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(54) APPARATUS DISPLAY

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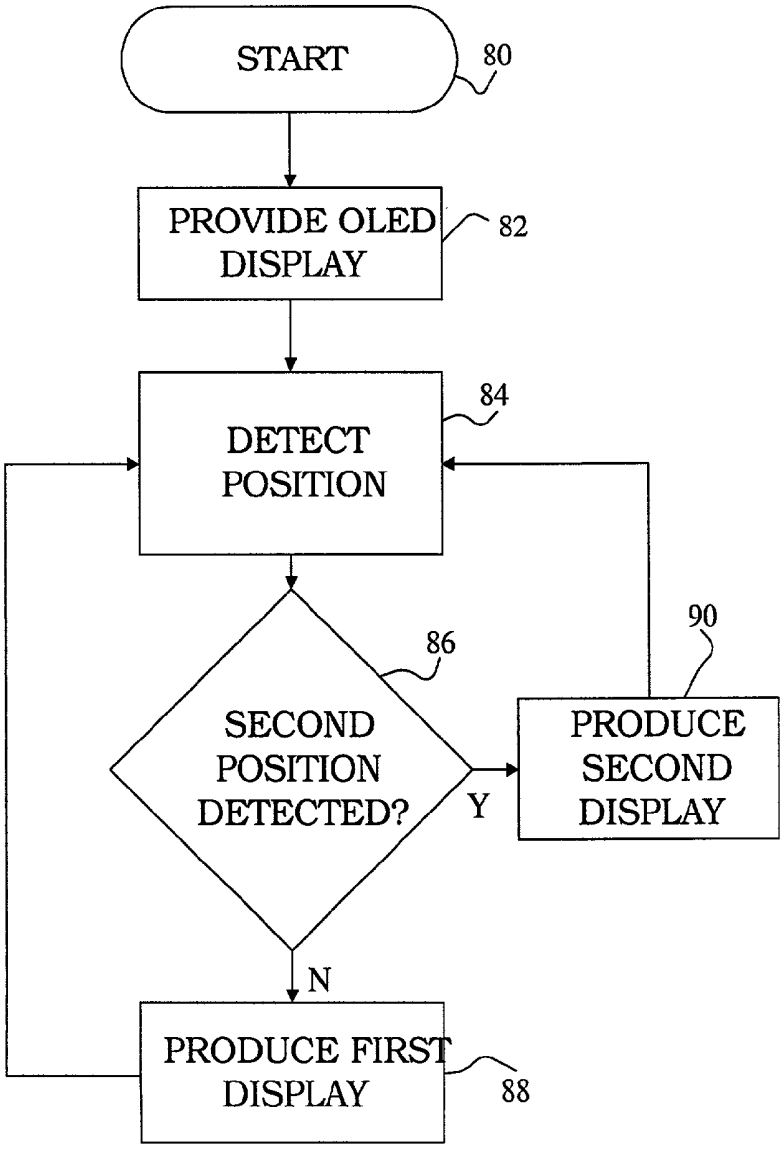
(57) ABSTRACT

A display for an apparatus. An OLED display, capable of displaying a first display viewable at a first surface and a second display viewable at a second-surface, responds to a detector to display either the first or the second display. The detector may determine whether to display the first or the second display depending on a position of all or a portion of the apparatus.



