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Table with 8 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY.DOCKET.NO, DRAWINGS, TOT CLAIMS, IND CLAIMS. Row 1: 11/537,986, 10/02/2006, 2863, 0.00, 854263.419, 3, 27, 3

CONFIRMATION NO. 1286

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FILING RECEIPT

Date Mailed: 11/07/2006

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Assignment For Published Patent Application

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Title

METHOD FOR CONTROLLING A PEDOMETER BASED ON THE USE OF INERTIAL SENSORS AND PEDOMETER IMPLEMENTING THE METHOD

IPR2018-00387

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# METHOD FOR CONTROLLING A PEDOMETER BASED ON THE USE OF INERTIAL SENSORS AND PEDOMETER IMPLEMENTING THE METHOD

## BACKGROUND OF THE INVENTION

### Field of the Invention

5                   The present invention relates to a method for controlling a pedometer based on the use of inertial sensors and to a pedometer implementing said method.

### Description of the Related Art

10                   As is known, a pedometer is a device that can be carried by a user and has the function of counting the number of steps during various walking or running activities for estimating accordingly the distance traveled. The indications supplied are useful for quantifying the motor activity performed by a person in the course of a given period, for instance, for clinical purposes, for assessing the athletic performance, or even just for simple personal interest.

15                   The reliability of a pedometer obviously depends on the precision in estimating the step length of the user at the various rates of locomotion, but also on the selectivity in recognizing and ignoring events not correlated to the gait, which, however, cause perturbations resembling those produced by a step. For example, many pedometers are based on the use of inertial sensors, which detect  
20                   accelerations along a substantially vertical axis, and recognize that a step has been being made by a user when the time plot of the acceleration signal shows given morphological characteristics. Basically, a step is recognized when the pedometer detects a positive acceleration peak (*i.e.*, a peak directed upwards) having an amplitude greater than a first threshold, followed, at a distance of some  
25                   tenths of second, by a negative acceleration peak (directed downwards) having an amplitude greater than a second threshold. However, there are many random

events that can interfere with correct recognition of the step. Impact or other external vibrations and given movements of the user can, in fact, give rise to so-called “false positives”, *i.e.*, to events that are recognized as steps even though in actual fact they are not, because the morphological characteristics produced are compatible. Events of this type are very frequent also in periods of rest, when the user, albeit not walking, in any case performs movements that can be detected by the pedometer. In the majority of cases, also “isolated” steps or very brief sequences of steps are far from significant and should preferably be ignored because they are, in effect, irrelevant in regard to assessment of the motor activity for which the pedometer is being used.

Of course, in all these situations, the count of the steps may prove to be completely erroneous.

#### BRIEF SUMMARY OF THE INVENTION

One embodiment of the present invention is a method for controlling a pedometer and a pedometer which overcome the described above limitations.

One embodiment is a method for controlling a pedometer. The method includes: generating a signal correlated to movements of a user of the pedometer; detecting steps of the user based on the signal; checking whether sequences of the detected steps satisfy pre-determined conditions of regularity; updating a total number of valid steps if the conditions of regularity are satisfied; and preventing updating of the total number of valid steps if the conditions of regularity are not satisfied.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

For a better understanding of the invention, an embodiment thereof is now described, purely by way of non-limiting example and with reference to the attached plate of drawings, wherein:

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