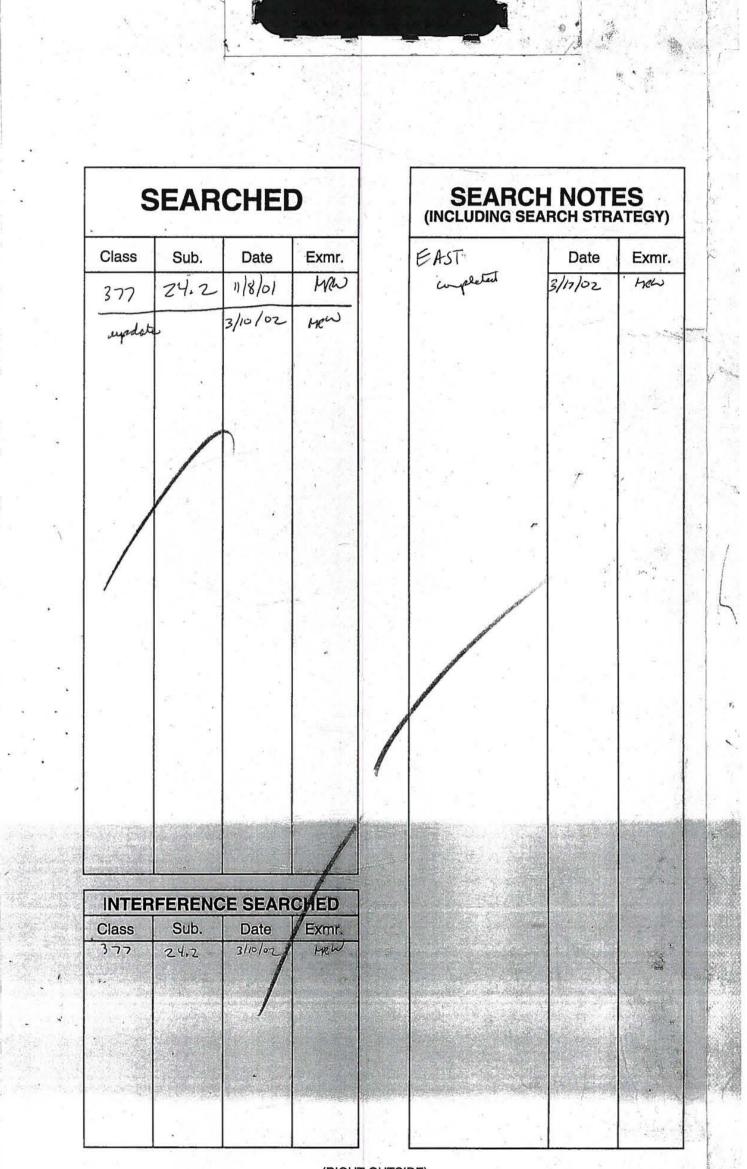
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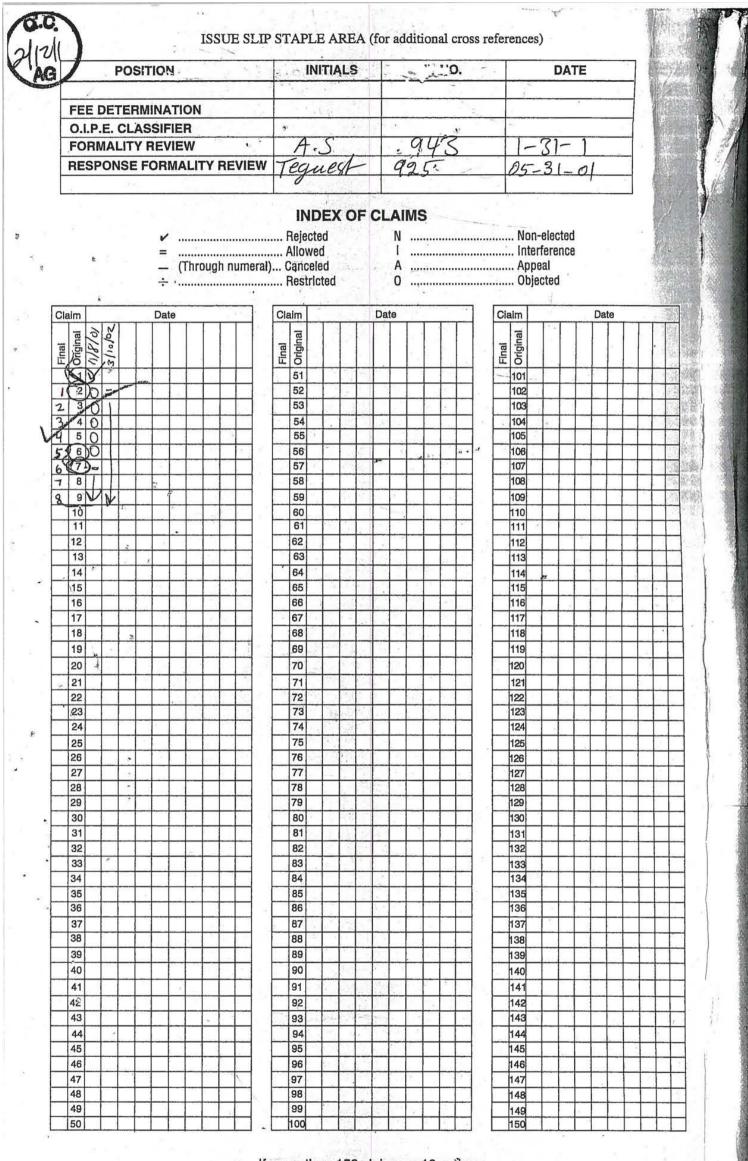
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PATENT APPLICATION IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Nathan Pyles

For: PEDOMETER

Docket No.: KNOWMO-6

BOX PATENT APPLICATION Assistant Commissioner for Patents Washington, D.C. 20231

> "Express Mail" Mailing Label No.: EL281944856US Date of Deposit: January 4, 2001

I hereby certify that these attached documents

Response postcard

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Specification, Claims and Formal Drawing (14 pp)

are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 35 C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

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Enclosed for filing please find the above-referenced new patent application. Please indicate receipt of this application by returning the attached postcard with the official Patent and Trademark Office receipt and serial number stamped thereon. Respectfully submitted,

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Jeffry W. Smith, Reg. No. 33455 Attorney for Applicant Lathrop & Clark LLP P.O. Box 1507 Madison, Wisconsin 53701-1507 (608) 257-7766

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ABSTRACT OF THE DISCLOSURE

The pedometer having improved accuracy by calculating actual stride lengths of a user based on relative stride rates. The pedometer includes a waist or leg mounted stride counter, a transmitter for transmitting data to a wrist-mounted display unit, and a data processor for calculating necessary base units and actual stride rates and lengths. The pedometer can also interact with a heart monitoring device.

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The undersigned hereby certifies that this document is being deposited with the United States Postal Service today 2001, by the "Express Mail" service, dilizing express mail number EL 2819448560US addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231

PEDOMETER

This application is a continuation of Application No. 09/181,738, filed October now us patent no. 6, 175, 608 28, 1998, the disclosure of which is incorporated by reference herein.

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates generally to pedometers having a waist mounted stride-counting device and transmitter, and a wrist-mounted receiver and display. The invention also relates to a distance calculation device that calculates a distance walked or run based on an algorithm that converts a base stride length and a base stride rate to an actual stride length for use in calculating the distance traveled.

Pedometers are known which include devices or algorithms for determining the distance a person travels on foot. For example, U.S. Patent 4,371,945 discloses an electronic pedometer that calculates distance by electronically measuring the length of each stride taken by a user. Stride length is measured by ultrasonic waves generated by an ultrasonic module strapped to one leg and an ultrasonic detector worn on the other leg. A program compensates for a variety of measurement errors and the results are displayed on

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a wrist-mounted display after being transmitted by VHF waves from the leg to the wrist.

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U.S. Patent 4,771,394 discloses a computer shoe with a heel-mounted electronic device with an inertia footstrike counter, a timer, a sound generating device, a battery, and a gate array for counting time and footstrikes to calculate distance and running time as a function of stride time. Although recognizing the important relationship of stride length and foot speed, the shoe in this patent requires data from at least 15 test runs or walks and the data must be user-entered in pairs of footstrikes and elapsed time to cover a pre-determined distance. Further, user adjustments of time must be performed to accommodate start and stop times, and the number of counted footstrikes is increased one percent to overcome inherent errors in the inertia step counter. The shoe-mounted device is subject to damage from impact, dirt, and water, and requires a stay-at-home computer with which to interface. There is no means disclosed to transmit data to a wrist-mounted display device or an "on-board" computing device that provides "real time" data to a runner.

U.S. Patent 4,855,942 discloses a pedometer and calorie measuring device that includes a wrist-mounted step counter and a fixed stride length to calculate distance traveled. Wrist-mounted step counters are known to be inaccurate because they assume a step for every arm movement. Even with error correction, such a device will provide less accurate step counts than a leg or waist-mounted counter. Further, fixed stride lengths do not take into account the fact that stride length varies with rate of movement.

U.S. Patent 5,117,444 discloses a pedometer and calibration method with two calibration modes. First, a user travels a predetermined "half-distance" for the device to count and store the number of strides in that distance. Next, the user travels a second distance with the step counter comparing actual steps to the steps in memory and a current trip memory are incremented by a tenth of a "whole unit" distance. There is no correlation between stride length and stride rate which requires the user to re-calibrate the device when walking as opposed to running.