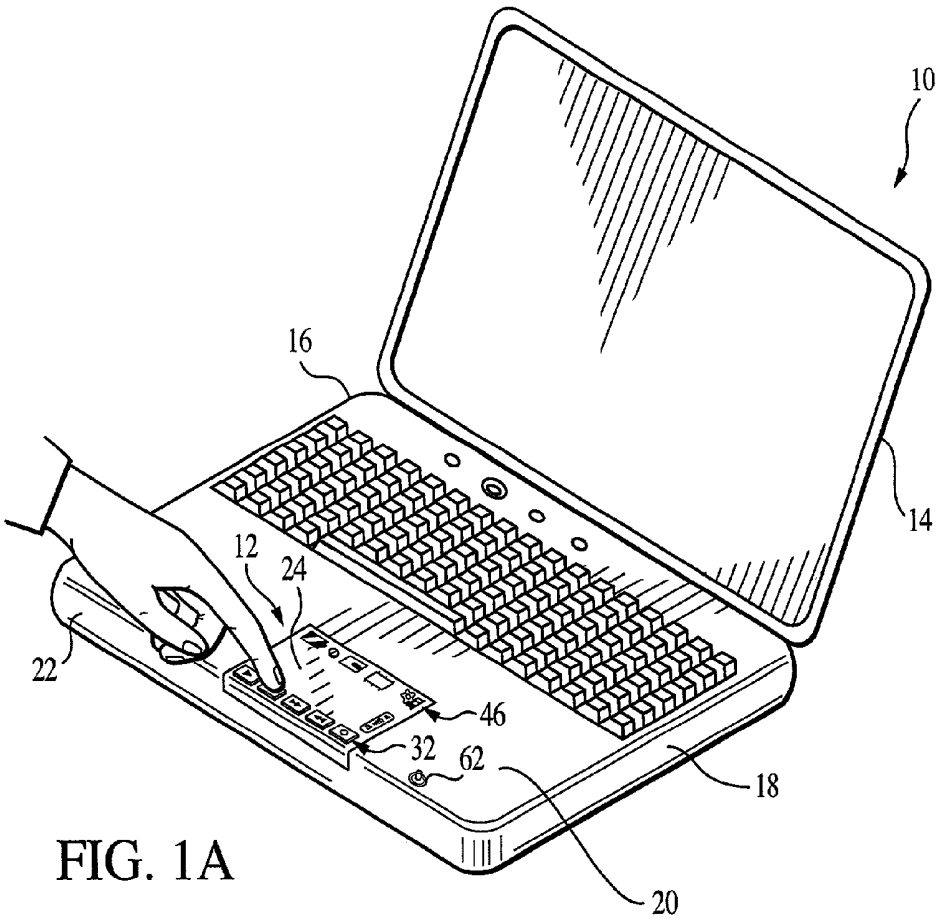

10
16
14
12
24
22
46
32
62
18
20

FIG. 1A

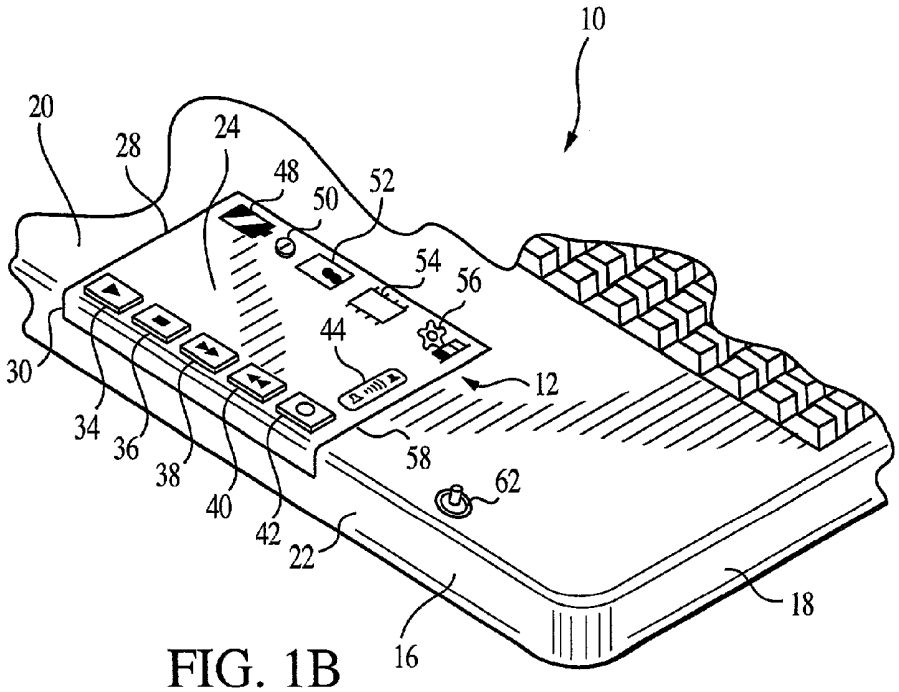

10
20
28
24
48
50
52
54
56
44
30
12
34
36
38
40
42
58
62
22
18
16

FIG. 1B

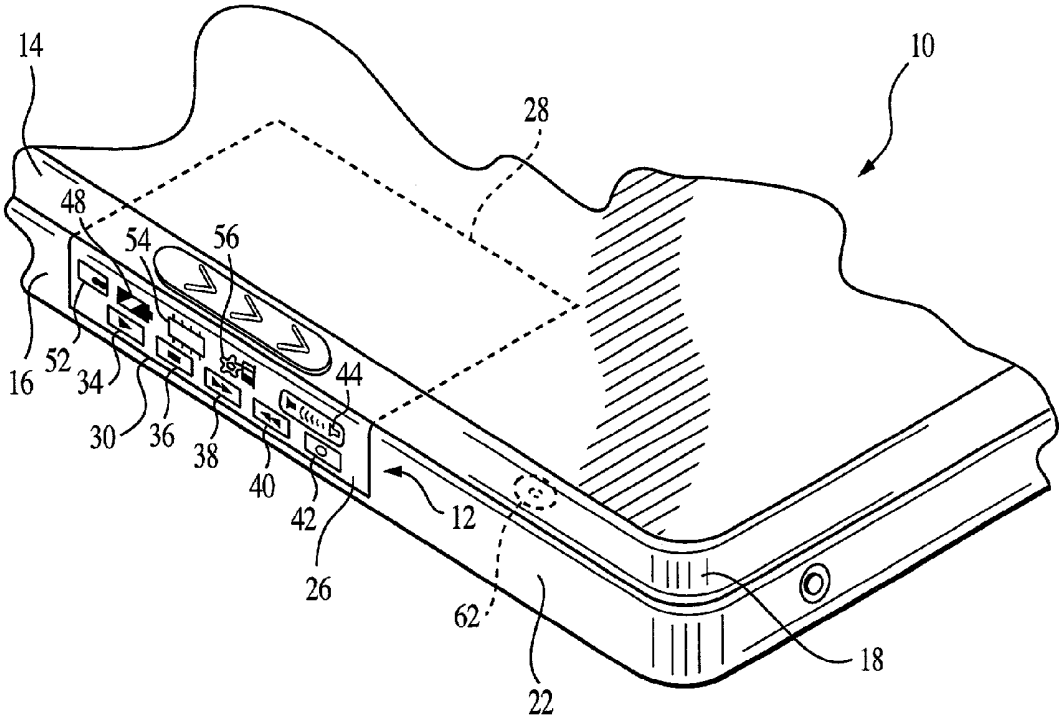


FIG. 2

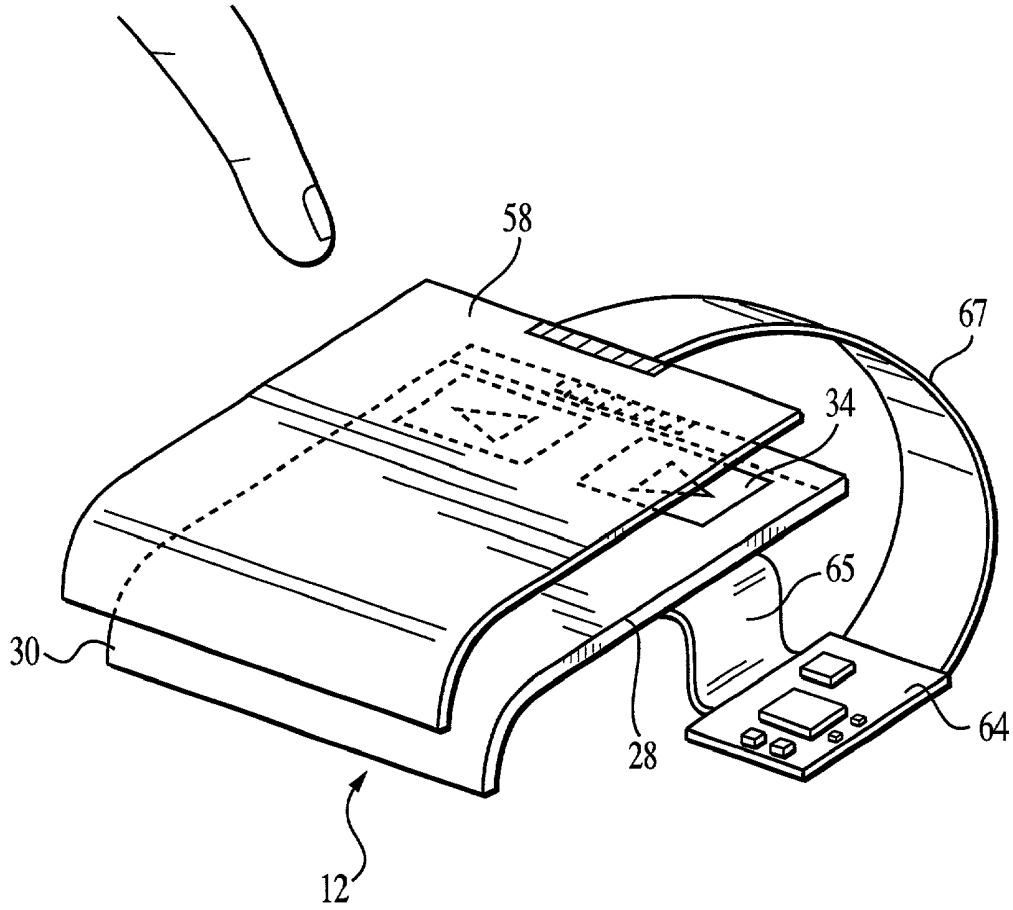


