Jan. 19, 1932. H. M. HOPPER 1,841,951

REGISTERING WALKING STICK

Filed May 20, 1927 2 Sheets-Sheet 1

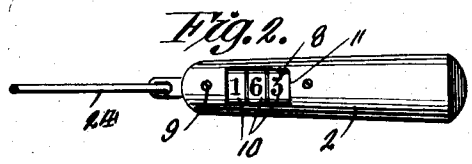
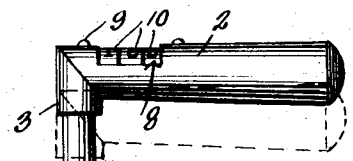


Fig. 2.



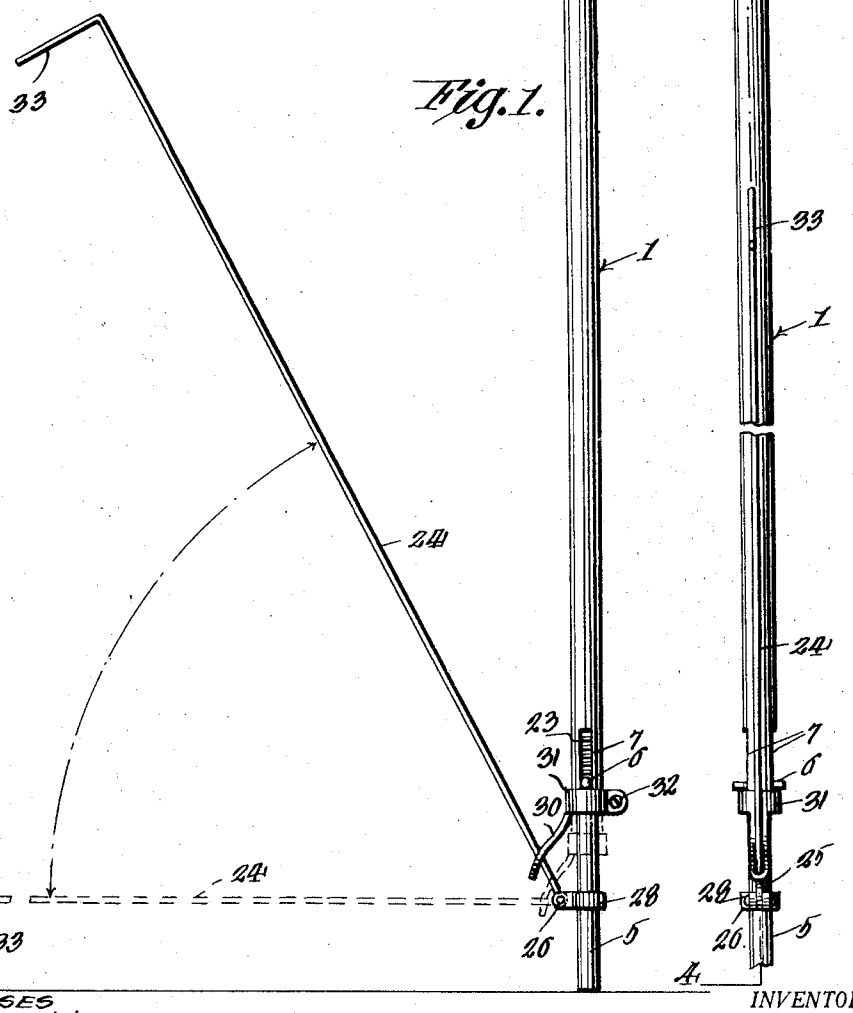


Fig. 1.

Fig. 3.

WITNESSES

Guy M. Spring

H. L. Smith

INVENTOR.

HERSCHEL M. HOPPER

BY

Richard B. Owen

ATTORNEYS.

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Fig. 4.

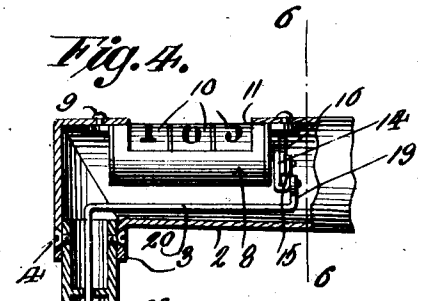


Fig. 5.

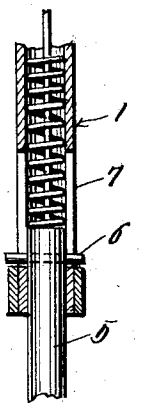


Fig. 6.

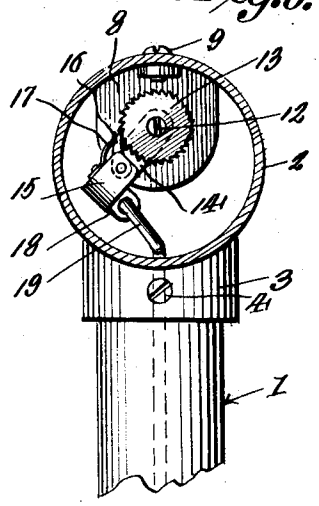
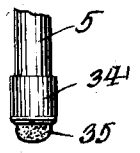


Fig. 7.



