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United States Patent [19] Gerpheide

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[54] **METHODS AND APPARATUS FOR DATA INPUT**

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[22] Filed: **Jul. 13, 1992**

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Related U.S. Application Data

[63] Continuation of Ser. No. 754,329, Sep. 4, 1991, which is a continuation of Ser. No. 394,566, Aug. 16, 1989.

[51] Int. Cl.⁵ **G09G 3/02**
 [52] U.S. Cl. **345/174; 345/168**
 [58] Field of Search **340/706, 709, 710, 712; 341/20, 23; 178/18, 19; 345/173, 174, 168**

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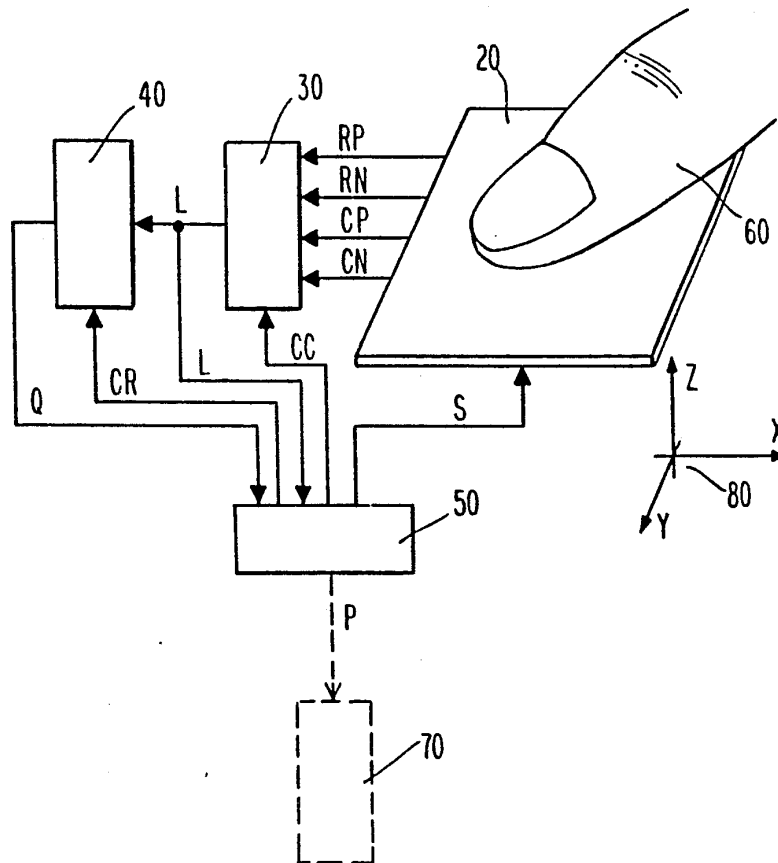
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Assistant Examiner—M. Fatahiyar
Attorney, Agent, or Firm—Thorpe North & Western

[57] **ABSTRACT**

Methods and apparatus for data input. Devices are provided in accordance with this invention which utilize capacitive coupling of an object to the device to sense the object's position. The devices are comprised of a plurality of electrode strips which form virtual electrodes. The virtual electrodes are selectively connected to form virtual dipole electrodes which are responsive to the object's position.