FIG. 3

FIG. 4

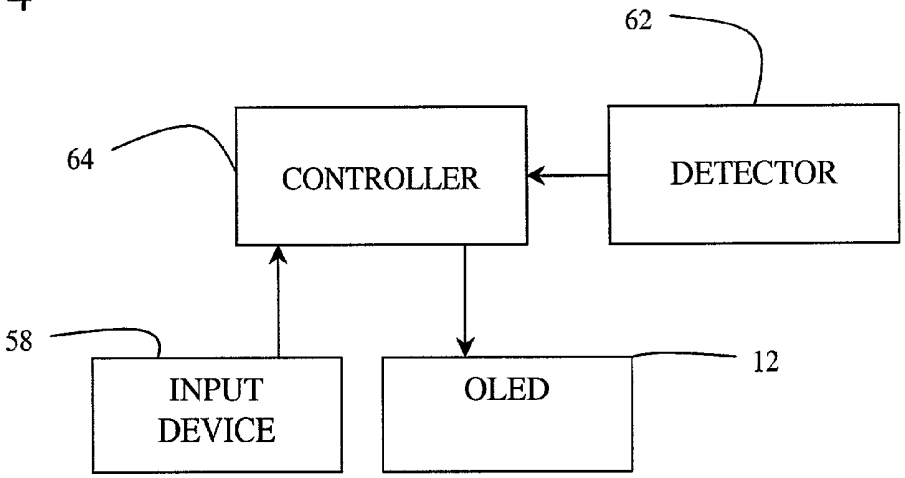
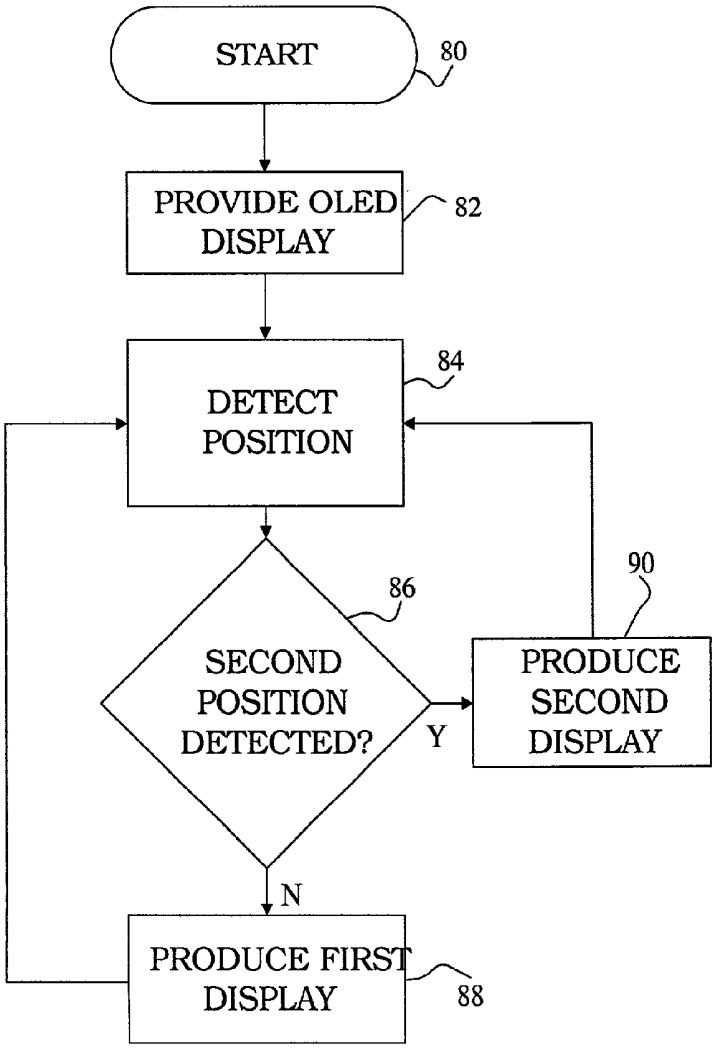

62
64
CONTROLLER
DETECTOR
58
INPUT DEVICE
OLED
12

FIG. 7


START
80
PROVIDE OLED DISPLAY
82
DETECT POSITION
84
SECOND POSITION DETECTED?
86
Y
N
PRODUCE SECOND DISPLAY
90
PRODUCE FIRST DISPLAY
88

