

[0020] FIG. 6 is a flowchart showing the operation of the display controller 140 according to the present modification.

[0021] FIG. 7 is a front view showing a first modification of the displaying apparatus 100.

[0022] FIG. 8 is a flowchart showing another operation of the display controller 140.

[0023] FIG. 9 is a front view showing a second modification of the displaying apparatus 100.

DETAILED DESCRIPTION OF THE INVENTION

[0024] The invention will now be described based on the preferred embodiments, which do not intend to limit the scope of the present invention, but exemplify the invention. All of the features and the combinations thereof described in the embodiment are not necessarily essential to the invention.

[0025] FIG. 1 is a front view of a displaying apparatus 100 according to an embodiment of the present invention. The displaying apparatus 100 displays a plurality of display data sequentially by updating its display. On a surface of the frame 100a, the displaying apparatus 100 includes a display panel 110, a bend member 120a, and a bend member 120b and both the bend member 120a and the bend member 120b have elasticity. The bend member 120a and the bend member 120b are referred to bend member 120 hereinafter. Each of the bend member 120a and the bend member 120b is provided at an edge of the surface of the frame 100a. In addition, it is preferable that both the bend member 120a and the bend member 120b are located separately so that the user can operate the bend member 120a and the bend member 120b by each of his hands.

[0026] When reading a book, a reader turns pages as bending the book. In this embodiment, the displaying apparatus 100 updates the display in the display panel 110, based on deformation volume of the bend member 120. In other words, the user bends each of the bend member 120a and the bend member 120b when he wants to update the display of the display panel 110. Therefore, the user can get the feeling of turning the pages of a book.

[0027] In addition, each of the surfaces of the bend member 120a and the bend member 120b especially extends in a direction (for example, perpendicular direction). The displaying apparatus 100 decides a contact position of the user on the surface of the bend member 120, and sets the updating speed to update the display in the display panel 110 based on the decided contact position. Therefore, the user can change the updating speed for the display in the display panel 110 only by changing the contact position at the bend member 120.

[0028] FIG. 2 is an A-A section view of the bend member 120a shown in FIG. 1. The structure of the bend member 120b is the same as the bend member 120a except that the structures of bend members 120a and 120b are axisymmetrical. The bend member 120a has a deformation volume detector 122a on its bottom and a position detector 124a on its surface. The deformation volume detector 122a is a plurality of piezoelectric materials, each of which is located in certain interval along a longitudinal direction of the bend member 120a. In this case, the displaying apparatus 100

detects the deformation volume based on a voltage, which occurs according to the distortion in the piezoelectric material. For example, the position detector 124a is an electrostatic pad, and detects the contact position of the user in bend member 120a. In addition, the position detector 124a is overlapped with the deformation volume detector 122a. Accordingly, the displaying apparatus 100 can detect the contact position of the user in the bend member 120, and the deformation volume at the contact position.

[0029] Moreover, a top surface 126 on the bend member 120a includes a plurality of vertical-stripe unevenness. The unevenness is formed so that the user can recognize the height of the unevenness when the user touches the unevenness. For example, the height is equal to or less than 1 mm. The user touches the unevenness when updating the display in the display panel 110. Therefore, according to this embodiment, it is possible to get the feeling as if touching the edge part of the pages in a book.

[0030] FIG. 3 is a functional configuration showing the displaying apparatus 100. The displaying apparatus 100 further includes a display data storing unit 130 and a display controller 140, besides the display panel 110, and the bend members 120a and 120b. The display data storing unit 130 stores a group of display data, which includes a plurality of display data, of which numerical order for displaying is predetermined. The group of display data is, for example, an electronic book or an electronic album. The display data is, for example, a page of the electronic book or the electronic photograph. The display controller 140 controls the display in the display panel 110, based on the results, detected by both a deformation volume detector 122a included in the bend member 120a and a deformation volume detector 122b included in the bend member 120b. The details of the operation with respect to the display controller 140 will be described with reference to a following flowchart.

[0031] FIG. 4 is a flowchart showing the operation of the display controller 140. The display controller 140 decides the contact position of the user at the bend member 120, based on each of the results of the position detector 124a and the position detector 124b (S20). Next, the display controller 140 sets the display data to be displayed firstly based on the decided contact position (S22). For example, when the user moves the contact position to an upper part at the bend member 120 shown in FIG. 1, the display controller 140 sets data of which display order is previous to the present display data, as the display data to be display firstly. In this case, the display order is a numerical order with respect to the display data. When the user moves the contact position to a lower part in the bend member 120 shown in FIG. 1, the display controller 140 sets data of which display order is next to the present display data, as the display data to be display firstly.

[0032] The display controller 140 decides which of the deformation volume detector 122a and the deformation volume detector 122b the user bends, based on which of the deformation volume detector 122a and the deformation volume detector 122b detects the deformation volume (S24). In this case, the display controller 140 decides that the user has bended either the bend member 120a or the bend member 120b on the condition that the detected deformation volume exceeds a predetermined volume.

[0033] Next the display controller 140 set the updating order for updating the display data, based on the results of