

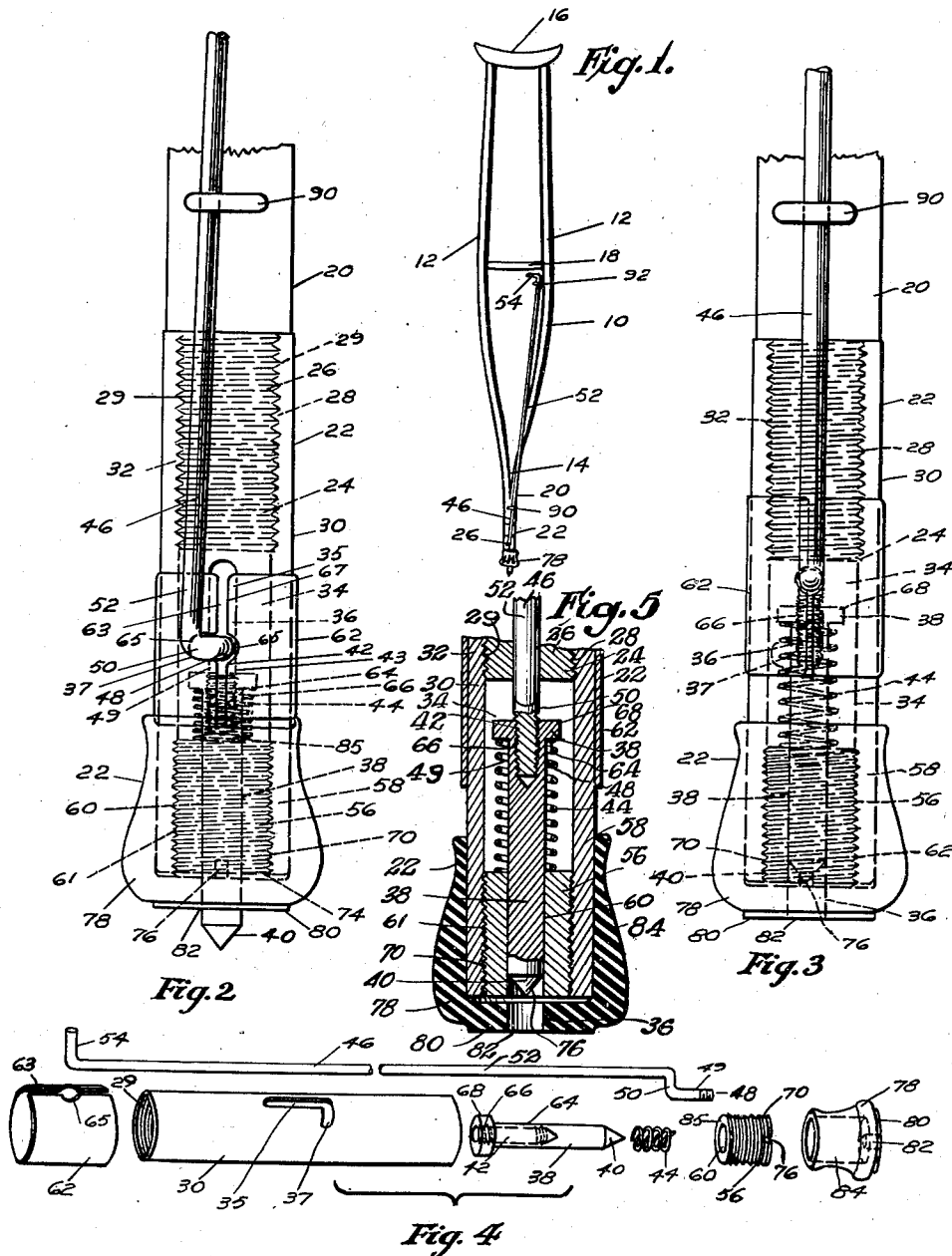
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ANTISLIPPING ATTACHMENT FOR CRUTCHES

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ANTISLIPPING ATTACHMENT FOR
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Our invention relates to improvements in crutches and comprises an anti-slipping attachment adapted to be secured to the shortened end of a crutch shank of such a length as to complete with said shortened crutch shank the desired length of the crutch.

Our invention includes a spike which may be selectively advanced by the crutch user beyond the tip of the crutch shank if desired in use, preferably from a point adjacent the usual hand grip of the crutch.