WITNESSES

Guy M. Spring

H. G. Smith

INVENTOR.

H. M. HOPPER

BY

Richard B. Owen

ATTORNEYS.

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UNITED STATES PATENT OFFICE

HERSCHEL M. HOPPER, OF SMARRS, GEORGIA

REGISTERING WALKING STICK

Application filed May 20, 1927. Serial No. 193,018.

This invention relates to improvements in registering devices and more particularly to a registering walking stick or cane, and one of the objects of the present invention is to provide, in connection with a walking stick, means for accurately registering the number of times the tip of the stick or cane is brought into contact with the ground surface, so that the one using the cane may obtain a record of the number of steps taken during a walk.

Another object of the invention is to provide a walking stick including registering mechanism for registering the number of times the tip of the stick is brought into contact with the ground surface, and means associated with the stick to adapt the stick to be employed in measuring land.

Another object of the invention is to provide a registering walking stick of such construction that the registering mechanism will include an actuating member which is yieldably held, by spring means, in an extended position and which constitutes the tip of the stick, so that the contact of the stick with the ground surface is cushioned thereby especially adapting the stick for use by those who are recovering from an illness and who are taking walking exercise, the yieldable tip serving to cushion the engagement of the walking stick with the ground surface.

While the accompanying drawings and the description which is to follow, constitute a disclosure of the preferred embodiment of the invention, it will be understood that various changes may be made within the scope of what is claimed.

In the accompanying drawings:

Fig. 1 is a side elevation of the walking stick embodying the invention, the stick being shown in normal condition in full lines, as well as the measuring means which may be employed in connection therewith, and the view illustrating in dotted lines the positions assumed by the parts when the stick is brought into engagement with the ground surface and downward pressure is exerted upon the stick;

Fig. 2 is a top plan view of the stick;

Fig. 3 is a front elevation thereof;

Fig. 4 is a vertical front to rear sectional view in detail through the stick, taken substantially on the line 4—4 of Figure 3;

Fig. 5 is a vertical sectional view through a portion of the stick taken in a plane at right angles to the plane of Figure 4;

Fig. 6 is a detail vertical transverse sectional view taken substantially on the line 6—6 of Figure 4;

Fig. 7 is a fragmentary view in elevation illustrating a modification of the invention.

In the drawings the walking stick is illustrated as embodying a staff indicated in general by the numeral 1 which staff is of the tubular form shown most clearly in Figures 4, 5 and 6 of the drawings, and the walking stick further includes a handle 2 which is provided at its forward end with a downwardly right angularly extending nipple 3 which is fitted to the upper end of the staff 1 and secured in place by screws 4 or other suitable fastening elements, the handle being hollow and of a shape to adapt it to be conveniently grasped and held. The tip of the walking stick is indicated by the numeral 5 and the said tip comprises a relatively short length of rod material which is slidably telescopically fitted into the lower end of the staff 1 as most clearly shown in Figures 4 and 5 of the drawings. A pin 6 is secured through the upper end portion of the tip 5 and projects at its ends beyond the opposite sides of the said end of the tip and has its said ends engaged slidably in slots 7 formed vertically in the opposite sides of the staff 1 near the lower end of said staff.

The numeral 8 indicates a registering mechanism which may be of any of the well known types and which is arranged within the hollow handle 2 and held in place by rivets or other suitable securing elements 9, the registering mechanism including a plurality of number disks 10 representing units, tens, and hundreds, in the illustrated embodiment, and of a greater number, if desired, the disks being exposed to view through an opening 11 formed in the upper side of the handle 2. The registering mechanism includes an actuating shaft 12 upon which is fixed a ratchet wheel 13, and the registering mechanism is, as usual, so construct-

