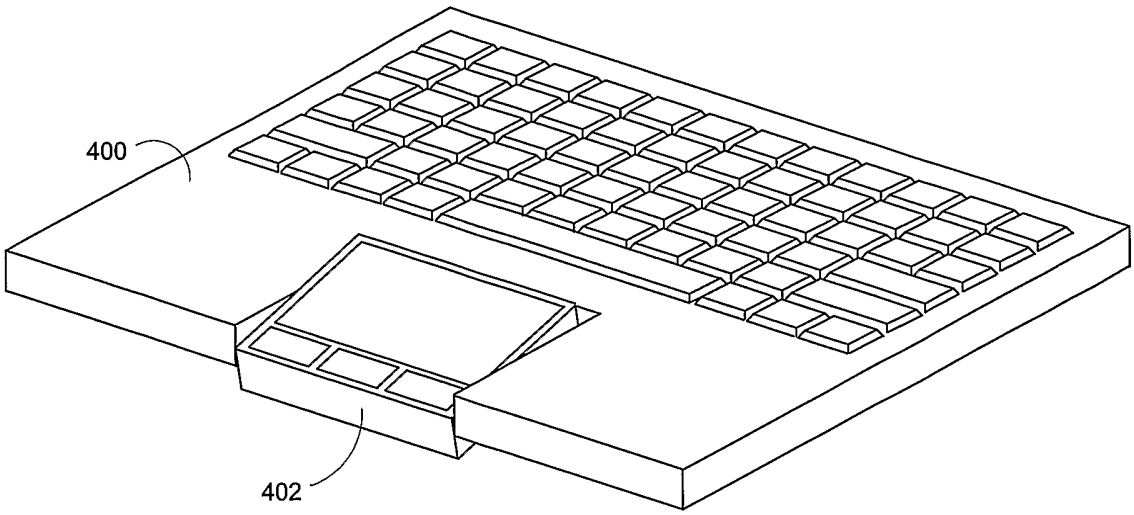

FIG. 4A

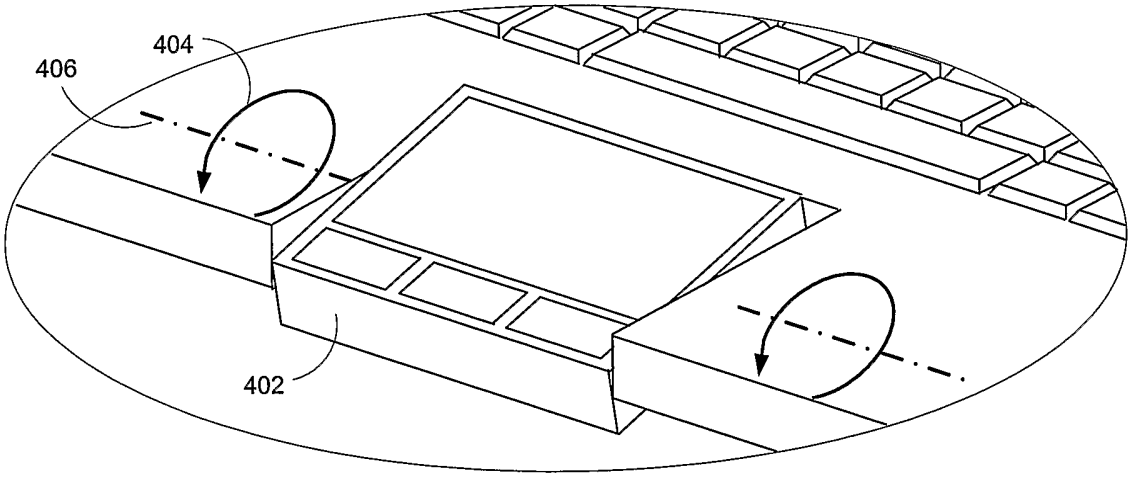

FIG. 4B

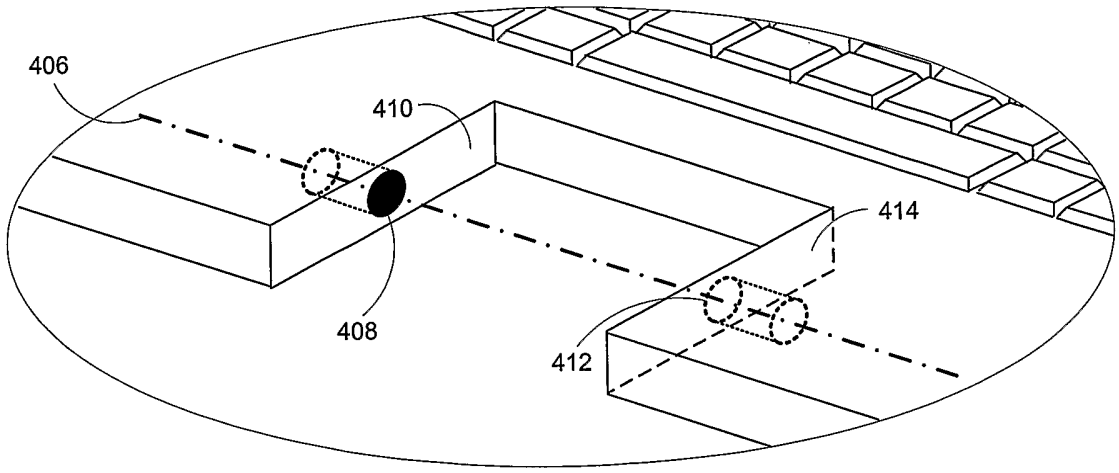

