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Pasolini et al.

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(54) PEDOMETER DEVICE AND STEP DETECTION METHOD USING AN ALGORITHM FOR SELF-ADAPTIVE COMPUTATION OF ACCELERATION THRESHOLDS	6,052,654 A 4/2000 Gaudet et al. 702/160 6,135,951 A 10/2000 Richardson et al. 600/300 6,826,477 B2 * 11/2004 Ladetto et al. 701/217 6,898,550 B1 5/2005 Blackadar et al. 702/182 2006/0020177 A1 * 1/2006 Seo et al. 600/300 2007/0073514 A1 * 3/2007 Nogimori et al. 702/160 2007/0143069 A1 * 6/2007 Pasolini et al. 702/160 2007/0198187 A1 * 8/2007 Pasolini et al. 701/220
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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 3 days.

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Primary Examiner—Michael P Nghiem

(65) **Prior Publication Data**

(74) *Attorney, Agent, or Firm*—Lisa K. Jorgenson; Dennis M. de Guzman; Seed IP Law Group PLLC

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(30) **Foreign Application Priority Data**

(57) **ABSTRACT**

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In a pedometer device for detecting and counting steps of a user on foot, an accelerometer sensor detects a vertical acceleration generated during the step. A processing unit, connected to the accelerometer sensor, processes an acceleration signal relating to the acceleration in order to detect the occurrence of a step, and in particular compares the acceleration signal with a first reference threshold. The processing unit automatically adapts the first reference threshold as a function of the acceleration signal. In particular, the processing unit modifies the first reference threshold as a function of an envelope of the amplitude of the acceleration signal.

(51) **Int. Cl.**
G01C 22/00 (2006.01)

(52) **U.S. Cl.** **702/160**

(58) **Field of Classification Search** 702/141,
702/150–154, 158, 160; 600/595; 73/490,
73/510

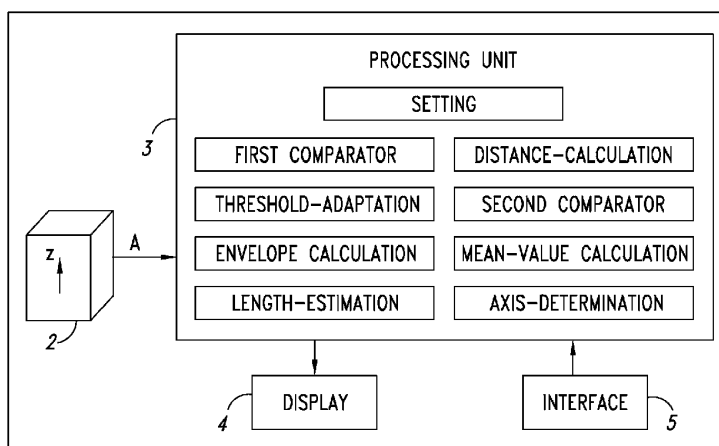
See application file for complete search history.

