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[54] **MAGNETIC SUSPENSION SEISMOMETER**

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[58] Field of Search **367/178, 185;**
181/122

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,626,364	12/1971	Simon et al.	367/185
4,497,206	2/1985	Scheurenbrand	73/382 R
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[57] **ABSTRACT**

The objective of this invention is to simplify and provide a versatile device capable of accurately measuring seismic

activity. The technique is based on magnetic levitation. The concept of magnetic levitation has been around since the 1960's, and it has been used extensively for high speed trains, however its use in seismology has been described in U.S. Pat No. 3,626,364 issued to Simon et al. However the present invention utilizes a four-vector magnetic field instead of three separate scalar magnetic fields. The advantages of present approach is reduction of three seismic masses to a single seismic mass.

To detect seismic activity using this concept, a seismic mass must be magnetically suspended. A seismic mass trapped in a magnetic field still possesses its inertia. Therefore, as the magnetic field moves under the influence of seismic activity, the seismic mass will tend to stay in the same place. The controller, however tends to keep the seismic mass in its place. Consequently, the total current in the electromagnets increases to compensate for the seismic action in the z direction. To detect lateral motion, the current in two opposing electromagnetic is subtracted. A secondary way to detect seismic activity is accomplished through the measurement of the position of the seismic mass. This technique is also applicable in measuring acceleration in multiple axis, vibration, detection, and motion detection, exoatmospheric altitude determination and attitude determination in two axis of x and y.

10 Claims, 5 Drawing Sheets

