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United States Patent [19]

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Koen

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[54] VERTICALLY MOUNTED ACCELEROMETER CHIP

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[51] Int. Cl.⁶ **G01P 1/02**

[52] U.S. Cl. **73/493**

[58] Field of Search **73/493, 431, 777, 73/756, 866.5, 204.22, 856; 174/260**

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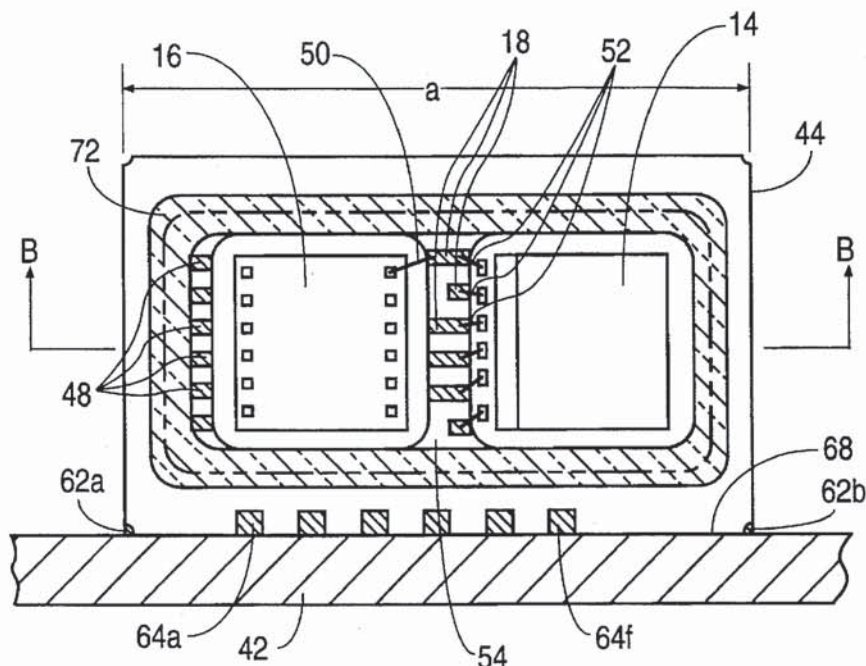
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Assistant Examiner—Christine K. Oda
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[57] ABSTRACT

Micro-machined accelerometer chips have a sensitive axis perpendicular to the principle surface of the device. In an application where the desired sensing direction is in the plane of a supporting printed circuit board, the accelerometer cannot be mounted directly on the printed circuit board and instead is mounted on a wall perpendicular to the printed circuit board. This requirement to wall-mount the sensor is eliminated by using an accelerometer chip packaged with a signal conditioning circuit in a multi layer ceramic chip carrier. Electrical connections are contained within the layers of the ceramic and terminate at a side surface of the chip carrier. Thus the accelerometer chip sits perpendicular to the printed circuit board and the ceramic chip carrier is attached directly thereto.

