May 22, 1945. T. E. JONES ET AL 2,376,776

CRUTCH TIP

Filed Nov. 2, 1944

Fig. 1

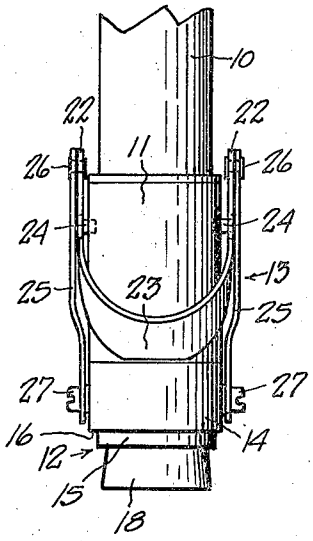


Fig. 2

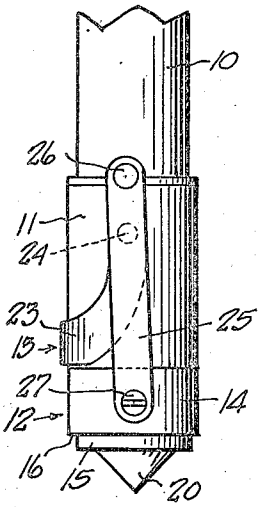


Fig. 3

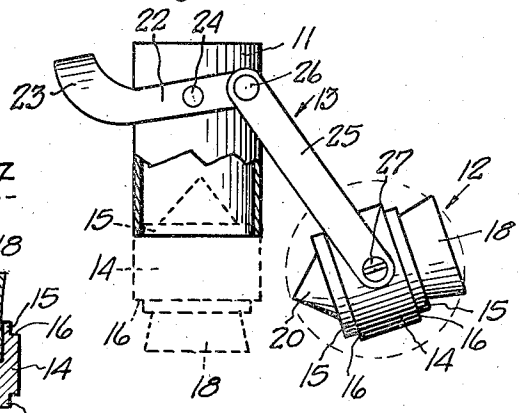
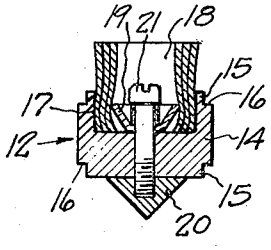


Fig. 4



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CRUTCH TIP

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11 Claims. (Cl. 135—53)

This invention relates to improvements in crutch tips.

Crutches are conventionally supplied with rubber tips. Such tips serve multiple advantageous purposes. Among the advantages are cushioning of impact, deadening of sound, protection against wear of floor coverings, and gripping or frictional contact with floors and other surfaces to prevent slipping. However, under some conditions of use, such rubber tips are hazardous. Thus, rubber loses its gripping and non-skid properties when contacting ice, snow or a smooth wet surface. Consequently, crippled people who are able to walk about freely with the aid of crutches or canes under normal conditions, cannot walk out-of-doors in wet, snowy or icy weather without assistance or the exercise of great care and attention to the condition of each successive surface spot which the crutch or cane tips engage.

The most effective crutch tip for use on an icy, snowy or wet smooth surface is a rigid pointed tip. Such tips have not been feasible heretofore, however, because they present so many objections to use under normal conditions, particularly indoors, and it is not possible for a crippled person to carry two pairs of crutches or an extra cane or canes in order to be able to change from one to the other as the need for a different tip arises.

Therefore, it is the primary object of this invention to provide a crutch tip having a reversible part with two different types of terminal portions which can be selectively arranged in operative ground-engaging position.

A further object is to provide a device of this character having a mounting to which a double-ended member is reversibly connected by latching means adapted to lock said member in selected supporting position or to shift said member clear of said mounting for reversal thereof.

A further object is to provide a device of this character including a mounting, a reversible tip and a locking member, wherein the parts are so constructed that the tip solidly interengages with the mounting and is fixedly positioned by the locking means but can be quickly and easily released and bodily shifted for reversal of said tip.

Other objects will be apparent from the description, drawing and appended claims.

In the drawing:

Fig. 1 is a side view of the tip.

Fig. 2 is a side view of the tip taken at right angles to Fig. 1.

Fig. 3 is a side view similar to Fig. 2 illustrating the device in position for tip reversal, with parts shown in section.

Fig. 4 is an axial sectional view of the reversible tip unit of the device.

Referring to the drawing, which illustrates one embodiment of the invention, the numeral 10 designates the end portion of a cane, crutch or like appliance, of any desired or conventional construction, to which the improved tip is applied.