U.S. Patent 5,475,725 discloses a pulse meter with pedometer function to determine pace and pulse rate of a user. The meter uses pulse wave base data compared to actual pulse wave data rates.

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U.S. Patent 5,476,427 discloses a pace display device utilizing a base rate for traveling pre-set distances in successive trails. The device calculates step counts and rates, and compares actual step count rates to display data to a user for comparison of present running rates to previous rates.

Thus, there is a need for a simple, but highly accurate, pedometer that displays distance traveled, pace, speed, heart rate, and other important information on an easily read wrist-mounted device.

SUMMARY OF THE INVENTION

The present invention overcomes problems and shortcomings in the prior art by providing a device that includes a waist, chest, or leg-mounted stride counting device, a transmitter, and a wrist-mounted receiver/display device that provides highly accurate travel distances and other information. The device includes a computer that stores base stride length and rate data from traveling a pre-determined distance and compares that to actual stride rate data to calculate actual distance traveled, speed, and pace. The invention recognizes the interdependency of stride length and stride rate and uses that relationship to provide superior distance-calculating accuracy.

The invention also provides for improved display of relevant data on a wristmounted display that receives digital signals from devices worn on other body parts such as legs, waist, and chest. Transmitters that can send coded signals are desirable because they will not interfere with similar devices worn by other users in the vicinity.

The accuracy of the device is enhanced by the use of an algorithm that adjusts a base stride length based on actual stride rates. The algorithm is defined as: Actual Stride Length = Base Stride Length + Base Stride Length *(((Actual Stride Rate - Base Stride Rate) N)/Base Stride Rate); where N is either an average value or a derived value from a plurality of samples.

The invention also includes a method for calculating an actual stride length including steps of: timing a first user run of a predetermined distance; counting the total number of strides in the user first run; dividing the first run distance by the stride count to obtain a base stride length; dividing the stride count by the first run time to obtain a base stride rate; counting strides during a user's second run to obtain an actual stride rate;

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calculating the actual stride length using the formula: Actual Stride Length = Base Stride Length + Base Stride Length

*(((Actual Stride Rate - Base Stride Rate)N)/Base Stride Rate); wherein N is an average value or a derived value.

The average value method can be refined by comparing Base Stride Rate to Actual Stride Rate to determine a percentage difference; and using N=1 when the Actual Stride Rate \leq Base Stride Rate * 1.02 and using N=3 when Actual Stride Rate > Base Stride Rate * 1.02. A preferred embodiment uses a plurality of sample runs over known distances to derive an accurate N value for each individual.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of a pedometer in accordance with the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

As illustrated in Fig. 1, the present invention is directed to an improved pedometer 20 including: a waist, chest, or leg mounted stride counter 24, and a wrist or waist mounted display unit 26. An optional chest-mounted heart monitor 28 can be included. All of the device components are mounted in suitable housings. The pedometer 20 includes a data processor 30 that is mounted in the same housing as either the step counter 24 or the display unit 26.

The step counter 24 is an inertia device that counts the number of steps a user takes. The number of steps is transmitted to a data archive 32 either directly or via a transmitter 34. The data archive 32 is mounted in the housing with the step counter 24 or the display 26.

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The transmitter 34 is mounted in the step counter housing and is preferably an Rf telemetric signal transmitter with a 30 inches to 36 inches transmission range. Alternately, the transmitter is a wireless or wired digital transmitter with a coding function to limit or eliminate interference with other similar devices. The wireless transmission range is set between 30 inches and 36 inches to provide adequate range to transmit signals from a user's waist to wrist, but not so far as to cause interference with other Rf or digital devices in the vicinity.

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The transmitter 34 transmits either raw data or calculated distances, pace, etc. to a wrist-mounted display unit receiver 40. The receiver 40 relays a raw data signal to the data processor 30 or a calculated data signal directly to the display panel 42, such as an LCD or LED.

Similarly, the heart rate monitor 28 includes a transmitter 44 that transmits heart rate data to the display unit 26. The heart monitor transmitter 44 can transmit at the same or a different frequency as the stride counter 24, and to the same or a different receiver in the display unit 26. The heart rate transmitter 44 is preferably Rf, but can be digital for the reasons stated above. The range of the heart rate transmitter 44 should also be between 30 inches and 36 inches to ensure effective communication with the receiver while limiting outside interference.

The data processor 30 can also include a programmable logic controller, a personal computer, a programmable read-only memory, or other suitable processor. The data processor 30 includes a data archive 32 to store historic data on stride length and pace to be used in an algorithm for calculating actual distances, speed, and rate for real-time conversion of data to useful information for a user.

The data processor 30 can also include closed loop or fuzzy logic programming to continually or periodically replace the base stride rate and length with recently calculated stride rates and lengths so that long term conditioning trends are accommodated in the base stride archive. Incorporating trend capabilities may further enhance accuracy of the distance and pace calculations.

The display unit 26 also includes an operator interface 46 such as a key pad, button, knob, etc. that enables the user to start and stop a clock 48 (or stop watch) and activate various use modes within the pedometer, such as a sampling mode and operation mode.

One option for using the pedometer 20, requires the user to operate a "sampling mode" and begin walking or running a pre-determined distance such as a mile or 1600 meters, preferably on a running track of a known size. Upon completion of the distance, a stop button on the operator interface 46 is pushed. The data processor 30 is programmed to then divide the distance by the number of strides counted to calculate an average stride

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length. This value is stored in the data archive 32 as the "Base Stride Length."

Also, the data processor 30 is programmed to divide the number of strides by the time of the run or walk as measured by the clock 48 to arrive at a "Base Stride Rate."

The data processor 30 preferably includes programming that queries the user about the distance to be run during the sampling mode. By providing options or enabling the use of any distance during the sampling mode, the pedometer 20 provides maximum flexibility for use by people of various physical conditions, or having access to courses of different known distances. Thus, a user may be queried to input a distance to be used in the sampling mode and then be given a list of options such as 400 meters, 440 yards, 1600 meters, or one mile, or be asked to simply input any distance known to the user that will be traveled during the sampling mode.

The present invention makes full use of the relationship between a faster rate of travel and longer stride lengths. In other words, the faster a user is moving, the longer will be the stride length. Over the course of the run or walk, the user's step rate and, therefore, stride length will change and the user will cover more ground when moving fast and less ground when moving slow.

Clearly, using a fixed average stride length in calculating distance traveled will result in errors using prior pedometers. This is particularly true if a user changes pace, or improves conditioning and speed to the point where the average stride length over a given run increases dramatically. The error compensators in prior devices do not adjust for changes in pace. With the old devices, a user needed to re-calibrate periodically to be close to getting an accurate reading, and could not change pace during a workout without decreasing accuracy.

To make the correction, the user activates a "Use Mode" in which the data processor 30 calculates an Actual Stride Rate based on data from the stride counter 24 and the clock 48. For example, an Actual Stride Rate can be calculated every five seconds without the user doing more than activating the "Use Mode" button, while all the calculations are performed by the data processor automatically. The percentage change between the Actual Stride Rate and the Base Stride Rate is then computed by the data processor 30 to determine an Actual Stride Length. Again, if the Actual Stride Rate is

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greater than the Base Stride Rate, the Actual Stride Length is longer than the Base Stride Length. If the Actual Steps Per Second is lower than the Base Steps Per Second, the Actual Stride Length is shorter than the Base Stride Length. The algorithm below provides a means for comparing the Actual and Base Stride rates to arrive at an accurate Actual Stride Length.

First, a comparison between the Actual Stride Rate and the Base Stride Rate is made to determine whether Actual Stride Rate is less than or equal to Base Stride Rate multiplied by 1.02. Stride Length is calculated by:

Actual Stride Length = Base Stride Length +

Base Stride Length *(((Actual Stride Rate - Base Stride Rate)N)/Base Stride Rate)

Where: N=1 when Actual Stride Rate is less than or equal to Base Stride Rate multiplied by 1.02, and N=3 when Actual Stride Rate is greater than Base Stride Rate multiplied by 1.02, although other N values in the range of one to three can be used.

The above algorithm is accurate for heel to toe activities such as walking or jogging, but is less accurate for sprinting (toe only).

A third method of calculating actual stride length uses three separate run or walk samples at three different paces. This is the most accurate option. With this method, the N values are unique for each individual. By deriving an N value for each individual, this value more accurately reflects the actual change in stride length with a change in pace. After a proper warmup, the user completes a sample run or walk on the track at a normal pace. This first sample S1, will establish the Base Stride and the Base Steps Per Second. S1 SAMPLE:

S1 Stride = Base Stride = Distance / Number of Steps

S1 Steps Per Second or S1 Steps Per Second = Base Steps Per Second = Number of Steps Per Second

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Following completion of the first run or walk at normal pace, the user runs or walks the same course and the same distance at a faster run or walking pace, but not a sprinting pace. The user should not run on his toes, but maintain the normal heel to toe jogging style. This is the S2 sample. The purpose of the S2 sample is to calculate an N2

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value for each individual which reflects the effect an increase in Steps Per Second has on this individual's stride length. Some individual's steps will lengthen more than others as Steps Per Second increases, and by finding the value for N2, this relative increase can be quantified for a more accurate and customized algorithm for each individual.

S2 SAMPLE:

To find the N2 value, which will be used by the algorithm when Actual Steps Per Second > Base Steps Per Second

N2 = ((S2 Stride * S1 Steps Per Second) - (S1 Stride * S1 Steps Per Second)) / (S1 Stride (S2 Steps Per Second - S1 Steps Per Second))

This value can be calculated since the distance is known, and both a Fast Stride Length (S2 Stride) and a Fast Steps Per Second (S2 Steps Per Second) can be calculated from the second sample.

