



United States Patent [19]

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Kalendra et al.

[45] Date of Patent: **Feb. 1, 1994**

[54] **AUTOMATIC CALIBRATION OF A CAPACITIVE TOUCH SCREEN USED WITH A FIXED ELEMENT FLAT SCREEN DISPLAY PANEL**

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[21] Appl. No.: **947,688**

[22] Filed: **Sep. 21, 1992**

[51] Int. Cl.⁵ **G09G 5/00**

[52] U.S. Cl. **345/168; 345/156**

[58] Field of Search **340/706, 712; 178/18, 178/19, 20; 341/32, 33**

[56] **References Cited**

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[57] **ABSTRACT**

A touch screen display is automatically calibrated during periods of active use or extended periods of non-use. Calibration contacts are cemented or embedded to the surface of a touch sensitive panel, and electrically connected to a reference during calibration. The reference is either electrical ground or a resistive, capacitive, or inductive load.

19 Claims, 5 Drawing Sheets

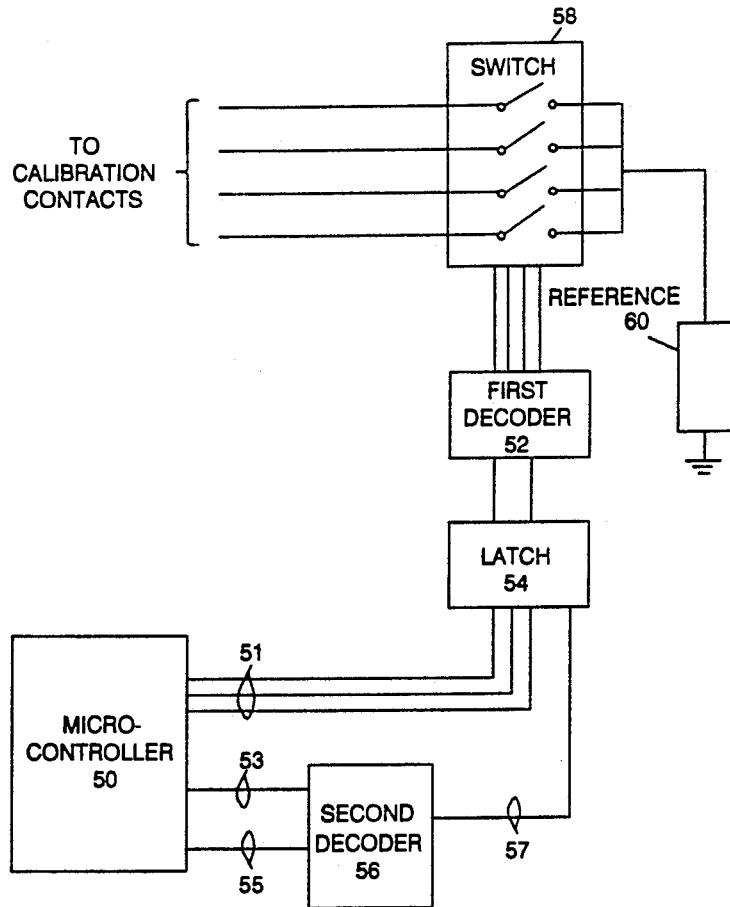


FIG. 1

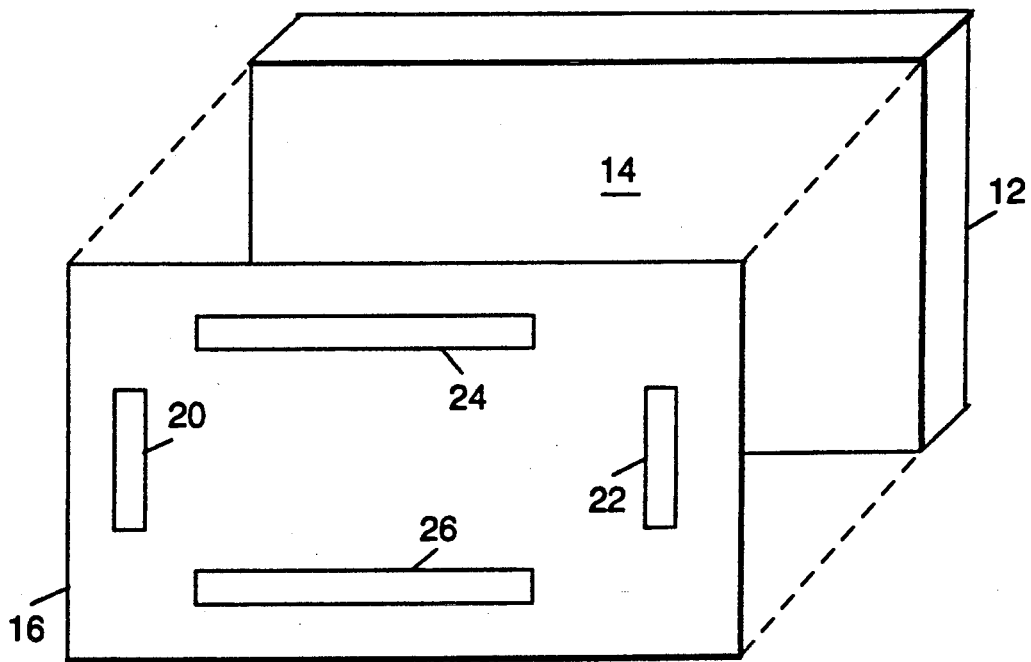


FIG. 2

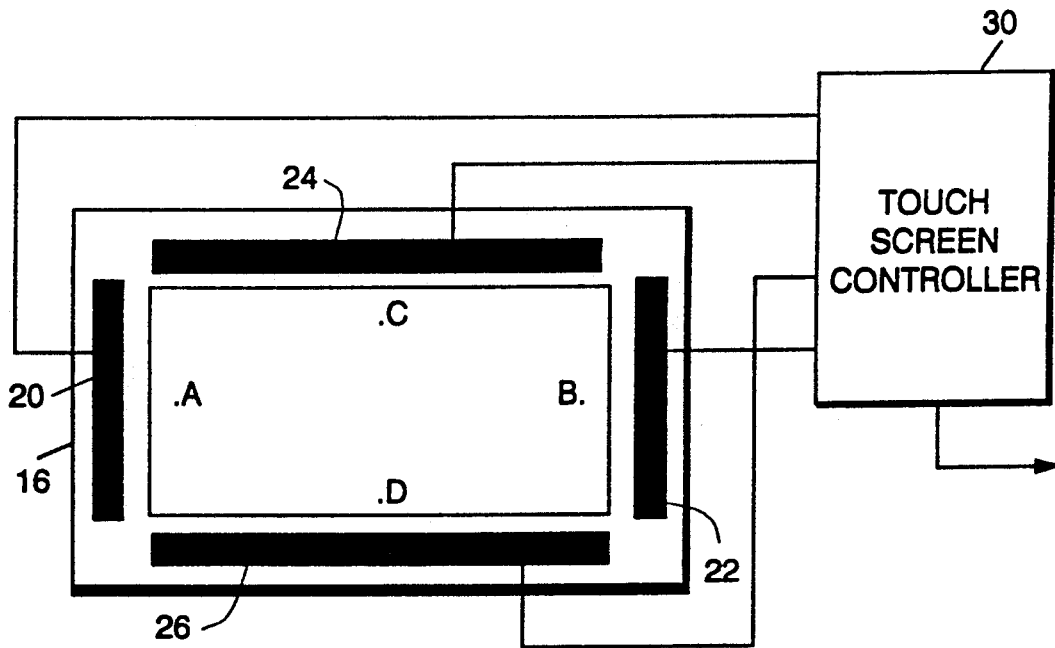


FIG. 3

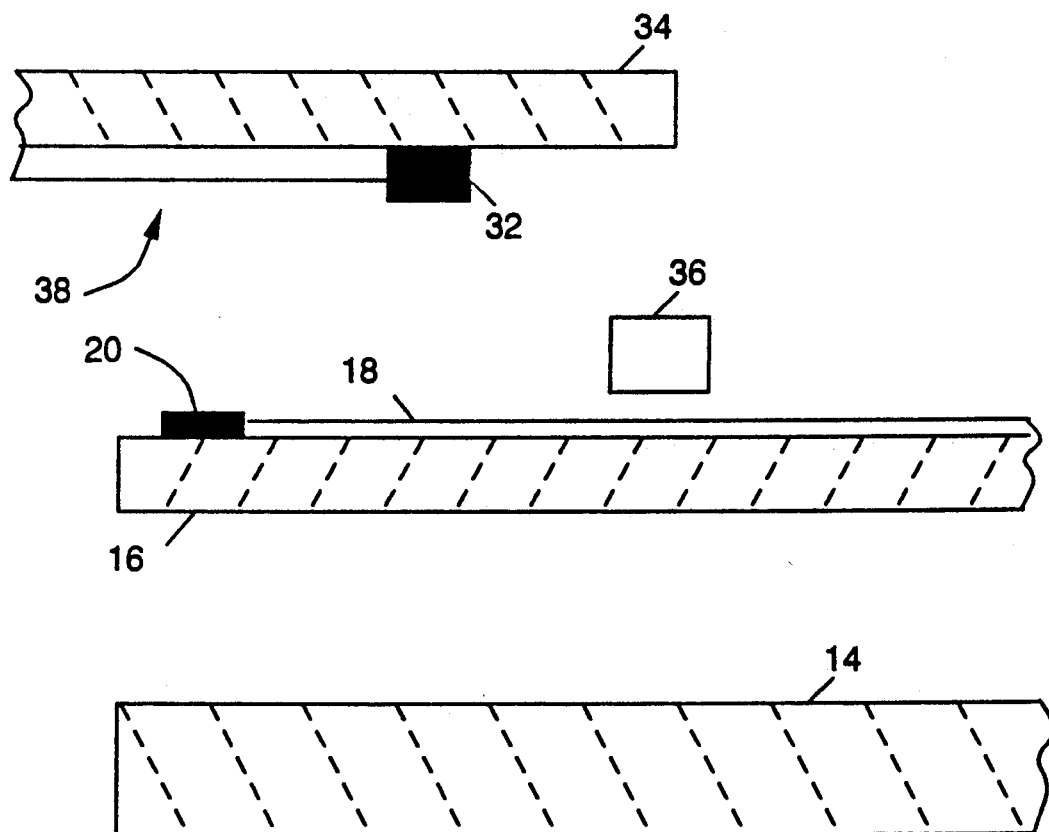
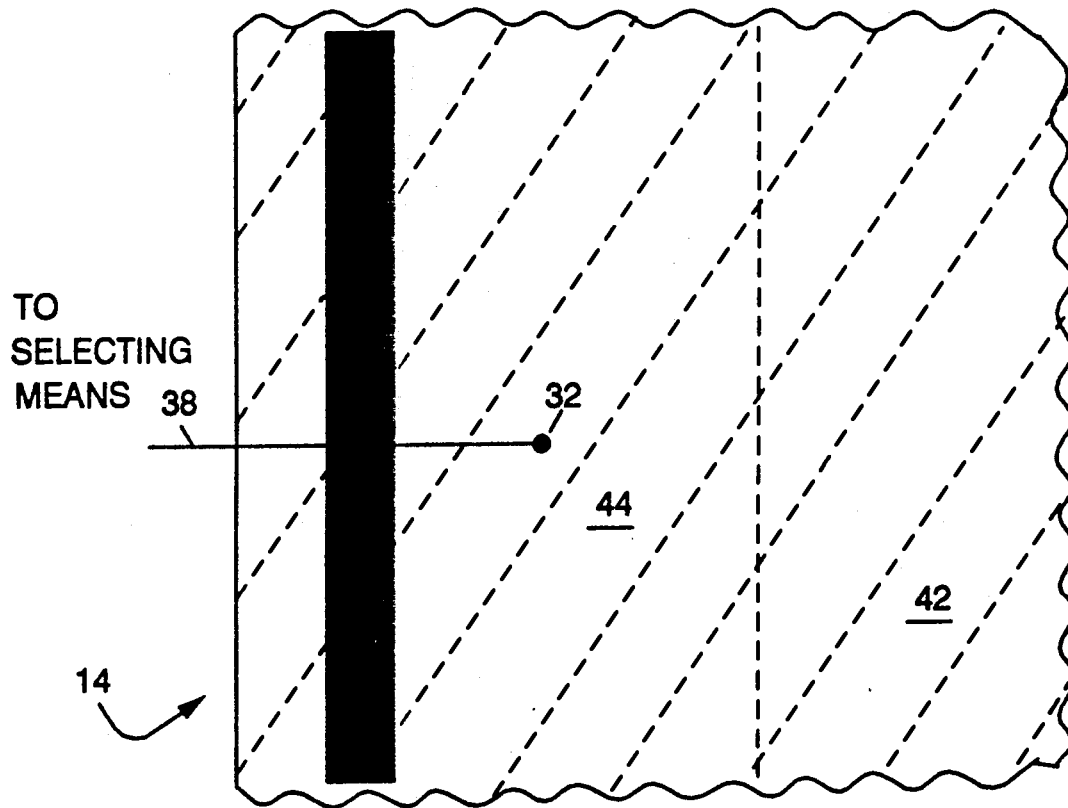


FIG. 4



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