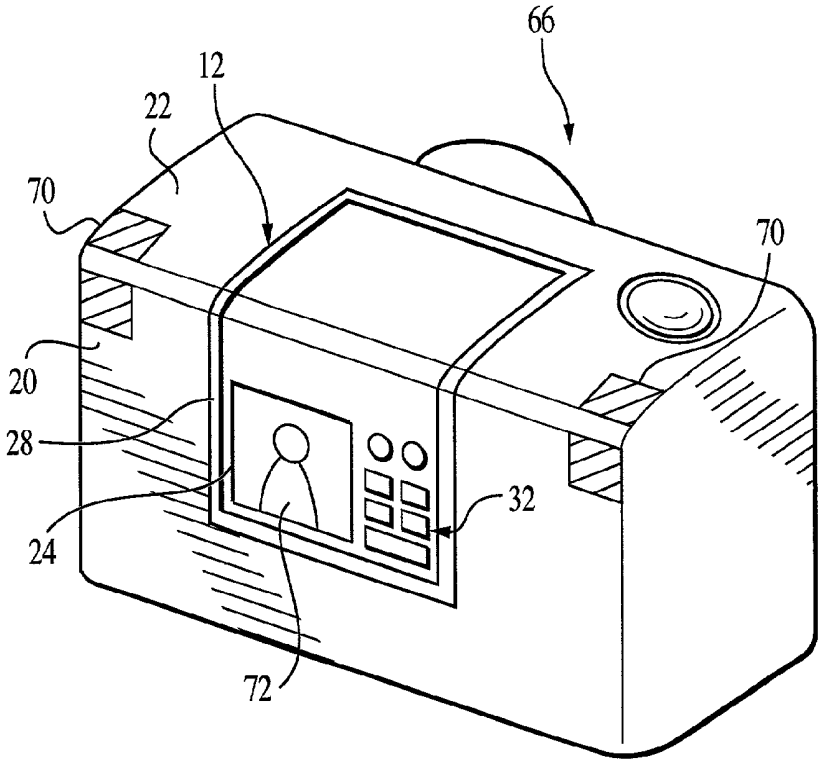


FIG. 5

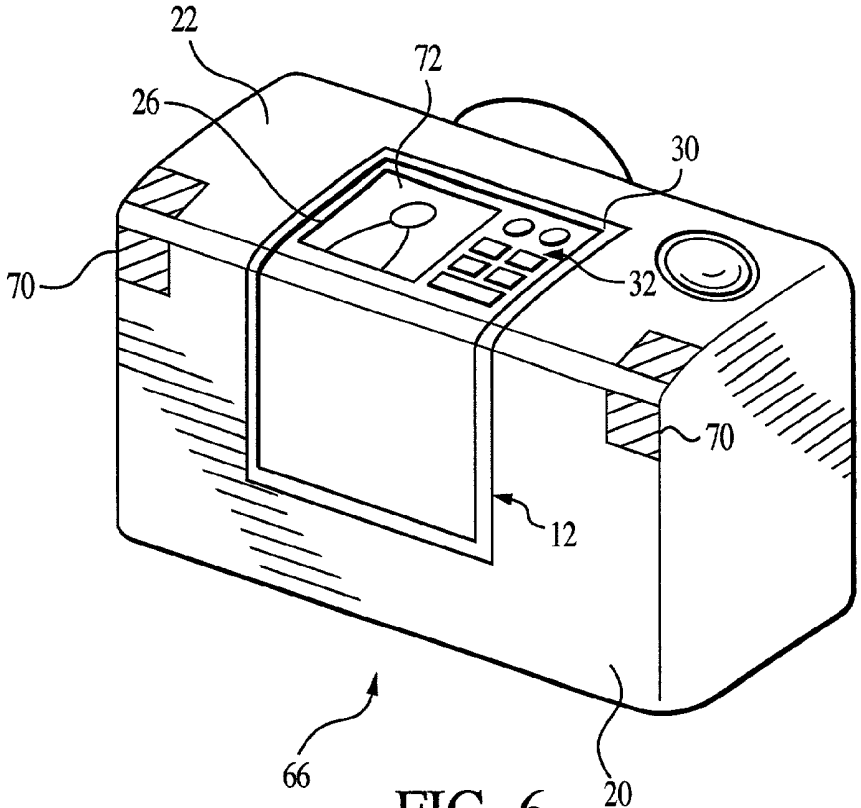


FIG. 6

APPARATUS DISPLAY

FIELD OF THE INVENTION

[0001] The present invention relates generally to the field of displays and/or controls for various types of apparatuses.

BACKGROUND OF THE INVENTION

[0002] Apparatuses, such as computers, peripherals, portable equipment, and others, may include displays for providing information to a user. This information may be, among other things, an indication of the operating status of the apparatus, or information collected, recorded, or processed by the apparatus (for example, a view screen for a portable camera). The display may also be part of a control for operating an apparatus.

[0003] However, a display or control for an apparatus may not be easily viewable or available to a user when the user moves the apparatus or a portion of the apparatus. For example, an apparatus or a portion of the apparatus may be usable in a number of positions. These positions may be locations, orientations, open or closed states, or others. However, displays or controls for such an apparatus may be sufficiently viewable only when the apparatus or a portion thereof is in a particular position. If a user wishes to view the display or operate the controls, he or she may need to reposition all or a portion of the apparatus so that the display and/or controls are viewable and/or accessible. This is often inconvenient for the user, particularly when the apparatus, to be operated as the user desires, must be in a position that does not allow viewing of the display.