Following completion of the fast run or walk, the user runs the same course and the same distance at a slower than normal run or walking pace. This pace cannot exceed the first sample pace. This is the S3 sample. The purpose of the S3 sample is to calculate an N3 value for each individual which reflects the effect a decrease in Steps Per Second has on this individual's stride length. Some individual's steps will shorten more than others as Steps Per Second decreases, and by finding the value for N3, this relative decrease can be quantified for a more accurate and customized algorithm for each individual. S3 SAMPLE:

To find the N3 value, which will be used by the algorithm when Actual Steps Per Second < Base Steps Per Second.

N3=((S3 Stride * S1 Steps Per Second) - (S1 Stride * S1 Steps Per Second)) / (S1 Stride (S2 Steps Per Second - S1 Steps Per Second))

This value can be calculated since the distance is known and both a "Slow" Stride Length (S3 Stride) and a "Slow" Steps Per Second (S3 Steps Per Second) can be calculated from the third sample.

Once these three samples are completed and the information automatically calculated and stored in the data processor 30, then the following formula can be used for the most accurate measurements of speed and distance.

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If: Actual Steps Per Second is less than or equal to Base Steps Per

Then:

Second

Stride Length = Base Stride + Base Stride*(((Actual Steps Per Second - Base Steps Per Second)N)/Base Steps Per Second)

And N = N3 (Stored Value)

If: Actual Steps Per Second > Base Steps Per Second Then:

Stride Length = Base Stride + Base Stride*(((Actual Steps Per Second - Base Steps Per Second)N)/Base Steps Per Second)

And N = N2 (Stored Value)

This third option for calculating stride length, and subsequently distance, speed, and pace, is a far more accurate method than a fixed stride length pedometer. This device and method are also practical, convenient, and has a relatively low manufacturing cost. If an individual's running or walking style is progressing with training and practice (as seen by significantly improved times), then it may be beneficial for them to recalibrate their device by repeating the three samples every 3 to 6 months. If there are no significant improvements in time, then recalibration is not necessary.

It is noted that any single stride length or pace discussed above can in fact be an average of a plurality of stride lengths or rates from test runs to further refine accuracy in the calculations of actual stride data.

Other variations on this device could also incorporate an altimeter which measures changes in elevation. The stride length could then be adjusted (shortened) when elevation is increasing, and lengthened when elevation is decreasing. This adjustment could be done with an average value, as we used in setting option 2, or with a derived value by running or walking over a known distance on a hilly course. This device can use two batteries so that the calibration data is not lost when the batteries are replaced one at a time.

Once the actual stride length is calculated for a given period of time, the value can be multiplied by the number of strides in that period to obtain a total distance for that period to be stored in a data archive file for that particular walk or run and added to other

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actual stride lengths or distances for other periods in which stride length was calculated. When the run or walk is completed, the user engages the operator interface 46 to indicate that a total distance is to be displayed on the display unit. Preferably, there is continual display of the distance traveled.

As a result of accurately calculating distance traveled, the pedometer 20 also has the capability of calculating speed in miles per hour, for example or pace in minutes per mile, including average speed and pace over the course of that particular walk or run. Further, the pedometer 20 can include a port for coupling to a separate personal computer or computing device to create larger training histories, trends, etc.

Additional features can include stop watches, day, date and time displays, as well as, heart rate displays as discussed above. Also, it will be understood that all distances and time periods used above can be varied in length and units of measure (English, metric, seconds, minutes, hours, etc.).

The foregoing detailed description is provided for clearness of understanding only and no unnecessary limitations therefrom should be read into the following claims.

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CLAIMS

An exercise monitoring device comprising:
 a strap for releasably securing the exercise monitoring device to a user;
 a step counter joined to the strap; and
 a heart rate monitor joined to the strap.

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The exercise monitoring device of claim 1, and further comprising:
 a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length that varies according to a rate at which steps are counted.

3. The exercise monitoring device of claim 1, and further comprising: a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length that varies in accordance with a stride rate, wherein the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate.

4. The exercise monitoring device of claim 3, wherein the data processor is further programmed to recalibrate the stride length as a function of a subsequently calculted and known stride rate.

4.8. The exercise monitoring device of claim, wherein the data processor is further programmed to recalibrate the stride length by calculating an average stride length from the calibration stride length and the recalibration stride length.

6. The pedometer of claim 1, and further comprising:

a data processor programmed to calculate a distance traveled by multiplying the number of steps counted by the step counter by a stride length that varies according to a rate at which steps are counted, and further programmed to derive the stride length from a range of stride lengths calculated from a range of corresponding stride rates calculated from a plurality of calibration samples

7. A pedometer comprising:

a step counter;

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a transmitter in communication with the step counter to generate a step count signal corresponding to each step and transmit the step count singal; a receiver mountable on a user body portion to receive the step count signal transmitted from the transmitter; and

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by a stride length that varies according to a rate at which steps are taken, and further programmed to derive an actual stride length/from a range of stride lengths calculated from a range of corresponding stride rates.

7%. The pedometer of claim, wherein the data processor is further programmed to:

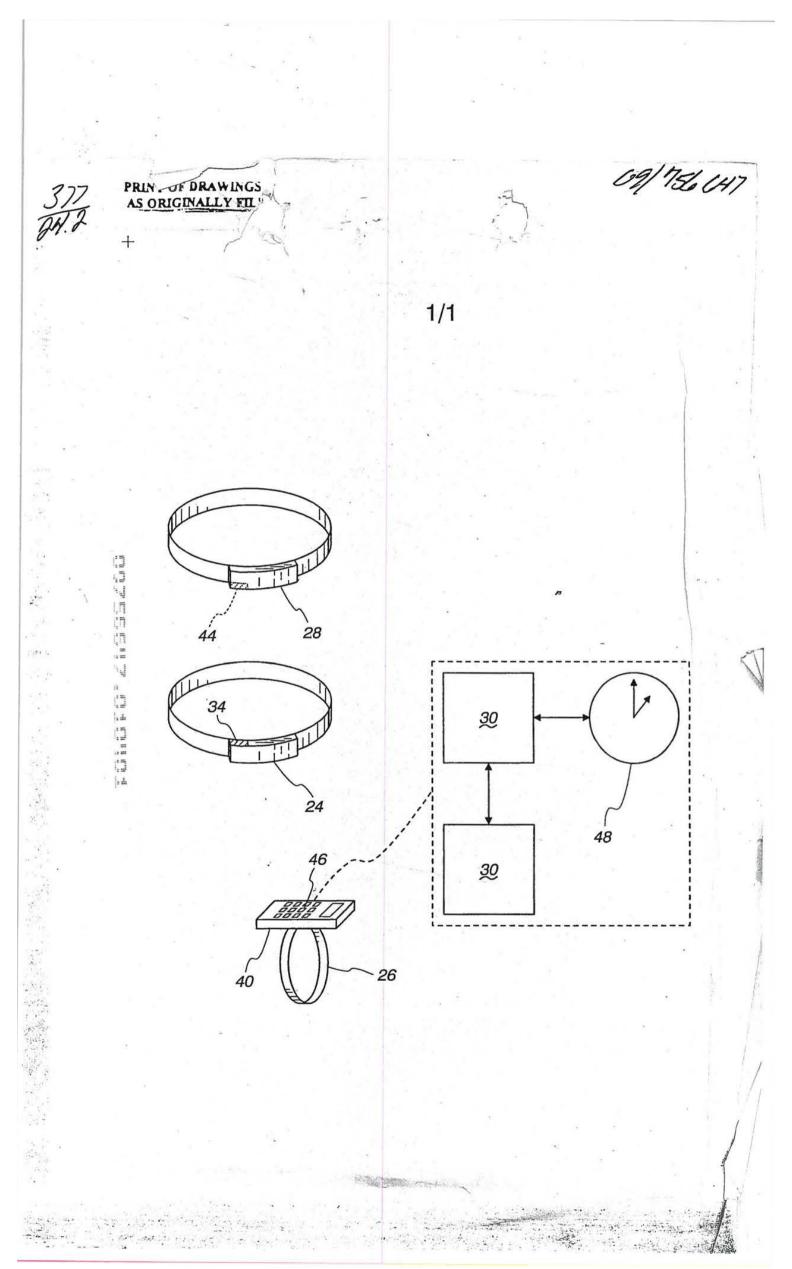
use the range of stride rates to create a corresponding range of stride lengths and compare an actual stride rate to the range of stride rates to derive a corresponding actual stride length.

8%. The pedometer of claim, wherein the data processor is further

programmed to:

interpolate between and extrapolate from the ranges of stride rates and stride lengths to calculate a plurality of additional corresponding stride rates and stride lengths.

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TomTom Exhibit 1009, Page 23 of 92

PE 1 6 200 TRADE

PATENT APPLICATION

In the United States Patent and Trademark Office

Applicant:

Docket No.:

Date: April 16, 2001

Nathan Pyles

KNOWMO-6

09/756,647

2816

January 4, 2001

Application No.:

Filed:

Art Unit:

Examiner:

For: PEDOMETER

Certificate of Mailing I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Box Missing Parts, Assistant Commissioner for Patents, Washington, D.C. 20231 luni 2001 16 Signatu Jeffry W. Smith, Reg. No. 33455 Name of Applicant, assignee or **Registered Representative**

#13

TRANSMITTAL OF MISSING PARTS OF APPLICATION UNDER 37 C.F.R. §1.53

Box Missing Parts Assistant Commissioner for Patents Washington, D.C. 20231

Dear Sir:

In response to the Notice of Missing Parts mailed February 15, 2001, enclosed are the

following items for filing in the above-referenced U.S. patent application:

1. A Declaration and Power of Attorney, executed by the Applicant(s) on April 13,

2001.

