Sept. 14, 1948. S. H. RICHARDS 2,449,509

NONSKID DEVICE FOR CRUTCHES AND THE LIKE

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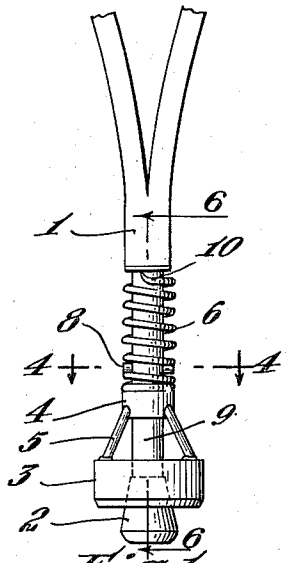


Fig. 1

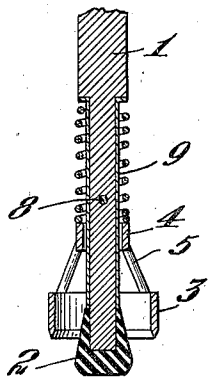


Fig. 6

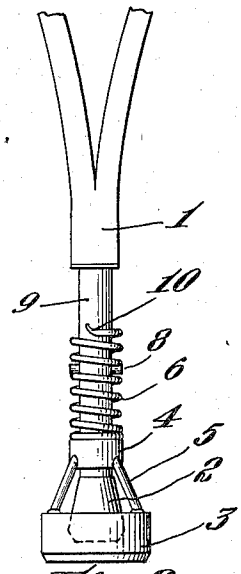


Fig. 2

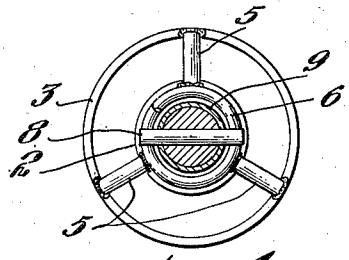


Fig. 4

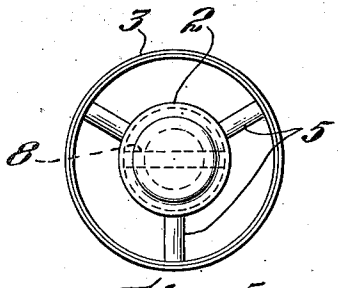


Fig. 5

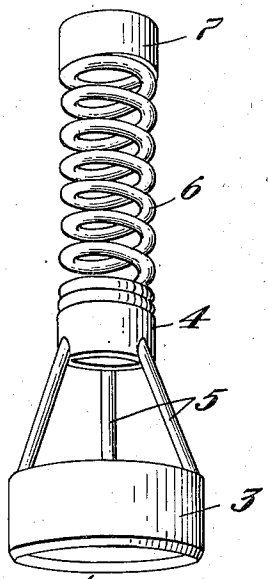


Fig. 3

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NONSKID DEVICE FOR CRUTCHES AND THE LIKE

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6 Claims. (Cl. 135—53)

1

Most canes and crutches are covered at the lower end with a tip of rubber or similar material which will prevent the crutch or cane from slipping on a dry surface and which will not scar a polished surface. When this type of tip is used on ice and snow, it is found to be very slippery and dangerous. Devices have been designed for use on crutches when being used on ice, but these are of such type that if used on a polished surface they may scar the surface.

One object of the present invention is to provide a non-skid device which can be installed readily upon any pair of crutches or the like and which can be advanced to an operative position or retracted to an inoperative position. Another object is to provide a non-skid device which will contact the floor evenly even though the crutch may meet the floor at varying slight angles and also to provide a non-skid device which will not collect ice and snow.

The present invention comprises non-skid gripping means with a sharp edge or edges, prongs or the like, held in position around the rubber tip of the crutch by means of a helical spring. The spring allows the gripping means to tilt slightly so that the gripping means contacts the floor evenly with maximum gripping effect. The helical spring is attached to the shank of the crutch by a lateral lug which is preferably in the form of a pin passing between the coils of the spring and through the crutch. By rotating the spring the gripping means may be retracted from an operative position below the end of the shank to an inoperative position above the end of the shank. The gripping means is substantially larger than the tip of the shank so that snow and ice may pass clear of the gripping means.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawings in which

Fig. 1 is a side view of the non-skid device retracted to inoperative position;

Fig. 2 is a side view of the non-skid device advanced in operative position;

Fig. 3 is an isometric view of a modified non-skid device;

Fig. 4 is a section on line 4—4 of Fig. 1;

Fig. 5 is a bottom plan; and

Fig. 6 is a section on line 6—6 of Fig. 1.