SUMMARY OF THE INVENTION

[0004] A display for an apparatus has an organic light emitting diode (OLED) display that is capable of selectively producing either a first display viewable at a first surface of the apparatus or a second display viewable at a second surface of the apparatus. A detector determines which of the first or second displays should be produced, and the OLED display responds to the detector to produce one of the first display or the second display. Preferably, the detector determines whether the first or the second display should be produced depending on whether the apparatus or a portion thereof is in a first position or a second position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] **FIG. 1A** is a perspective view of a portable computer having a display according to a first preferred embodiment of the present invention, with the portable computer in an open position;

[0006] **FIG. 1B** is an enlarged fragmentary view of the portable computer of **FIG. 1**A, with the portable computer in an open position;

[0007] **FIG. 2** is an enlarged fragmentary view of the portable computer and display shown in **FIG. 1**B, with the portable computer in a closed position;

[0008] **FIG. 3** is an exploded perspective view of a preferred embodiment display;

[0009] **FIG. 4** is a block diagram of a display for an apparatus according to a preferred embodiment of the present invention;

[0010] **FIG. 5** is a perspective view of a camera in a first location having a display according to a second preferred embodiment of the present invention;

[0011] **FIG. 6** is a perspective view of the camera shown in **FIG. 5**, with the camera in a second location; and

[0012] **FIG. 7** is a flowchart showing a method of operation of the display according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0013] The present invention provides a display for an apparatus, which has at least first and second surfaces in first and second planes, respectively. The display includes an OLED display configured to selectively produce a first display viewable at the first surface of the apparatus, or a second display viewable at the second surface of the apparatus, in response to a detector. In a preferred embodiment, the detector determines whether the first display or the second display is shown based on whether the apparatus or a portion thereof is in a first position or a second position.

[0014] In this way, the OLED display can produce a display in a location that better suits the viewing angle of the user when the apparatus or a portion thereof is moved from one position to another. The OLED display may be capable of multiple displays with relatively low production costs. In addition, in a preferred embodiment, the OLED display may display controls that a user can access from multiple locations, with preferably lower production costs than that needed to produce sets of fixed controls.

[0015] The invention will now be illustrated with respect to preferred embodiment displays and representative apparatuses incorporating the preferred embodiment displays. In describing the invention, particular exemplary apparatuses and apparatus applications will be used for purposes of illustration. Dimensions and illustrated apparatuses may be exaggerated for purposes of illustration and understanding of the invention.

[0016] Referring now to the drawings, **FIGS. 1A and 1B** show an apparatus, such as a portable computer **10**, having an OLED display **12** according to a first embodiment of the present invention, with the portable computer **10** in an open position. The portable computer **10** has a screen **14** rotatably connected to a base **16**. A housing **18** substantially surrounds both the screen **14** and the base **16**. The portable computer **10** includes a number of surfaces, including a first surface **20** and a second surface **22**, which are in first and second planes, respectively. As shown in **FIGS. 1A and 1B**, for example, the first surface **20** and the second surface **22** are oriented approximately 90 degrees from one another, though a 90 degree angle is not necessary. The first surface **20** and the second surface **22** may also be parallel to one another in certain embodiments, for example, they may be inwardly and outwardly facing surfaces.

[0017] The OLED display **12** in the first preferred embodiment is provided for the portable computer **10** as an interface for controlling playback from a disk drive (not shown), such as a CD drive, and for indicating the status of the disk drive or other parts of the portable computer. Instead of, or in addition to, controlling a disk drive, however, the OLED display **12** may be used for viewing information and/or

controlling various other components of the portable computer **10**. The OLED display **12** is positioned on and/or within the portable computer **10** and configured to produce a first display **24** viewable at the first surface **20** and a second display **26** (see **FIG. 2**) viewable at the second surface **22** of the portable computer. For example, the OLED display **12** shown in FIGS. **1**A-**1**B and **2**-**3** has a "waterfall" shape (best seen in **FIG. 3**), and extends from the first surface **20** to the second surface **22**. In a preferred embodiment, the OLED display **12** is a flexible OLED (FOLED) display.

[**0018**] In a preferred configuration, the OLED display **12** illuminates a first portion **28** of the OLED display viewable at the first surface **20** of the portable computer **10** to produce the first display **24** (**FIGS. 1A and 1B**), and illuminates a second portion **30** viewable at the second surface **22** to produce the second display **26** (**FIG. 2**). The OLED display **12** may, but need not, be disposed at or on the first surface **20** or second surface **22** to produce displays viewable at these surfaces. For example, the OLED display **12** may be disposed underneath the surfaces **20**, **22**, or it may be positioned away from the surfaces while illuminations are viewable at the surfaces (reflected, for example). In addition, the OLED display **12** is not required to extend continuously from the first surface **20** to the second surface **22** as shown in FIGS. **1**A-**3**, but instead may, for example, extend entirely or partially underneath the first and second surfaces (through the housing **18**), so that peripheral portions of the OLED display are viewable at the first and second surfaces, while a central portion of the display is obstructed by the housing. Portions of the housing **18** may be selectively transparent as well, so that all or selected portions of the OLED display **12** are viewable by the user.

[**0019**] The first display **24** produced by the example OLED display **12** shown in **FIGS. 1A and 1B**, and viewable at the first surface **20** of the portable computer **10**, contains a number of control icons **32** that include symbols for control functions of the disk drive. The control icons **32** contained in the first display **24** are preferably controls that would be useful for a user when the portable computer **10** is open. The control icons **32** may include, for example, a play icon **34**, a stop icon **36**, a forward icon **38**, a reverse icon **40**, a power icon **42**, and a volume control icon **44**. In addition, the preferred first display **24** displays a number of status icons **46**, which indicate operating status or other information for the disk drive or other components of the portable computer **10**. The status icons **46** may include, but are not limited to, a battery indicator icon **48**, a hard disk status icon **50**, a disk drive status icon **52**, a memory status icon **54**, and a CPU speed status icon **56**. The control icons **32** and the status icons **46** need not be in separate locations, as shown in **FIG. 1**A, for example, but may instead be interposed with one another.

