

are fixed to the casing **30** at the center of both sides of the liquid crystal display device **20**.

[0044] Next, the coordinate input element **10** will be described with reference to FIGS. **3** to **5**.

[0045] FIG. **3** is a plan view of the coordinate input element **10** shown in FIGS. **1** and **2**, FIG. **4** is a perspective plan view of the coordinate detector **11** of the coordinate input element **10**, and FIG. **5** is a cross-sectional view of the coordinate detector **11** shown in FIG. **4**.

[0046] As shown in FIG. **3**, the coordinate input element **10** includes the coordinate detector **11** for detecting information scanned by a finger of the user, a pen, or the like and a controller **12** provided on one side (left side in the figure) of the coordinate detector **11**. In the coordinate input element **10** of the embodiment, the coordinate detector **11** and the controller **12** are integrated so as to share a substrate (a second insulating layer) **16**. As shown in FIG. **3**, the controller **12** has a control circuit **12a** for driving and controlling the coordinate detector **11** on the substrate **16** shared by the coordinate detector **11**. The control circuit **12a** is electrically connected to the coordinate detector **11** through transparent circuit wiring lines (not shown) formed on the substrate **16**.

[0047] As shown in FIGS. **4** and **5**, in the coordinate detector **11**, a plurality of (thirteen in FIG. **4**) linear transparent electrodes (a first electrode layer) **16a** extending in the direction orthogonal to the longitudinal direction of the substrate **16** are provided in parallel on the upper surface of the flat substrate (second insulating layer) **16**, which comprises a transparent resin film and glass. Also, on the lower surface of the substrate **16**, a plurality of (five in FIG. **4**) strip-like transparent electrodes (a second electrode layer) **16b** extending in the direction orthogonal to the transparent electrodes **16a** provided on the upper surface of the substrate **16** are formed in parallel.

[0048] Also, as shown in FIG. **5**, a protective layer (a first insulating layer) **17** comprising a transparent resin substrate is bonded to the substrate **16** with a transparent adhesive so as to cover the transparent electrodes **16a** and a lower insulating layer (a third insulating layer) **18** comprising a transparent resin material is bonded to the substrate **16** with a transparent adhesive so as to cover the transparent electrodes **16b** on the lower side of the substrate **16**. A transparent hard coat layer having surface unevenness may be bonded to the upper surface of the protective layer **17** with a transparent adhesive or the like. When such a layer is provided, the friction between the tip of a finger or a pen and the scanned surface is reduced when the surface of the coordinate detector **11** is scanned by the finger or the pen, and thus the usability can be improved.

[0049] One end in the longitudinal direction (the lower end in FIG. **4**) of each of the transparent electrodes **16a** is connected to one end of corresponding circuit wiring line **13** comprising a transparent conductive material. The other end of each circuit wiring line **13** is connected to the control circuit **12a** shown in FIG. **3** so that the control circuit **12a** and the transparent electrodes **16a** are electrically connected. On the other hand, one end in the longitudinal direction (the left end in FIG. **4**) of each of the transparent electrodes **16b** formed on the lower surface of the substrate **16** is connected to one end of corresponding circuit wiring

line **14** comprising a transparent conductive material. The other end of each circuit wiring line **14** is connected to the control circuit **12a** so that the control circuit **12a** and the transparent electrodes **16b** are electrically connected.

[0050] In the embodiment, each of the substrate **16** (second insulating layer), the protective layer **17** (first insulating layer), and the lower insulating layer **18** (third insulating layer) comprises a transparent resin substrate. However, these layers can be formed by applying a liquid resin material and then curing. For example, in order to form the protective layer **17** with this method, a light setting resin or a thermosetting resin is applied to cover the transparent electrodes **16a** so that the resin is cured by ultraviolet radiation or heating. Also, only the lower insulating layer **18** may be a transparent resin substrate and the other layers may be formed by applying a resin and curing it as described above.

[0051] By forming each of the layers by application of a resin and curing, an extremely thin layer can be easily formed. Accordingly, the light transmittance of the coordinate detector **11** can be easily increased compared to the case where the resin substrate is bonded with an adhesive.

[0052] The display area of the liquid crystal display device **20** is placed on the back side of the coordinate detector **11** and the liquid crystal display device **20** is sandwiched by the coordinate input element **10** and the casing **30**. In the coordinate input device **1** of the embodiment, the size of the liquid crystal display device **20** is substantially the same as that of the coordinate detector **11**. Also, information displayed on the liquid crystal display device **20** is transmitted through the coordinate detector **11** so that the user can see the information. Also, a conductive ground layer is provided on a plane surface of the liquid crystal display device **20** so as to keep the coordinate detector **11** and the liquid crystal display device **20** electrically stable and to prevent an electrical disturbance from the electronic equipment.

[0053] The liquid crystal display device **20** may be any of a reflective-type, a transmissive-type, and a transfective-type. In particular, the advantage of the coordinate input device of the present invention becomes significant when a reflective or transfective liquid crystal display device is used. The reason is as follows. In a reflective or transfective liquid crystal display device, display is performed by reflecting an external light at the reflective layer inside the device and thus the luminance greatly depends on the amount of external light. The coordinate input element **10** of the present invention has a high light transmittance, and thus attenuation of the light entering the liquid crystal display device and the light radiated from the device can be suppressed when the light is transmitted through the coordinate detector **11**. Accordingly, a bright display can be realized. Also, when a transmissive liquid crystal display device is used, the light radiated from the liquid crystal display device **20** is transmitted through the coordinate detector **11** with little attenuation so as to reach the user, and thus a clear and bright display can be obtained.

[0054] The operation buttons **40B** and **41B** of the push button switches **40** and **41** are movable vertically and are urged upward by tact switches (not shown) provided on the back side of these buttons. When one of the operation buttons **40B** and **41B** is pushed downward by the user, the tact switch on the back side is turned on and the tact switch