FIG. 4C

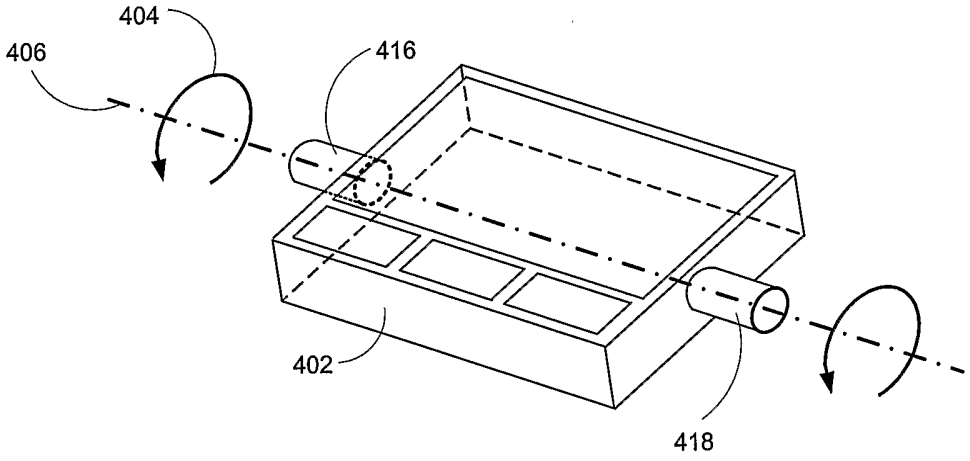

FIG. 4D

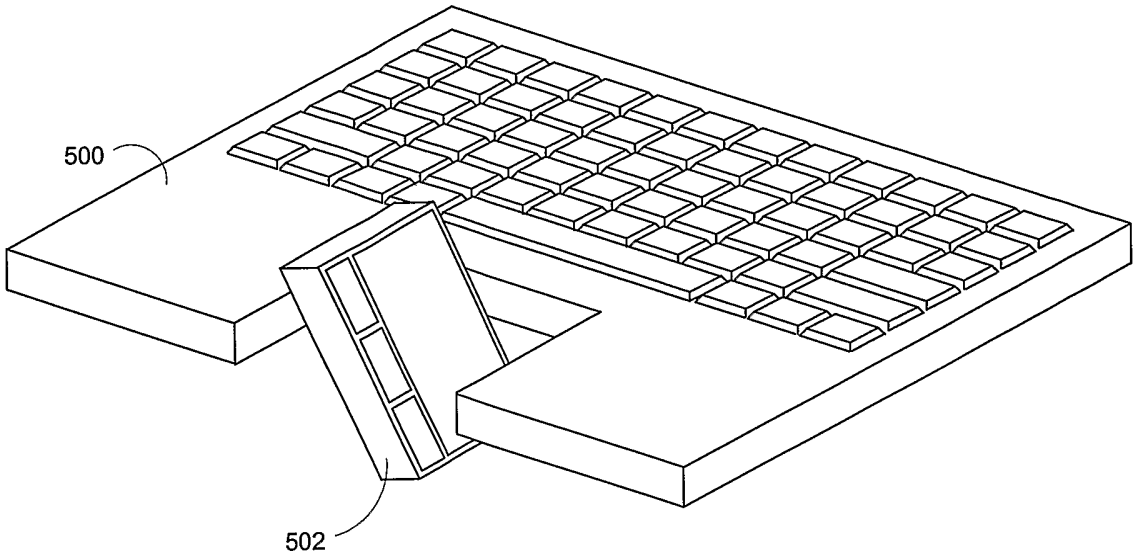

FIG. 5A

