W. F. FANNING.

SHOCK ABSORBER FOR CRUTCHES AND THE LIKE.

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1,406,453. Patented Feb. 14, 1922.

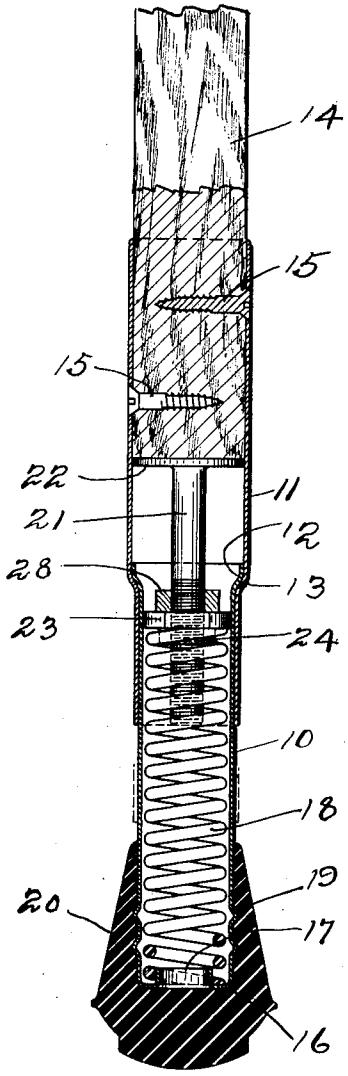


Fig. 1.

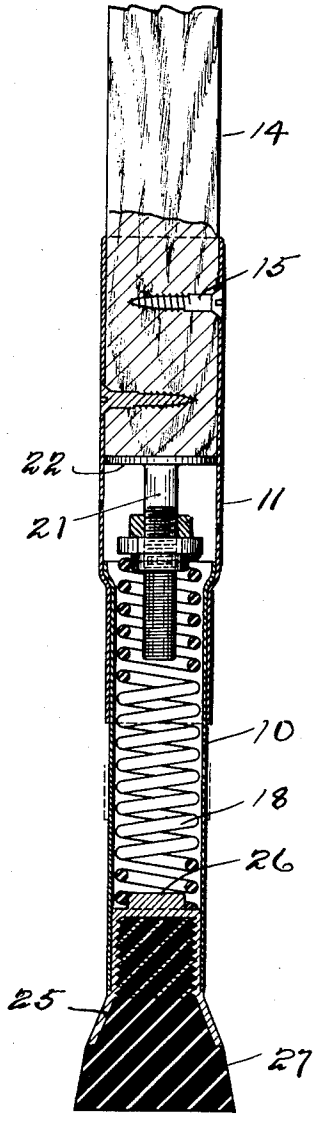


Fig. 2.

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UNITED STATES PATENT OFFICE.

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SHOCK ABSORBER FOR CRUTCHES AND THE LIKE.

1,406,453. Specification of Letters Patent. Patented Feb. 14, 1922.

Application filed May 31, 1919. Serial No. 300,875.

To all whom it may concern:

Be it known that I, WALTER F. FANNING, a citizen of the United States, and resident of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Shock Absorbers for Crutches and the like, of which the following is a specification.

This invention relates to shock absorbing devices adapted more particularly to be applied to crutches, canes, wooden legs and the like, and the object of this invention is to provide a simple, inexpensive and effective device for this purpose, which may be readily attached to a staff or the like and serve to absorb the jars and shocks incident to walking, the device being constructed essentially of a pair of telescoping, tubular members, one end of one member being adapted to be connected to the supporting staff, while the opposite end of the other member is adapted to receive a resilient tip, a spring being interposed between said member to hold them normally in extended position but which is adapted to yield when pressure is exerted upon the staff.

A further object of this invention is the provision of means whereby the tension of the supporting spring may be readily adjusted to accommodate itself to the weight of the person it is called upon to carry.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1— is an elevation in section showing one construction of my improved shock absorbing device as attached to the end of a supporting staff.

Figure 2— is a modification of the construction illustrated in Figure 1.

Referring to the drawings, 10 designates the lower, tubular member which fits and slides in the upper, tubular member 11, the upper end of the lower, tubular member being expanded as at 12 forming a shoulder which contacts with the reduced shoulder 13 formed by pressing or swaging inwardly the lower end of the upper member thereby forming a convenient stop to limit the relative outward or extending action of said tubular members. The upper end of the upper member is adapted to receive the lower end of the supporting staff 14 and is herein shown as being attached to the staff by means of screws 15, but any other suitable means of connecting this member to the staff may be provided.