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30 Claims, 5 Drawing Sheets



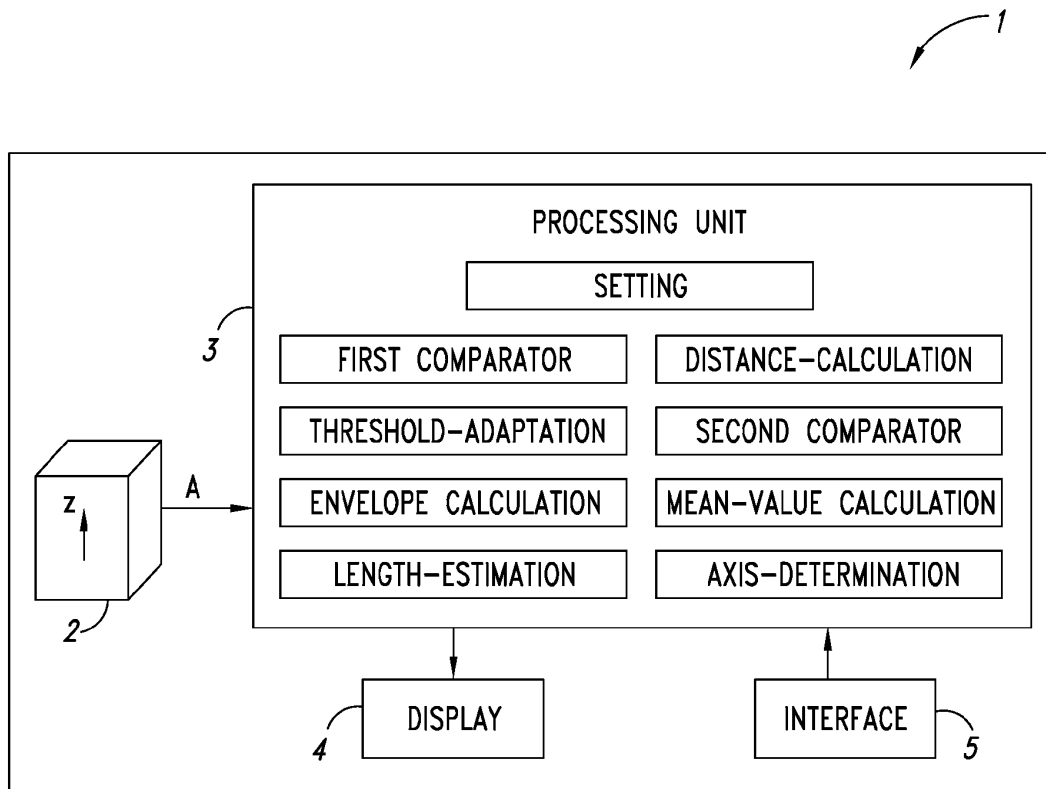
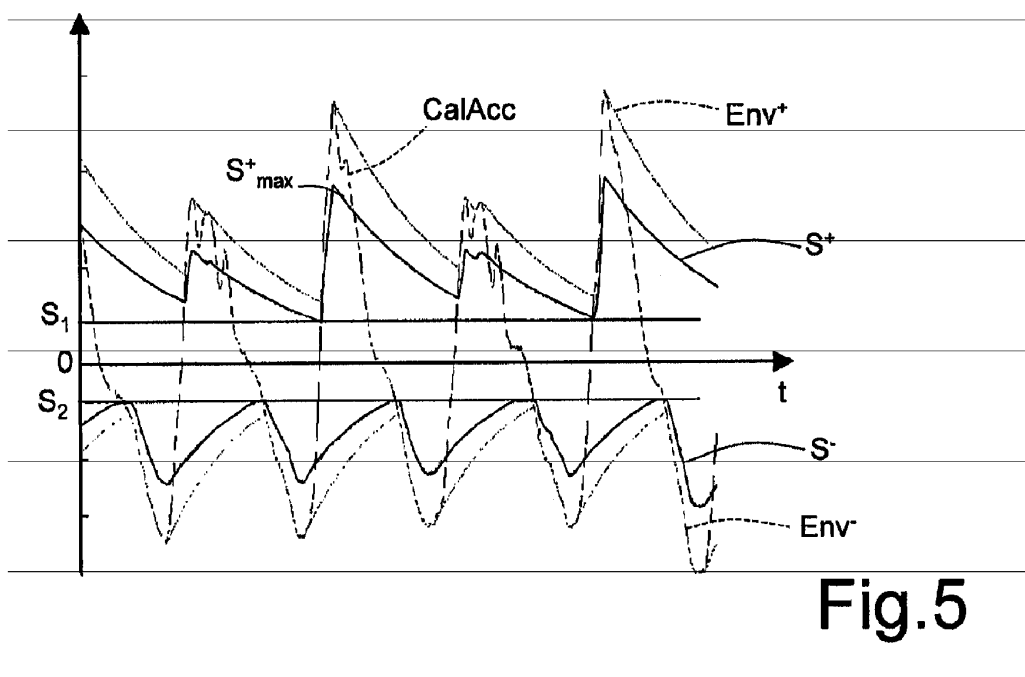
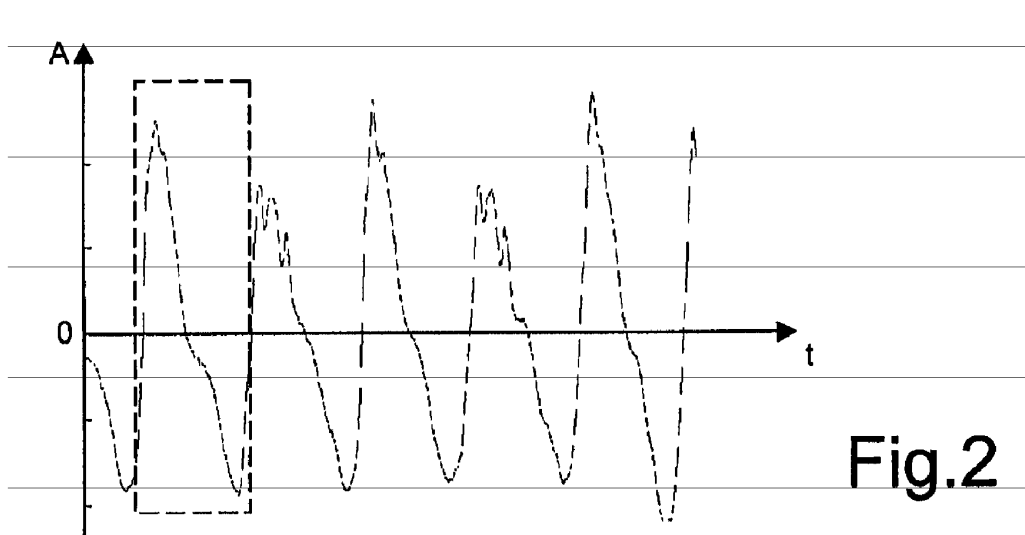