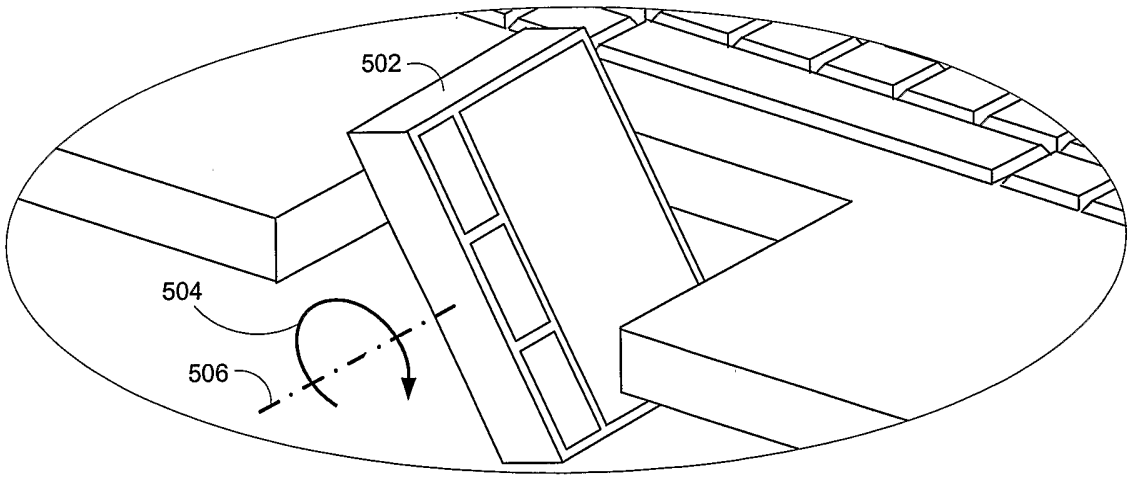

FIG. 5B

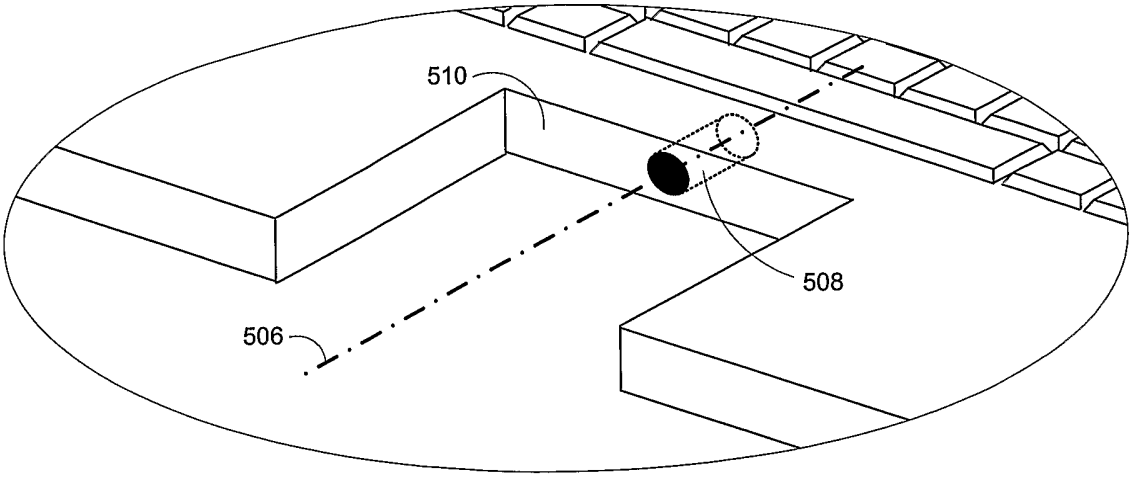

FIG. 5C

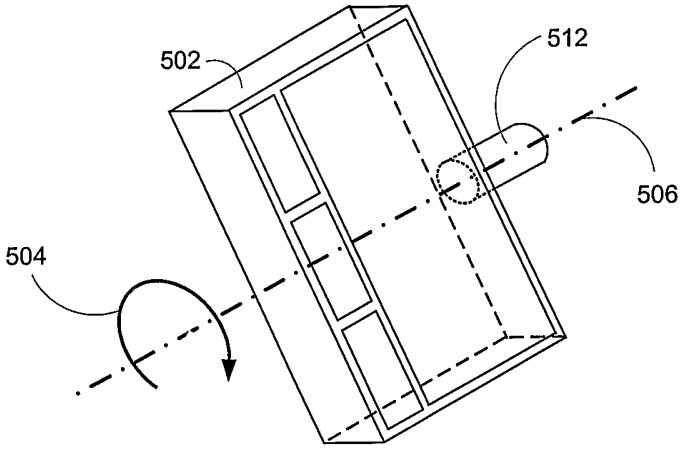

