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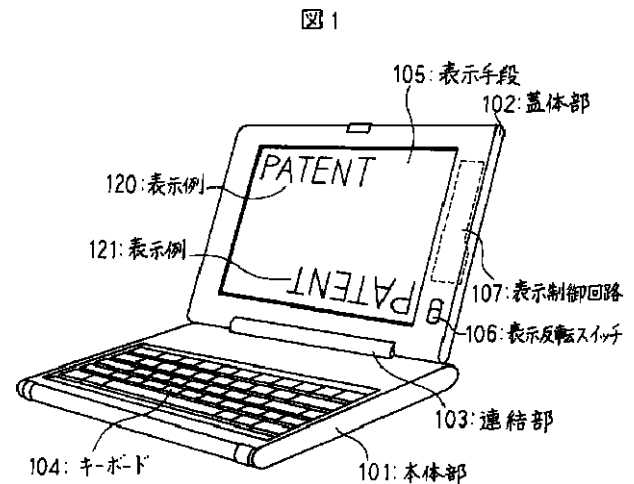
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## (57) [Abstract]

[Purpose] To provide a personal computer which can adopt a mode suitable for a user environment centered on a pen input operation and a mouse input operation while retaining a mode which can use a keyboard.

[Configuration] It is a personal computer made up of a main part 101 provided with a keyboard 104 on the front, a cover part 102 provided with a display means 105 on the front and a coupling mechanism 103 used to couple one end of the main part and one end of the cover part with both the display device 105 and the cover part 102 facing main part 101 and which can open and close both of these. This coupling mechanism 103 is structured so that it can open the cover part 102 so that it exceeds 180° relative to main part 101. It should have a display reverse switch 106 so that display means 105 can be switched upside down.



[Claims]

[Claim 1] An electronic machine and device characterized as being in a state wherein a main part having a keyboard on the front side, a cover part having a display means on the front side and a front side of said main part and the front side of said cover part facing each other; made up of a coupling mechanism wherein one end of the main part and one end of the cover part are coupled; the invention characterized as said coupling mechanism being a structure wherein it can open said cover part to an angle relative to said main part which exceeds 180°.

[Claim 2] The electronic machine and device described in Claim 1 wherein said display means is provided with a switching means used so that the symbols displayed can be displayed at the top and then turned upside down.

[Claim 3] The electronic machine and device described in Claim 1 wherein said coupling mechanism is a structure which can essentially place the abovementioned cover part relative to the abovementioned main part within a range from 0° to 360°.

[Claim 4] The electronic machine and device described in Claim 3 wherein said display means is provided with a switching device which makes it possible for the symbols displayed to be displayed at the top and then turned upside down.

[Claim 5] The electronic machine and device described in any of Claims 1 through 4 wherein said keyboard is provided with a second keyboard which invalidates input from the keyboard.

[Claim 6] The electronic machine and device as described in any of Claims 1 through 4 wherein it is provided with a detection means used to detect when the main part is at an angle within a predetermined range relative to a perpendicular line and the abovementioned keyboard is provided with a third switching means used to invalidate the input from the keyboard based on the value detected by said detection means.

[Claim 7] A personal computer characteristic in that it is provided with a keyboard on the front, a coupling mechanism which couples one end of the main part and one end of the cover part in a state wherein the main part which stores the electronic circuit, the cover part which is provided with a display means on the front and the front of said main part and the front of said cover part are facing one another so that both can be opened and closed; said coupling mechanism consists of a structure which can open the cover part at an angle relative to the cover part which exceeds 180°.

[Claim 8] The personal computer as described in Claim 7 wherein said display means is provided with a switching means used so that the symbols displayed can be displayed at the top and then turned upside down.

[Claim 9] The personal computer described in Claim 7 wherein the abovementioned linking mechanism is a structure which is made so that it places the abovementioned cover part essentially at any angle relative to the main part within 0° to 360°.

[Claim 10] The personal computer described in Claim 9 wherein the display means is provided with a switching means used so that the symbols displayed can be displayed at the top and then turned upside down.

[Claim 11] The personal computer as described in any of Claims 7 through 10 wherein the abovementioned keyboard is provided with a second switching means which invalidates input from the keyboard.

[Claim 12] The personal computer as described in any of Claims 7 through 10 wherein the abovementioned main part is provided with a detection means used to detect when the main part is at an angle within a predetermined range relative to a perpendicular line. The abovementioned keyboard is provided with a third switching means used to invalidate input from the keyboard based on the value detected by the detection means.