18 Claims, 4 Drawing Sheets



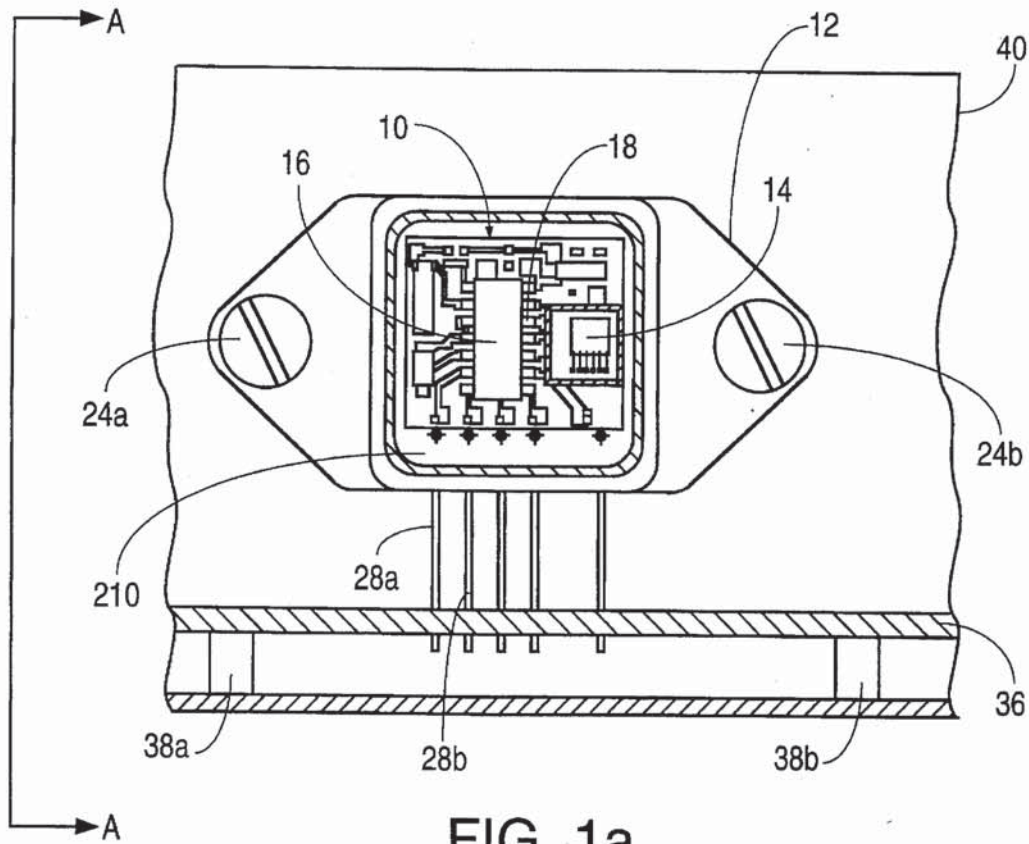


FIG. 1a
(Prior Art)

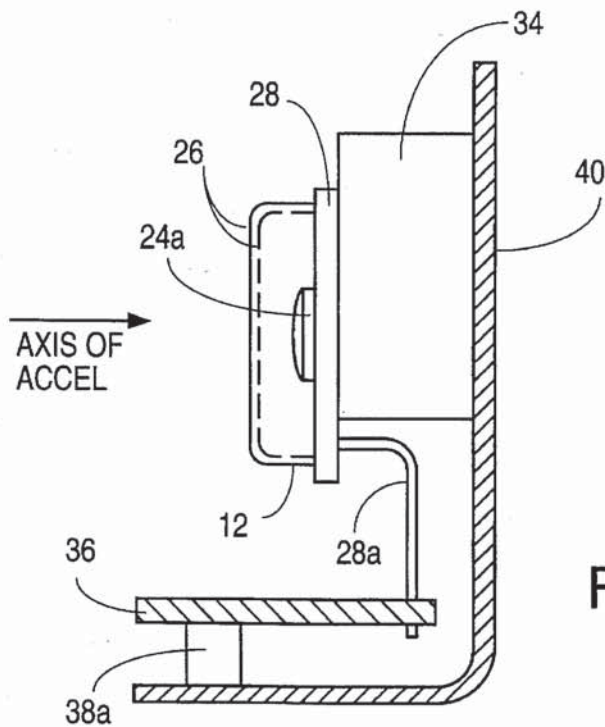


FIG. 1b
(Prior Art)

