(12) **United States Patent**
Levy

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(54) **INPUT DEVICES AND THEIR USE**

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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 935 days.

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(51) **Int. Cl.**
H04M 3/00 (2006.01)
H04M 1/00 (2006.01)
H04M 9/00 (2006.01)

(52) **U.S. Cl.** **379/368**; 379/433.07; 341/33

(58) **Field of Classification Search** 200/511–513, 200/245, 275, 520–521; 178/18.01, 18.06; 379/368, 428.01–433.13
See application file for complete search history.

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(57) **ABSTRACT**

A keypad in which output keystrokes are determined both from individual switch activation and from the combined activation of adjacent switches. The keypad has a substrate carrying an array of sense elements arranged to change state in response to keypad operation, a flexible cover disposed above the substrate and having an exposed surface defining an array of independent key regions, with combination key regions defined in interstices between adjacent independent key regions. Snap elements provide tactile feedback. Some versions have a touch-sensitive grid rather than a switch matrix. A method of dialing a telephone includes generating a corresponding sequence of numerals by transposing alpha character input into one of the numerals 2 through 9 according to standard telephone keypad letter-number correspondence

46 Claims, 21 Drawing Sheets
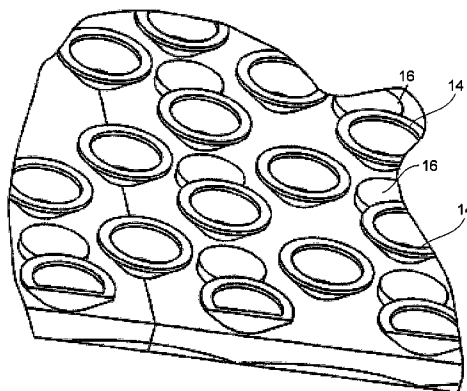
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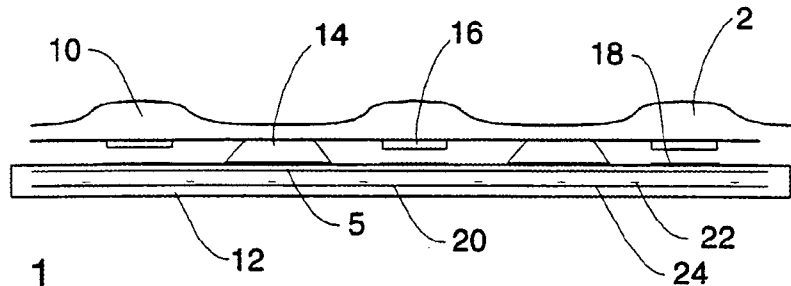Partial International Search Report for International Application No. PCT/US01/16461 Mailed Jan. 29, 2002.
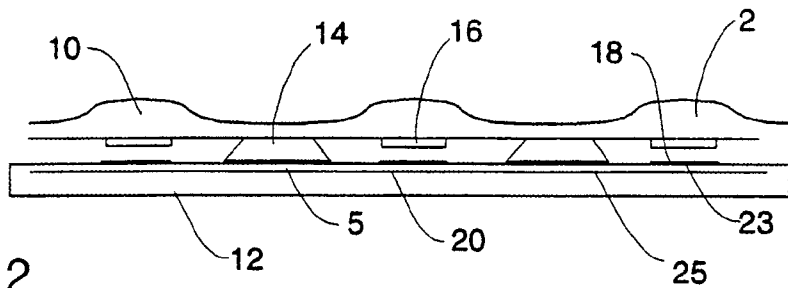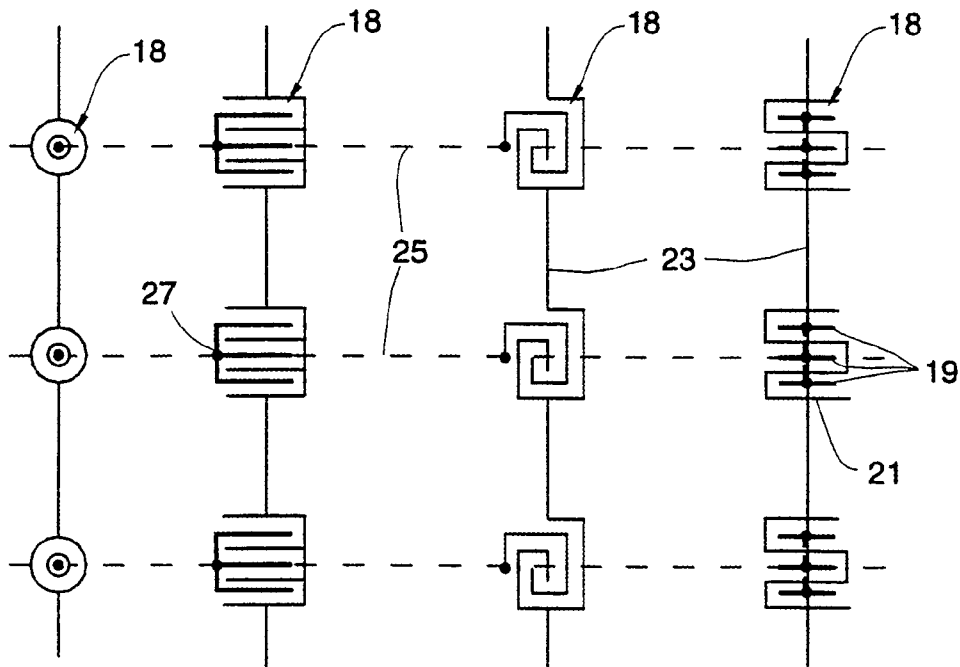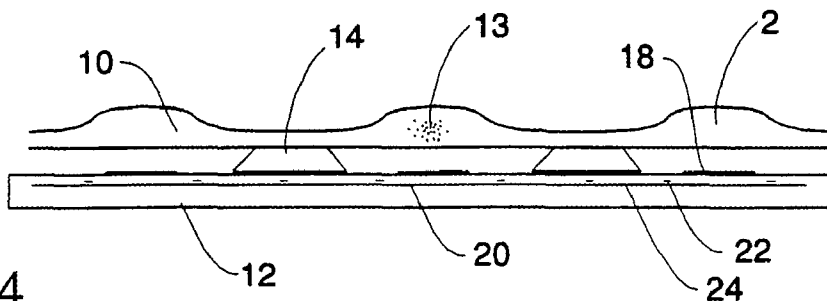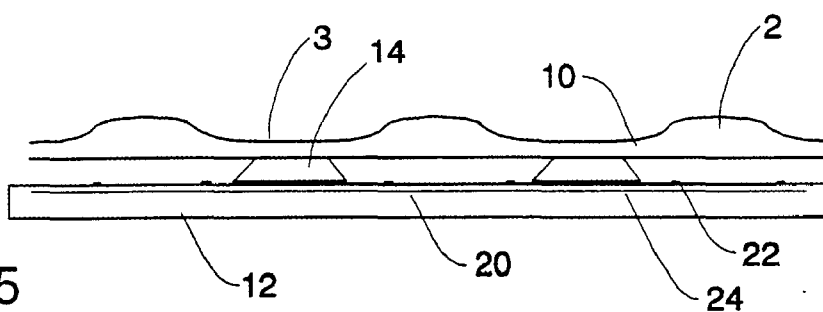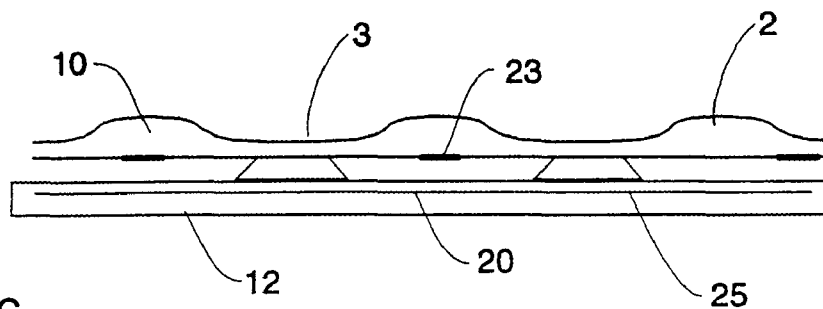
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FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6
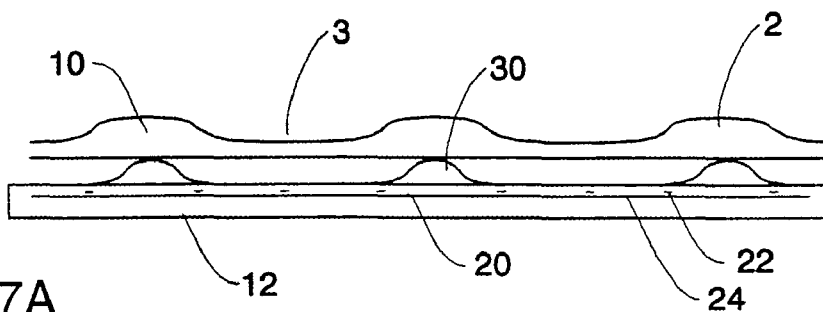
FIG. 7A