The stock at the lower end of the tubular member 10, in Figure 1, is turned inwardly as at 16 and the edge 17 is turned upwardly into the tube forming a boss adapted to extend into the coil of the spring 18 to centralize this coil and prevent it from contacting or rubbing on the sides of the tube while in action.

Outwardly extending annular ribs 19 are preferably formed on the outer surface at the lower end of this tube for the purpose of effectually retaining the rubber cup-shaped tip 20 when forced thereon.

In order to support the upper end of this spring 18 and provide convenient means whereby its tension may be readily adjusted I have provided a rod 21 having an enlarged head 22 which rests against the lower end of the staff, the lower end of this rod being threaded and provided with an adjustable nut 23, which has a downwardly extending boss 24 adapted to project into the upper end of the coil 18 to support this end and prevent the coil from contacting with the sides of the tube when in action.

In some instances it is found advisable to provide a checknut 28 to bind and hold the nut 23 in adjusted position.

In practice this check nut is unnecessary in most cases as the friction of the end of the spring contacting with the large nut 23 and by closely fitting about the lower extension 24 thereof serves to effectively hold this nut in adjusted position without the use of the check nut as shown in Fig. 2. Then again when this nut is so held by the spring alone, I am enabled to adjust the nut to regulate the operating length of the crutch by simply rotating the lower tubular post 10 relative to the upper part 11. The friction of the extended area of the bolt head 22 upon the wooden staff being sufficient to prevent the rod from rotating. By being able to adjust the length of the crutch by simply rotating one part relative to the other is found in practice to be of considerable advantage as it obviates the necessity of using tools for this purpose.

The construction illustrated in Figure 2 is the same as that illustrated in Figure 1 with the exception of the arrangement of the

parts at the lower end of the outer tube 10. This lower end instead of being provided with annular ribs 19 as shown in Figure 1, is left smooth and an internally threaded socket member 25 is forced up into this tube and secured therein if necessary by pins, solder or otherwise. The upper end of this socket is provided with an upwardly extending boss 26 to centralize the lower end of the spring 18, this socket member being constructed to receive another standard type of resilient tip 27 which is secured thereto by being screwed into the internally threaded portion.

My improved shock absorbing device is extremely simple and inexpensive in construction, may be readily attached to any crutch, cane, wooden leg or the like and by its use the shocks and jars incident to walking are nicely absorbed by the spring therein, thereby rendering getting about with such devices much more comfortable than where a solid staff is employed.

When it is desired to apply a device of this character to a wooden leg the upper end of the upper, tubular member might be formed a little larger to facilitate attaching thereto if desired.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the appended claims.

I claim:

1. In a supporting staff, a shock absorbing device comprising a pair of telescoping tubular shells, one of said shells being mounted on the lower end of said staff and the other of said shells being freely slidable and rotatable in said first mentioned shell, means on the walls of said shell to cooperate for limiting the extending movement of said shells, a rod projecting into said shells from the lower end of said staff, an abutment adjustably threaded on said rod, and a helical compression spring within said shell for maintaining the latter in extended position and having one end engaging said abutment, the lower end portion of said slidable and rotatable shell being inturned to form a flange extending substantially at right angles to the wall of the shell against which the other end of the spring engages, the edge of said flange being extended substantially inwardly and parallel with the wall of said shell for forming a stud to centralize the spring in the shell.

2. A shock absorbing device comprising a pair of telescopic tubular shells, the outer of said shells having one end attachable to the lower end of a staff, the lower portion of said outer shell from a substantially medial point thereof being of a reduced diameter, the inner of said shells being slidably fitted in said reduced portion to the outer shell and having its upper end enlarged correspondingly with said outer shell, and a rod projecting into said shells from the lower end of said staff, an abutment member adjustably threaded on said rod, the lower end portion of said inner shell being inturned to form a flange extending at substantial right angles to the wall of said shell, and a helical compression spring within said shell and having its end engaging respectively said abutment member and said flange, whereby said shells are maintained in extended position.

In testimony whereof I affix my signature.

WALTER F. FANNING.