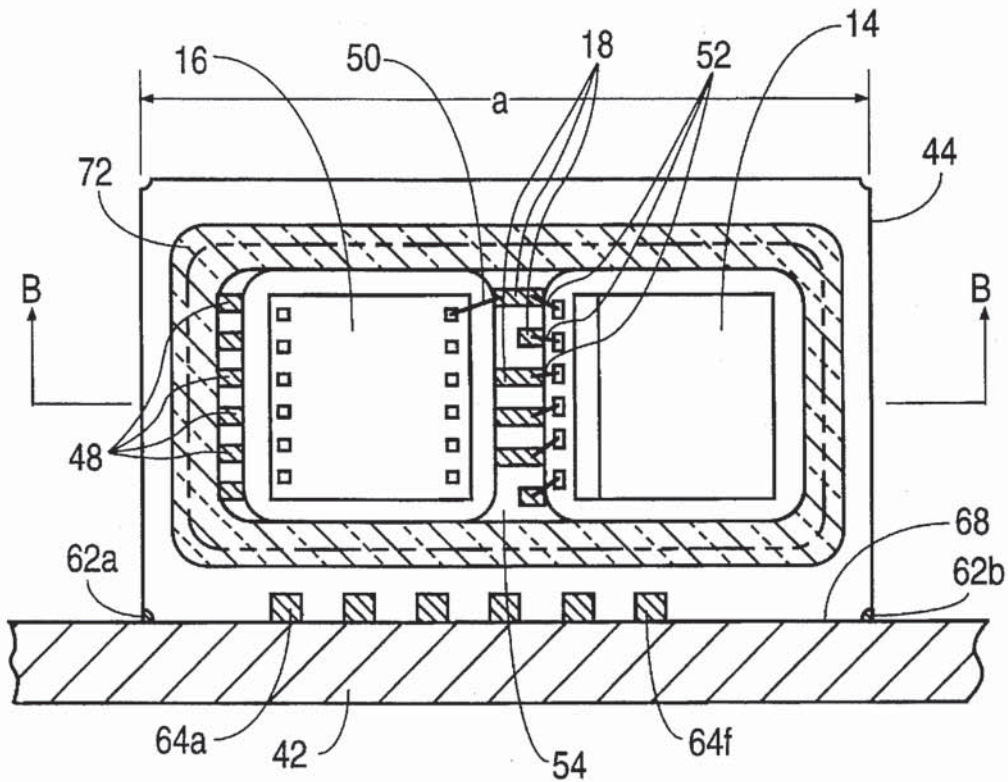


FIG. 2a

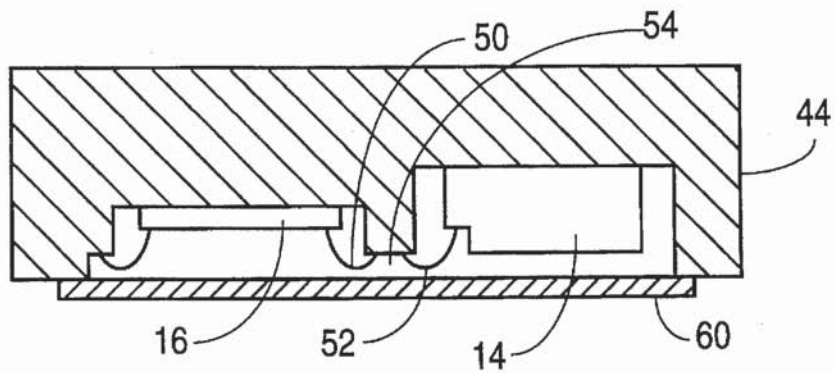


FIG. 2b

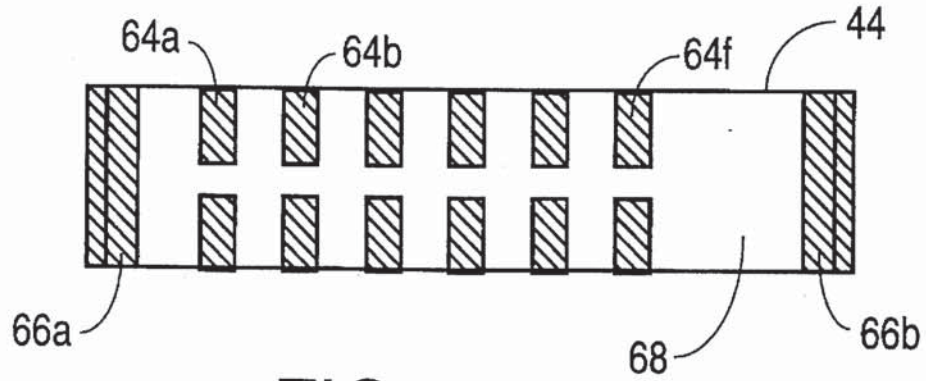


FIG. 2c