2. Copy of Notice to File Missing Parts of Nonprovisional Applciation.

3. A check in the amount of \$420.00 to cover the filing fee (37 C.F.R. §1.16(a) et

seq.), and the surcharge set forth in 37 C.F.R. §1.16(e).

Applicant: Nathan Pyles Application No.: 09/756,647

 Statement Claiming Small Entity Status – Small Business Concern (37 C.F.R. §§1.9(f) and 1.27(c).

The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 15-0660. A duplicate copy of this document is enclosed.

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Having now complied with all the requirements of 37 C.F.R. §1.53, Applicant(s) respectfully requests that this application be placed upon the files for examination.

Respectfully submitted,

Jefffy^bW. Smith, Reg. No. 33455 Attorney for Applicant LATHROP & CLARK LLP 740 Regent Street, Suite 400 P.O. Box 1507 Madison, Wisconsin 53701-1507 (608) 257-7766

TomTom Exhibit 1009, Page 25 of 92



Docket No.: KNOWMO-6

DECLARATION AND POWER OF ATTORNEY

E

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the investion entitled: PEDOMETER, the specification of which

- [] is attached hereto.
- [X] was filed on <u>January 4, 2001 as Application No. 09/756,647</u> and was amended on _____ (if applicable).

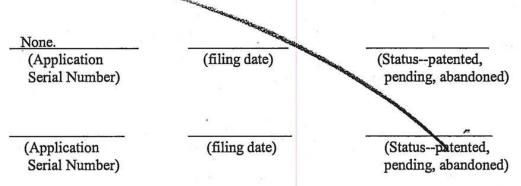
I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as alreaded by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Ap	oplication(s)		Priority Claimed
None.			[] []
(Number)	(Country)	(Day/Month/Year Filed)	Yes No
			[] []
(Number)	(Gountry)	(Day/Month/Year Filed)	Yes No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this

application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:



And I hereby appoint the practitioners associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to that Customer Number:

Customer Number: 020,455

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole Inventor

Â.

Nathan Pyles

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Inventor's Signature

Date Residence Citizenship Post Office Address

Lake Mills, Wisconsin United States of America 529 College Street, Lake Mills, Wisconsin 53551

TomTom Exhibit 1009, Page 28 of 92

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	See 37 C.F.R. §§ 1.27 and 1.28.		Group / Art Unit 2816	
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Name (Print/Type) Jeffry W. Smith	Registration No. (Attorney/Agent) 33455 Telephone (608) 257	-7766
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PATENT APPLICATION IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Nathan Pyles

Filed: January 4, 2001

For: PEDOMETER

KNOWMO-6 Docket No .:

Box Missing Parts Assistant Commissioner for Patents Washington, D.C. 20231

"Express Mail" Mailing Label No.: EL055846909US Date of Deposit: April 16, 2001

I hereby certify that these attached documents

- Response postcard
- Check in the amount of \$420.00
- PTO/SB 21 (1p) PTO/SB 17 (1p) and 1 copy
- Notice to File Missing Parts of Nonprovisional Application (1p)
- Transmittal of Missing Parts (2pp) and 1 copy Small Entity Statement Small Business Concern (1p)
- Executed Declaration and Power of Attorney (3pp)

are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 35 C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

W. Smith, Reg. No. 33455)

Enclosed for filing please find the above-referenced documents. Please indicate receipt of these documents by returning the attached postcard with the official Patent and Trademark Office receipt stamped thereon.

Respectfully submitted,

Jeffry W. Smith, Reg. No. 33455 Attorney for Applicant Lathrop & Clark LLP P.O. Box 1507 Madison, Wisconsin 53701-1507 (608) 257-7766

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REQUEST TO CORRECT ERRONEOUS RECORD ON FILING RECEIPT

Office of Initial Patent Examination's Customer Service Center Assistant Commissioner for Patents Washington, D.C. 20231

Dear Sir:

Responsive to the Filing Receipt received on May 31, 2001, Applicant hereby respectfully requests that the following error be corrected:

The Applicant's residence should be Lake Mills, WI.

A copy of the Filing Receipt with the change noted in red thereon is enclosed.

Respectfully submitted,

Jeffry W. Smith, Reg. No. 33455 Attorney for Applicant LATHROP & CLARK LLP 740 Regent Street, Suite 400 P.O. Box 1507 Madison, Wisconsin 53701-1507 (608) 257-7766

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Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Nathan Pyles, Lake Mills, WS;

Domestic Priority data as claimed by applicant

THIS APPLICATION IS A CON OF 09/181,738 10/28/1998 PAT 6,175,608

Foreign Applications

If Required, Foreign Filing License Granted 01/31/2001

Projected Publication Date: 09/06/2001

Non-Publication Request: No

Early Publication Request: No

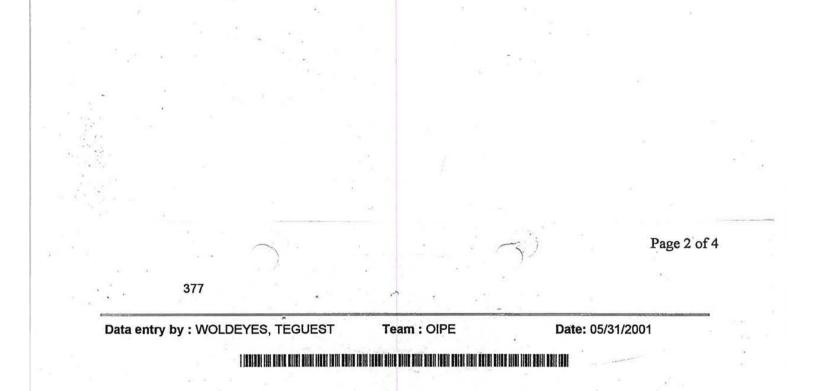
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Preliminary Class

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95) *U.S. GPO: 2000-473-000/44602

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earned patent term adjustment. See 37 CFR 1.704(b).		*	
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2a) This action is FINAL. 2b) 🔯 Th	nis action Is non-final.	<b>7</b> - 11	
3) Since this application is in condition for allow	ance except for formal ma	atters, prosecution as	to the merits is
closed in accordance with the practice under			
Disposition of Claims			
4) 🔀 Claim(s) 1-9		is/are pending	in the application.
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5) 🔀 Claim(s) <u>7-9</u>		is/are allo	wed.
6) 🔀 Claim(s) <u>1</u>		is/are reje	ected.
7) 😡 Claim(s) <u>2-6</u>		is/are obj	ected to
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Application Papers			
9) The specification is objected to by the Examin	ner.	· · · · · · ·	10 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A
10) The drawing(s) filed on	is/are objected to by the	Examiner.	i e i e
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12) The oath or declaration is objected to by the	Examiner.	• 2	
Priority under 35 U.S.C. § 119			
13) Acknowledgement is made of a claim for fore	eign priority under 35 U.S	.C. § 119(a)-(d).	
a) All b) Some* c) None of:			
1. Certified copies of the priority document	ts have been received.	· ·	
2. Certified copies of the priority document		Application No	
3. Copies of the certified copies of the prio application from the Internationa	Bureau (PCT Rule 17.2(a	a)).	nai ştage
*See the attached detailed Office action for a list	of the certified copies no	t received.	
(4) Acknowledgement is made of a claim for dom	nestic priority under 35 U.	.S.C. § 119(e).	
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attachment(s)			
5) X Notice of References Cited (PTO-892)	18) 🗌 Interview Summary	en onder andere de Seren en en en e	
6) . Notice of Draftsperson's Patent Drawing Review (PTO-948)		Patent Application (PTO-152)	
7) Information Disclosure Statement(s) (PTO-1449) Paper No(s).	20) 🛄 Other:		
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TomTom Exhibit 1009, Page 40 of 92

Application/Control Number: 09/756647

Art Unit: 2816

### DETAILED ACTION

#### **Claim Objections**

1. Claims 4 and 7 are objected to because of the following informalities: "calculated" and

"signal", respectively, are misspelled. Appropriate correction is required.

### Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Sham et al:

Referring to Figure of Sham, an exercise monitoring device is taught which includes a strap for releasably securing the exercise monitoring device to a user (the strap connected to 14), a step counter (within 14) and a heart rate monitor (within 14) as recited in claim 1.

### Allowable Subject Matter

4. Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 7-9 are allowed.

Page 2

A:pplication/Control Number: 09/756647 Art Unit: 2816

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Wambach whose telephone number is (703) 308-4875. The examiner can normally be reached on Monday-Thursday from 6:30 to 5p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (703) 308-4876. The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Margaret R. Wambach Primary Examiner Page 3

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·\	Filed: Art Unit: Examiner: For: PEDOMETER	January 4, 2001 2816		On November 19, 2001 Signature Juffry W.S. The Jeffry W. Smith, Reg. No. 33455 Name of Applicant, assignee or Registered Representative

#### INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents Washington, D.C. 20231

Dear Sir:

In accordance with 37 C.F.R. §1.56, Applicant wishes to call the attention of the Examiner to the following documents:

### United States Patents

United States Patent No.	Issue Date	
4,053,755	10-11-1977	
4,144,568	03-13-1979	
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Patentee Sherrill Hiller et al. Lipsey Searcy Allsen et al. Sochaczevski Morokawa Jiminez Karr et al.

