



US007336260B2

(12) **United States Patent**
Martin et al.

(10) **Patent No.:** **US 7,336,260 B2**
(45) **Date of Patent:** **Feb. 26, 2008**

(54) **METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS**

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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 730 days.

(21) Appl. No.: **10/285,450**

(22) Filed: **Nov. 1, 2002**

(65) **Prior Publication Data**

US 2003/0122779 A1 Jul. 3, 2003

Related U.S. Application Data

(60) Provisional application No. 60/335,493, filed on Nov. 1, 2001, provisional application No. 60/399,883, filed on Jul. 31, 2002.

(51) **Int. Cl.**
G09G 5/00 (2006.01)

(52) **U.S. Cl.** **345/169; 345/156**

(58) **Field of Classification Search** 345/156, 345/173, 157, 161, 163, 167-169

See application file for complete search history.

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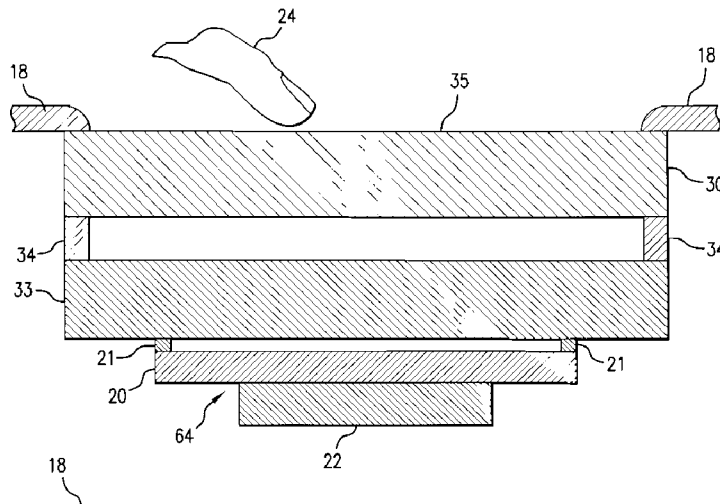
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(57) **ABSTRACT**

Products and processes for providing tactile sensations to input devices or electronic devices are provided. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected.

9 Claims, 11 Drawing Sheets



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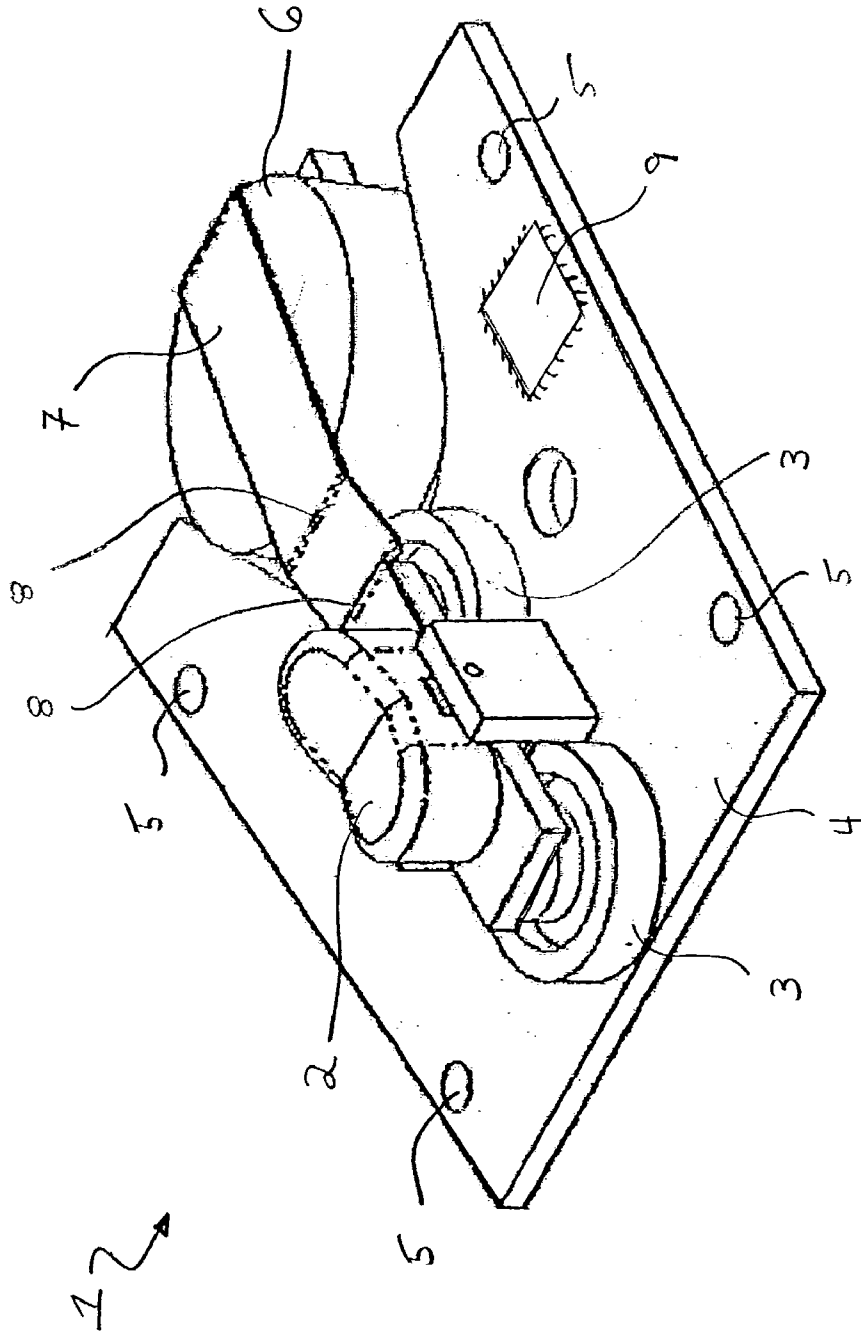


