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Philipp**

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(54) CAPACITIVE SENSOR AND ARRAY

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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Related U.S. Application Data

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(52) U.S. Cl. 341/33; 341/22; 178/18.06

**(58) Field of Search 341/33, 22; 178/18.06,
178/18.07; 200/343; 345/168**

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(57) ABSTRACT

Proximity of a body, which may be a user's finger, to an electrode pair is sensed by a charge transfer capacitive measurement approach. The electrode pair thus acts as a key that can be arrayed with other electrode pairs to form a keypad, keyboard, linear slider control, or liquid level sensor. In one embodiment of the invention each key is associated with an alternating voltage source and a pair of electrodes mounted on or within a solid dielectric substrate or panel so as to be separated from each other by a gap. The voltage source is connected to a driven electrode, a sampling charge detector is connected to a second, receiving, electrode, and the output of the charge detector is, in turn, fed into a signal processor. Disturbances in coupling between the two electrodes are detected through the solid substrate or panel material when a substance or object approaches or contacts the panel. The receiving electrode is a low-impedance node during the sampling phase of the process, which aids in keeping the sensor from being affected by wiring length or by extraneous objects near an output lead..

10 Claims, 7 Drawing Sheets

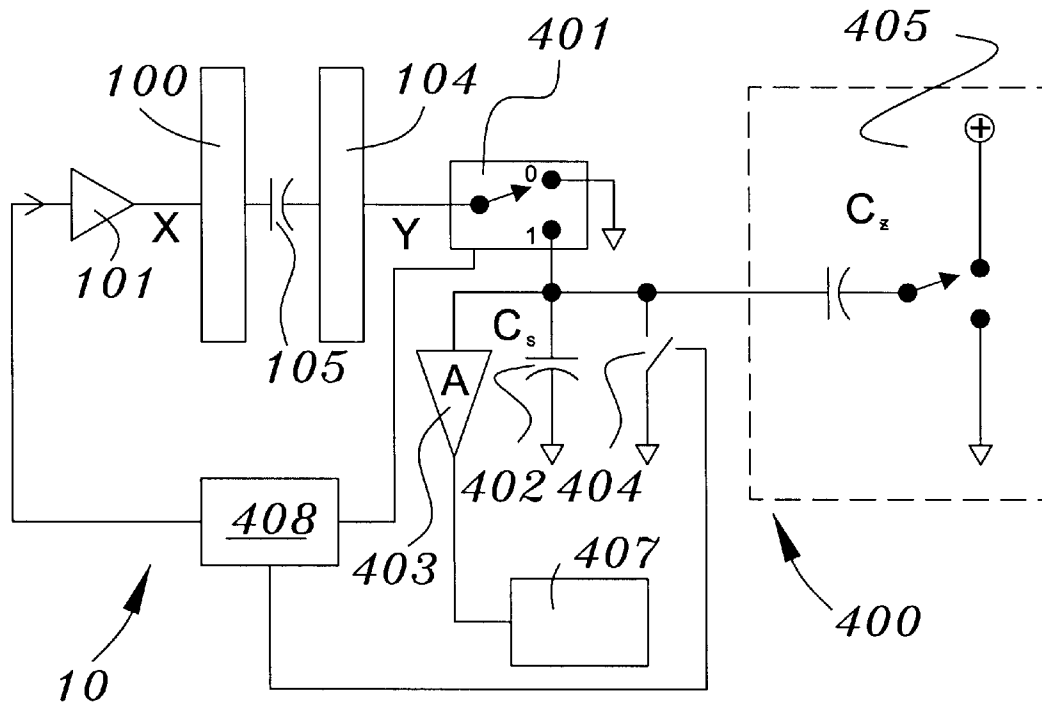


FIG. 1a

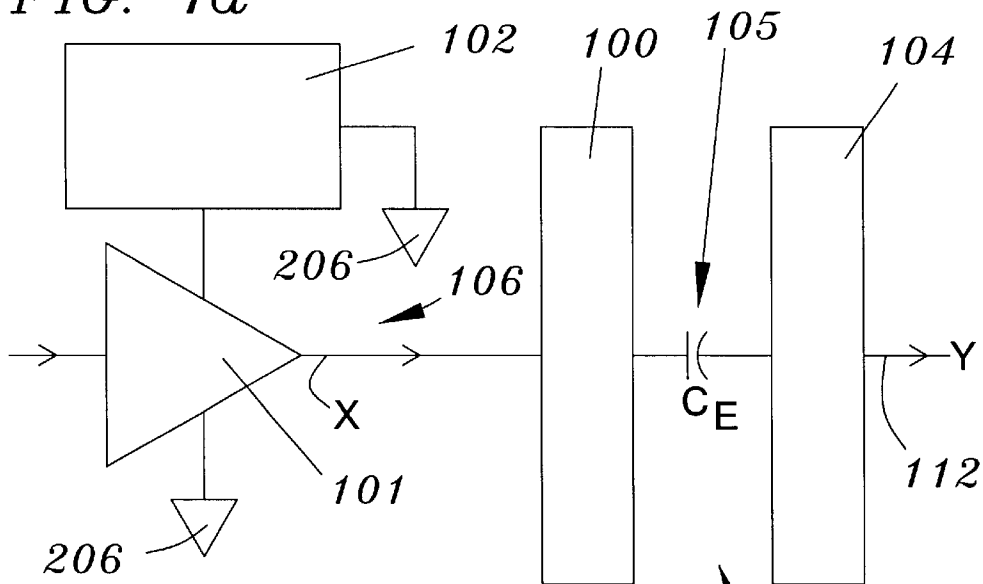


FIG. 1b

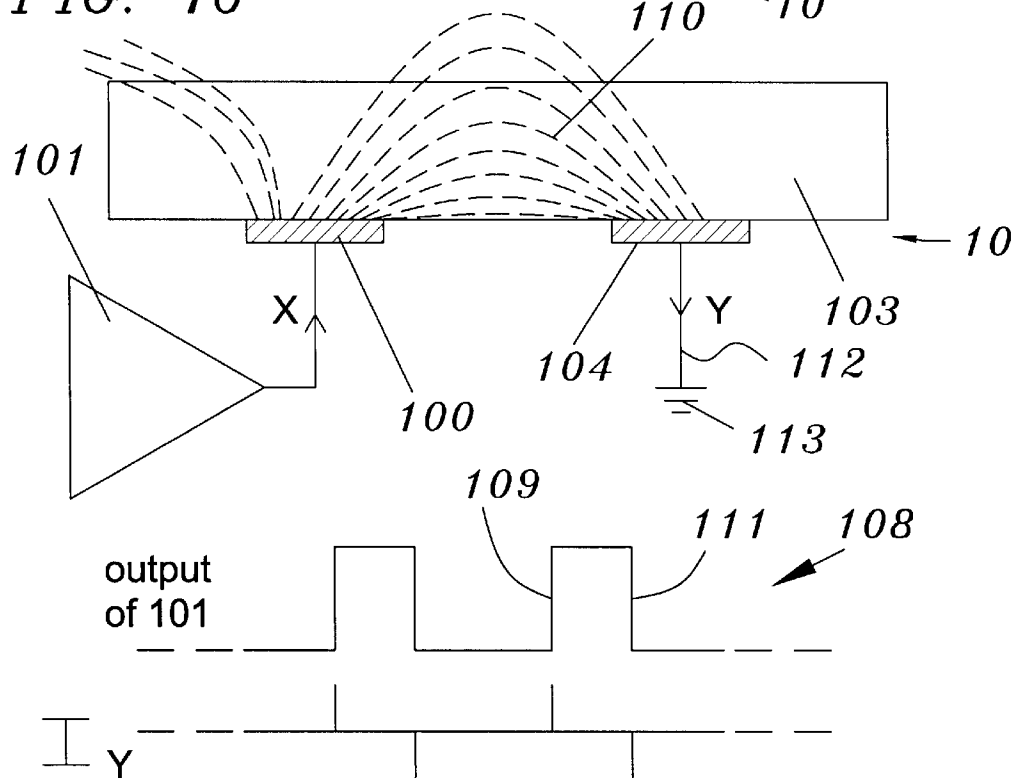


FIG. 1c

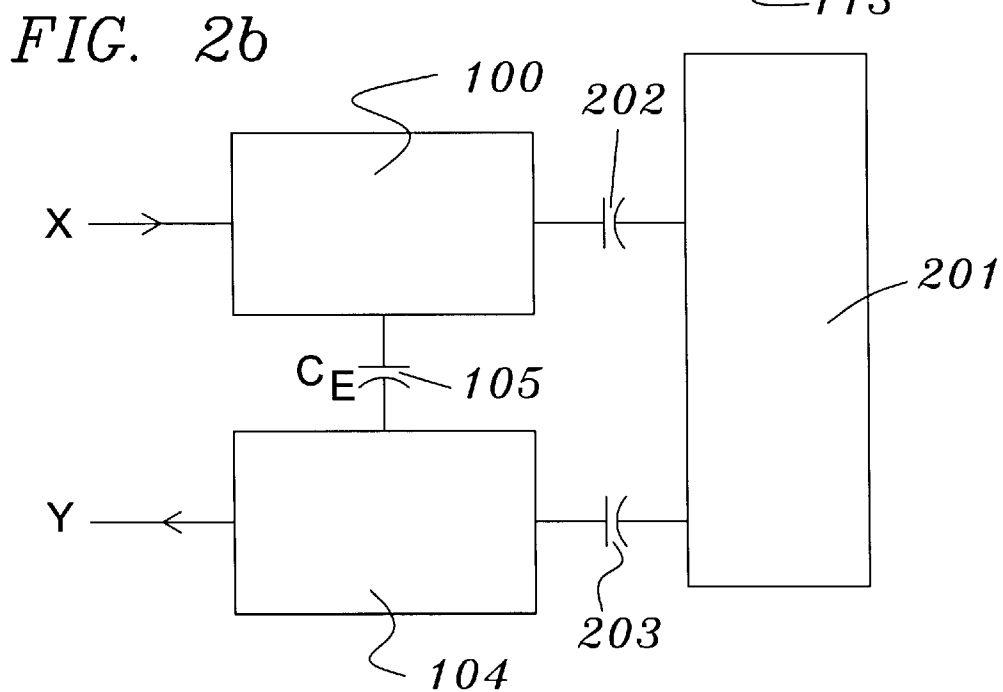
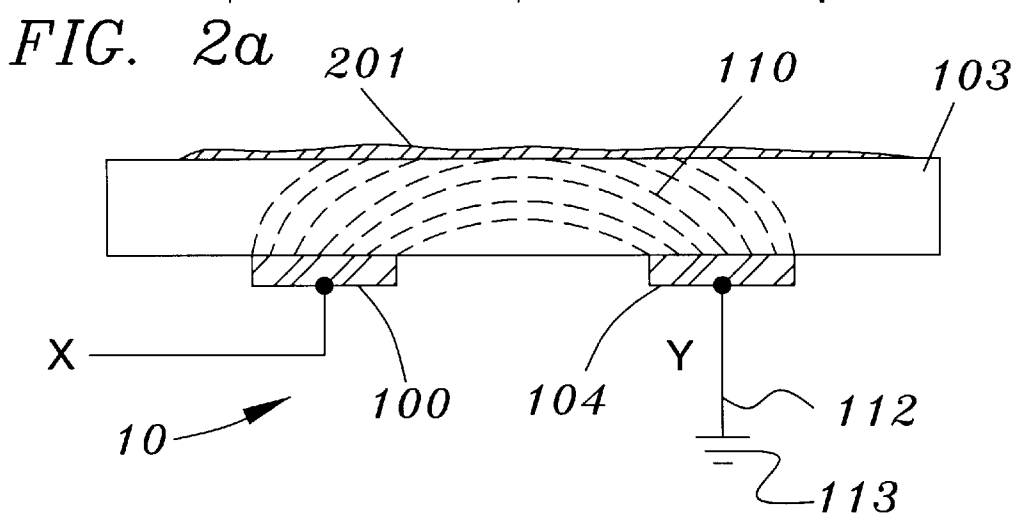
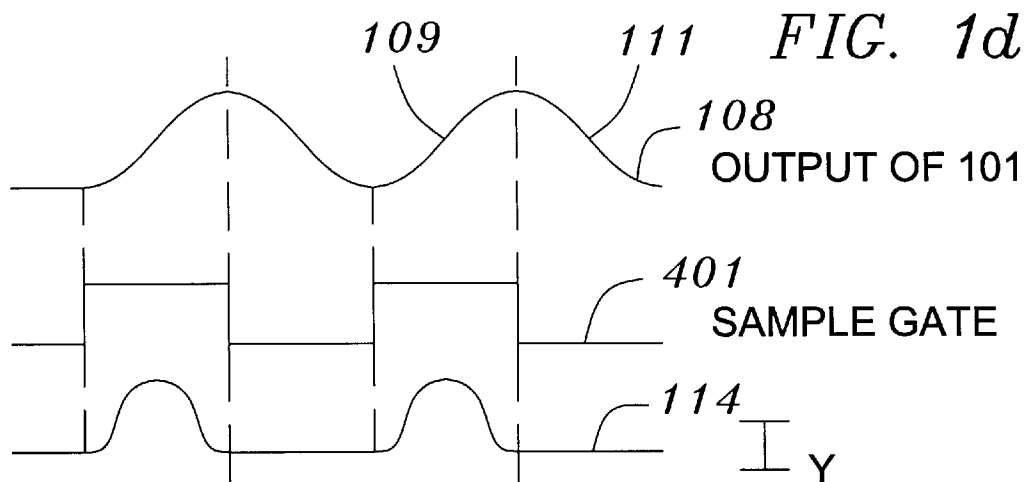