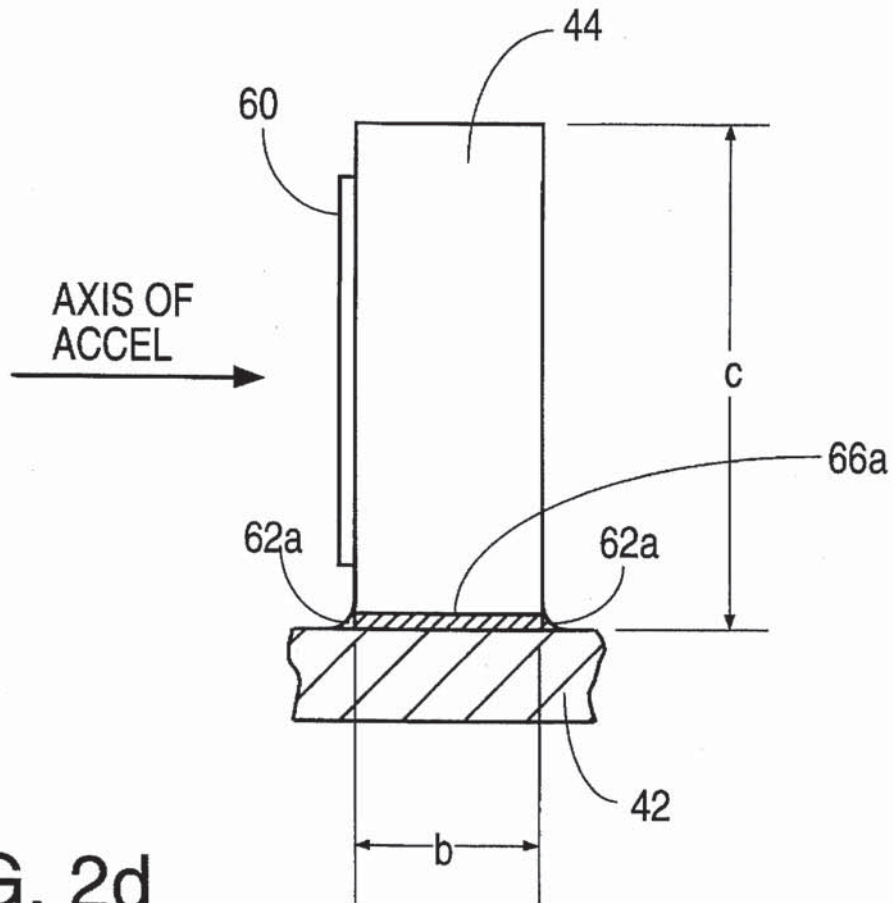


FIG. 2d

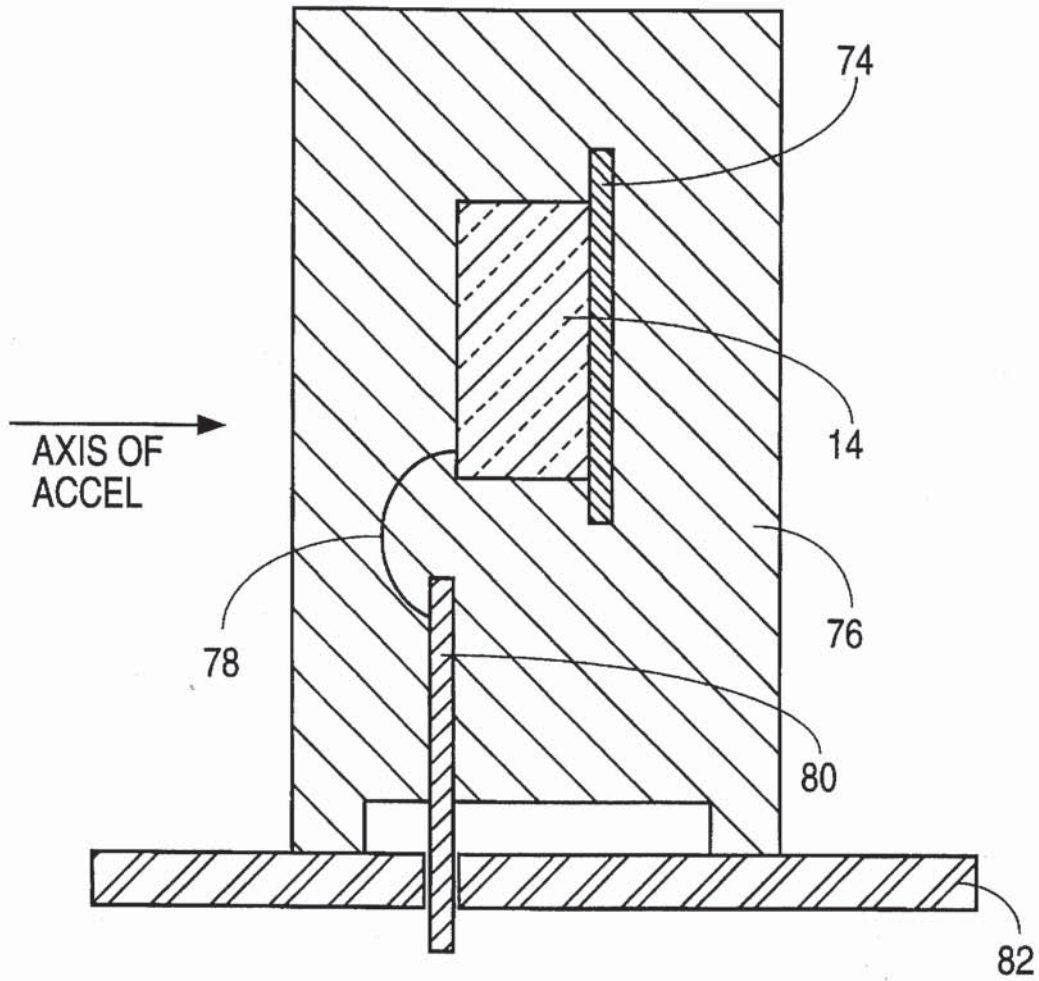


FIG. 3

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