Applicant: Nathan Pyles	
Application No.: 09/756,647	

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# TomTom Exhibit 1009, Page 45 of 92

Applicant: Nathan Pyles Application No.: 09/756,647

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#### Foreign Patent Documents

Patent No. EP 0 119 009 A1 Publication Date ,19-09-1984 Patentee Frederick

### Other Documents

Form PCT/IPEA/408, Written Opinion received August 8, 2000, 5pgs.

Form PCT/ISA/210, International Search Report, 4pgs.

Sportsline Products, "Fitness Pedometer 360", web page, 1pg.

Sportsline Products, Fitness Pedometer 360 packaging label, 5 pgs.

Copies of these documents are submitted herewith along with Form PTO/SB 08a and/or PTO/SB 08b.

Applicant respectfully requests that these documents be expressly considered during the prosecution of this application and made of record herein and appear among the "documents cited" on any patent to issue herefrom.

Applicant: Nathan Pyles Application No.: 09/756,647

Respectfully submitted,

)§ H

Jefffy W. Smith, Reg. No. 33455 Attorney for Applicant LATHROP & CLARK LLP 740 Regent Street, Suite 400 P.O. Box 1507 Madison, Wisconsin 53701-1507 (608) 257-7766

# TomTom Exhibit 1009, Page 47 of 92

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		U.S: PAT	ENTDOCUMENTS	(a. )		
Examiner Initials*	Cite No. ¹ Number-Kind Code ² (if known,	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear		
MW.	US-4.053.755	10-11-1977	Sherrill			
MRW	US-4,144,568	03-13-1979	Hiller et al.			
When.	US-4,192,000	03-04-1980	Lipsey			
new	US-4,220,996	09-02-1980		~		
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ARW	US-4.371.945	02-01-1983				
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at <u>www.uspto.gov</u> or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached. Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

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	men	US-4.848.009	07-18-1989	Rodgers			
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Authority to grant an extension, see Rule           How?         By submitting a written reply, accompanie           For the form and the language of the ame           Also         For an additional opportunity to submit an           For the examiner's obligation to consider a For an informal communication with the examiner.	d, where appropriate, by amendments, according to Rule 66.3. ndments, see Rules 66.8 and 66.9. mendments, see Rule 66.4. amendments and/or arguments, see Rule 66.4 <i>bis</i> . maminer, see Rule 66.6. nation report will be established on the basis of this opinion.

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Novelty (N)	Claims	14-16, 28-54		YES
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Inventive Step (IS)	Claims	14, 16, 28-54	N 69	YES
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Industrial Applicability (IA)	Claims	1-54		YES
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ms 1-13, 17-28 lack novelty under PCT Ar	ticle 33(2) as	being anticipated by	Hutchins.	2 A F
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# TomTom Exhibit 1009, Page 57 of 92

## PATENT COOPERATION TREATY

# PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

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pplicant's or agent's file reference PIXINC-9	FOR FURTHER see Notification ACTION (Form PCT/ISA	n of Transmittal of International Search Report V220) as well as, where applicable, item 5 below.
ternational application No.	International filing date (day/month/year)	(Earliest) Priority Date (day/month/year)
CT/US 99/25314	28/10/1999	28/10/1998
pplicant PIX, INC. et al.		
This International Search Report has b according to Article 18. A copy is being This International Search Report consis	een prepared by this international Searching A transmitted to the international Bureau.	uthority and is transmitted to the applicant
	by a copy of each prior art document cited in th	nia report.
1. Basis of the report		
a. With regard to the <b>language</b> , the language in which it was filed, the language in which it was filed, the language is the language in which it was filed.	he International search was carried out on the b unless otherwise indicated under this item.	pasts of the International application in the
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	US 5 033 013 A (KATO YASUJI 16 July 1991 (1991-07-16)	ET AL)		1-3,5-7, 13, 17-19, 21-23,49	
	column 7, line 25 - line 30 column 8, line 21 - line 28 abstract				
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X A	EP 0 119 009 A (NIKE INTERNATIONAL LTD) 19 September 1984 (1984-09-19) page 6		1,2,5-7, 13 14,17, 18, 21-23, 27,49	
	page 10 page 11		<i>1</i> 5	
X	US 4 371 945 A (KARR LAWRENCE J ET AL) 1 February 1983 (1983-02-01) cited in the application column 4, line 33 -column 5, line 26		1,2,6-8, 17	
X A	US 5 583 776 A (LEVI ROBERT W ET AL) 10 December 1996 (1996-12-10) column 6, line 6 - line 42; claim 14; figures 5,7		49,53,54 32,35, 44,50	
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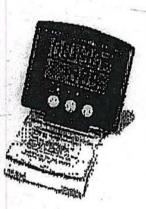
#### Sportline Products

Page 1 of 1

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### **FITNESS PEDOMETER 360**

The best double line display pedometer for walking, hiking and/or jogging. Accurately measures your distance, steps (including steps per minute and miles per hour), calories, speed, and time actually spent exercising. Seven (7) day memory keeps your activity for the past 7 days -- all instantly recallable. Time of day clock keeps you on time. Scan feature shows you all your information without having to push a button. Automatically shuts "off" when there's no activity, "on" when there is.

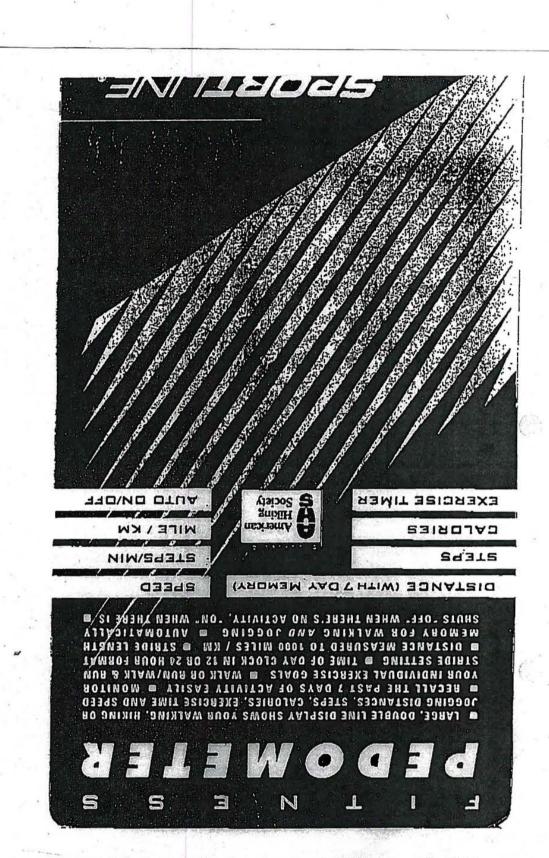


#### Features:

- New European design, easy-to-read flipcase design
- Displays distance traveled, steps, mph, steps per minute, and calories burned
- Distance measured to 1/100 of a mile (.01), steps to 10,000
- Distance and stride sets in mile (ML) and kilometers (KM)
- "Scan" feature automatically cycles through all functions and displays distance, steps, timer, calories, mph, steps per min., and time-of-day
- Individual stride adjustment for walking and running
- Automatic built-in sensitivity adjustment
- Large double display
- Push-button mode and selection buttons
- KM or MILE selectable

### Price: \$39.95

2 Year Warranty



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Prilingual

# FITNESS PEDOMENTER 360

# FI NESS PEDOMET R 360

WHAT ABOUT WALKING? Walking is one of the best forms of exercise. It burns calories, and it is easy on your joints. You can walk anywhere inside a mall, around your neighborhood, or up the side of a mountain. Walking can help you reduce your stress, make your muscles stronger, lower your blood pressure and cholesterol levels, prevent Type 2 diabetes, reduce your risk of heart disease, control your appetite and lose weight, feel and look better. Walking is a great way to get fit, especially if you're just starting to exercise. If you haven't exercised in a while, start out by walking briskly for 20 minutes, three times a week. Increase your time by a few minutes each walk until you can walk for 30 minutes, Aim to walk two miles or more in a half hour, three times a week and gradually increase your walking time and distance.

Inside



ΑFTER WARANIY ΙΙ Ότς «κειτολιγ ροποία ήρας «κρίναά από της υπίς ής τετωποία το δροσιδίου for servicing, αποίοσες 52.50 for postage από handling. Send your unit instruct to our Service Department listed before. If you are located outside the United States eithor ταίμνα τhe unit hy insured to out Service deolect distributor where purchased.

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# SPORTLINE 360 FILMES SPECOO WETER INSTRUCTIONS

w pedometer has been designed for your easy use and the accurate measurement of the distance you travel (travel distance records up to 7 days in memory), the steps you take, the calories "Burned" while you walk or run, how long you exercise, what speed you walk or run, conver-sion of distance measurement from mile (MIL) to kilometer (KM) or kilometer to mile, and auto power on/off. Also included is a convenient Time-of-Day clock with 12 hour or 24 hour format to tell you what time it is. The unit will also measure your distance in miles/kilometers and fractions of miles/kilometers.