FIG. 3a

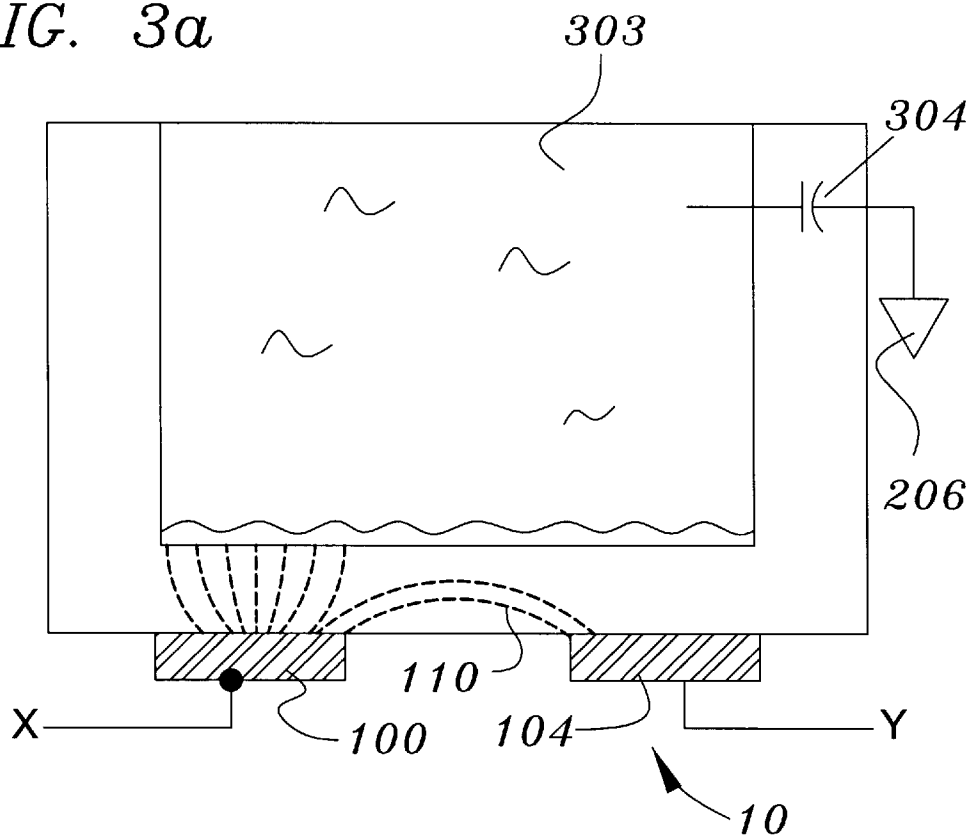
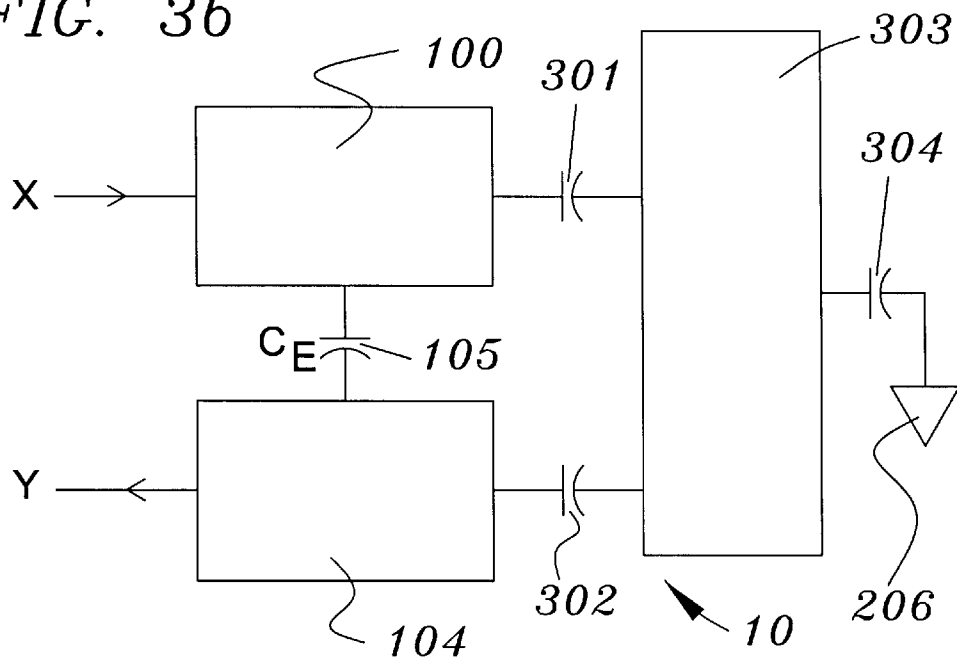
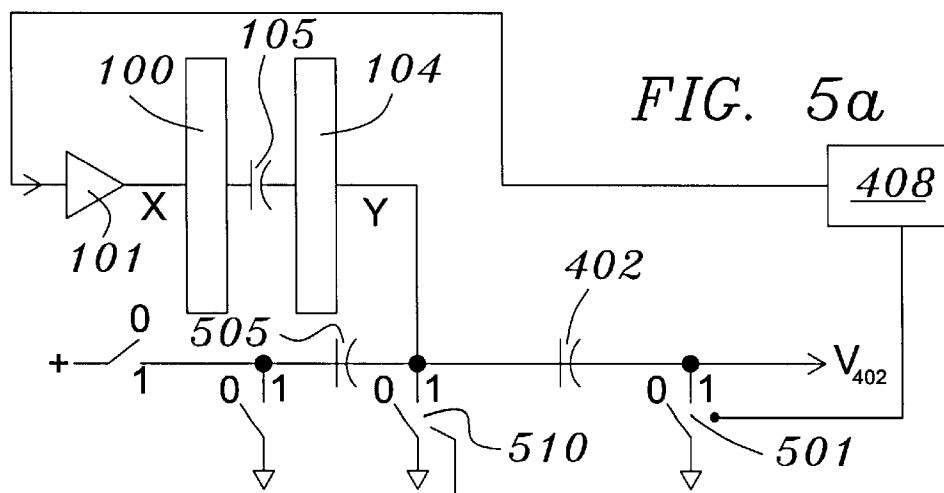
