

United States Patent [19]

Bisset et al.

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[45] Date of Patent:

Aug. 6, 1996

[54] TOUCH PAD DRIVEN HANDHELD COMPUTING DEVICE

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[73] Assignee: Synaptics, Incorporated, San Jose,

Calif.

[21] Appl. No.: 161,671

[22] Filed: Dec. 3, 1993

(Under 37 CFR 1.47)

Related U.S. Application Data

[63] Continuation-in-part of Scr. No. 895,934, Jun. 8, 1992, and a continuation-in-part of Scr. No. 115,743, Aug. 31, 1993, Pat. No. 5,374,787.

[51] Int. Cl.⁶ G08C 21/00; G09G 5/00

 References Cited

[56]

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

2662528 11/1991 European Pat. Off. .

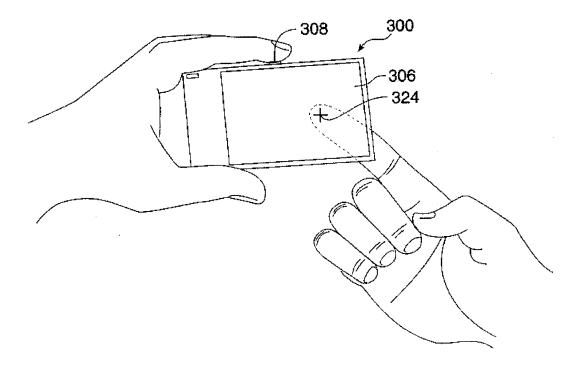
Primary Examiner—Stephen Chin Assistant Examiner—Kevin Kim

Attorney, Agent, or Firm-D'Alessandro & Ritchie

[57] ABSTRACT

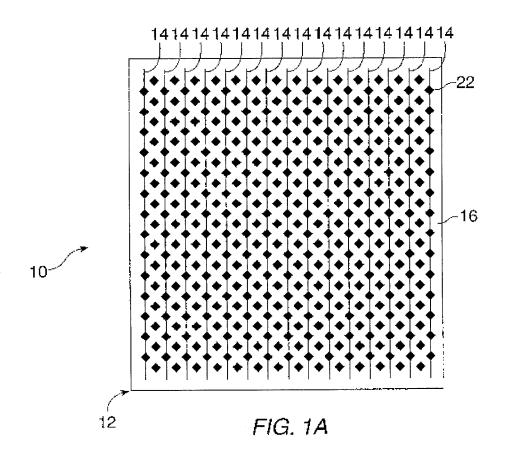
A handheld computing device comprises a thin enclosure having two opposing major faces. A display screen is disposed on a first one of the major opposing faces of the enclosure and a touch-sensitive object position detector input device is disposed on a second one of the major opposing faces of the enclosure. Computing device circuitry, circuitry for interfacing the touch-sensitive object position detector to the computing device circuitry, and circuitry for driving the display screen are all disposed within the enclosure