#### **EXPLANATION OF SYMBOLS**

Buttons Button A - RESET, H(HR), ▲ (UP), KM/MIL Button B + MIN (MINUTES) ▼ (DOWN) Button C · MODE

Display (upper window) STEP - You are in Step mode TIMER - You are in Count Up Timer mode CAL - You are in Caloria mode KM/H, MIL/H - You are in Speed per hour mode STEP/M - You are in Step per Minute mode 000 - You are in total Mileage/Kilometer mode Nothing or P. You are in Time of Day

Display (lawer window) WALK- You are in Walk & Run mode RUN - You are in Run /Stride measurement mode WALK & RUN - You are in Walk & Run stride setting mode

with 12 hour or 24 hour format Clock mode

- ▲ Pedometer is counting successfully ➡ You are in auto power OFF mode
- Numbers of distance traveled in MIL or KM (7 days records).

Note: Remove bettery isolation strip from battery compartment to "power up" your unit.

#### UNIQUE SCAN FEATURE

Your pedometer has a very unique scanning feature. After you turn on the pedometer the dis-play will be in STEP mode. Press "C" button once or repeatedly to show TIMER, CAL. KM/H or MIL/H, STEP/M and Timo of Day modes. When you return back to the STEP mode, it will be "blinking". You are now in the Auto-Scan mode. Now the display will automatically show the blinking words "STEP. TIMER. CAL, KM/H or MIL/H, STEP/M and Clock". The pedometer will now rotate through each one of these displays for 3 seconds sequentially as long as the auto-scan function is activated... or until you press the "C" button once more for new data setting or viewing.

#### HOW TO OPERATE YOUR NEW PEDOMETER

You will need to give your pedometer some information for it to operate properly. In the sec-tions below you will see how to enter your personal STRIDE LENGTH (for walking, hiking), your WEIGHT (for calories), and TIME OF DAY. Once this information has been entered into the unit, you're ready to go!

#### YOUR STRIDE LENGTH (Your stride length and how to measure it)

This pedameter automatically records your exercise distance based upon your walking or run-ning or hiking movements. The maximum distance reading is 999.99 miles/kilometers. The num-bers to the right of the decimal point are fractions of a mile (just like your car's odometer) right down to 1 /100 of a mile or kilometer. It is important to walk or run or hike consistently. If you vary your walking pace, your stride length will vary and your distance traveled will be diffe-rent.

#### HOW TO MEASURE YOUR STRIDE

In order to measure your exercise distance accurately, you must enter your stride length into the Pedometer's "memory" so it knows how much distance you cover with each step you take. [Stride length is the length of each one of your steps, measured either from heel to heel or toe to toe). It's easy to find your stride length!

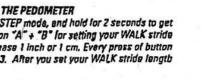
#### FOR WALKERS

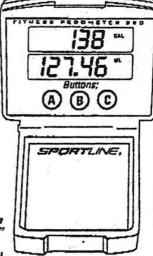
!

1. Walk 10 steps. 2 Measure the distance. 3. Divide by 10 the distance covered to arrive at your stride length. 4. Example: Distance covered in 10 steps = 30 feet. Steps taken to cover the distance (10 steps), 30 feet divided by 10 steps = 3 feet, stride length = 3 feet,

#### FOR JOGGERS OR HIKERS Follow the directions above, except jog or hike for 10 steps.

HOW TO ENTER YOUR "WALK" STRIDE LENGTH INTO THE PEDOMETER 1. Press the MODE button "C" on the display panel to STEP mode, and hold for 2 seconds to get to the WALK stride length setting mode. 2. Press button "A" + "B" for setting your WALK stride length information, every press of button "A" will increase 1 inch or 1 cm. Every press of button "B" will decrease 1 inch or 1 cm in the reverse order. 3. After you set your WALK stride length





# back to STEP mode automatically alter 5 seconds.

W TO ENTER YOUR "RUN" STRIDE LENGTH INTO THE DMETER. T. Press the MODE button "C" on the display panel to STEP mode, and hold for 2 seconds to WALK stride length selling mode, press MODE button "C" once again to get RUN stride length setting mode. 2 Press button "A" + "B" for setting your RUN stride length information (the same as above).

#### HOW TO SET CALORIE COUNTER

Press the MDDE button "C" and the display panel until you see CALORIE mode.
 Press MDDE button "C" and the display panel until you see CALORIE mode.
 Press MDDE button "C" and hold for 2 seconds to get WEIGHT setting mode.
 Press button "A"+"B" to setsyour weight information. Every press on button "A" increases the weight by 10 LB (pounds) or 4.5 KG (kilograms). Every press of button "B" decreases the weight by 10 LB (pounds) or 4.5 KG (kilograms).
 Once you set the proper weight, the display will blink for 5 seconds and then the display will skip back to CALORIE mode.

#### HOW TO SET TIME OF DAY

 Press the MODE button "C" on the display panel repeatedly to reach CLOCK mode.
 Press button "C" once and hold for 2 seconds to get 12 or 24 hour time setting mode. Press either button "A" or "B" once to set 12 hour time format or 24 hour time format. J. Press MODE button "C" once to get into CLOCK setting. Press button "A" for hour setting and "B" button for minute setting. After completing the setting, display will automatically go back to CLOCK mode after 5 seconds.

#### TO START YOUR EXERCISE

TO START YUOH EXERCISE T. Press "C" until the upper display will show STEP mode. Z. The display will show 00000 in the STEP mode in the upper display window (if numbers appear in either display, RESET the display by pressing "A" for 2 seconds), and 0.00 MIL or KM for distance on lower display window. J. Select WALK, RUN or WALK/RUN mode by pressing "C" button and holding it for 2 seconds for WALK, then pressing again quickly for RUN, pressing again for WALK/RUN, (Note: The WALK/RUN mode senses when you walk and uses the WALK stride, and uses the RUN stride when you win WMen you get the mode you wast sime wait for display to the binking. Being when you run.) When you get the mode you went, simply wait for display to stop blinking. Begin your exercise

#### TO RESET YOUR PEDOMETER

Press the RESET button "A" and hold for 2 seconds. The upper display and lower display will be reset to zero except the CLOCK mode and the previous 7 days distance travel records. TO RESET THE 7 DAY MEMORY press and hold "A" for 5 seconds. All the digits will show, Release "A". The memory will clear. However, this will also change MIL to KM, or KM to MIL Simply press and hold "A" for 5 seconds again to change back to your preferred (KM or MIL) distance measurement.

#### MILE / KILOMETER CONVERSION

To change from MILE to KILOMETER, press and hold RESET button "A" for 5 seconds. This will change STRIDE setting measurement from feet to cm (centimeters) as well.

#### HOW TO USE THE TIMER COUNTER

This pedameter accurately measures the time you spend exercising. When you stop, the timer stops. When you exercise, the timer runs. Press MODE button "C"on the display panel until you get to the TIMER mode for viewing the record of your exercise time.

#### DISTANCE COUNTER FUNCTION

This feature allows you to count the distance you travel during an exercise period, or all day if you wish. Your target should be to walk or jog 4 miles each day. Try it. 1. Press the MODE button "C" to get to STEP mode, Z. Press RESET button "A" and hold for Z

seconds and begin walking, running or hiking. The display will show DODDD and will begin to record your steps and distance.

#### DISTANCE WITH 7 DAY MEMORY & ODOMETER FUNCTION

This feature allows you to view the record of any day in miles or kilometers for 7 days. Starting from the 8th day, new data will automatically replace the memory of the 1st day recorded, and the 9th day will replace the 2nd day recorded... and so forth. Press and release button "A" to view each consecutive day's memory, and press button "B" to view each previous day's memory and total distance traveled "ODO" (like your car's odometer). Please note: You can complete your viewing of the 7 days activities and total distance before you return to the mein pedometer functions OR press "C" once to return to the main pedometer functions.

#### **SPEED FUNCTION**

This feature allows you to know what speed you travel per hour and how many steps per minute.

1. SPEED/HOUR: Press MODE button "C" repeatedly to locate SPEED mode to view speed function. The display will show MIL/H (mile per hour) or KM/H (kilometer per hour). 2. STEP/MINUTE: Press MODE button "C" once to advance to the next display STEP/M (step/minute) mode to view step per minute function.

#### AUTO POWER DN/OFF

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DISTANCE COUNTER FUNCTION This feature allows you to count the distance you travel ing an exercise period, or all day if µ wish. Your target should be to welk or jog 4 miles eac. jy. Try it. 1. Press the MODE butten "C" to got to STEP mode. 2. Press RESET button." A" and hold for 2 seconds and begin welking, running or hiking. The display will show 00000 and will begin to recent wire stars and distance. record your steps and distance.

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#### SPEED FUNCTION

This feature allows you to know what speed you travel par hour and how many steps par minute.

1. SPEED/HOUR: Press MODE button "C" repeatedly to locate SPEED mode to view speed funcction. The display will show MIL/H (mile per hour) or KM/H (kilometer per hour). 2. STEP/MINUTE: Press MDDE button "C" once to advance to the next display STEP/M (step/minute) mode to view step per minute function.

#### AUTO POWER ON/OFF

To save battery power, this unit will automatically "go to sleep" when no activity has been detec-ted, for four (4) minutes. The lower display will show & whenever unit is not in use. HOW TO WEAR YOUR PEDOMETER

Your pedameter clips easily to your trousers or shorts. For best results keep the unit in line with the "crease line" of your trousers.

