

according to this invention. The capacitive-type touch panel includes: a transparent substrate **3**; a plurality of first conductors **41** disposed on the transparent substrate **3** and oriented in a first direction; a plurality of second conductors **42** disposed on the transparent substrate **3**, oriented in a second direction transverse to the first direction, intersecting insulatively with the first conductors **41**, and cooperating with the first conductors **41** to form a matrix of capacitive regions **4** when a current is applied to the first and second conductors **41**, **42**; and a controller **70** connected electrically to the first and second conductors **41**, **42** through conductive connecting lines **61**, **62** for detecting the capacitance of each of the capacitive regions **4**. Each of the first conductors **41** is intersected and divided by the second conductors **42** into a series of first electrode sections **411**. Each of the second conductors **42** is intersected and divided by the first conductors **41** into a series of second electrode sections **421**. Each of the first and second electrode sections **411**, **421** of the first and second conductors **41**, **42** has a fine conductor line-constructed structure which is constructed from a fine line-shaped conductor having a dimension that permits the fine line-shaped conductor to be substantially not visible to the naked eye. Preferably, the fine line-shaped conductor has a layer thickness less than 250 angstroms, and more preferably, ranging from 10-50 angstroms so as to be transparent, or has a line width less than 200 microns so as to be substantially not visible to the naked eye. Preferably, the fine line-shaped conductor is made from a metallic material selected from the group consisting of Cu, Al, Au, Ag, Ni, Cr, Mo, and combinations thereof. Formation of the first and second conductors **41**, **42** can be conducted using vapor deposition techniques. It is noted that the fine line-shaped conductor can be linear, curved or meandering in shape.

[0030] In this embodiment, each of the first and second electrode sections **411**, **421** of the first and second conductors **41**, **42** has a main part **413**, **423** (see FIG. 5) that is linear in shape, and two opposite bridging parts **417** (**427**) extending from two opposite ends of the main part **413**, **423** in opposite directions. Each of the bridging parts **417** of each of the first electrode sections **411** is connected to and cooperates with an adjacent one of the bridging parts **417** of an adjacent one of the first electrode sections **411** to define a first bridging line **415**. Each of the bridging parts **427** of each of the second electrode sections **421** is connected to and cooperates with an adjacent one of the bridging parts **427** of an adjacent one of the second electrode sections **421** to define a second bridging line **425**. The capacitive type touch panel further includes a plurality of spaced apart insulators **5**, each of which is disposed at an intersection of the first bridging line **415** interconnecting the main parts **413** of an adjacent pair of the first electrode sections **411** and the second bridging line **425** interconnecting the main parts **423** of an adjacent pair of the second electrode sections **421**, and each of which is sandwiched between the first bridging line **415** interconnecting the main parts **413** of the adjacent pair of the first electrode sections **411** and the second bridging line **425** interconnecting the main parts **423** of the adjacent pair of the second electrode sections **421**.

[0031] In this embodiment, the transparent substrate **3** has opposite first and second surfaces **31**, **32**, and the first and second conductors **41**, **42** are formed on the first surface **31** of the transparent substrate **3**.

[0032] Preferably, the transparent substrate **3** is made from a material selected from the group consisting of glass, poly-

methylmethacrylate, polyvinylchloride, polypropylene, polyethylene terephthalate, polyethylene naphthalate, polycarbonate, and combinations thereof.

[0033] Preferably, each of the insulators **5** is made from a material selected from the group consisting of photoresist, silicon dioxide, titanium dioxide, zinc oxide, silicon nitride, aluminum nitride, tantalum oxide, and combinations thereof.

[0034] FIG. 6 illustrates the second preferred embodiment of the capacitive-type touch panel according to this invention. The second preferred embodiment differs from the previous embodiment in that the main part **413**, **423** of the fine conductor line-constructed structure of each of the first and second electrode sections **411**, **421** of the first and second conductors **41**, **42** includes a linear stem portion **4131**, **4231** and spaced apart linear branch portions **4132**, **4232** transverse to the linear stem portion **4131**, **4231**.

[0035] FIGS. 7 and 8 illustrate the third preferred embodiment of the capacitive-type touch panel according to this invention. The third preferred embodiment differs from the previous embodiments in that the main part **413**, **423** of the fine conductor line-constructed structure of each of the first and second electrode sections **411**, **421** of the first and second conductors **41**, **42** is rectangular in shape.

[0036] FIGS. 9 to 11 illustrate the fourth preferred embodiment of the capacitive-type touch panel according to this invention. The fourth preferred embodiment differs from the third preferred embodiment in that the main part **413**, **423** of the fine conductor line-constructed structure of each of the first and second electrode sections **411**, **421** of the first and second conductors **41**, **42** has a plurality of intersected weft and warp metal lines **4131**, **4132** (**4231**, **4232**). The capacitive-type touch panel of this invention further includes an anti-reflective layer **72** disposed on the first and second conductors **41**, **42** (in this embodiment, it is formed directly on the first and second conductors **41**, **42**), a protective layer **71** disposed on the anti-reflective layer **72** (in this embodiment, it is formed directly on the anti-reflective layer **72**), and a conductive layer **73** disposed on the second surface **32** of the transparent substrate **3** (in this embodiment, it is formed directly on the second surface **32** of the transparent substrate **3**) and functioned as one of a grounding medium and an electromagnetically shielding medium. The conductive layer **73** is preferably made from a transparent conductive material. The screen-like structure permits enhancement in reduction of the sheet resistance of the capacitive-type touch panel. The protective layer **71** is preferably made from a material selected from the group consisting of adhesive, resin, photoresist, oxides, nitrides, and combinations thereof.

[0037] FIG. 12 illustrates the fifth preferred embodiment of the capacitive-type touch panel according to this invention. The fifth preferred embodiment differs from the fourth preferred embodiment in that the screen-like main part **413**, **423** of the fine conductor line-constructed structure of each of the first and second electrode sections **411**, **421** of the first and second conductors **41**, **42** defines a plurality of holes **4130**, **4230**, each of which is filled with a transparent conductive material **416**, **426**. Preferably, the transparent conductive material **416**, **426** is selected from the group consisting of indium-tin-oxide, indium-zinc-oxide, zinc oxide, aluminum zinc oxide, and combinations thereof. Inclusion of the trans-