17 Claims, 13 Drawing Sheets



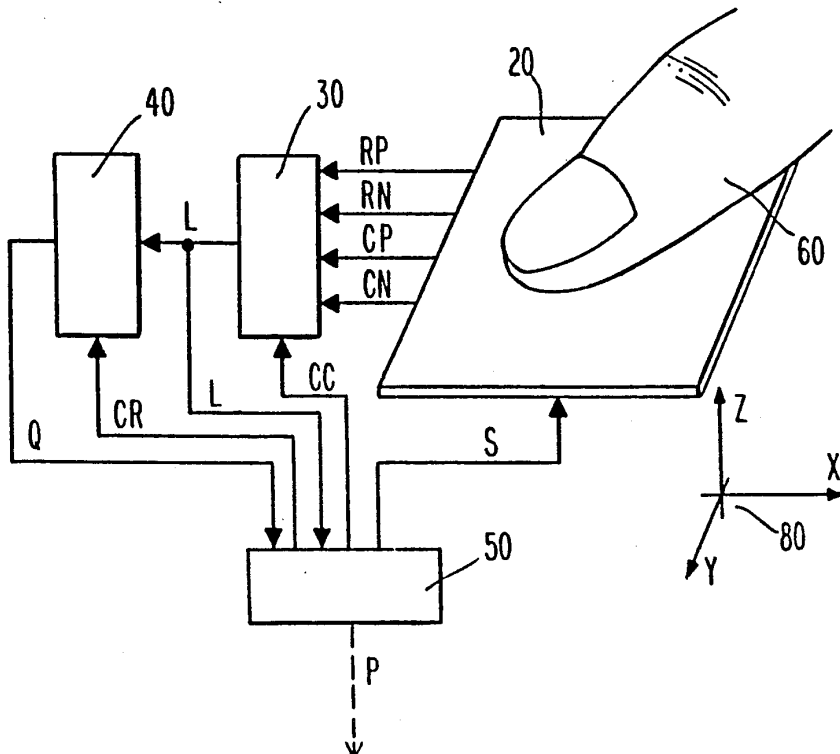


Fig. 1

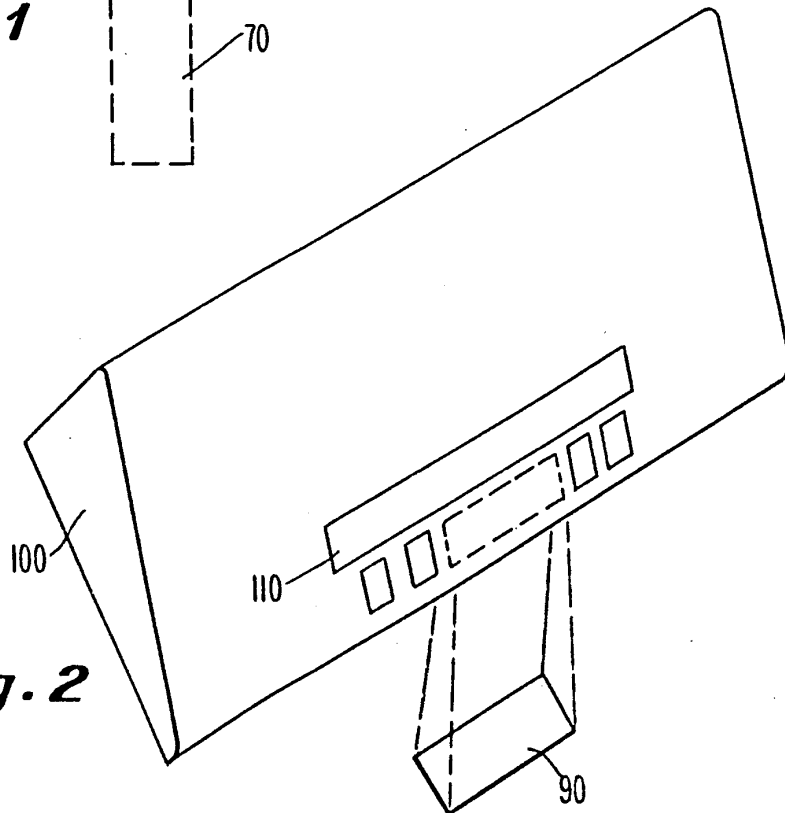


Fig. 2

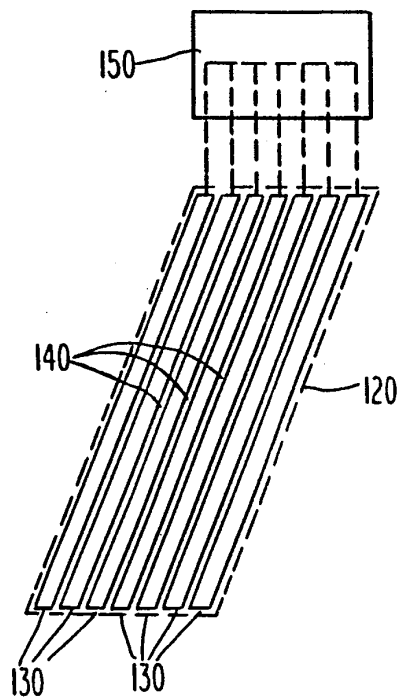