The tip unit comprises three main parts, a mounting member 11, a reversible end part 12 and means 13 for connecting and locking the part 12 to the mounting. As here shown, the mounting 11 comprises a rigid metal tube or sleeve fitting firmly and fixedly around the crutch or cane end portion 10 and secured thereto in any suitable manner. The sleeve projects beyond the end surface of member 10 to provide a socket open at its outer end.

The reversible part 12 preferably comprises a cylindrical body member 14 whose central portion is of substantially the same diameter as the exterior diameter of sleeve 12. The opposite end portions 15 of body 14 are of reduced diameter to fit within the outer end of the sleeve. The ends 15 are slidable freely into and out of the socket provided by the end of the sleeve 12, and fit in said socket snugly and substantially without lateral play. A transverse circumferential shoulder 16 is defined between the central portion and each of the reduced end portions 15 of body 14, and these shoulders are adapted to have continuous solid abutment with the outer end of sleeve 12 when the respective adjacent reduced portions 15 are operatively and fully inserted into the socket. One end of body 14 is recessed at 17. A strip of rubber 18 of a width greater than the depth of recess 17 is rolled and inserted into said recess. A retainer, in the nature of a frusto-conical metal wedge member 19 of a diameter slightly less than the recess 17 and having an axial opening therein, is positioned within the rubber roll 18. A rigid conical metal tip 20 bears against the opposite end of body 14. Suitable securing means, such as a bolt 21, may serve to fasten both of the members 19 and 20 to the body. As here illustrated, bolt 21 passes through central bores in the wedge and the body and is threaded in a socket in the inner end of metal tip 20. As this bolt is tightened, the wedge member is drawn inwardly to firmly clamp the rubber roll 18 in the socket 17 and the inner face of the metal tip 20 is brought

into full firm face engagement with the opposite end face of the body 14.

The means for connecting and locking the part 12 to sleeve 11 is formed of a plurality of parts. A yoke is formed of rigid metal strap material bent in substantially U-shape to provide a pair of elongated parallel end portions 22 lying in parallel planes spaced apart to fit freely at opposite sides of sleeve 11. The bight portion 23 of the yoke is bent to substantially arcuate form viewed both longitudinally and transversely thereof, and is somewhat twisted whereby its center portion is adapted for flat face engagement with the outer end of the sleeve 11 in its operative position as illustrated in Figs. 1 and 2. The arms 22 are pivoted intermediate their ends at 24 to the sleeve 11 adjacent the upper end of said sleeve. The yoke is so constructed that the arms or ends 22 thereof will be positioned at a slight inclination over-center in the direction at which the bight 23 projects when said bight engages sleeve 12, as best illustrated in Fig. 2. A rigid elongated link 25 is pivoted at 26 at one end to each arm 22 of the yoke. The opposite end of each link is pivoted at 27 to the reversible body 14 midway between the opposite shoulders 16 thereof.

In the normal or operative position of the parts illustrated in Figs. 1 and 2, the links 25 extend substantially parallel to the arms 22 of the yoke, and are held in this position by the engagement of bight 23 with sleeve 11 incident to the slight over-center positioning of the parts. The links 25 position the shoulder 16 at the inner end of the part 12 in firm engagement with the outer end of sleeve 11. This shoulder engagement, together with the snug fit of the inner reduced end 15 within the sleeve, holds the part 12 firmly against play and in alignment with the sleeve 11 and crutch or cane part 10. Hence, the parts are so locked that a firm and solid connection is formed and is maintained effectively during all conditions of normal use.

When it is desired to reverse the part 12, the upper ends of yoke arms 22 and the links 25 are pushed laterally to the right as viewed in Fig. 2, thereby pivoting the yoke past dead center and swinging the bight away from the sleeve. The yoke may then be swung freely to a position substantially perpendicular to the sleeve, as shown in Fig. 3, thereby releasing and bodily shifting the part 12 longitudinally outwardly relative to sleeve 11. The pivots at 26 and 27 permit the links 25 and part 12 to be swung completely clear of the sleeve as shown in Fig. 3, whereby the part 12 is free to revolve upon pivot axis 27. Thereupon the part 12 can again be positioned in alignment with sleeve 12, with the selected one of its end parts 18 and 20 outermost, and the yoke is swung back to the Fig. 2 position to again effect an over-center locking of the parts. The two operative reversed positions of the part 12 are illustrated in Figs. 1 and 2.

It will be understood that the form and construction of both the rubber tip 18 and the conical metal tip 20 are illustrative, and that any selected form and construction of these parts which will fit within the socket at the end of sleeve 11 may be employed. Also, it will be understood that the term "crutch tip" as used herein is illustrative and not limiting since the device is applicable to any crutch, cane or other supporting appliance or device having a ground-engaging end portion.

