

the bag portions q20 to q24 (not shown in the drawings) by passing through the air-exhaust port 307 and the flow channel 2b.

[0127] When the valve bodies 304, 305 are opened at the same time, the air supplied from the blower 3b is introduced to the bag portions q1 to q17 by passing through the air-exhaust port 306 and the flow channel 2a and at the same time, is introduced to the bag portions q18 to q24 by passing through the air-exhaust port 307 and the flow channel 2b. Also, when the valve bodies 304, 305 are closed at the same time, the air supply to the bag portions q1 to q24 is stopped.

[0128] In this manner, the programmable air-circulation unit 3 is constituted to send the air to the plurality of bag portions q1 to q17 and the plurality of bag portions q18 to q24, which are arranged in the base member 11, for every group or to take the air from the bag portions q1 to q17 and the bag portions q18 to q24. In the touch-sensitive sheet member 200 shown in FIG. 14A, it is possible to fill the bag portion q5, the bag portion q8, the bag portion q10 and the like up with the air supplied from the air-circulation unit 3 by passing through the flow channel 2a and the like.

[0129] The following will describe a formation method of the base member 11 with reference to FIGS. 15A to 15C. FIGS. 15A to 15C show a formation example of the base member 11. In this example, there are formed a first sheet member 11a in which the bag portions q7, q11 and the like shown in FIG. 14B are halved in the horizontal direction and a second sheet member 11b in which the bag portions q7, q11 and the like shown in FIG. 14B are also halved in the horizontal direction. For example, by processing a die member, a core and a cavity are prepared which form dish shapes modeling the bag portions q7, q11 and the like. By die-tightening a die having such a core and cavity and by sealing a transparent resin material therein, there is formed the first sheet member 11a having the concave shaped half-cut bag portions q7, q11 as shown in FIG. 15A in which the bag portions q7, q11 and the like shown in FIG. 14B are halved in the horizontal direction.

[0130] Next, there is formed the second sheet member 11b having air insertion portions 11c and the concave shaped half-cut bag portions q7, q11 which become partners of the concave shaped half-cut bag portions q7, q11 and the like shown in FIG. 15A. For example, by processing a die member, a core and a cavity are prepared which form dish shapes modeling the half-cut bag portions q7, q11 and the like and shapes of the air insertion portions 11c. By die-tightening a die having such a core and cavity and by sealing a transparent resin material therein, there is formed the second sheet member 11b having the air insertion portions 11c and the concave shaped half-cut bag portions q7, q11 shown in FIG. 15B.

[0131] Thereafter, the base member 11 having the bag portions q1 to q24 is formed by bonding the first and second concave shaped sheet members 11a, 11b. At that time, the concave region of the half-cut bag portions q7, q11 of the first sheet member 11a and the concave region of the half-cut bag portions q7, q11 of the second sheet member 11b are bonded with them being positioned. For the bonding of the first sheet member 11a and the second sheet member 11b, a hot melt-based resin adhesive agent or a double-sided tape is used. Thus, the base member 11 having the plurality of bag portions q1 to q24 as shown in FIG. 14A is completed.

[0132] The following will describe a function example of the base member 11 with reference to FIGS. 16A to 16C. FIGS. 16A to 16C show a function example of the base

member 11. The bag portion q11 or the like shown in FIG. 16A is a state in which the air is not filled up. In this state, when an operator presses the bag portion q11 or the like, he or she can obtain any sense of touch of concave feeling. The bag portion q11 or the like shown in FIG. 16B is a state in which the air is filled up. The bag portion q11 or the like is filled up with compressed air constantly from the air-circulation unit 3 shown in FIG. 14B through the flow channel changeover unit 3b.

[0133] In this example, when the operator touches the bag portion q11 or the like of a state of being filled up with the air shown in FIG. 16C with the finger or the like (operation body), he or she can obtain any sense of touch of concave and convex feeling by a protuberant shape depending on the swelled-up bag portion q11 or the like with respect to the operator's finger 30a. Thus, it is possible to execute the slide operation and the press operation accompanied with an elastic feeling.

[0134] FIGS. 17A and 17B show a modification example of the base member 11. The base member 11A as shown in FIG. 17A is equal to a reverse dish shaped bag body which does not have the flow-out port Q7 shown in FIG. 11A. The sheet shaped base member 11A having such a half-cut bag portion q7 shown in FIG. 17B is formed so as to be formed as being shown in FIG. 15A and is bonded to the panel body 2k of the flow channel panel 2 shown in FIG. 14A without forming the half-cut bag portion q7 or the like of the partner as shown in FIG. 15B, thereby enabling a touch-sensitive sheet member. This touch-sensitive sheet member, not shown, is the device in which the sheet shaped base member 11A having the half-cut bag portion q7 shown in FIG. 17B is bonded to the panel body 2k of the flow channel panel 2 shown in FIG. 14A. It should be noted that each of the signs, "1a" in FIGS. 17A and 17B indicates a display region of the key of numeral "1" or the like which forms the icon image. Even by this structure, it is possible to obtain a unique sense of touch by the swelled-up base member 11A.

[0135] In this manner, according to the touch-sensitive sheet member 200 as the second embodiment, the blower 3b comes to send the compressed air to the bag portions q1 to q24 for every group through the flow channel changeover unit 3a. Consequently, in the spots of the base member 11 or the predetermined positions of the base member 11, it becomes possible to represent the sense of touch for giving the concave and convex feeling by the protuberant shape depending on each of the swelled-up bag portions q1 to q24 or by the original shape in a case of no ventilation with respect to the operator's finger or the like (operation body). Thus, it becomes possible to provide the input device having the programmable touch-sensitive input sheet.

Embodiment 3

[0136] FIG. 18 shows a configuration of a third embodiment of an input device 300 according to the embodiment to which the touch-sensitive sheet member 200 is applied. In this embodiment, the input device 300 which can carry out an operation panel building mode is provided. The input device 300 can select a first group of seventeen element bag portions E1 to E17 and/or a second group of eight element bag portions E18 to E25, which are provided on the same plane of a base member 101.

[0137] The input device 300 shown in FIG. 18 inputs any information by the slide and/or press operation depending on the finger or the like of the operator 30 (operation body). The