SENSITIVITY ADJUSTMENT

Everyone's walking style is different. This pedometer has an automatic sensitivity

adjuster that compensates for the different walking, running or jogging styles. BATTERY REPLACEMENT

1. The battery hatch is on the side of your pedometer. Slide open the bettery door with your finger to access the battery. 2. Replace battery with LR-44 type when display dims. 3. Reset the pedometer and resetter the WEIGHT / STRIDE length and CLOCK information. OTHER INFORMATION

1. Treat your pedometer with care and it will work most efficiently. 2. Pedometer is NOT waterproof, so keep it dry.

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I hereby certify that this correspo mail in an envelope addressed to		ATE OF MAILING ne United States Postal Serv shington, DC 20231 on this of	ice with sufficient postage as first class date:
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C 20231. DO NOT SEND FEES OR	COMPLETED FORMS TO THIS ADD	RESS. SEND TO: Assistant Co	r, U.S. Patent and Trademark Office, Washingtor mmissioner for Patents, Washington, DC 20231.



### PATENT APPLICATION

In the United States Patent and Trademark Office

Applicant:

Docket No.: KNOWMO-6

Nathan Pyles

January 4, 2001

Date: February 13, 2002

Application No.: 09/756,647

Filed:

Art Unit: 2816

Examiner: M. Wambach

For: PEDOMETER

AMENDMENT

Box Responses-No Fee Assistant Commissioner for Patents Washington, D.C. 20231

Dear Sir:

In response to a November 13, 2001 official action, Applicant makes the following

amendments and remarks. Reconsideration and allowance are respectfully requested. A marked-

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up version of the amended claims is attached herewith as Exhibit A.

Please amend the application as follows:

### In The Claims

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Please cancel claim 1 without prejudice.

2. (Amended.) An exercise monitoring device comprising:

a strap for releasably securing the exercise monitoring device to a user;

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Certificate of Mailing

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Service as Express Mail in an envelope addressed to: Box

Responses-No Fee, Assistant Commissioner for Patents,

Washington, D.C. 20231

Jeffry W. Smith, Reg. No. 33455 Name of Applicant, assignee or

**Registered Representative** 

Signature

# TomTom Exhibit 1009, Page 70 of 92

#### Applicant: Nathan Pyles Application No.: 09/756,647

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a step counter joined to the strap;

a heart rate monitor joined to the strap; and

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length

that varies according to a rate at which steps are counted.

 $\frac{\gamma}{3}$ . (Amended.) An exercise monitoring device comprising:

a strap for releasably securing the exercise monitoring device to a user; a step counter joined to the strap;

a heart rate monitor joined to the strap; and

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length that varies in accordance with a stride rate, wherein the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate.

 $3_{\text{M}}$  (Amended.) The exercise monitoring device of claim  $\beta$ , wherein the data processor is further programmed to recalibrate the stride length as a function of a subsequently calculated and known stride rate.

 $5_{\beta}$ . (Amended.) An exercise monitoring device comprising:

a strap for releasably securing the exercise monitoring device to a user;

a step counter joined to the strap;

a heart rate monitor joined to the strap; and

Applicant: Nathan Pyles Application No.: 09/756,647

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a data processor programmed to calculate a distance traveled by multiplying the number of steps counted by the step counter by a stride length that varies according to the rate at which steps are counted, and further programmed to derive the stride length from a range of stride lengths calculated from a range of corresponding stride rates calculated from a plurality of calibration samples.

a step counter;

a transmitter in communication with the step counter to generate a step count signal corresponding to each step and transmit the step count signal; a receiver mountable on a user body portion to receive the step count signal transmitted from the transmitter; and

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by a stride length that varies according to a rate at which steps are taken, and further programmed to derive an actual stride length from a range of stride lengths calculated from a range of corresponding stride rates.

#### Remarks

In the November 13, 2001 official action, claim 1 was rejected under 35 U.S.C. §102(b), claims 2 to 6 were allowable if amended to overcome an objection as being dependent from a rejected base claim, and claims 7 to 9 were allowed. Claims 4 and 7 were objected to as including misspelled words that are corrected by the above amendment.

Applicant: Nathan Pyles Application No.: 09/756,647

Claim 1 has been canceled without prejudice because although Applicant disagrees with the basis for rejection, it wishes to expedite prosecution and allowance of this application.

Claims 2, 3, and 6, which all depended from rejected claim 1, have been amended into an independent claim format to include all of the limitations of claim 1. These claims are now believed to be allowable.

Claims 4 and 5 depended from claim 3, and require no amendment to overcome the objection because claim 3 is now in independent format. Claims 4 and 5 are, therefore, believed to be allowable.

Claims 7 to 9 were allowable and require no amendment or comment.

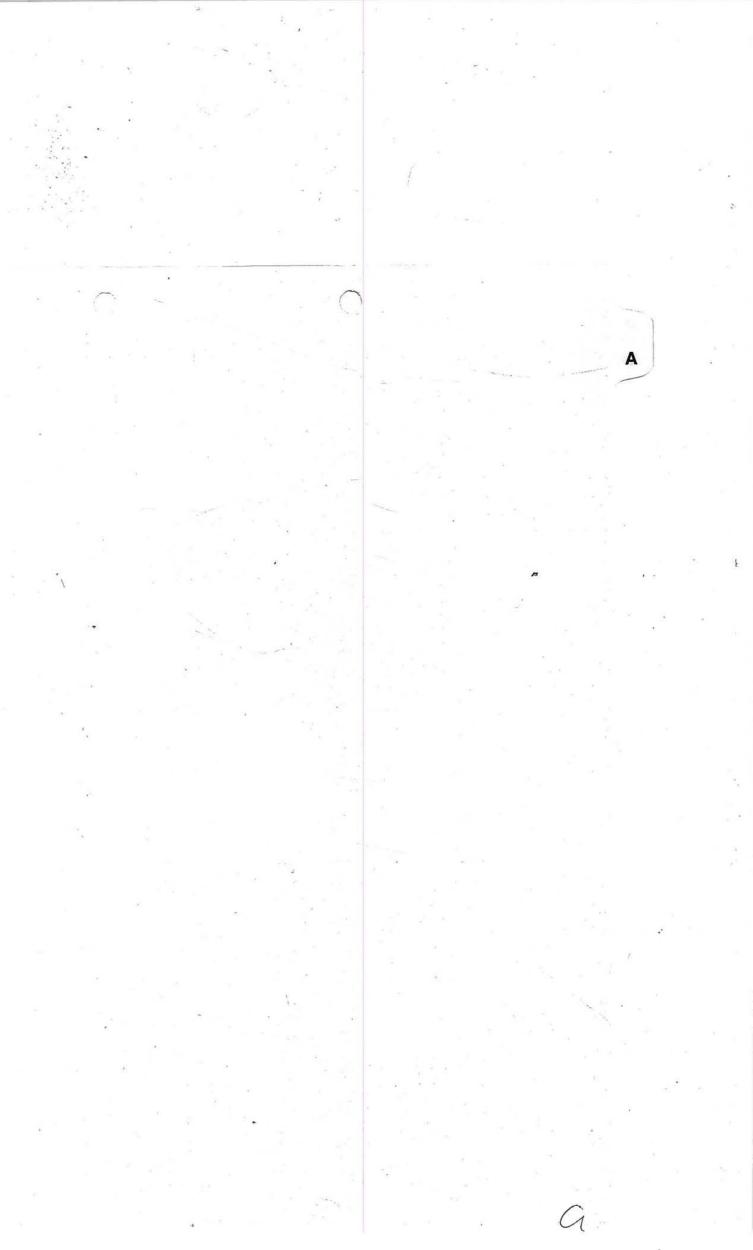
### Conclusion

For the foregoing reasons, claims 2 to 9 are in allowable form. Applicant requests that this case be passed to issue.

Respectfully submitted,

Jéfffy^IW. Smith, Reg. No. 33455 Attorney for Applicant LATHROP & CLARK LLP 740 Regent Street, Suite 400 P.O. Box 1507 Madison, Wisconsin 53701-1507 (608) 257-7766

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Applicant: Nathan Pyles Application No.: 09/756,647

(Amended.) <u>An exercise monitoring device comprising:</u>
 a strap for releasably securing the exercise monitoring device to a user;

a step counter joined to the strap;

a heart rate monitor joined to the strap; and

[The exercise monitoring device of claim 1, and further comprising:]

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length-

that varies according to a rate at which steps are counted.

3. (Amended.) An exercise monitoring device comprising:

a strap for releasably securing the exercise monitoring device to a user;

a step counter joined to the strap;

a heart rate monitor joined to the strap; and

[The exercise monitoring device of claim 1, and further comprising:]

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by the step counter by a stride length that varies in accordance with a stride rate, wherein the stride length is determined with reference to a plurality of calibrations that each calculate a stride length as a function of a known stride rate.

4. (Amended.) The exercise monitoring device of claim 3, wherein the data processor is further programmed to recalibrate the stride length as a function of a subsequently <u>calculated</u> [calculted] and known stride rate. 6. (Amended.) An exercise monitoring device comprising:

a strap for releasably securing the exercise monitoring device to a user; a step counter joined to the strap;

a heart rate monitor joined to the strap; and

[The pedometer of claim 1, and further comprising:]

a data processor programmed to calculate a distance traveled by multiplying the number of steps counted by the step counter by a stride length that varies according to the rate at which steps are counted, and further programmed to derive the stride length from a range of stride lengths calculated from a range of corresponding stride rates calculated from a plurality of calibration samples.

### 7. (Amended.) A pedometer comprising:

a step counter;

a transmitter in communication with the step counter to generate a step count signal corresponding to each step and transmit the step count <u>signal</u> [singal]; a receiver mountable on a user body portion to receive the step count signal transmitted from the transmitter; and

a data processor programmed to calculate a distance traveled by multiplying a number of steps counted by a stride length that varies according to a rate at which steps are taken, and further programmed to derive an actual stride length from a range of stride lengths calculated from a range of corresponding stride rates.