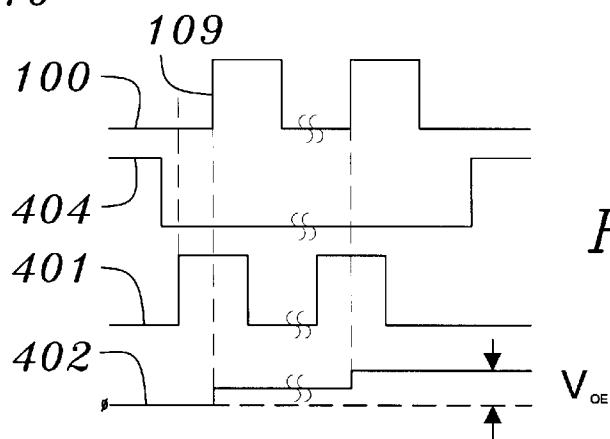
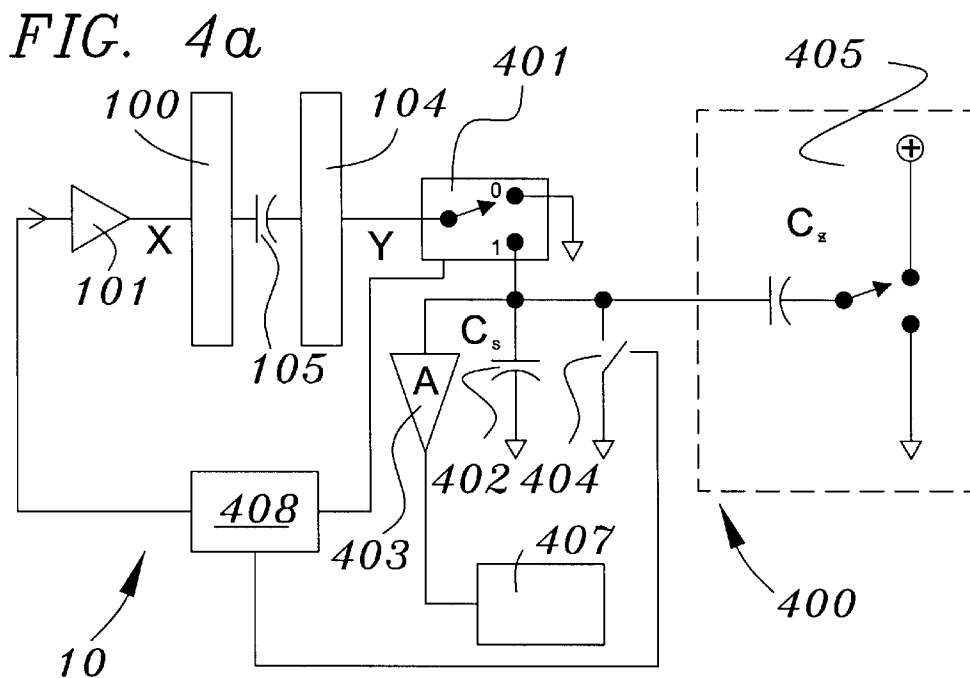


FIG. 3b





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