An object of our invention is to provide an attachment of this description in which all operating parts are contained in the attachment itself below the shortened end of the crutch, which provides a construction not requiring any cutting or any other manipulation of the shortened crutch end for the operation of the working parts therein.

A further object of our invention is to provide in a device of this description a structure which permits the ready replacement of spikes as they wear out in use without taking the attachment itself off the lower crutch end.

A further object of our invention is to provide a device wherein the spike and handle may be readily removed, if desired, for use in the summer time.

For this purpose, we provide a hollow tubular member having an upper end adapted to be detachably secured to the lower end of the shank and means operable from without said tubular member, including a portion projecting inwardly through a bayonet joint slot in the tubular member to the upper end of the spike. Difficulty has been experienced in devices of this description in having snow, dirt, or other objects either becoming encrusted on or moving in through the slot to affect the operation thereof. A further object of our invention therefore is to provide an axially and circumferentially movable guide adapted at all times to cover the bayonet joint slot and also movable in use to break up any accumulation of snow, ice, mud, etc., thereon.

These and such other objects of our invention as may hereinafter appear will be best understood from a description of the accompanying drawing which illustrates an embodiment thereof.

In the drawing, Fig. 1 is a side elevation of a crutch having our improved attachment attached to the lower end of the shank thereof.

Fig. 2 is an enlarged elevational view of the lower end of said crutch, including our attachment with the spike projecting to a gripping position from the lower end thereof.

Fig. 3 is an elevational view like Fig. 2 with the spike withdrawn from below the tip of the crutch.

Fig. 4 is a disassembled perspective view of the parts of our improved attachment.

Fig. 5 is a vertical central sectional view of the lower end of the crutch with my invention attached with the parts in the position shown in Fig. 3.

In the drawing, wherein like characters of reference generally indicate like parts throughout, 10 generally indicates a crutch. Our invention is particularly adapted for use with a standard type of crutch 10 having the usual spaced side bars 12 with the lower ends thereof tapering as at 14 to each other, an arm rest 16 mounted across the top of said bars and a hand grip 18 mounted between said side bars adjacent the center portion thereof and a shank 20 projecting downwardly from the lower end of said side bars. If desired, however, our invention is equally applicable to the old-fashioned type of crutch having a single shank projecting downwardly from the arm rest.

While our improved attachment 22 may be employed on any suitable type of a crutch, the lower end 24 of the shank is shortened to make the crutch of less length than necessary to support the person and our anti-slipping attachment 22 is of such an effective length as to complete the desired length of the crutch. If desired, a projection 26 of less diameter than the crutch shank 20 may project downwardly therefrom at the lower end of the crutch and may, if desired, be externally threaded as at 28. Our improved attachment includes a tubular member 30 having its upper end 32 adapted to surround and be secured to the lower end or tip 24 of the crutch shank 20 or projection 26 when employed. The member 30 also has a central hollow portion 34 projecting below the lower end of the crutch shank which is preferably provided with a bayonet joint slot 36 therein. We provide the spike 38 with a pointed lower end 40 and an upper end 42 movable within the central hollow portion 34 of said tubular member 30 and means such as a spring 44 contained within the said hollow portion 34 of said tubular member 30, normally urging said spike 38 within said tubular member. We also provide means for urging said spike axially of said crutch shank to gripping position comprising an operating rod 46 having an inner end 48 detachably securable to the upper end 42 of said spike, a locking radial portion 50 for movement within said bayonet joint slot 36 and an operating handle portion 52 beyond said radial portion 50, in our preferred embodiment extend-

ing to the crutch hand grip 18 and having an operating handle 54.

In order that spikes 38 may be replaced as worn out we preferably provide a plug 56 detachably securable within the lower end 58 of said tubular member having a central spike hole 60 therein, whereby said plug 56 and spike 38 may be detachably removed from the lower end 58 of said tubular member 30 for replacement of the spike 38. We also preferably provide a bayonet joint slot guard 62 securable to the radial portion 50 of said operating rod exterior of said tubular member 30.