FIG. 5D

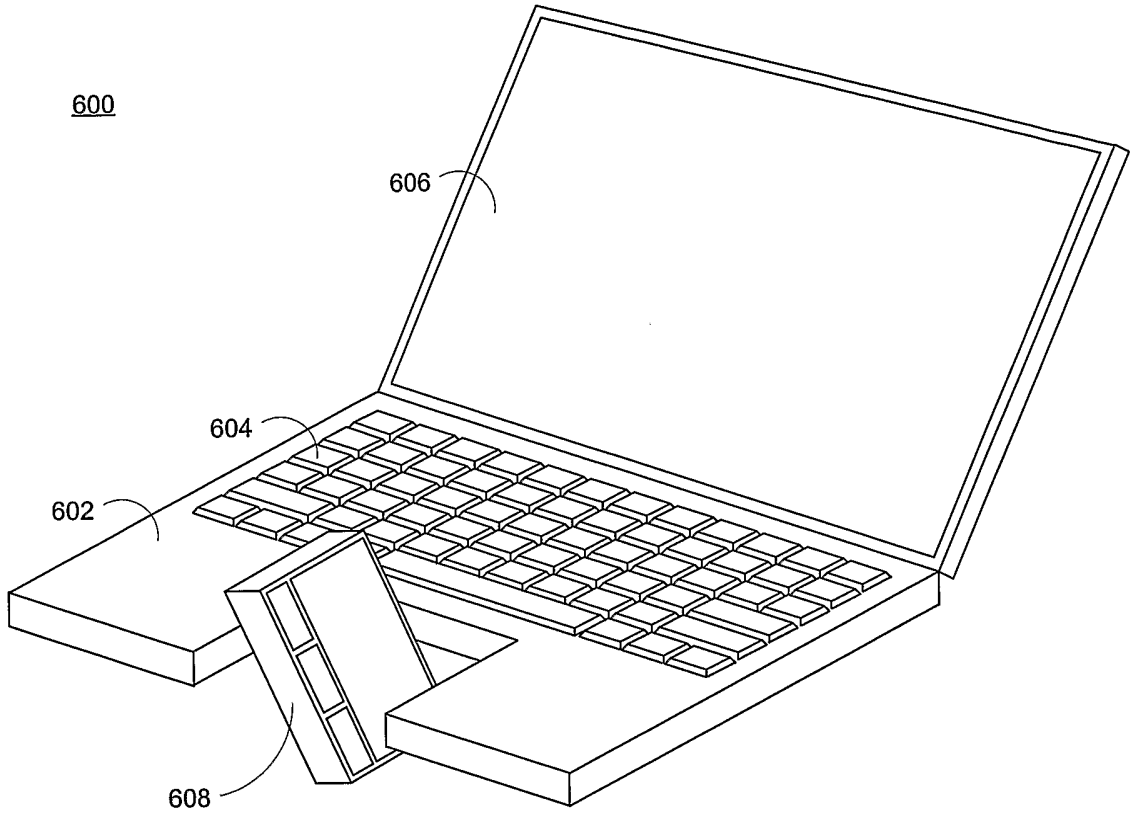

FIG. 6A

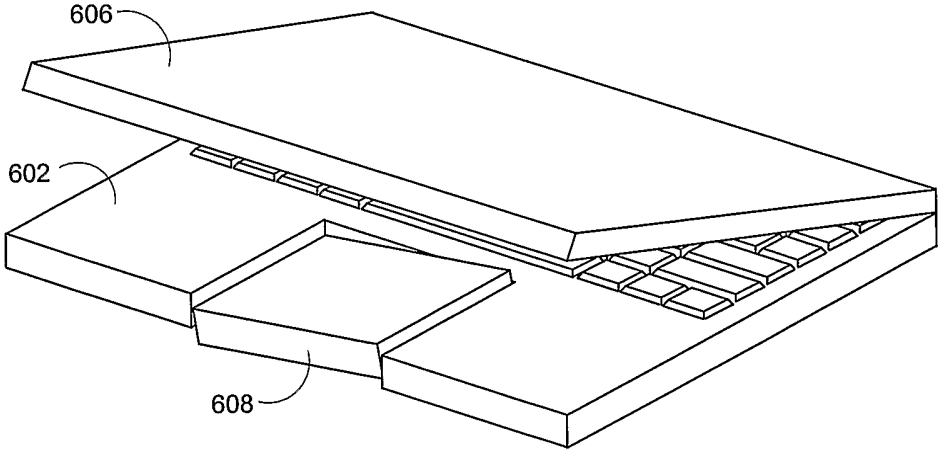

FIG. 6B

