

used, the hinge portion 16 is rotated in the direction of the arrow indicated in FIG. 2 to open the cover.

[0034] In the main unit 13, a central processing unit (CPU), a hard disk drive, memories, etc. are accommodated. The details of a computation made, for example, by the CPU, are displayed on the display screen 14, and display on the display screen 14 is controlled by the CPU. A battery unit 26, in which a battery is accommodated, is attached to a front portion 13b of the main unit 13 on the bottom surface side of the same. The main unit 13 has a keyboard 19 provided in a front portion 18a of its upper surface 18, and a recessed portion 21 which is formed in its upper surface 18 between a rear portion 18b and a central portion 18c of the upper surface 18, and in which an arm 20 having a hinge portion 16 is accommodated.

[0035] The hinge portion 16 includes an arm 20, a first hinge portion 22 for connecting the arm 20 to the main unit 13, and a second hinge portion 23 for connecting the arm 20 and the monitor 15. Each of the first hinge portion 22 and the second hinge portion 23 is rotatable about an axis extending in a direction (Y-direction) perpendicular to the front-rear direction of the main unit 13 (X-direction as viewed in the figure). The arm 20 is formed into the shape of a plate and has, in its end edge portions in the X-direction, axes on which the first hinge portion 22 and the second hinge portion 23 rotate respectively. The first hinge portion 22 is provided on the keyboard 19 side of the central portion 18c of the upper surface 18 of the main unit 13.

[0036] The second hinge portion 23 is connected to a lower end portion 15a of the monitor 15 and is positioned at a rear end edge 13a of the main unit 13 when the arm 20 is accommodated in the recessed portion 21. In the state shown in FIGS. 1 and 2, therefore, the second hinge portion 23 functions as an opening/closing hinge portion for opening/closing the main unit 13 and the monitor 15. Thus, the notebook PC 11 can be used in a state such as shown in FIG. 1.

[0037] FIG. 3 is a perspective view of the notebook PC 11 shown in FIGS. 1 and 2 when the position and the angle of the monitor 15 in the notebook PC 11 are changed. FIG. 4 is a side view of the notebook PC 11 in the state shown in FIG. 3. FIG. 5 is a rear perspective view of the notebook PC 11 in the state shown in FIG. 3.

[0038] The notebook PC 11 shown in FIGS. 1 and 2 can also be used in the various other arrangements, for instance as shown in FIGS. 3, 4, and 5. That is, referring to FIGS. 3, 4, and 5, the portion of the arm 20 other than the portion adjacent to the first hinge portion 22, may be moved apart from the recessed portion 21 of the main unit 13, and the arm 20 is raised by being rotated on the first hinge portion 22. The position of the monitor 15 is thereby moved upward relative to its position shown in FIGS. 1 and 2.

[0039] In this state, each of the first hinge portion 22 and the second hinge portion 23 can be freely fixed at an opening angle in a predetermined range. Thus, each of the first hinge portion 22 and the second hinge portion 23 can be set at a predetermined angle and the position or the angle of the monitor 15 relative to the main unit 13 can be freely adjusted by changing the position of the arm 20. The stiffness of the joint between the first hinge portion 22 or the second hinge portion 23 and the mating member is adjusted by using a latch or meshing mechanism to enable support of the monitor 15.

[0040] As described above, the monitor 15 is connected by the arm 20 in the notebook PC 11 so that each of the position (height) of the monitor 15 and the angle of the monitor 15 with respect to the main unit 13 can be freely set. In this embodiment, the position of the monitor 15 can be smoothly changed without changing the angle of tilt of the monitor 15. The structure for connection between the arm 20, the first hinge portion 22 and the second hinge portion 23 will be described in detail.

[0041] FIG. 6 is an exploded perspective view of the arm 20, the first hinge portion 22 and the second hinge portion 23, according to an embodiment of the present invention. FIG. 7 is a perspective view of the arm 20, the first hinge portion 22 and the second hinge portion 23 in an assembled state viewed from a point at the rear of the notebook PC 11, according to an embodiment of the present invention.

[0042] As shown in FIGS. 6 and 7, the arm 20, the first hinge portion 22 and the second hinge portion 23 have, as their essential portions, a base (fixing portion, base unit) 150 connected to a recessed portion 21 of the main unit 13, a front plate (first supporting member) 116 and a rear plate (second supporting member) 130 connected to the base 150 and constituting the arm 20, and a top holding portion 101 connected to the arm 20 and constituting the second hinge portion 23. Signal lines (not shown) for supplying signals sent out from the main unit 13 to the monitor 15 to control images displayed on the display screen 14 are provided between the front plate 116 and the rear plate 130 to connect the main unit 13 and the monitor 15.

[0043] Shafts 103a and 103b of tie members 104a and 104b are inserted in end portions 102a and 102b at opposite ends of the top holding portion 101 in the direction (Y-direction) parallel to the axis of the top holding portion 101 so as to be movable about the Y-direction axis. Fixation surfaces 109a and 109b of the tie members 104a and 104b are connected and fixed to the lower end portion 15a of the monitor 15. Shafts (second pivots) 111a and 111b rotatably held by hitch portions 113a and 113b of connecting plates 110a and 110b for connection of the front plate 116 are inserted in holes 106a and 106b formed at front positions in lower opening portions 105a and 105b of the top holding portion 101. The connecting plates 110a and 110b are thereby connected to the top holding portion 101 so as to be rotatable about a Y-direction axis relative to the top holding portion 101. These connecting plates 110a and 110b are placed on recessed portions 114a and 114b formed at upper end portions of the front plate 116 and connections are made with engaging members (not shown) passed through holes 115a and 115b and holes 112a and 112b.

[0044] Shafts (third pivots) 131a and 131b (shaft 131b not shown in FIG. 6) rotatably held by hitch portions 132a and 132b (shaft 132b not shown in FIG. 6) of the rear plate 130 at the upper end portions are inserted in holes 107a and 107b (hole 107b not shown in FIG. 6) formed at rear positions in the lower opening portions 105a and 105b of the top holding portion 101. The rear plate 130 is thereby connected to the top holding portion 101 so as to be rotatable about a Y-direction axis relative to the top holding portion 101. When the front plate 116 and the rear plate 130 rotatably connected to the top holding portion 101 are superposed on each other as shown in FIG. 7, engaging projections 120a and 120b provided on the back surface of the front plate 116