In our preferred embodiment said parts are preferably constructed as follows: The upper end 32 of said tubular portion is preferably internally threaded as at 29 so that said upper end may be threaded on the threaded tip 26 of the shank 20 externally threaded as at 28 for this purpose, the bayonet joint slot 36 has the portion 35 extending vertically and axially of said central portion 34 or of said tubular member 30 and a portion 37 extending circumferentially from the lower end of said axially extending portion 35. The lower end of said axially extending portion 35. The lower end of said tubular member is preferably internally threaded as at 61. The upper end 42 of the spike 38 is provided with a socket 64 internally threaded as at 66 in the tip thereof and a washer-shaped portion 68 projecting radially outwardly therefrom. Said portion 68 may be integral with the upper end of said spike or may comprise a washer secured thereto. The detachable plug 56 is preferably externally threaded as at 70 and said lower end 58 of said tubular member 30 is preferably cooperating internally threaded as at 61. The base of said plug 74 is also preferably provided with the diametric turning slot 76 for receiving the end of a screw driver for threaded securement and removal of the plug within the lower end 58 of the tubular member 30. The crutch is also preferably provided with the usual resilient tip 78 having a base 80 having a central spike hole 82 therein and a circumferential side wall 84 embracing the lower end 58 of the tubular member 30. The means to normally urge the spike 38 within the lower end of said tubular member 30 and the base 80 of said tip 78 preferably comprises spring means 44 interposed between said washer-shaped projection 68 and the top 85 of said plug. In the embodiment shown the means for urging said spike 38 axially of said crutch shank so that the pointed end 40 thereof may project beyond the lower end of said crutch preferably comprises the operating rod 46, which has an axially extending lower end 48 contained within the hollow central portion 34 of said tubular member 30, preferably externally threaded as at 49, which is preferably threaded within the hollow socket 42 at the upper end of said spike 38, provided with the gripping internal threads 66 for this purpose. The locking portion 50 projects radially outwardly from said threaded lower end 48 through said bayonet joint slot 36 to exterior of said tubular member 30 to form with the circumferential portion 37 of said bayonet joint slot 36, a locking bayonet joint. In the preferred embodiment shown said operating rod also has the portion 52 projecting vertically upwardly from the radial portion 50 exterior of said guard sleeve 62 and terminating in a handle 54 adjacent the crutch hand grip 18. Means such as the guide eyes 90 and 92 may be provided for loosely securing said upwardly projecting rod portion 52 to

said crutch. In the embodiment shown the guard sleeve 62 for said bayonet joint slot 36 is split as at 63 and is provided with aligned partially-circular holes 65 therein substantially centrally of the ends 67 thereof forming said split 63 surrounding the outer end of the projecting portion 50 of said operating rod 46.

As shown in Fig. 3 the normal position of the device is with the handle 54 of the operating rod 46 substantially adjacent the hand grip 18 and with the spring 44 normally urging the spike 38 within the lower end of said tubular portion 30. When a slippery or icy condition exists the handle 54 is pushed downwardly forcing the radial portion 50 of the operating rod 46 in the vertically extending portion 35 of said slot 36 until it reaches the lower end thereof, simultaneously forcing the inner end 48 thereof and spike 38 attached thereto downwardly so that the pointed end 40 of said spike moves downwardly below the lower end 58 of the tubular member 30 and below the base 80 of the resilient tip 78 as shown in Fig. 2, with the spring 44 compressing for this purpose to the position shown. Then the handle 54 may be rotated by the thumb to cause the entire operating rod to rotate causing the radially projecting portion 50 thereof to move circumferentially within the circumferentially extending portion 37 of the bayonet joint slot 36 with the spring 44 operating against the washer-shaped projection 68 to urge the spike 38 and operating rod 46 upwardly, pushing the upper edge of said radial portion 50 of said operating rod 46 against the upper edge of the circumferentially extending portion 37 of said bayonet joint slot to retain the device in operating position with the point 40 of the spike projecting downwardly beyond the lower end of the crutch. To retract the tip 40 of the spike within the tubular member 30, it is obvious that it is merely necessary to rotate the operating rod until the radial portion 50 thereof lies in the vertically extending portion 35 of the bayonet joint slot 36 when the spring 44 will push the radial portion 50 vertically upwardly in the slot portion 35 to move the spike 38 upwardly to withdraw the pointed tip 40 thereof within the lower end 58 of said tubular member 30. It is also apparent that the guard 62 attached to said radial portion 50 of the operating rod 46 will move therewith to and from the position shown in Fig. 2 to the position shown in Fig. 3, to keep the bayonet joint slot 36 covered at all times.

When it is desired to replace the spike 38, it is merely necessary to unscrew the plug 56, and remove the spike 38 from the lower end of said operating rod 46 when said spike 38 may be replaced by a new one, which may be threaded on to the threaded inner end 48 of said operating rod 46 and the plug 56 reinserted within the lower end 58 of the tubular member 30 and resilient tip 78.