We claim:

1. A crutch tip comprising a rigid sleeve adapted to be fixedly mounted on an appliance, a carrier mounting a pair of tip elements at its opposite ends, said carrier having opposite reduced end portions defined by circumferential shoulders and adapted to fit snugly in the end of said sleeve with said shoulders bearing firmly against said sleeve, a pair of links pivotally connected at one end to said carrier midway between said shoulders, and a yoke having a pair of elongated arms pivoted to said sleeve intermediate its ends and to said links at their other ends, and having a bight engageable with said sleeve.

2. A crutch tip comprising a mounting member adapted to be fixedly secured on an appliance and having a socket at its outer end, a yoke having arms pivoted to said mounting member at points spaced from their ends, a pair of rigid links each pivoted at one end to the ends of the respective yoke arms, and a tip carrier pivoted at mid-length to the opposite ends of said links, said tip carrier including shouldered portions at opposite ends each adapted for snug solid fit in said socket, said arms and links being swingable past dead center relative to the axis of said mounting member and cooperating for firmly locking said tip carrier in said socket.

3. A crutch tip comprising a mounting member adapted to be fixedly secured on the end of an appliance, a reversible tip carrier, a yoke pivoted to said mounting member and normally positioned with its opposite ends slightly inclined and projecting above the pivot, and a pair of links each pivotally connected at one end to the respective ends of said yoke and at their opposite ends to the center of said tip carrier, said carrier having ends selectively and complementarily interfitting with said mounting member in firm engagement and being releasable therefrom upon pivoting of said yoke from normal position.

4. A crutch tip comprising a mounting member adapted to be fixedly secured on the end of an appliance, a reversible tip carrier, means for positioning either end of said carrier in operative engagement with and against lateral displacement relative to said mounting member, and locking means including parts pivoted to said mounting member and carrier respectively, and to each other, one of said parts having a stop engageable with said mounting member.

5. A crutch tip comprising a mounting member adapted to be secured to an appliance, a carrier mounting a pair of tip elements in opposite relation, the opposite ends of said carrier having similar seat portions for interfitting supporting engagement with said mounting member, and means carried by said mounting for pivotally supporting said carrier, said means being shiftable longitudinally to disengage said carrier from said mounting and including a locking part operative when said carrier and mounting member interfit.

6. A crutch tip comprising a socket member adapted to be secured to the end of an appliance, a carrier having similar portions at its ends adapted to fit snugly in the socket in supporting relation thereto, a resilient tip element secured at one end of said carrier, a pointed rigid tip element secured to the opposite end of said carrier, each tip element being selectively receivable in said socket member, and connecting means pivoted to said socket member and the mid-point of said carrier, said connecting means serving to lock said carrier in interfitting relation to said socket member in one adjustment and being re-

leasable to bodily shift said carrier clear of said socket.

7. A crutch tip comprising a tubular member adapted to be secured to the end of an appliance in projecting relation thereto, a cylindrical carrier having similar end portions each adapted to fit snugly in said tubular member and circumferential shoulders at said ends adapted to bear against the end of said tubular member, and bodily shiftable locking means carried by said tubular member and revolvably mounting said carrier.

8. A crutch tip comprising a rigid tube adapted to be secured to and project from the end of an appliance, a carrier mounting tip elements at its opposite ends and having end portions each adapted for supporting interfitting engagement with said tube, a yoke spanning and pivoted to said tube, and a pair of links pivoted at their opposite ends to said yoke and said carrier, said yoke and links being swingable over a dead center position and forming a lock when said carrier end fits in said tube.

9. The combination with a crutch, of a socket member secured to the bottom of the crutch, a carrier mounting a pair of tips at its opposite ends and having opposite end portions each adapted to fit snugly in and supportingly engage said socket member, and normally tensioned locking means connecting said carrier and socket member and bodily shiftable to disengage said carrier from the socket member, said carrier being pivoted to said locking means.

10. The combination with a crutch, of a socket member secured to the bottom of the crutch, a carrier mounting a pair of tips at its opposite ends and having opposite end portions each adapted to fit snugly in and supportingly engage said socket member, and a pivoted link and lever unit pivotally connected to said socket member and carrier and having a dead center position for locking said carrier in operative engagement with said socket member.

11. The combination with a walking appliance, a carrier mounting a pair of tip elements at its opposite ends, means on said appliance for centering said carrier in supporting relation thereto, and extensible locking means connecting said appliance and carrier, said carrier being rotatably connected to said locking means.

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