Fig. 3

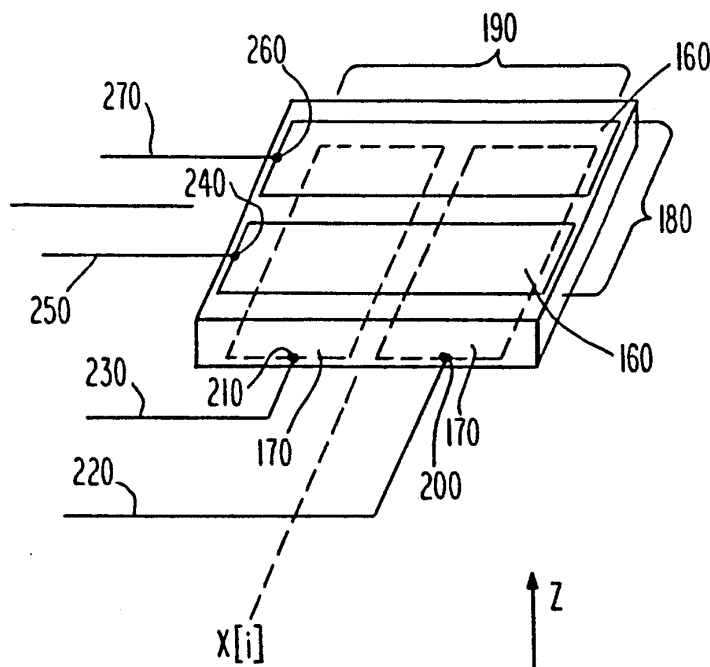
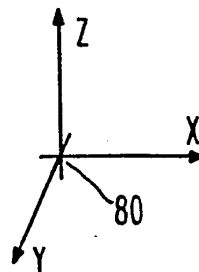


Fig. 4



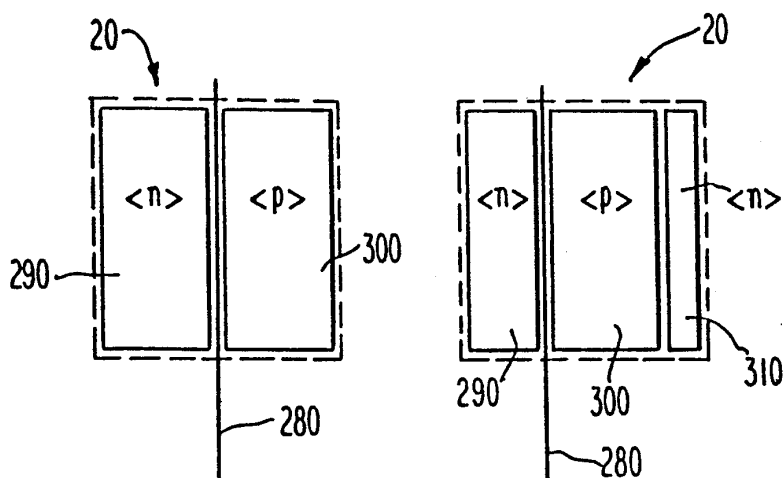


Fig. 5(a)

Fig. 5(b)