[**0020**] Referring now to **FIG. 2**, the OLED display **12** is shown producing the second display **26** viewable at the second surface **22** of the portable computer **10**. The second display **26** preferably includes elements also present in the first display **24**. In the example shown in **FIG. 3**, the second display **26** includes the disk drive status icon **52**, the battery status icon **48**, the memory status icon **54**, the CPU status icon **56**, and the power icon **42**, in addition to the volume control icon **44**, the play icon **34**, the stop icon **36**, the forward icon **38**, and the reverse icon **40**, all of which are also present in the first display **24**. The icons selected to be in the second display **26** are preferably those that would be most useful to a user when the portable computer **10** is closed, for example, to play a music CD or view the power status of the portable computer. Although the second display **26** need not include any of the specific elements present in the first display **24**, providing the same or similar elements to those in the first display allows a user to view information and access controls that are consistent between the first surface **20** and the second surface **22**. If icons are shown in the second display **26**, they need not be identical to corresponding ones of the first display **24**; for example, they may have partially different configurations. Preferably, though, there is some similarity between the information and/or controls provided on the first display **24** and the second display **26**. This also allows the control icons **32** or status icons **46** to appear to "shift" from the first display **24** to the second display **26**, or vice versa. In an alternative embodiment, the OLED display **12** produces more than two displays, and thus an image may "shift" through a number of displays.

[**0021**] Preferably, the OLED display **12** includes a number of pixels (picture elements) that may be illuminated to produce the first display **24** or the second display **26**. Most preferably, the pixels substantially cover the first portion **28** and the second portion **30** of the OLED display **12**. The illuminated pixels of the first display **24** shown in FIGS. **1**A-**1**B are disposed at the first portion **28** of the OLED display **12** viewable from the first surface **20**. The illuminated pixels of the second display **26** shown in **FIG. 2** are disposed at the second portion **30** of the OLED display **12** viewable from the second surface **22**. Thus, by illuminating the pixels at the first portion **28** or the second portion **30** of the display **12**, the OLED display produces the first display **24** viewable at the first surface **20** or the second display **26** viewable at the second surface **22**, respectively. By selectively illuminating the icons at the first **28** or second portions **30**, the icons can appear to shift from one surface to the other. The OLED display may be a passive or active matrix display.

[**0022**] As will be appreciated by those in the art, the pixels can be illuminated in patterns to form the control icons **32** or the status icons **46**. While the pixels preferably are disposed over the entire OLED display **12**, alternatively the pixels may be present only in the location of the displays **24**, **26** to be produced. For example, both the first portion **28** and the second portion **30** of the OLED display **12** may contain picture or light elements disposed under and/or beside a transparent or translucent plastic overlay having two sets of printed icons. In this alternative embodiment, one set may be disposed over the first portion **28**, and another set may be disposed over the second portion **30**. Other methods or configurations for displaying first **24** and second displays **26** may be used with the present invention.

[**0023**] In a preferred embodiment of the present invention, and as shown most clearly in **FIG. 3**, an input device **58** such as, but not limited to, a translucent or transparent touch-sensitive membrane, is disposed partially or entirely over the OLED display **12**. The touch-sensitive membrane preferably is configured so that the membrane detects an input location, which is a location of pressure applied to the membrane. Preferably, the touch-sensitive membrane is integrated with the OLED display **12** so that the user can interface with the display by contacting the input device **58** at locations over

or otherwise near or analogous to the location of the displayed control icons **32** shown on the OLED display. For example, the user may touch a portion of the input device **58** disposed over the play icon **34** to cause the disk drive to play a disk. Instead of a touch-sensitive membrane, the input device **58** may include hard keys, which are selectively illuminated by the OLED display **12**. In a contemplated embodiment, the OLED display **12** may be integrated with a membrane of the type common in portable computers.

[**0024**] Referring again to FIGS. **1**A-**1**B and **2**, a detector **62** is provided for determining whether the OLED display **12** produces the first display **24** or the second display **26**. A suitable detector may be any hardware or software device capable of having two or more states or producing two or more different outputs so that the OLED display **12**, which is responsive to the detector directly or indirectly, can display the first **24** or the second display **26** based at least partly on the output of the detector.

[**0025**] For example, and as shown in FIGs. **1**A-**1**B and **2**, the detector **62** may be a switch, such as a push-button switch, which is depressed by rotation of the screen **14** towards the base **16**, for example, when closing the portable computer **10**. As is well known in the art, the screen **14** of the portable computer **10** rotates away from or towards the base **16** to place the portable computer in an open position or a closed position. These positions are relative, as the portable computer **10** can be either "open" or "closed" within various angles between the screen **14** and the base **16**. Thus, opening or closing the portable computer **10** moves the push-button switch of the detector **62** to a first (for example, raised) or second (lowered) position. The positions of the detector **62** may be relative.

[**0026**] The type and location of the detector **62** may vary. For example, the detector **62** may be disposed near the front of the base **16**, or may be disposed in an alternate location such as the rear of the base. Detectors **62** in the form of switches that are responsive to lowering the screen **14** to place the computer into a "suspend" mode may also be used to detect an open or closed position of the portable computer **10**.

[**0027**] **FIG. 4** shows a preferred arrangement of components of the display. The components of the display may be integrated into an apparatus using any suitable method. The detector **62** may be coupled to a controller **64**, such as a processor (for example, the CPU of the portable computer **10** or other processing device, running appropriate software, or firmware, as necessary) or other device for controlling the OLED display **12**. Alternatively, the detector **62** may be connected directly to the OLED display **12**. In the configuration shown in **FIG. 4**, the controller **64** receives a signal from the detector **62** and controls the OLED display **12** for producing the first display **24** or the second display **26**.

[**0028**] The controller **64** may also be connected to the input device **58** for receiving information, such as when the OLED display **12** displays the control icons **32**. The connection between the controller **64** and the input device **58** may be direct, such as via a flex cable **65** or other link, or indirect, such as through the OLED display **12**. The OLED display **12** may connect to the controller **64** directly via a second flex cable **67**, or in other ways. If the input device **58** is a touch-sensitive membrane that detects an input location, the controller **64** preferably analyzes the detected input location. By comparing the input location to a known location, preferably a location correlating to the location of an icon in the OLED display **12**, the controller **64** can determine whether a particular control was selected by the user.

