**FIG. 5**. **FIG. 5** schematically illustrates the touch panel apparatus **10** in a perspective view. Incidentally, in this figure, the same elements or components as in **FIG. 2** carry the same numerals, and the explanation of them is omitted.

[**0092**] In **FIG. 5**, the visual information "1", which is an example of the "visual information to prompt the input operation" according to the present invention, is displayed on the display device **200**. This visual information reaches the photoconductive layer **420** through the touch panel device **300** (not shown in **FIG. 5**) opposite to the display device **200**. At the photoconductive layer **420**, the conductivity of a part corresponding to black color (i.e. the part indicating "1") does not change, and the conductivity of a part corresponding to while color (i.e. the area other than the part indicating "1") increases.

[**0093**] As a result, at the electrorheological fluid layer **430**, the viscosity of the area other than the part indicating "1" changes so that this area becomes harder, and the viscosity of the part indicating "1" does not change so that this area becomes relatively softer. The tactile impression due to the viscosity change, differentiating the hard part from the soft part, is transmitted to the operator through the plastic film **450**. The thickness of the plastic film **450** is determined within a range so as not to disturb this tactile impression. That is, according to the tactile display device **400**, it is possible to present to the operator the tactile impression due to the difference in the viscosity of the electrorheological fluid layer **430**, differentiating the hard part from the soft part, as the tactile information, when the operator operates the touch panel device **300** (not shown in **FIG. 5**) in order to select the visual information "1" displayed on the display device **200**.

[**0094**] As mentioned above, according to the touch panel apparatus **10** with tactile display function, it is possible to change the viscosity of the electrorheological fluid layer **430** by means of the visual information on the display device **200**, i.e. by means of so-called "light input". Therefore, it is possible to present the tactile information effectively.

[**0095**] Incidentally, a type or kind of the electrorheological fluid composing the electrorheological fluid layer **430**, the thickness of the electrorheological fluid layer **430**, a type or kind of the photoconductive material composing the photoconductive layer **420**, the thickness of the photoconductive layer **420** and a voltage value applied to the tactile display device **400** and so on are determined experimentally, empirically otherwise via simulation, in order to present the tactile information appropriately.

[**0096**] Incidentally, in this embodiment, the display device **200** displays only the binary information indicating black or white. Nevertheless, the display device **200** may be a display device capable of performing a full-color display as seen in a usual full-color display device. In this case, although the viscosity of the electrorheological fluid layer **430** may change with a great variety, the electrorheological fluid layer **430** and the photoconductive layer **420** may be sufficiently adapted in such a manner that the viscosity of the part corresponding to black color differs significantly from the viscosity of the remaining area.

[**0097**] Incidentally, the touch panel device **300** may be embodied in various types such as an existing capacitance type, an existing infrared type, an existing piezoelectric type, an existing electromagnetic induction type, an existing SAW (surface acoustic wave) type, an existing non-contact optical type and so on, without limited to the resistance film type using ITO which is exemplified in this embodiment.

## Second Embodiment

[**0098**] In the aforementioned first embodiment, there is even a possibility of a discomfort feeling about the operation, if the viscosity of the electrorheological fluid layer **430** does not change even in the case that the operator depresses the plastic film **450** to select the visual information such as a button. In the second embodiment, this problem is solved by the CPU **110** which performs a tactile addition process as explained below (i.e. acts as an example of the "change addition device" according to the present invention). Hereinbelow, an explanation will be made on the second embodiment of the present invention, with reference to **FIG. 6** and **FIG. 7**. **FIG. 6** schematically illustrates a display screen in the tactile addition process in a plan view, and **FIG. 7** is a flow chart of the tactile addition process.

[**0099**] Incidentally, a construction or structure in the second embodiment is the same as the first embodiment, because the second embodiment is of an explanation about the process performed by the control device **100** in the first embodiment. Therefore, in the aftermentioned explanation of the second embodiment, elements or components the same as in the first embodiment carry the same numerals and the explanation of them is omitted as appropriate.

[**0100**] In **FIG. 7**, the CPU **110** of the control device **100** displays the typical visual information (step **S10**). The typical visual information means visual information "1" as described in the first embodiment. In this second embodiment, there is displayed the visual information in which the numeral character "1" is encompassed within a square frame.

[**0101**] In **FIG. 6** (*a*), there is shown a status of the display device **200** at step **S10**. In this status, the part indicating "1" and the surrounding square part are shown as black, and the remaining area are shown as white. This visual information is the same as a numeric key for an ATM of a bank, for example.

[**0102**] Furthermore, in **FIG. 6** (*b*), there is shown a status of the electrorheological fluid layer **430**, correspondingly to **FIG. 6** (*a*). In this status, as described above, a part corresponding to the black part of the display device **200** becomes softer and a part corresponding to the white part of the display device **200** becomes harder.

[**0103**] Referring back to **FIG. 7**, it is assumed that the operator selects this visual information at a certain time point and depresses a part of the plastic film **450** corresponding to this visual information (step **S11**). The pressure resulting from this depression is transmitted to the tactile display device **400** and further to the touch panel device **300**, so that the coordinate information indicating the display position of the visual information on the display device **200** is outputted from the FPC substrate **323** and stored into the memory **120**, as shown in **FIG. 3** (*b*). The CPU **110** detects a fact that the visual information is selected (i.e. "1" is inputted by the operator) (step **S12**), due to a fact that the coordinate data is stored into the memory **120**.

[**0104**] Then, the CPU **110** changes a display pattern of the selected visual information on the display device **200** (step