The particular embodiment of the invention chosen for the purpose of illustration is for use on a crutch of well-known type having a shank 1 on the end of which is a tip 2 of rubber or similar material which contacts the floor. The

2

non-skid device may comprise a metal ring 3 with a sharp lower edge or any irregular or circular shape with a sharp edge, teeth, prongs, or the like, capable of being sharpened, which are suitable to dig into the ice and snow. The ring 3 is large enough so that it will pass over the rubber tip 2 on the shank 1 with sufficient space between the rubber tip 2 and the ring 3 so that ice or snow may pass through. The ring 3 is connected to a smaller ring 4 by upright members 5 which slant upwardly and inwardly. There is sufficient space between the aforesaid upright members 5 to allow ice and snow to pass between them and clear the non-skid device. On top of said ring 4 is attached a helical spring 6 of the same size approximately as the ring 4. The helical spring 6 may end at the top with a slight upward curve 10 at the upper end of the coil as shown in Figs. 1 and 2, or it may be capped with another ring 7 as shown in Fig. 3. The ring 4 is slightly larger than the shank 1 of the crutch over which it is placed when installed so that the ring 4 may tilt slightly. Crutches with a shank of rectangular or larger size may be rounded to receive the ring 4.

Referring to Fig. 6 a metal tube 9 is placed on the shank 1 to provide a smooth bearing surface for the ring 4 and the spring 6. Because the ring 4 is larger than the shank, the ring 4 may tilt slightly, against the action of the helical spring 6, with the result that the lower edge of the ring 3 contacts the floor evenly even when the shank of the crutch makes a slight angle with the floor. The metal tube 9 provides a strong bearing surface for the ring 4 when it tilts slightly and prevents the tendency of the ring 4 to dig into the shank 1.

The helical spring 6 is held on the shank 1 by means of a lug 8 which passes between the coils of the spring 6 and through the shank 1. In the embodiment which comprises a spring ending with a slight upward curve 10 the lug 8 may be installed first through the shank and then the coil spring may be threaded onto the lug 8. In the embodiment with the upper ring 7 the spring must be placed first on the shank 1 and the lug 8 then placed through the shank 1.

The lug 8 may be thicker than the space between the coils of the spring, thereby holding the spring 6 from rotating, or the lug may be placed so it does not exactly coincide with the spaces between the coils of the spring causing the spring to bear on one side of the lug at all times, thus holding the non-skid device from getting out of position. By merely rotating the coil 6 the non-

skid device can be positioned above the rubber tip 2 or it can be positioned at various levels below the rubber tip 2 so that the portion of the weight carried by the non-skid device may be varied in order to get the most satisfactory penetration of the ring 3 into the ice and snow.

When the ring 3 is advanced to operative position below the rubber tip 2 on the end of the shank 1, the ring contacts the ground before the rubber tip and the weight of the user causes the sharp edge or teeth on the ring to dig into the ice and snow. As the shank 1 is forced down by the weight of the user it carries with it the lug 8, thereby compressing the helical spring 6. The rubber tip 2 may or may not contact the ground, but if it does it carries a portion of the weight. By adjusting the distance of the ring 3 below the rubber tip the portion of weight carried by the ring can be adjusted to attain a suitable gripping action.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. For use on the lower end of the shank of a crutch having a lateral lug, a non-skid device comprising a helical spring fitting over said end, and non-skid gripping means mounted on the bottom of the spring around said end, the spring being threaded on said lug so that the gripping means may be advanced beyond said end by rotation of the coil in one direction and may be retracted into inoperative position around the end by rotation in the opposite direction.

2. For use on the lower end of the shank of a crutch having a lateral lug, a non-skid device comprising a helical spring fitting over said end, and a circular ring with a sharp lower edge mounted on the bottom of the spring around said end, the spring being threaded on said lug so that the gripping means may be advanced beyond said end by rotation of the coil in one direction and may be retracted into inoperative position around the end by rotation in the opposite direction.

3. For use on the lower end of the shank of a crutch having a lateral lug, a non-skid device comprising a helical spring fitting over said end, and a circular ring substantially larger than said end with a sharp lower edge mounted on the bottom of the spring around said end by upright members with spaces between, the spring being threaded on said lug so that the gripping means may be advanced beyond said end by rotation of the coil in one direction and may be retracted into inoperative position around the end by rotation in the opposite direction.

4. For use on the lower end of the shank of a crutch or the like, a non-skid device comprising a helical spring fitting over said end, non-skid gripping means mounted on the bottom of the spring around said end, and a lug projecting laterally from said end between the coils of the spring, whereby the gripping means may be advanced beyond said end by rotation of the coil in one direction and may be retracted into inoperative position around the end by rotation in the opposite direction.

5. For use on the lower end of the shank of a crutch or the like, a non-skid device comprising a helical spring fitting over said end, a circular ring with a sharp lower edge mounted on the bottom of the spring around said end, and a lug projecting laterally from said end between the coils of the spring, whereby the gripping means may be advanced beyond said end by rotation of the coil in one direction and may be retracted into inoperative position around the end by rotation in the opposite direction.

6. For use on the lower end of the shank of a crutch or the like, a non-skid device comprising a helical spring fitting over said end, a circular ring with a sharp lower edge mounted on the bottom of the spring around said end by upright members with spaces between, and a lug projecting laterally from said end between the coils of the springs, whereby the gripping means may be advanced beyond said end by rotation of the coil in one direction and may be retracted into inoperative position around the end by rotation in the opposite direction.

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