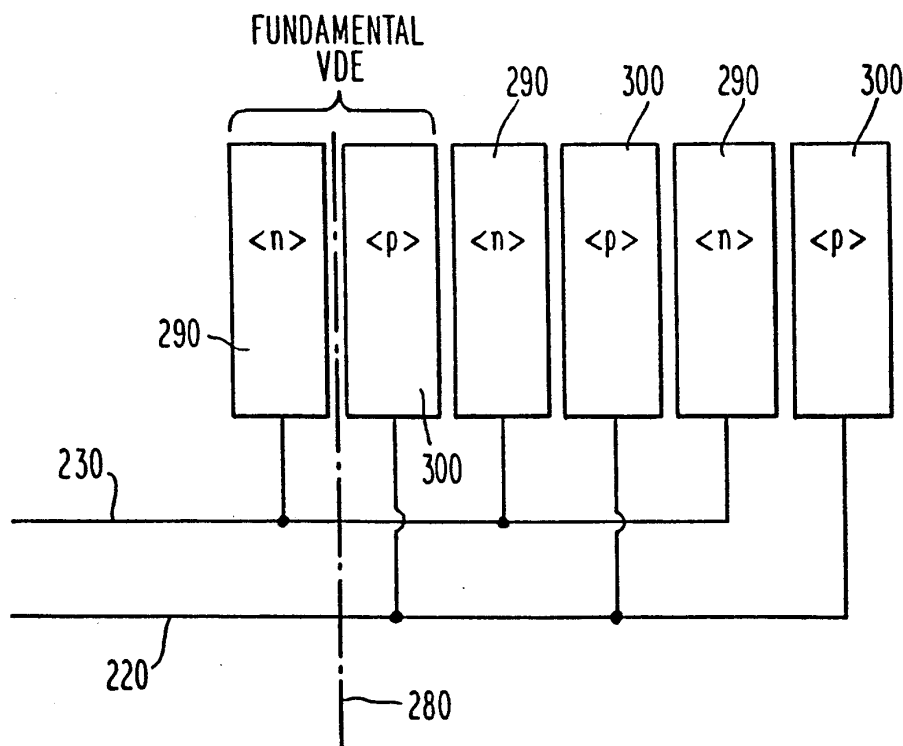


Fig. 6

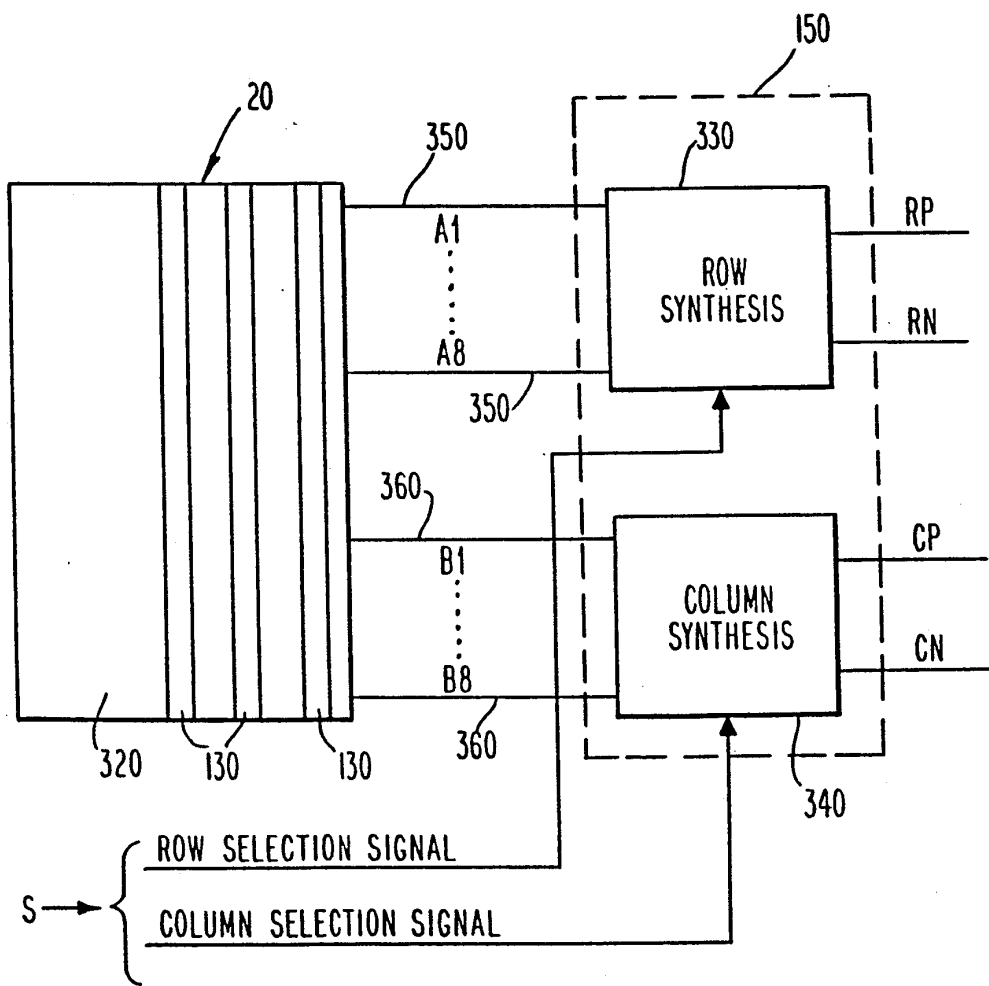


Fig. 7

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