FIG. 7B

FIG. 8

FIG. 9

DOCKET ALARM
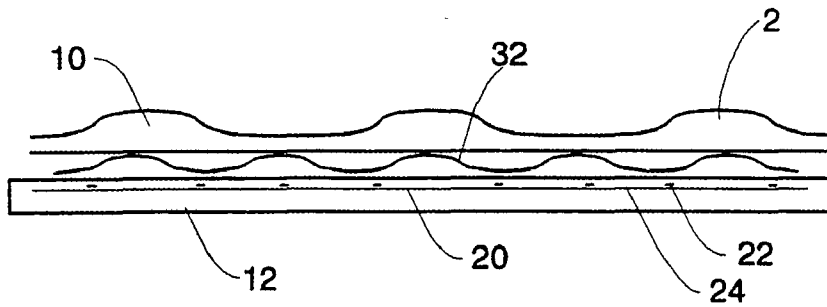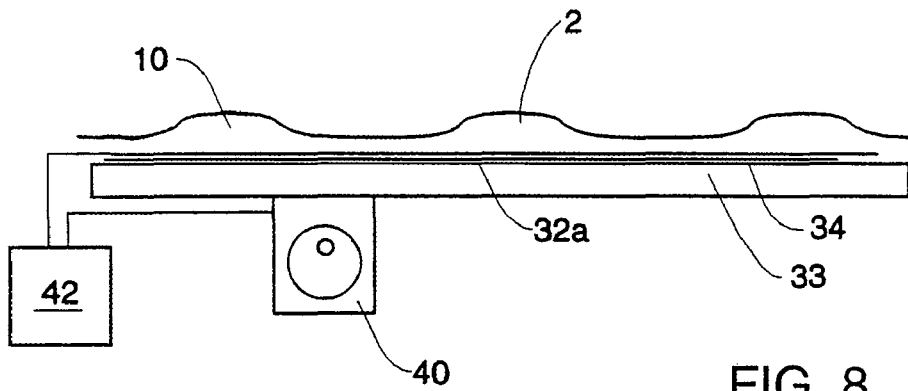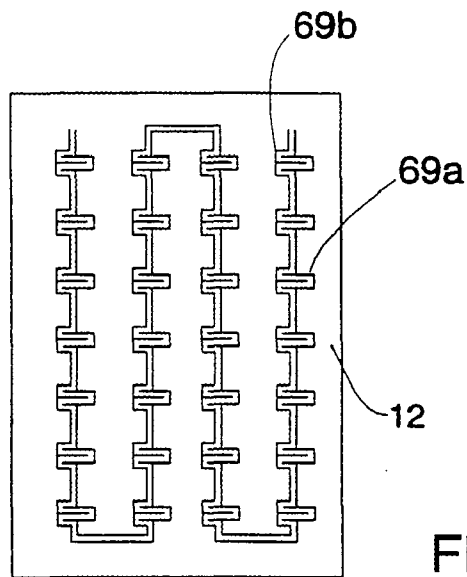
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