[Detailed Description of Invention]

[0001]

[Field of Industrial Use] The present invention relates to an electronic machine and device and a personal computer with enhanced portability as it has been miniaturized.

[0002]

[Prior Art] In recent years, there has been outstanding miniaturization of information processing machines and other electronic machines and devices and especially personal computers which are large and heavy. These have been miniaturized so that they can be carried around.

[0003] The general mode of this type of prior art portable personal computer features (1) a main part which is provided with an operating part; (2) a cover part which is provided with a display part; and (3) a box-like structure which couples said main part and cover part and at the same time rotates the cover with the coupling part as a shaft and structured so that it can open and close. When not in use, it is usually carried about closed so that the main part and the cover part face one another. When it is used, the cover part can be opened to approximately 120° and operated. This type of portable personal computer is popularly known as a lap-top computer and in recent years many of these have been brought to market and used as a space-saving table-top computer. Further, Laid-Open Patent Application H3-109622 and Laid-Open Patent Application H3-292520 and the like.

[0004] [Problems Which the Present Invention is Intended to Resolve] The above-mentioned prior art was problematical in that it was not a shape which is suitable for use which has a user interface which is based on pen input operation and mouse input operations. In recent years, the usage environment of the personal computer has been changing. One of those changes involves an operating environment based on mouse input. Another change involves an operating environment based on pen input. The abovementioned prior art was persistently suitable for a keyboard-based operating environment. Furthermore, this problem was the same for electronic machines and devices other than portable word-processors and other personal computers.

[0005] It is the objective of the present invention to provide an electronic machine and device and a personal computer which adopt a shape which is suitable for a user environment centered on pen input operations and mouse operations while maintaining a shape which can be used as a keyboard.

[0006]

[Means Used to Resolve the Problems] In order to attain the abovementioned objective, the electronic machine and device in the present invention are made up of a coupling mechanism which couples a main part which is provided with a keyboard on the front, a cover part which is provided with a display means on the front and couples one end of the main part and one end of the cover part so that the front of this main part and the front of this cover part and is configured of a coupling mechanism structure so that the cover part can be opened relative to the main part which exceeds 180°.

[0007] The personal computer in the present invention is configured of a coupling mechanism structure which is made up of a main part used to store the electronic circuit, a cover part which is provided with a display means on the front and a coupling mechanism which couples one end of the main part and one end of the cover part with the front of this main part and the front of this cover part facing one another so that both of these can be opened and closed and so that the cover main part can be opened to an angle relative to the main part which exceeds 180°.

[0008] In both of the devices, the abovementioned coupling mechanism should have a structure such that the cover part can essentially assume any angle relative to the main part within a range of 0° to 360°. The abovementioned display means should also be provided with a switching means which makes it possible for the symbols displayed to be displayed at the top and then switch to the bottom. It also opens the cover part 360° relative to the main part. When the cover part is used on the front, when some force is exerted on the cover part, unintended data from the keyboard of the main part which is on the back side may sometimes be inputted by mistake. A second switching means should be provided in order to invalidate the input from the keyboard in order to prevent that. This switching means is set so that it switches automatically from an angle relative to the vertical

line of the main part.

[0009]

[Actions] The main part which has a keyboard and the cover part which has a display means open approximately 360° by virtue of this configuration and the keyboard and the display means can be joined together at the back. In this type of state where it is approximately 360° open, the keyboard and the display device can protrude to the front of the machine. As a result, when the display means is grasped with the hand so that it faces the user, it is further suitable for a pen-based input environment. Moreover, should the need arise, the user can manipulate the keyboard by turning the machine over.

[0010] Also, the main part and the cover part can be opened to approximately 340°. In this state, with the linking part on the top and one end of the main part and one end of the cover part on the bottom, can be placed so that it stands on the table. At this time, the characters and diagrams which are displayed on the display device are such that the top and bottom and left and right can be reversed so that it is difficult for the user to immediately read the display details. Therefore, the display can be turned upside down. Thus, if used by placing on top of a table, it is in a state where it is suitable for operating with a mouse.

[0011]

[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.

[0012]

Coupling part 103 is fastened by a hinge and one end of main part 101. Meanwhile, coupling part 103 is fastened by a hinge and one end of cover part 102. Display reverse switch 106 is a switch which is operated by the user and can be placed in two states, a normal state and a reverse state. This state is inputted to display control circuit 107. Display control circuit 107 is an electronic circuit used to control output to display means 105 by controlling the computer circuit which is stored in main part 101. Display control circuit 107 can turn the display upside down to the display means by using the mode of display reverse switch 106. This means that when display reverse switch 106 is in normal mode, the display is carried out as indicated in display example 120. Meanwhile, when display reverse switch 106 is in reverse mode, it can be turned upside

down as indicated in display example 121, that is, it can be rotated 180° centered on the vertical line of the display surface.