ed that rotation of the ratchet wheel 13 with a step-by-step motion will effect, first, initial adjustment of the units disk of the registering mechanism, and subsequent adjustment of the tens and hundreds disks of the said mechanism. As the registering mechanism in itself constitutes no part of the present invention, the same has not been illustrated in detail, it being understood that any mechanism suitable for the purpose may be mounted within the handle of the walking stick. The numeral 14 indicates an oscillatory arm which is mounted upon the shaft 12 for oscillatory movement and normally extends substantially at the angle shown in Figure 6 of the drawings, the arm being bent back upon itself to provide a portion 15 spaced from the main portion of the arm, and a pawl 16 being pivotally mounted between the said portions of the arm and held yieldably in coactive engagement with the teeth of the ratchet wheel 13, through the medium of a spring 17. The arm 14 is provided with a downwardly extending apertured ear 18 to which is connected a short arm 19 extending upwardly laterally at an angle from an angular extension 20 of an actuating rod 21 which is mounted substantially axially within the tubular staff 1. The actuating rod 21 is guided through suitable apertured webs 22 formed in the staff 1 near the upper and lower ends thereof, and is connected at its lower end to the upper end of the tip 5, a compression spring 23 being arranged within the lower portion of the staff and bearing at its lower end against the upper end of the tip 5 and at its upper end against the lower one of the webs 22 so as to yieldably hold the tip 5 in the projected position shown in the several figures of the drawings, the tip being limited in its movement to this position by the engagement of the projecting ends of the pin 6 in the lower ends of the slots 7. The movement of the tip 5 in an upward direction, against the tension of the spring 23, which movement takes place when the tip is brought into engagement with the ground surface, in the use of the walking stick, and downward pressure is exterted against the stick, is limited by the engagement of the projecting ends of the pins 6 with the upper ends of the slots 7. It will now be evident that upward movement of the tip 5 will effect corresponding shifting movement of the actuating rod 21 with the result that the arm 19 will exert an upward thrust against the arm 14 to swing the said arm 14 about the shaft 12 of the registering mechanism through an angular distance sufficient to effect rotation of the ratchet wheel 13 a distance to register the contact of the walking stick with the ground surface. Therefore the successive contacts will be automatically registered and, after the user of the cane has exercised himself by walking, he may readily ascertain the number of steps which he has taken, by referring to the registering mechanism 8. It will be evident that the spring 23 serves not only as a means for returning the tip 5 to its normal lowered position after each upward movement thereof, but it also constitutes a cushioning means for the tip so that there is no jar imparted to the arm of the user of the walking stick when the stick is brought into engagement with the ground surface.

As previously stated, the device embodying the invention is provided with means whereby the device may be employed in measuring land and this means comprises a measuring arm indicated by the numeral 24 which arm is pivotally mounted at its inner end, by an eye 25, upon a bolt 26 which extends through the spaced ears 27 of a collar 28 which is frictionally clamped by the bolt upon the tip 5 of the walking stick. The measuring arm 24 may be in the nature of a rod of small diameter and this rod extends through and is guided in a slot 29 formed in a bracket arm 30 which extends downwardly and outwardly from a split collar 31 which is removably clamped upon the lower end of the staff 1 of the walking stick by means of a clamping bolt 32. The outer end of the measuring arm 24 is bent at right angles to provide a marker finger 33 which, in the lowered position of the arm, shown in dotted lines in Figure 1 of the drawings, is designed to strike the ground and form a slight though visible depression in the ground surface for a purpose which will now be explained. By reference to Figure 1 of the drawings it will be observed that when the tip 5 is shifted upwardly through contact with the ground surface and downward pressure upon the walking stick, the arm 24 will be swung downwardly and the marker finger 33 thereof will form a depression in the ground surface as stated. The arm 24 is of a definite length as for example two or three feet and in the use of the walking stick, in measuring land, the lower end of the tip 5 is brought into engagement with the surface of the ground at the depression made by the marker finger 33 at each successive operation of the device. Therefore the registering mechanism 8 will register the number of times the device is employed and this number multiplied by the length of the marker arm 24 will give the number of feet measured. When the walking stick is relieved of pressure and lifted from contact with the ground surface, the downward movement of the tip 5 under the influence of the spring 23, will of course effect automatic elevation of the marker arm 24 to the full line position shown in Figure 1 of the drawings.

From the foregoing description it will be understood that the bolts 26 and 32 may be loosened and the collars 28 and 31 separated from the tip 5 and staff 1 respectively, when it

is not required to use the measuring attachment.

In addition to the uses above outlined, the structure is also capable of use in checking lumber and when it is to be employed for this purpose, a ferrule 34, illustrated in Figure 7 of the drawings, is fitted onto the lower end of the tip 5 and carries an ink saturated pad 35.

In the drawings the invention has been illustrated as embodied in a walking stick or cane, but it will be evident that it might equally as well be embodied in a crutch.

Having thus described the invention, what I claim is:

1. A measuring device of the class described, comprising a staff, a surface-engaging tip carried by the staff and reciprocable therein, a measuring arm angularly movable with respect to said staff and actuated through the movement of said tip, a surface-indenting finger extending at an angle to said measuring arm, means for pivotally connecting the inner end of said arm to said tip, a bracket arm carried by said staff, said bracket arm extending at an angle to said staff and provided with a guiding aperture formed therein, said measuring arm extending through said aperture for permitting said measuring arm to swing downwardly as said staff is depressed on said tip and for raising said measuring arm as said staff is extended with respect to said staff.

2. A measuring device of the class described, comprising a staff, a surface-engaging tip reciprocally mounted within said staff, spring means for normally pressing the same outwardly with respect to said staff, said staff provided with slots formed therein, a pin carried by said tip working within said slots for limiting the reciprocating of the tip within said staff and holding said tip against rotary movement therein, a bracket arm secured to said staff and provided with a guiding aperture, a measuring arm pivotally connected to said tip at a point normally below said guiding aperture in said bracket arm whereby said measuring arm will be caused to drop as said staff is depressed on said tip and whereby said measuring arm will be raised as said tip is extended, and a surface indenting means carried by the outer end of said measuring arm.

In testimony whereof I affix my signature.

HERSCHEL M. HOPPER.