[**0029**] **FIG. 7** shows an operation of the display according to one embodiment of the invention. When the display operation begins (step **80**), the OLED display **12** is provided (step **82**), and the detector **62** detects a position of all or a portion of the apparatus **10** (step **84**), preferably based on the state of the detector. Responding to the output or state of the detector **62** (step **86**), the OLED display **12** produces the first display **24** (step **88**) or the second display **26** (step **90**). In the exemplary process shown, it is determined if the second position was detected by the detector **62** (step **86**). In the embodiment of the present invention shown in **FIGS. 1A, 1B**, and **2**, this occurs when the portable computer **10** is closed, depressing the detector **62**. If so, the OLED display **12** produces the second display **26** (step **90**) and returns to the detection step (step **84**). If the detector **62** is not in the second position, as is true when the portable computer **10** is in the open position detected by the detector **62** being in the raised position, the OLED display **12** produces the first display **24** (step **88**) and returns to the detection step (step **84**). In a preferred embodiment of the invention, the controller **64** determines (step **86**) whether the detector **62** detects the second position, and causes the OLED display **12** to produce either the first or second display **24**, **26** accordingly (steps **88**, **90**).

[**0030**] Variations of the exemplary process shown in **FIG. 7** are possible. For example, in the exemplary process, the first display **24** is a default display. However, in other contemplated embodiments, the second display **26** may be a default, the default may be set according to specific conditions (for example, the last display produced may be set as a default), or no default may be set at all, in which case the OLED display **12** may wait to produce a display until, for example, the detector **62** is in a particular state or states. In addition, the exemplary process shown in **FIG. 7** produces the first and second displays **24**, **26**. However, in other possible embodiments, more than two displays are possible, and a similar method to that shown in **FIG. 7** may be used to select and produce particular displays. Furthermore, the display may receive input via the input device **58** before or after the displaying steps **88**, **90**. In addition, the input device **58** may itself be used as a switch to display either the first display **24** or the second display **26**.

[**0031**] In this first type of embodiment, because the OLED display **12** of the portable computer **10** produces displays viewable from different surfaces depending on the open or closed position of the portable computer, a user can view the first display **24** when the computer is open and the second display **26** when the computer is closed. The first surface **20** is more convenient to view when the user is working with the computer **10** in an open position, as the user is typically positioned over the computer when working. The second surface **22** is more convenient to the user when the computer **10** is in the closed position, as the screen **14** of the portable computer blocks a substantial part of the remaining OLED display **12**. Accordingly, the display **12** of this preferred type of embodiment allows a user to view and/or access more

easily and conveniently the status icons **46** or the control icons **32** for operating the disk drive or other parts of the portable computer **10**.

[**0032**] The OLED display **12** of the present invention may be used in various types of apparatuses. In addition, besides detecting open/closed positions or other positions based upon movement of a portion of an apparatus, certain embodiments of the display **12** may produce first or second displays **24**, **26** in first or second surfaces **20**, **22** depending on positions of the entire apparatus. **FIGS. 5 and 6** show a camera **66** having the OLED display **12** according to a second preferred embodiment of the present invention, in which a detector **70** detects the relative location and/or the orientation of the camera to determine whether the first display **24** or the second display **26** is produced.

[**0033**] A user may move the camera **66** between first and second relative locations. For example, the user may move the camera **66** to an upper location for a horizontal shoot, and move the camera to a relatively lower location for a vertical shoot. The user may also tilt the camera **66** between a first orientation and a second orientation for a desired shot. For operation of the camera **66**, the user may wish to view a display showing, for example, an image perceived by the lens of the camera, and/or access one or more controls. However, an image facing the user when the camera **66** is in an upper position, for example, may be difficult to view if the user moves the camera to a lower position for a vertical shoot. Similarly, an image on a surface facing the user in a first orientation may be difficult to view if the camera is tilted to a second orientation so that a different surface is facing the user.

[**0034**] The OLED display **12** in the camera **66** shown in FIGS. **5-6** is configured to produce the first display **24** (**FIG. 5**) viewable at the first (vertical, as shown in **FIGS. 5 and 6**) surface **20**, and the second display **26** (**FIG. 6**) viewable at the second (horizontal, as shown) surface **22**. The image shown in either surface preferably includes a viewfinder or view-screen image **72** and/or one or more of the control icons **32**. OLED displays are typically well-suited for displaying images such as the view-screen image **72**, with relatively sharp picture quality. The input device **58**, such as a touch-sensitive membrane similar to that shown in **FIG. 2**, may overlay the OLED display **12**, to receive feedback from a user for controlling the camera **66**.

[**0035**] In one preferred embodiment, the detector **70** detects whether the camera **66** is in the relatively upper location or the lower location, and determines whether the OLED display **12** produces the first display **24** or the second display **26** (if both displays are shown simultaneously, peripheral effects of one display may confuse the viewer looking at the other display). Accordingly, if the user moves the camera **66** to a higher position, the OLED display **12** produces the first display **24**, so that he or she can view the display with a substantially horizontal line of sight. If the user moves the camera **66** to a lower position, the OLED display **12** produces the second display **26**, and the user can then view the display with a substantially vertical line of sight. The present invention further contemplates that a number of vertical (or horizontal) positions could be detected by the detector **70**, and a corresponding number of displays could be produced by the OLED display **12** so that the OLED display appears to "shift" from the first surface **20** to the second surface **22** or vice versa as the user moves the camera **66**.

[**0036**] A preferred embodiment of the detector **70** for detecting the relative location of the camera **66**, as shown in FIGS. **5-6**, includes one or more touch-sensitive pads disposed at or near a location or locations where a user would naturally grip the camera, preferably on a surface of the camera. In this embodiment, when the user naturally switches his or her grip, the OLED display **12** switches between producing the first display **24** or the second display **26** based on the locations of the pads that are contacted by the user. The detector **70** may also be a gravity-sensitive or motion-sensitive device, an optical device, a manually operated device, such as a switch, or other type of device. The detector **70** is coupled to the OLED display **12**, either directly or indirectly, such as through the controller **64** of the type described previously, or of a different type.