FIG. 1



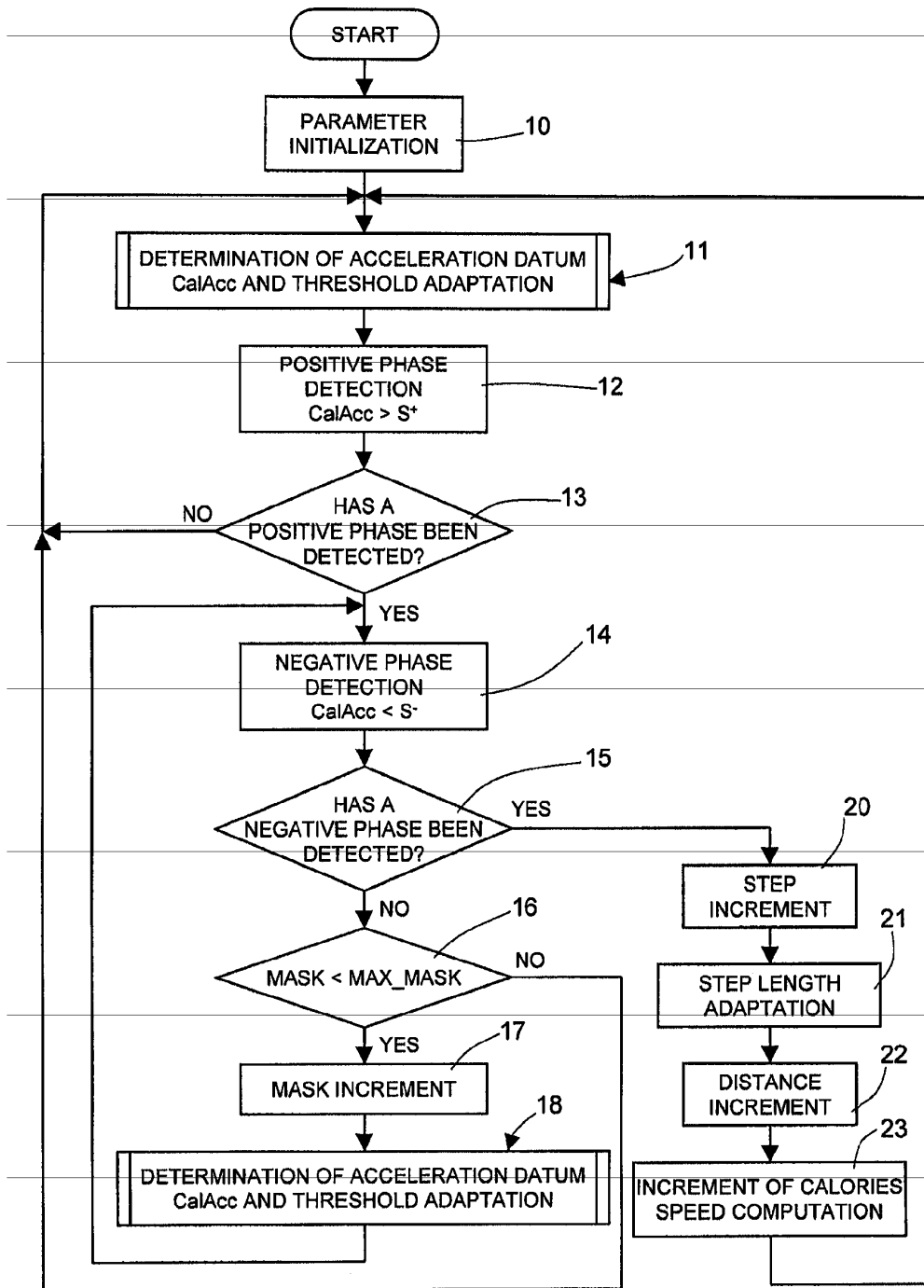


Fig.3

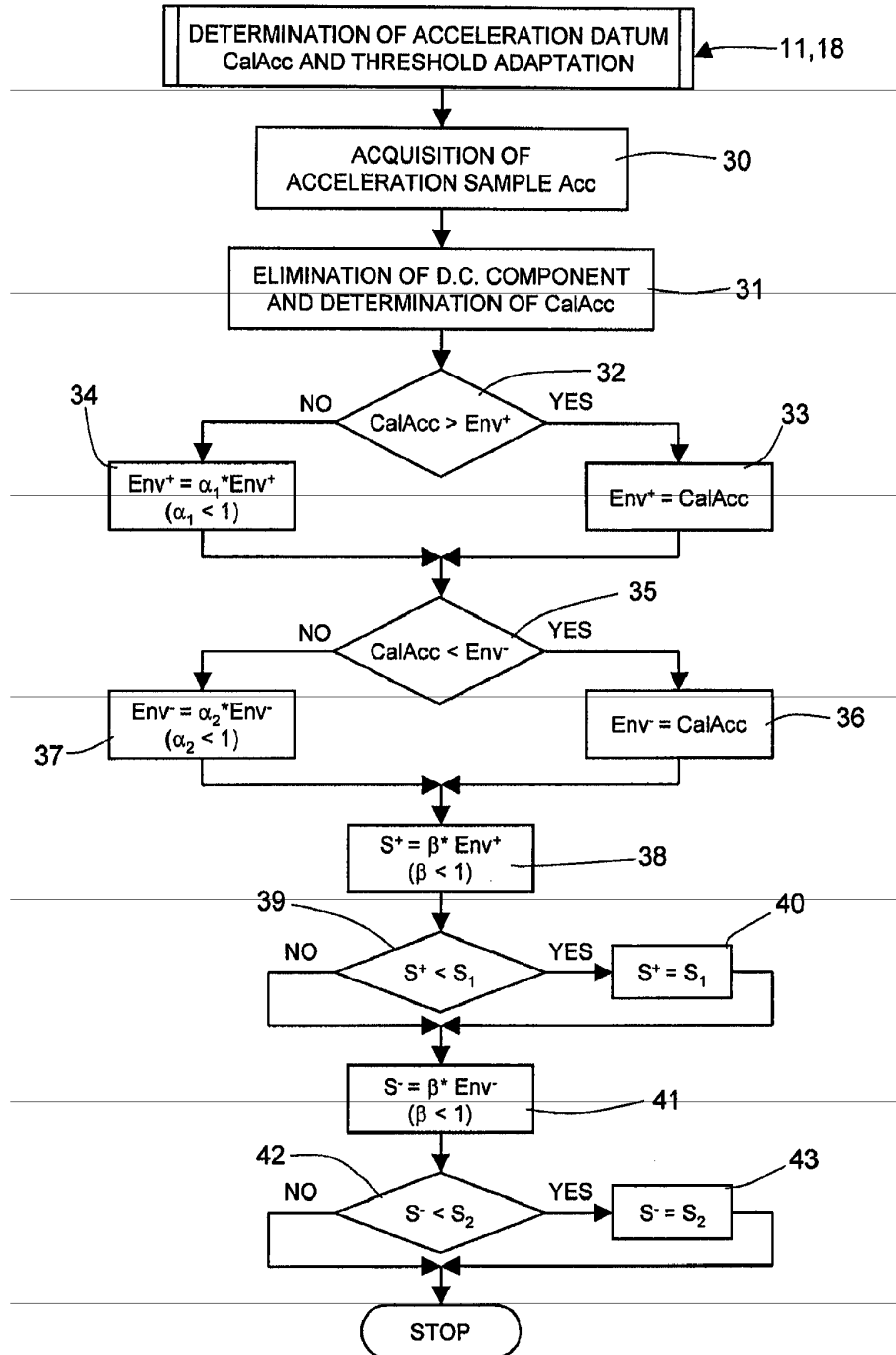


Fig.4

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