It is apparent therefore that we have provided a novel type of anti-slipping attachment for the lower end of a crutch shank with the advantages explained above.

It is understood that our invention is not limited to the specific embodiment shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What we claim is:

1. A crutch having the usual spaced side bars with the lower ends thereof tapering to each other, an arm rest mounted across the top of

said side bars, a hand grip mounted between said side bars adjacent the center portions thereof and a shank projecting from the lower ends of the side bars, said crutch being of less length than necessary to support the person, and an anti-slipping attachment of an effective length to complete the desired length of the crutch, comprising a tubular member having its upper end surrounding and secured to the lower end of the crutch shank and a central hollow portion projecting below the lower end of the crutch shank having a bayonet joint slot therein, a spike having a pointed lower end and an upper end movable within the central hollow portion of said tubular member, means contained within the hollow center portion of said tubular member for normally urging the pointed lower end of said spike within said tubular member, an operating rod having an inner end detachably securable to the upper end of said spike for urging the pointed end of said spike downwards to operative position, a locking radial portion for movement within said bayonet joint slot, and an operating handle portion beyond said radial portion extending upwardly substantially to the crutch hand grip, a plug having a central spike hole detachably securable within the lower end of said tubular member whereby said plug and spike may be removed from the lower end of said tubular member for replacement of the spike, and a bayonet joint slot guard securable to the radial portion of said operating rod exterior of said tubular member.

2. A crutch having the usual spaced side bars with the lower ends thereof tapering to each other, an arm rest mounted across the top of said side bars, a hand grip mounted between said side bars and adjacent the center portions thereof and a shank projecting from the lower ends of the side bars, said crutch being of less length than necessary to support the person, and an anti-slipping attachment of an effective length to complete the desired length of the crutch, comprising a tubular member having its upper end surrounding and secured to the lower end of the crutch shank and a central hollow portion projecting below the lower end of the crutch shank having a bayonet joint slot therein, a spike having a pointed lower end and an upper end movable within the central hollow portion of said tubular member, means contained within the hollow center portion of said tubular member for normally urging the pointed lower end of said spike within said tubular member, an operating rod having an inner end detachably securable to the upper end of said spike for urging the pointed end of said spike downwards to operative position, a locking radial portion for movement within said bayonet joint slot, an operating handle portion beyond said radial portion extending upwardly substantially to the crutch hand grip and a plug having a central spike hole detachably securable within the lower end of said tubular member whereby said plug and spike may be removed from the lower end of said tubular member for replacement of the spike.

3. A crutch having the usual spaced side bars with the lower ends thereof tapering to each other, an arm rest mounted across the top of said side bars, a hand grip mounted between said side bars adjacent the center portions thereof and a shank projecting from the lower ends of the side bars, said crutch being of less length than necessary to support the person, and an

anti-slipping attachment of an effective length to complete the desired length of the crutch, comprising a tubular member having its upper end surrounding and secured to the lower end of the crutch shank and a central hollow portion projecting below the lower end of the crutch shank having a bayonet joint slot therein, a spike having a pointed lower end and an upper end movable within the central hollow portion of said tubular member, means contained within the hollow center portion of said tubular member for normally urging the pointed lower end of said spike within said tubular member, an operating rod having an inner end detachably securable to the upper end of said spike for urging the pointed end of said spike downwards to operative position, a locking radial portion for movement within said bayonet joint slot, and an operating handle portion beyond said radial portion extending upwardly substantially to the crutch hand grip, and a bayonet joint slot guard securable to the radial portion of said operating rod exterior of said tubular member.

4. An anti-slipping attachment for the lower end of a crutch shank, comprising a tubular member having its upper end adapted to surround and be secured to the lower end of the crutch shank and a central hollow portion adapted to project below the lower end of the crutch shank having a bayonet joint slot therein, a spike having a pointed lower end and an upper end movable within the central hollow portion of said tubular member, means contained within the hollow center portion of said tubular member for normally urging the pointed lower end of said spike within said tubular member, an operating rod having an inner end detachably securable to the upper end of said spike for urging the pointed end of said spike downwards to operative position, a locking radial portion on said rod for movement within said bayonet joint slot, and an operating handle portion beyond said radial portion, a plug having a central spike hole detachably securable within the lower end of said tubular member whereby said plug and spike may be removed from the lower end of said tubular member for replacement of the spike, and a bayonet joint slot guard securable to the radial portion of said operating rod exterior of said tubular member.