[0013] Next, the coupling mechanism which carries out an important role in the present invention will be explained in detail based on Figure 2. The coupling mechanism is provided with coupling part 103, support shaft 110 and support part 112 which is placed on main part 101. Main part 101 can rotate freely around shaft 150. Cover support shaft 111 is coupled to cover support part 113 which is placed on cover part 102. Cover part 102 can rotate freely around shaft 151.

[0014] Next, how main part 101 and cover part 102 rotate thanks to the movement of the coupling mechanism explained in Figure 2 will be explained based on Figure 3. Usually when they are not being used for the portable computer, main part 101 and cover part 102 can close so that keyboard 104 and display means 105 face each other thanks to the movement of the coupling mechanism explained based on Figure 2. Meanwhile, when it is being used, cover part 102 rotates around shaft 151 so that it is lifted up from main part 101 and can be opened. When cover part 102 is opened at a suitable angle, for example, 120°, by rotation 152, cover part 102 is positioned at cover part position 155. This is the mode indicated in Figure 1. The user can operate the computer while facing keyboard 104 and display means 105 in a natural mode.

[0015] Now, when cover part 102 is opened 180° thanks to rotation 153 [sic], cover part 102 is positioned at cover part position 156. Then, when coupling part 103 is rotated 180° thanks to rotation 154 [sic] centered on shaft 150 and shaft 151 is moved to shaft position 157, cover part 102 is positioned at cover part position 158. Thus, cover part 102 can rotate nearly 360° thanks to the movement of the coupling mechanism explained based on Figure 2. In this state, display means 105 is positioned in display means position 159. This means that keyboard 104 and display means 105 protrude onto the surface of the computer so that the user can operate keyboard 104 and can use display means 105 if necessary.

[0016] As was explained based on Figure 3, the personal computer in the present invention can place main part 101 and cover part 102 in a state where they can be opened to nearly 360°. Figure 4 is an inclined view indicating the state at this time which enables pen input for the user of the computer. In this figure, coupling part 103 is in a forward position so that it faces the user. At this time, the display orientation of display means 105 is that indicated in display example 120 and presents no problems. However, some users prefer coupling part 103 to be facing them from a distance. In this case, by

placing display rotation switch in reverse mode, the display orientation of display means 105 should be that indicated in display example 121.

[0017] As has already been explained, according to the process of the present invention, main part 101 and cover part 102 can be opened to any angle within a range of nearly 0° to 360°. Figure 5 indicates the user mode of the state of opening of main part 101 and cover part 102 at approximately 340°. In this case, display reverse switch 106 is set to reverse mode so that the display orientation of display means 105 is set as in display example 121. Then, coupling part 103 is placed upward and placed on the table. At this time, keyboard 104 is completely on the back side when seen by the user. The user cannot easily operate keyboard 104, however, if mouse 130 is connected and it is a mouse centered operating environment, it does not present any great problems. Thus, when placed on top of a table, the area taken up by the computer on the table can be greatly reduced. This contrasts to the placement method indicated in Figure 1.

[0018] Furthermore, when some force is exerted on display means 105 of the chart using the personal computer in the state indicated in Figure 4, there are cases in which unintended data are mistakenly inputted from the keyboard which is on the back side. A switching means (not shown in figure) should be set in place to invalidate input from the keyboard to prevent this.

[0019] This switching means may also be devised so that it operates automatically. For example, it may be configured so that a detection means used to detect that the main part is at an angle within a predetermined range is placed on the main part and so that input from the keyboard is invalidated based on a value which has been detected by this detection means.

[0020]

[Effect of Invention] The present invention is configured as indicated above so that it has the following effects.

- (1) The usage configurations of the prior art keyboard main core, the configuration which is suitable for the usage configuration of the pen-entry main core and the mouse operation main core have all be realized.
- (2) When used with the mouse operation main core, one can get by with a smaller space taken up on a tabletop.
- (3) When the external display means is used, the external display means can be easily placed in front of the user.

[Brief Explanation of Figures]

[Figure 1] An inclined view of the personal computer in the preferred embodiment of the present invention.

[Figure 2] A diagram of the coupling mechanism of the personal computer in the preferred embodiment of the present invention.

[Figure 3] A figure explaining the action of the coupling

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