

[54] **EXERCISE MEASURING INSTRUMENT**
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 [52] U.S. Cl. 364/561; 235/105
 [58] Field of Search 364/561, 565, 566, 564; 235/105; 272/DIG. 9; 377/24.2; 324/165, 166

[56] References Cited

U.S. PATENT DOCUMENTS

3,797,010 3/1974 Adler et al. 272/DIG. 9
 4,144,568 3/1979 Hiller et al. 364/556
 4,192,000 3/1980 Lipsey 364/413.29
 4,220,996 9/1980 Searcy 364/561
 4,223,211 9/1980 Allsen et al. 377/24.2
 4,387,437 6/1983 Lowrey et al. 235/105
 4,466,204 8/1984 Wu 235/105

4,510,704 4/1985 Johnson 235/105
 4,571,680 5/1982 Wu 364/561
 4,651,446 3/1987 Yukawa et al. 235/105
 4,741,001 4/1988 Ma 364/561

FOREIGN PATENT DOCUMENTS

2192475 1/1988 United Kingdom 235/105

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[57] ABSTRACT

An exercise measuring instrument according to the present invention employs an acceleration sensor which comprises a piezoelectric piece having a pair of piezoelectric elements stuck to each other. An output waveform of the acceleration sensor is supplied to an amplifier, gain of which is changed in accordance with an exercise mode selected out of a walking mode, an exercise-walking mode and a jogging mode, and thereby an output level of the amplifier is kept at somewhat an equal voltage level, although the voltage level of the output waveform of the acceleration sensor is different between the exercise modes. This improvement allows an accurate measurement of exercise.