[**0037**] In another preferred embodiment, the detector **70** detects whether the camera **66** is in a first orientation or a second orientation. This type of detector **70** may be a switch, a gravity-sensitive or motion-sensitive device, an optical device, or may include pads, such as those shown in FIGS. **5-6**, so that when the user switches his or her grip, as may occur when the camera **66** is tilted from the first orientation to a second orientation, the OLED display **12** produces the first display **24** or the second display **26**.

[**0038**] While specific embodiments of the present invention has been shown and described, it should be understood that other modifications, substitutions, and alternatives are apparent to one of ordinary skill in the art. Such modifications, substitutions, and alternatives can be made without departing from the spirit and scope of the invention, which should be determined from the appended claims.

[**0039**] Various features of the invention are set forth in the appended claims.

1. A display for an apparatus, the apparatus having a first surface in a first plane and a second surface in a second plane, the display comprising:

an OLED display capable of selectively producing either a first display viewable at the first surface or a second display viewable at the second surface; and

a detector for determining which of said first and said second display should be produced;

said OLED display responding to said detector to produce one of said first display or said second display.

2. The display according to claim 1 wherein said OLED display is disposed at least partly at said first surface and said second surface.

3. The display according to claim 1 wherein said detector determines whether the apparatus or a portion thereof is in a first position or a second position.

4. The display according to claim 1 wherein said detector determines an orientation of the apparatus.

5. The display according to claim 1 wherein said detector determines whether the apparatus or a portion thereof is in an open position or a closed position.

6. The display according to claim 1 wherein said detector determines whether the apparatus is in a first location or a second location.

7. The display according to claim 1 further comprising:

an input device for allowing a user to interface with the display.

8. The display according to claim 7 wherein said input device comprises a touch-sensitive membrane.

9. The display according to claim 8 wherein said touch-sensitive membrane is disposed at least partially over said OLED display.

10. The display according to claim 8 wherein said touch-sensitive membrane detects an input location.

11. The display according to claim 10 wherein said display compares said input location to a location of a portion of said first display or said second display.

12. The display according to claim 1 wherein said first display comprises an icon.

13. The display according to claim 12 wherein said second display comprises said icon.

14. The display according to claim 1 wherein said detector comprises at least one touch-sensitive pad.

15. The display according to claim 1 wherein said detector comprises a switch.

16. The display according to claim 1 wherein said detector comprises a motion-sensitive device.

17. The display according to claim 1 wherein said first display displays a first image and said second display displays said first image.

18. An apparatus comprising:

a housing having a first surface in a first plane and a second surface in a second plane;

an OLED display capable of selectively producing either a first display viewable at the first surface or a second display viewable at the second surface; and

a detector for determining which of said first and said second display should be produced;

said OLED display responding to said detector to produce one of said first display or said second display.

19. The apparatus according to claim 18 wherein said OLED display is at least partly disposed at said first surface and said second surface.

20. The apparatus according to claim 18 wherein said detector determines whether the apparatus or a portion thereof is in a first position or a second position.

21. The apparatus according to claim 18 further comprising:

an input device disposed at least partially over said OLED display.

22. The apparatus according to claim 21 wherein said input device comprises a touch-sensitive membrane.

23. The apparatus according to claim 21 wherein said input device detects an input location.

24. A method of producing a display for an apparatus, comprising the steps of:

providing an OLED display capable of producing a first display viewable from a first surface of the apparatus and a second display viewable from a second surface of the apparatus;

detecting a position of all or a portion of the apparatus; and

responsive to said position, producing either said first display or said second display.

25. The method according to claim 24 wherein said step of producing comprises producing said first display when a detector detects that said apparatus or a portion thereof is in a first position, and producing said second display when said detector detects that said apparatus or a portion thereof is in a second position.

26. A display for an apparatus, the apparatus having a first surface in a first plane and a second surface in a second plane, the display comprising:

an OLED display capable of selectively producing either a first display viewable at the first surface or a second display viewable at the second surface; and

means for detecting whether the apparatus or a portion thereof is in a first position or a second position;

said OLED display responding to said means for detecting to produce said first display if said means for detecting detects that the apparatus or a portion thereof is in said first position, and to produce said second display if said means for detecting detects that the apparatus or a portion thereof is in said second position.

27. The display according to claim 26 wherein said OLED display is disposed at least partly at said first surface and said second surface.

28. The display according to claim 26 further comprising:

touch-sensitive means for receiving input.

29. The display according to claim 28 wherein said means for receiving input is disposed at least partially over said OLED display.

30. The display according to claim 28 wherein said means for receiving input detects an input location.

31. The display according to claim 28 wherein said means for receiving input comprises a touch-sensitive membrane.

32. The display according to claim 26 wherein said means for detecting determines whether the apparatus or a portion thereof is in a first orientation or a second orientation.

33. The display according to claim 26 wherein said means for detecting determines whether the apparatus is in an open position or a closed position.

34. The display according to claim 26 wherein said means for detecting determines whether the apparatus is in a first location or a second location.

35. The display according to claim 26 wherein said means for detecting comprises a switch.

36. The display according to claim 26 wherein said means for detecting comprises a motion-sensitive device.

37. The display according to claim 26 wherein said means for detecting comprises at least one-touch sensitive pad disposed on a surface of the apparatus.

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专利名称(译)	设备显示		
公开(公告)号	US20030201974A1	公开(公告)日	2003-10-30
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[标]申请(专利权)人(译)	尹孟菲斯志宏		
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[标]发明人	YIN MEMPHIS ZHIHONG		
发明人	YIN, MEMPHIS ZHIHONG		
IPC分类号	H01L51/50 G06F1/16 G06F3/02 G06F3/023 G06F3/033 G06F3/041 G06F3/14 G09F9/00 G09F9/30 G09F9/40 G09G3/20 G09G3/30 G09G5/00 G09G5/08 H01L27/32 H03M11/04 H05B33/14		
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摘要(译)

用于设备的显示器。能够显示在第一表面处可见的第一显示器和在第二表面处可见的第二显示器的OLED显示器响应于检测器以显示第一或第二显示器。检测器可以根据装置的全部或一部分的位置确定是否显示第一或第二显示器。