H. L. HERROLD.

CRUTCH.

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1,304,978. Patented May 27, 1919.

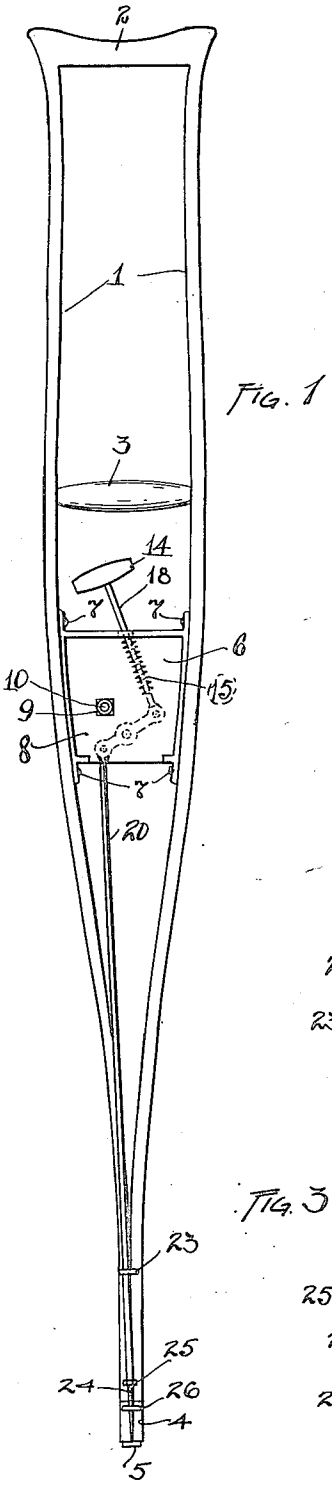


Fig. 1

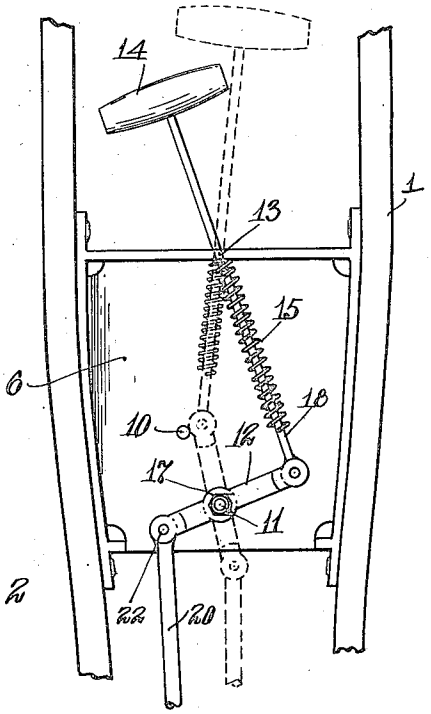


Fig. 2

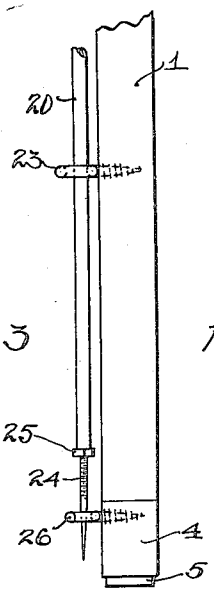


Fig. 3

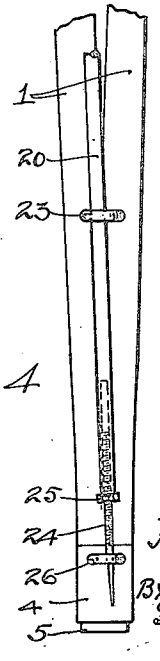


Fig. 4

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CRUTCH.

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To all whom it may concern:

Be it known that I, HARRY L. HERROLD, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Crutches, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to crutches which are provided with means for preventing slipping. More particularly my improved crutch provides convenient means for operating an anti-slipping device which maintains itself in either its operative or its inoperative position. This feature allows the operator the use of his hands except during the actual operating of the anti-slipping means.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:

Figure 1 is a side elevation showing my improved mechanism attached to a crutch. Fig. 2 is a side elevation of the operating mechanism, showing the operative position of the handle and mechanism in dotted lines. Fig. 3 is a front elevation of the lower end of the crutch with the anti-slipping device and Fig. 4 is a side elevation of the lower end of the crutch showing the anti-slipping device.

The present crutch consists of the usual arms 1, having a curved shoulder rest 2 at the top and a hand rest 3. The arms curve toward each other as they approach the lower end and engage to form the single arm which carries the usual tip 4 provided with the usual replaceable rubber tip 5.