34 Claims, 21 Drawing Sheets

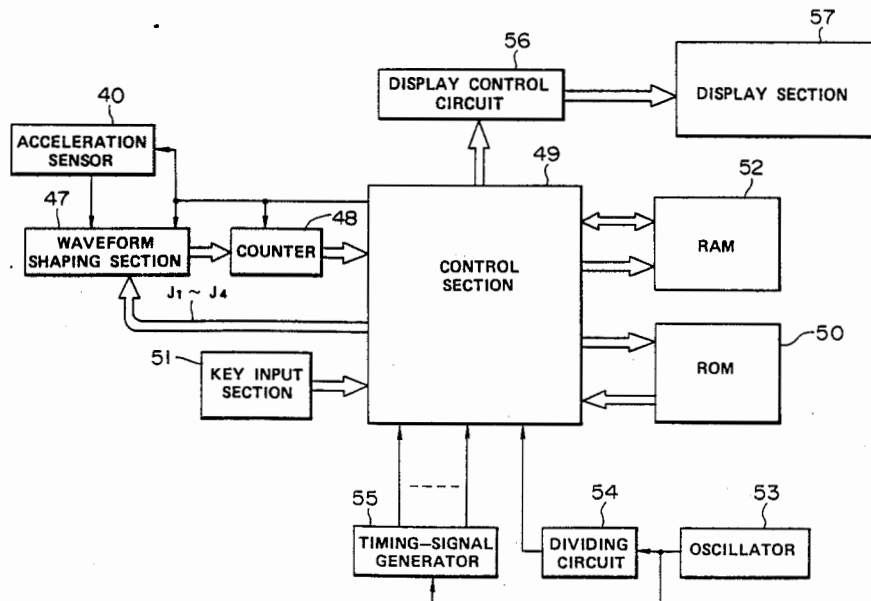
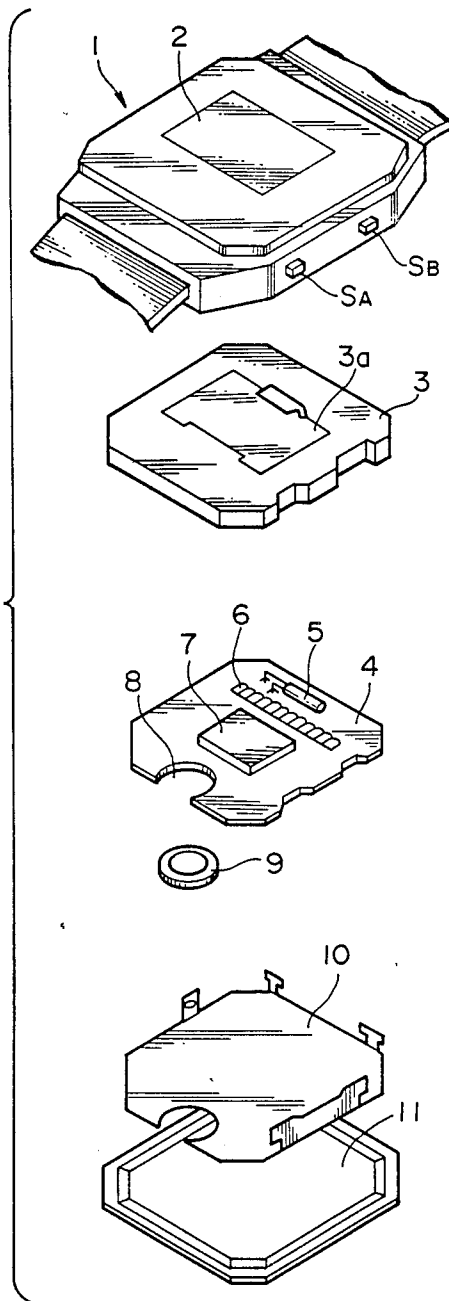
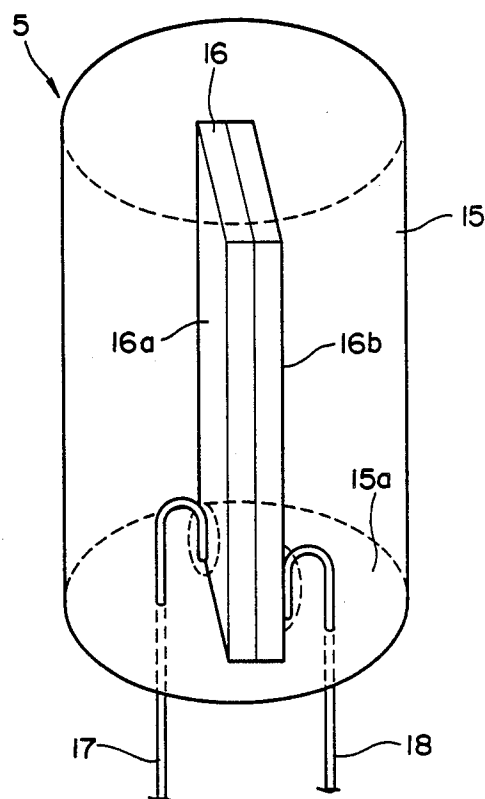
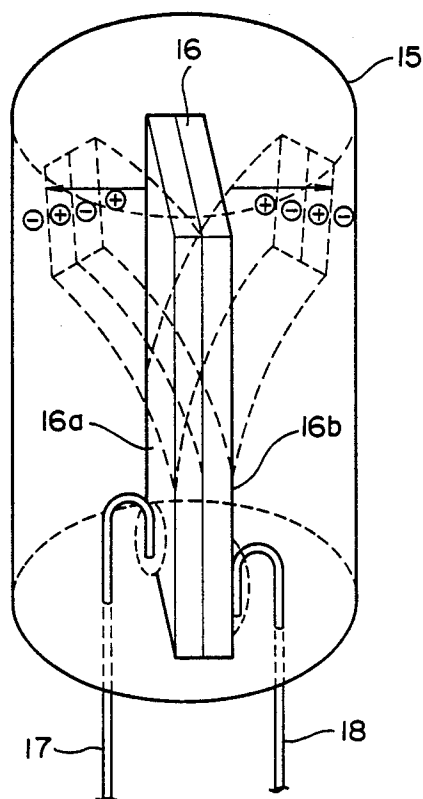
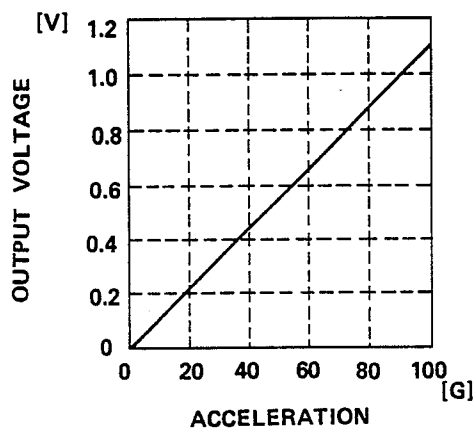
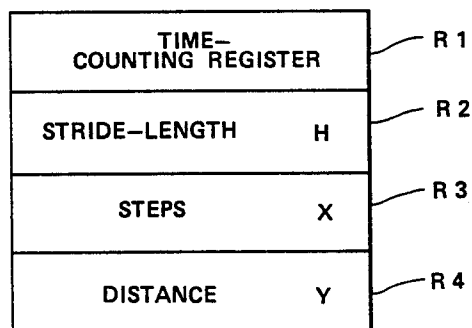


FIG. 1



**FIG. 2**

**FIG. 3**

**FIG. 4****FIG. 9**

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