5. An anti-slipping attachment for the lower end of a crutch shank, comprising a tubular member having its upper end adapted to surround and be secured to the lower end of the crutch shank and a central hollow portion adapted to project below the lower end of the crutch shank having a bayonet joint slot therein, a spike having a pointed lower end and an upper end movable within the central hollow portion of said tubular member, means contained within the hollow center portion of said tubular member for normally urging the pointed lower end of said spike within said tubular member, an operating rod having an inner end detachably securable to the upper end of said spike for urging the pointed end of said spike downwards to operative position, a locking radial portion on said rod for movement within said bayonet joint slot, and an operating handle portion beyond said radial portion and a plug having a central spike hole detachably securable within the lower end of said tubular member whereby said plug and spike may be removed from the lower end of said tubular member for replacement of the spike.

6. An anti-slipping attachment for the lower end of a crutch shank, comprising a tubular member having its upper end adapted to surround and be secured to the lower end of the crutch shank and a central hollow portion adapted to project below the lower end of the crutch shank having a bayonet joint slot therein, a spike having a pointed lower end and an upper end movable within the central hollow portion of said tubular member, means contained within the hollow center portion of said tubular member for normally urging the pointed lower end of said spike within said tubular member, an operating rod having an inner end detachably securable to the upper end of said spike for urging the pointed end of said spike downwards to operative position, a locking radial portion on said rod for movement within said bayonet joint slot, and an operating handle portion beyond said radial portion, and a bayonet joint slot guard securable to the radial portion of said operating rod exterior of said tubular member.

7. An anti-slipping attachment for the lower end of a crutch shank, comprising a tubular member having its upper end adapted to surround and be secured to the lower end of a crutch shank, a central hollow portion projecting below the crutch shank having a bayonet joint slot therein having an axially extending portion and a portion extending circumferentially from the lower end of said axial portion and an internally threaded lower end, a spike having a pointed lower end, and an upper end movable within the hollow center portion of said tubular member having an internally threaded socket in the top thereof and an annular washer shaped portion projecting radially outwardly therefrom, a detachable plug threaded within the lower end of said tubular member having a central bore containing said spike, a resilient tip for said crutch shank having a base having a central spike hole therein and side walls embracing the lower end of said tubular member, spring means interposed between the upper end of said plug and the washer shaped portion of said spike, normally urging said spike upwardly so that the pointed lower end thereof is contained within said tip, means for urging said spike axially of said crutch shank to gripping position, comprising an operating rod having an externally threaded axially extending lower end detachably secured within the threaded socket in the upper end of said spike, a locking portion projecting radially outwardly therefrom to exterior of said

tubular member forming with the circumferential portion of said bayonet joint slot, a locking bayonet joint and a portion adapted to project vertically upwardly therefrom terminating in a handle, means for loosely securing said upwardly projecting rod portion to said crutch, and a detachable split guard sleeve for said joint slot having aligned partially circular openings therein substantially in the center portions of the ends thereof forming said split, surrounding the outer end of the radially projecting portion of said operating rod.

8. An anti-slipping attachment for the lower end of a crutch shank, comprising a tubular member having its upper end adapted to surround and be secured to the lower end of the crutch shank, a central hollow portion adapted to project below the crutch shank having a bayonet joint slot therein having an axially extending portion and a portion extending circumferentially from the lower end of said axial portion and an internally threaded lower end, a spike having a pointed lower end, and an upper end movable within the hollow center portion of said tubular member having an internally threaded socket in the top thereof and an annular washer shaped portion projecting radially outwardly therefrom, a detachable plug threaded within the lower end of said tubular member having a central bore containing said spike, a resilient tip for said crutch shank having a base having a central spike hole therein and side walls embracing the lower end of said tubular member, spring means interposed between the upper end of said plug and the washer shaped portion of said spike, normally urging said spike upwardly so that the pointed lower end thereof is contained within said tip, and means for urging said spike axially of said crutch shank to gripping position, comprising an operating rod having an externally threaded axially extending lower end detachably secured within the threaded socket in the upper end of said spike, a locking portion projecting radially outwardly therefrom to exterior of said tubular member forming with the circumferential portion of said bayonet joint slot, a locking bayonet joint and a portion adapted to project vertically upwardly therefrom terminating in a handle, and means for loosely securing said upwardly projecting rod portion to said crutch.

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