My improved anti-slipping means consist of a casing or box 6 located between the arms below the hand rest and held in place by means of screws 7. This casing has a removable cover 8 which is attached by a nut 9 which engages a threaded bolt 10. This bolt extends through alined apertures in the back of the casing and in the cover, and has threaded engagement with the latter, the nut 9 acting as a lock nut to securely hold the cover in place.

Near the lower side of the casing and centrally disposed is a boss 11 which carries a pivotally mounted lever 12 which is held in place by a bolt 17 having threaded engagement with the boss 11. To the longer arm of the lever which has a yoked end, a rod 18 is pivotally attached, the rod extending through an aperture 13 in the top of the casing and being provided with a handle 14 which will be spaced a convenient distance below the hand rest 3.

A coiled spring 15 surrounds the handle rod 18 and is attached thereto at its lower end. This spring engages with the under side of the casing top and acts to prevent accidental movement of the handle. In the normal raised position of the spike, the handle and operating mechanism are in the position shown in full lines in Fig. 2. To operate the spike, the handle is moved to the position shown in dotted lines in Fig. 2. It will be seen that here the lever 12 is moved past the vertical and rests against the bolt 10 which acts as a stop. The spring is under compression and tends to prevent the lever being moved while the bolt 10 receives the pressure from the spike. To release the spike the handle must be moved against the action of the spring until the lever 12 has again moved past the vertical or dead center when the spring will force the handle into the inoperative position.

The anti-slipping means consist of a rod 20 which is pivotally connected to the end of the lever 12 by means of a pin 22 passing through alined apertures in the yoked end of the lever and the rod. The rod extends out of the casing which has an elongated slot to permit the movement of the rod. It then extends down between the arms through a screw eye 23 which is held in the arms of the crutch.

At its lower end the rod is tapered and a threaded spike 24 is inserted which is locked in place by means of a nut 25. This spike 24 extends through a screw eye 26 attached near the bottom of the tip.

The present device is simple to operate and acts positively so that there is no danger of its disengaging accidentally. The handle must be pulled to actuate the device, both to

render the spike operative and inoperative. When in its operative position any weight borne by the spike increases the pressure of the lever against the bolt and prevents any accidental displacement.

The use of an adjustable and removable spike, allows the spike to be adjusted so as to present a uniform amount below the tip. The wear of the spike may be compensated for and a new spike may be inserted if necessary. It allows the amount of spike extending below the tip, to be varied to suit changes in conditions of use.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. The combination with a crutch including arms, a tip and a hand rest of a rod slidably mounted along said arms, a spike removably attached to the lower end of said rod, and a handle connected to said rod and adapted to be moved upwardly to project said spike.

2. The combination with a crutch including arms, a tip and a hand rest of a rod slidably mounted along said arms, a spike removably attached to the lower end of said rod, and a handle mounted between said arms below said hand rest, connected to said rod, and adapted to be moved upwardly to project said spike below the tip.

3. The combination with a crutch including arms, a tip and a hand rest of a casing mounted between said arms below said hand rest, a rod slidably mounted along said arms and ending in a spike, said rod having its upper end entering said casing, a handle mounted above said casing and entering the same, and connections within said casing operatively connecting said handle and said rod whereby upward movement of said handle projects said rod downwardly.

4. The combination with a crutch including arms, a tip and a hand rest of a casing mounted between said arms below said hand rest, a rod provided with an adjustably mounted spike extending along said tip and into said casing, a handle mounted below said hand rest and extending into said casing, and connections between said handle and said rod whereby upward movement of the former operates the latter, a spring mounted on said handle and engaging said casing, said spring tending to restrain movement of said handle and rod from either their operative or inoperative positions.

5. The combination with a crutch including arms, a tip and a hand rest of a casing mounted between said arms below said hand rest, a rod provided with an adjustably mounted spike extending along said tip and into said casing, a handle mounted below said hand rest and extending into said casing, a lever pivotally mounted in said casing and connected to said rod and said handle, a coiled spring about said handle and engaging said casing, said spring tending to prevent movement of said handle from either of its two positions, and a stop in said casing adapted to limit movement of said lever in one direction to limit the downward movement of said rod and spike.

6. The combination with a crutch including arms, a tip and a hand rest of screw eyes mounted in one of said arms and the tip, a rod slidably mounted through such screw eyes and terminating in a spike, said rod extending between said arms at its upper end and on the outside of said arms at its lower end, and a handle operatively connected to the upper end of said rod.

7. The combination of a crutch including arms, a tip and a hand rest of screw eyes mounted in one of said arms and the tip, a rod slidably mounted through such screw eyes and terminating in a spike, said rod extending between said arms at its upper end, a handle mounted below said hand rest and means connecting said handle and said rod whereby upward movement of said handle projects said rod and spike downwardly.

Signed by me this 1st day of April, 1918.

HARRY L. HERROLD.