Fig. 1

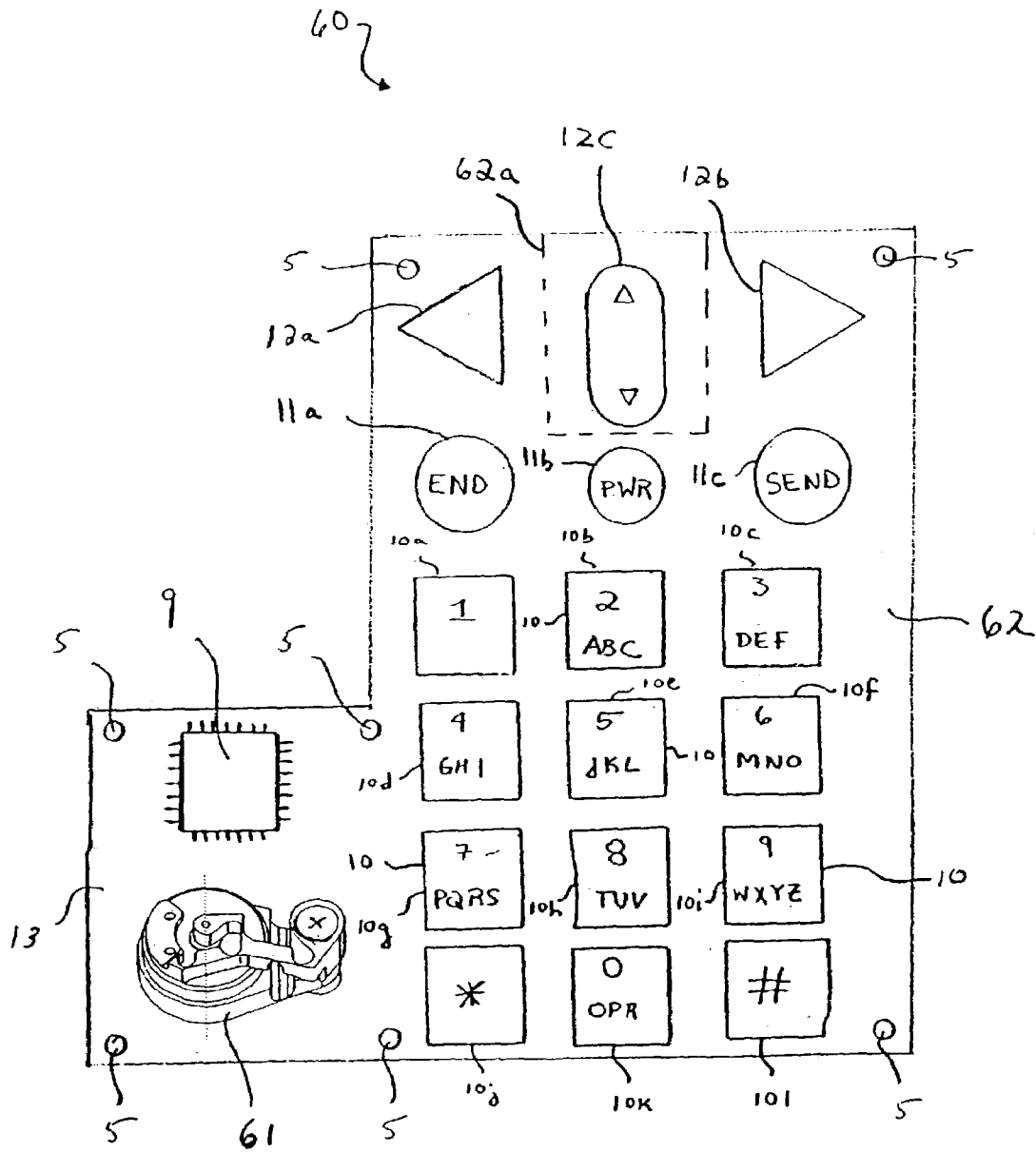


Fig. 2

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