

[0024] As such, the second optical film is provided to be arranged on the thin-plate region of the first substrate, and thus the total thickness of the electro-optical device can be reduced.

[0025] It is preferable that a second optical film (a phase plate or the like) is provided between the electro-panel and the first optical film and is arranged between the electro-optical panel and the input device.

[0026] As described above, in accordance with the second aspect of the invention, since any of the substrates of the input device is made of the glass substrate, positional relationship between the input device and the optical films can be freely designed. For this reason, as described above, the input device may be arranged below the second optical film (between the liquid crystal panel and the second optical film). Alternatively, the input device may be arranged above the first optical film (between the second optical film and the first optical film or above the first optical film). When the second optical film and the first optical film are laminated above the input device, the total thickness of these optical members becomes large, such that an input pressure is not sufficiently transferred to the coordinate input surface. In this case, like the configuration of the second aspect of the invention, it is preferable that the second optical film and the first optical film are separately attached above and below the input device. In such a manner, the input operation can be easily performed.

[0027] It is preferable that, on a rear surface of the fourth substrate of the electro-optical panel, a thin-plate region having a reduced thickness than the periphery is formed at a position which faces the coordinate input surface of the input device.

[0028] As described above, in the electro-optical device in which the input device is mounted on the front surface of the liquid crystal panel, when a finger or a pen is pressed on the coordinate input surface, the third substrate of the liquid crystal panel is partially deflected by the pressure. The deflection of the substrate changes the gap between the substrates, thereby generating the display distortion. On the contrary, in accordance with the second aspect of the invention, since the thin-plate region is formed on the fourth substrate of the liquid crystal panel, the fourth substrate is easily deflected. Therefore, when the third substrate is deflected by the above-described input operation, the fourth substrate is also deflected accordingly. For this reason, the partial change in gap is suppressed and thus the display distortion hardly occurs.

[0029] It is preferable that a third optical film (a polarizing plate or the like) is provided on a rear surface of the electro-optical panel and is arranged on the thin-plate region that is formed on the fourth substrate of the electro-optical panel.

[0030] In accordance with the second aspect of the invention, there is provided an inner-type electro-optical device in which the optical film (the third optical film) provided on the rear surface of the liquid crystal panel is arranged on the thin-plate region of the fourth substrate of the liquid crystal panel. In such a manner, a thin electro-optical device can be provided as compared to the related art.

[0031] According to a third aspect of the invention, an electronic apparatus includes the above-described electro-optical device.

[0032] In accordance with the third aspect of the invention, an electronic apparatus which has high durability or reliability and which is excellent in detection precision when the input is performed can be provided.

[0033] According to a fourth aspect of the invention, there is provided a method of manufacturing an input device which has a first substrate having a coordinate input surface and a second substrate facing the first substrate and in which a position on the coordinate input surface of the first substrate is directly indicated, such that coordinate information at the indicated position is input. The method includes bonding the first substrate and the second substrate, each being made of a glass substrate, by sealing materials which are provided in ring shapes on peripheral portions of the first and second substrates, and forming, according to the coordinate input surface of the first substrate, a thin-plate region having the reduced thickness than the periphery of the coordinate input surface.

[0034] In accordance with the fourth aspect of the invention, the portion corresponding to the coordinate input surface in the first substrate is reduced in thickness. Thus, as compared to the case in which the glass substrates are simply bonded, the input load can be reduced and the detection precision can be increased. Further, in accordance with the fourth aspect of the invention, a thick portion (hereinafter, also referred to as a thick-plate region) remains in a frame shape around the coordinate input surface, without reducing the thickness of the entire substrate. Therefore, the first substrate has improved impact resistance or ease of handling, such that the manufacturing process can be simplified.

[0035] In this case, the method of manufacturing an input device may further include sealing a liquid material for adjusting a refractive index into a space surrounded by the first substrate, the second substrate, and the sealing materials.

[0036] As such, an input device in which the reflection on the interface is suppressed and has high transmittance can be constructed. Further, the sealed liquid material serves as a cushion for relieving the input stress. Thus, the impact resistance of the input device is enhanced.

[0037] In this case, the method of manufacturing an input device may further include forming a buffing member made of an elastic member on a surface of the first substrate or second substrate.

[0038] As such, since the buffing member is provided, the impact resistance of the input device can be increased.

[0039] In this case, the bonding of the first substrate and the second substrate may include bonding a first mother substrate having a plurality of substrate regions, each serving as the first substrate, and a second mother substrate having a plurality of substrate regions, each serving as the second substrate, by the sealing materials formed on the respective substrate regions. Further, the forming of the thin-plate region on the first substrate may include forming the thin-plate region on a region which is the coordinate input surface of each of the substrate regions of the first mother substrate. At this time, the method of manufacturing an input device may further include, after the forming of the thin-plate region on the first substrate, cutting the bonded first and second mother substrates to separate input devices from each other. Here, the cutting of the first mother