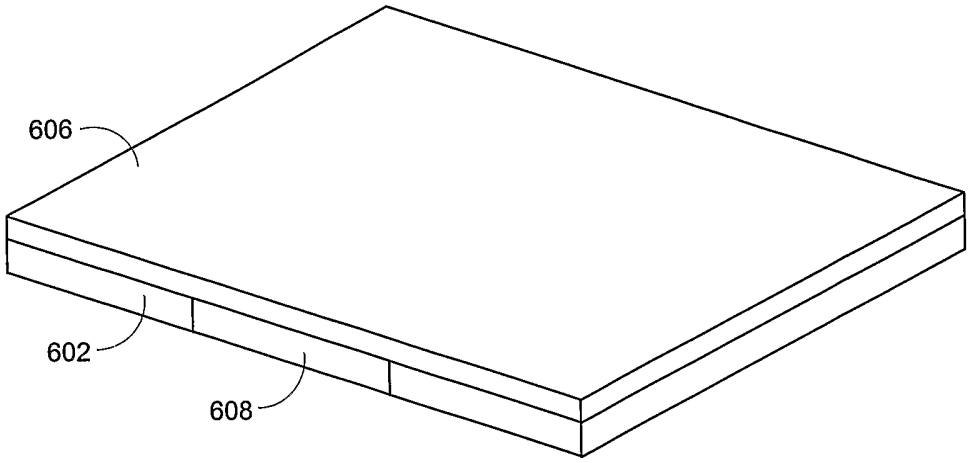

FIG. 6C

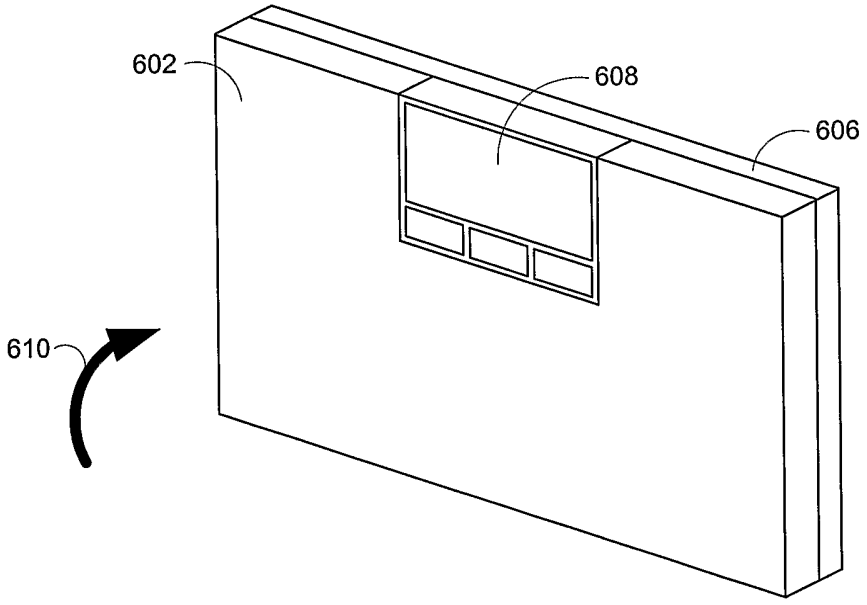

FIG. 6D

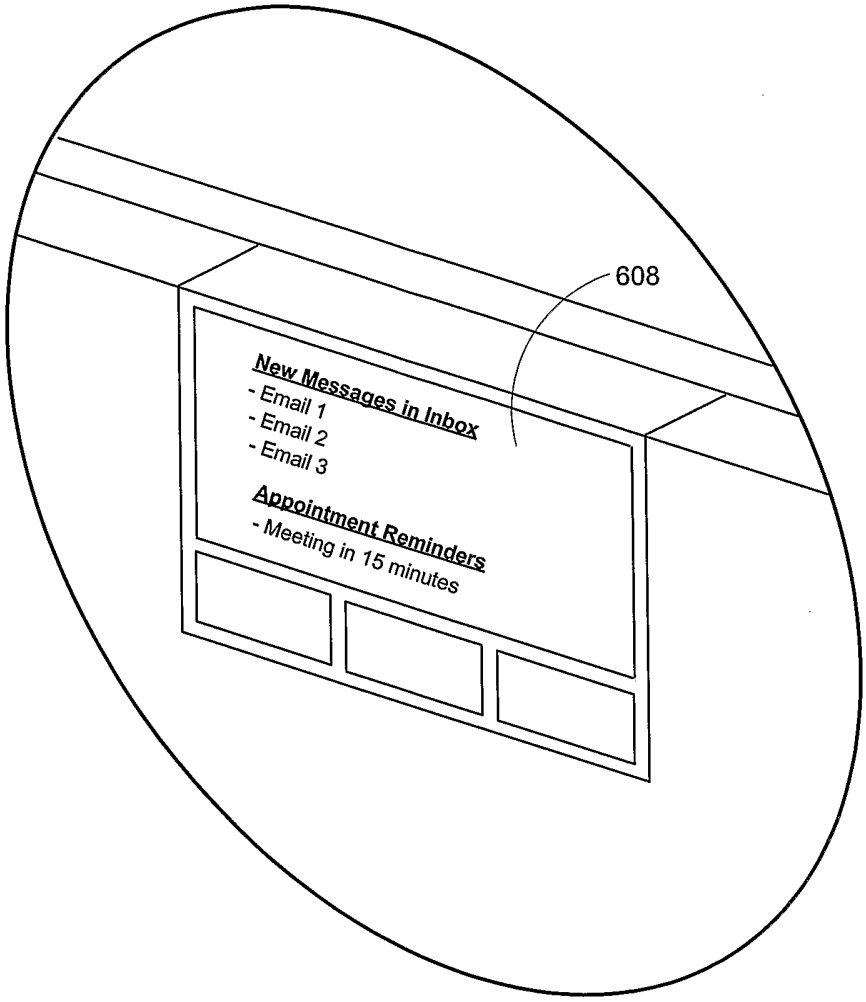
608
New Messages in Inbox
- Email 1
- Email 2
- Email 3
Appointment Reminders
- Meeting in 15 minutes

FIG. 6E