## TomTom Exhibit 1009, Page 76 of 92

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	ATTAN A NU MAY ANNA INI	First Named Inventor	Nathan Pyles 4 8
(to be used for all correspondenc	e aner initial filing)	Group Art Unit	2816
		Examiner Name	M. Wambach
Total Number of Pages in This	Submission	Attorney Docket Number	KNOWMO-6
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THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. <u>PROSECUTION ON THE MERITS IS CLOSED.</u> THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN <u>THREE MONTHS</u> FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. <u>THIS STATUTORY</u> <u>PERIOD CANNOT BE EXTENDED</u>. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

If the SMALL ENTITY is shown as NO:
A. Pay TOTAL FEE(S) DUE shown above, or
B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Page 1 of 3

PTOL-85 (REV. 07-01) Approved for use through 01/31/2004.

PART B - FEE(S) TRANSMITTAL

Complete and mail this form, together with applicable fee(s), to:

Box ISSUE FEE Assistant Commissioner for Patents Washington, D.C. 20231

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The patent term adjustment to date is 0 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 0 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (http://pair.uspto.gov)

Page 3 of 3

PTOL-85 (REV. 07-01) Approved for use through 01/31/2004.

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Application/Control Number: 09/756,647 Art Unit: 2816

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: None of the references of record teach an exercise monitoring device comprising the data processing limitations included in the dependent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret R Wambach whose telephone number is (703) 308-4875. The examiner can normally be reached on Tues-Thurs 3-6pm.

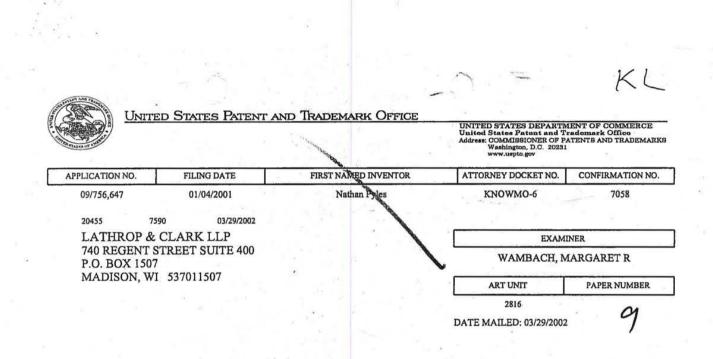
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (703) 308-4876. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-93 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mondon

Margaret R Wambach Primary Examiner Art Unit 2816

*** March 16, 2002



Please find below and/or attached an Office communication concerning this application or proceeding.

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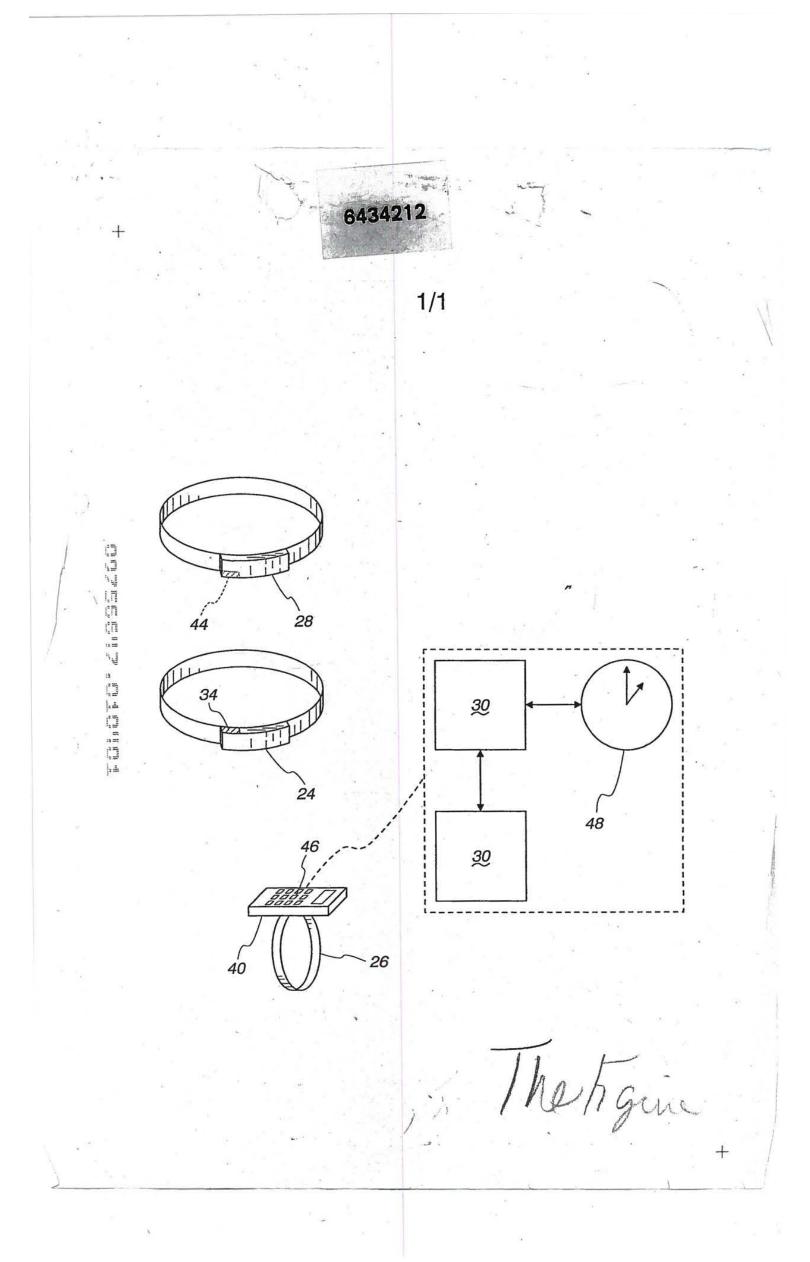
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Express Abandonment Request Request for Refund Information Disclosure Statement CD, Number of CD(s) Certified Copy of Priority CD, Number of CD(s) Document(s) Response to Missing Parts/ Incomplete Application The Commissioner is hereby authorized to charge any additional fees that may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 50-2911. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT Firm or or distance Jeffry W. Smith, Reg. No. 33455 Individual name Mach Q, 2004 Signature Defmandation CERTIFICATE OF TRANSMISSION/MAILING I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with authic dates mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature	After	Final	Provisional Application		Proprietary Information
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Information Disclosure Statement CD, Number of CD(s) Certified Copy of Priority Response to Missing Parts/ Incomplete Application The Commissioner is hereby authorized to charge any additional fees that may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 50-2911. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT Firm or of Individual name Jeffry W. Smith, Reg. No. 33455 Signature Date March Q, zood CERTIFICATE OF TRANSMISSION/MAILING I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature Jeffry W. Smith, Reg. No. 33455 </td <td>Express Aba</td> <td>Indonment Request</td> <td>Request for Refund</td> <td></td> <td>and the second in the second s</td>	Express Aba	Indonment Request	Request for Refund		and the second in the second s
Certified Copy of Priority Document(s) Remarks Image: Certified Copy of Priority Document(s) Response to Missing Parts/ incomplete Application The Commissioner is hereby authorized to charge pany additional fees that may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 50-2911. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT Firm or Individual name Jeffry W. Smith, Reg. No. 33455 Signature Jeffry W. Smith, Reg. No. 33455 Certific Core of this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature Jeffry W. Smith, Reg. N		.F	CD, Number of CD(s)		
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or Individual name Signature Signature Signature Signature March E, 200 fl CERTIFICATE OF TRANSMISSION/MAILING I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature Date This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and subtrouble to complete application form to the USPTO. The will way doeen set to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.		SIGNATU	RE OF APPLICANT, AT	TORNEY, C	DR AGENT
Signature With With Date March 2, 2004 CERTIFICATE OF TRANSMISSION/MAILING I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature Date This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to reducing thine your equire to complete, including gathering, prepering, and submitting the completed application form to the USPTO. Time will very depending upon the individual case. Any comments on the amount of time your equire to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information of the your equire to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information of the your equire to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information of there, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.		effry W. Smith, Reg. No. 334	155		70721
Date March 2, 2004 CERTIFICATE OF TRANSMISSION/MAILING I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature Date March 9, 2004 This collection of information is required by 37 CFR 1.5. The information is required to obtain or relain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.1. This collection is estimated to 12 minutes to complete, including gathering, preparing, or and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.		1.4. 50.4.1			57201
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I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. Typed or printed name Jeffry W. Smith, Reg. No. 33455 Signature Date Date March 9, 200C This collection of information is required by 37 CFR 1.5. The information is required to obtain or relain a benefit by the public which is to file (and by the USPTO is process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete dapilication for more the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.			and the second		
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TomTom Exhibit 1009, Page 88 of 92



TomTom Exhibit 1009, Page 89 of 92

APPLICATION NUMBER 09/756,647	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
	01/04/2001	Nathan Pyles	KNOWMO-6
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39231 SMITH & AMUNDSEN 440 SCIENCE DR. SUITE 320 MADISON, WI 53711

Date Mailed: 03/22/2004

OC00000012150605

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/19/2004.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

DAVID O LIPSCOMB OPR (703) 308-7127

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TomTom Exhibit 1009, Page 91 of 92

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FOR			NUMBER EXTRA		BASIC FEE	355.00	OR	BASIC FEE	710.00	
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TomTom Exhibit 1009, Page 92 of 92