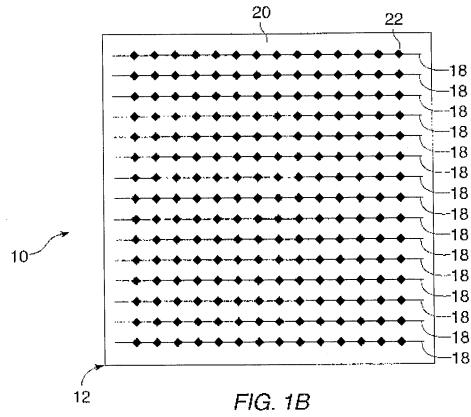
4 Claims, 15 Drawing Sheets





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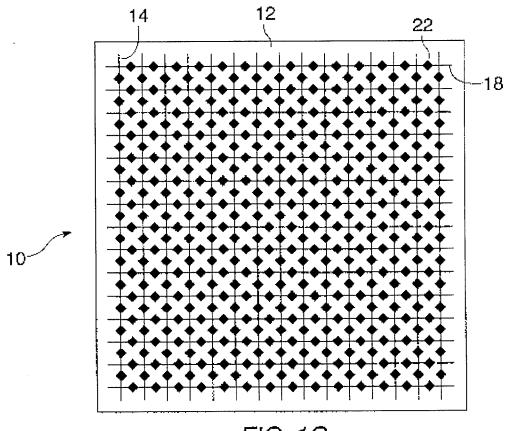
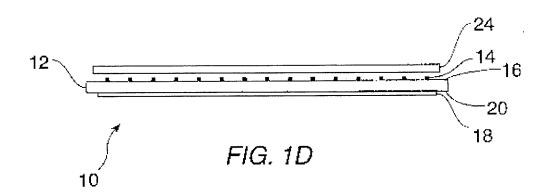
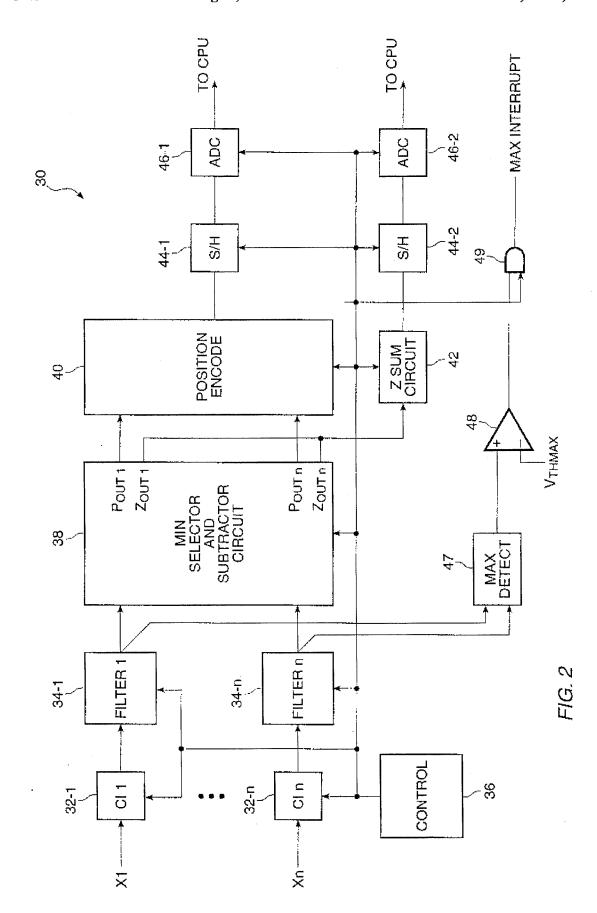


FIG. 1C







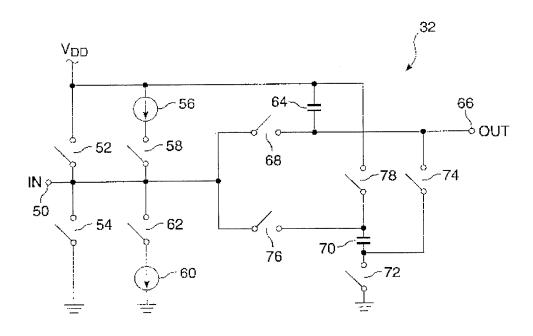


FIG. 3A

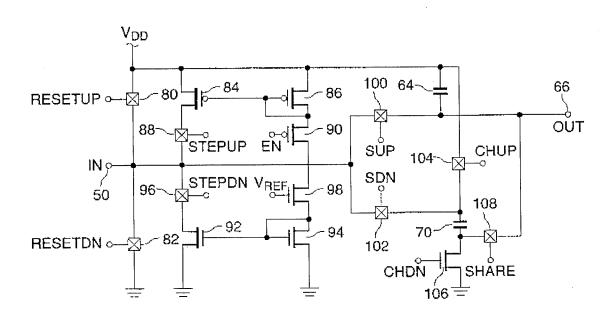


FIG. 3B



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