G. HIPWOOD.

CRUTCH TIP.

APPLICATION FILED SEPT. 17, 1921.

1,429,429. Patented Sept. 19, 1922.

Fig. 1.

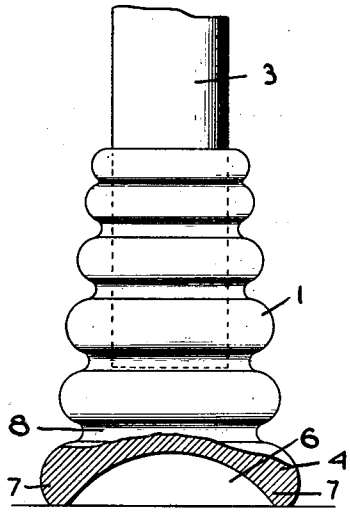


Fig. 2.

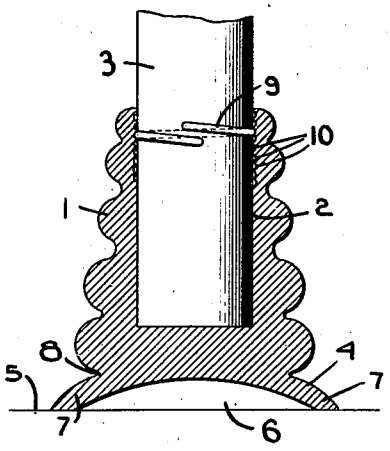


Fig. 3.

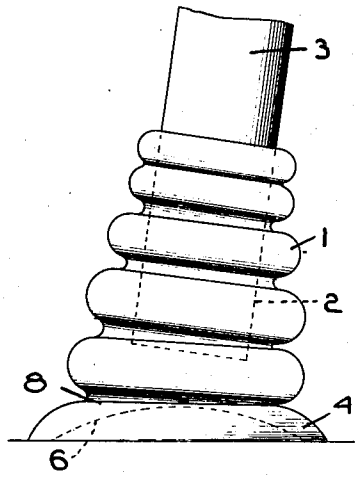


Fig. 4.

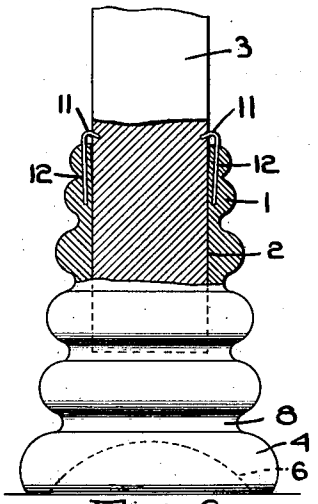


Fig. 5.

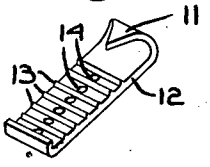
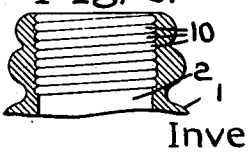


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF NEW YORK, N. Y.

CRUTCH TIP.

Application filed September 17, 1921. Serial No. 501,246.

To all whom it may concern:

Be it known that I, GEORGE HIPWOOD, a citizen of the United States, and resident of New York, county of New York, State of New York, have invented an Improvement in Crutch Tips, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to crutch tips and it has for one of its objects to provide a novel crutch tip which is constructed so that a suction action will be developed when it is used and which suction will not be broken or destroyed by tilting the crutch body in one direction or the other. The advantage of the suction action is that the crutch tip will be securely retained on the floor, pavement or other surface and will be prevented from slipping.

When a crutch is being used it is placed at each step on the floor, pavement or other support at an angle and slightly in advance of the user and then as the user's body moves forward the crutch will have a swinging motion about its tip or lower end which will correspond to the forward movement of the user. The suction action above referred to operates to hold the crutch tip firmly to the floor during each step and in order to obviate the possibility that this suction will be broken by the swinging or tilting movement of the crutch, I have provided a tip which has a yieldable or flexible section interposed between the body portion that fits over the end of the crutch and the foot portion in which the suction chamber is formed, such yielding section permitting the body of the tip to assume different angular positions relative to the foot without danger of breaking the suction.

In order to give an understanding of my invention I have illustrated in the drawings some selected embodiments thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 of the drawings is a side view of a crutch tip embodying my invention.

Fig. 2 is a view partly broken out showing the crutch tip supporting a load.

Fig. 3 is a view showing the crutch tip when the crutch is in angular position.

Fig. 4 shows a modification of the invention.

Fig. 5 is a view of the gripping device shown in Fig. 4.

Fig. 6 is a fragmentary sectional view of the body of the tip.

My improved crutch tip comprises a body portion 1 having a chamber or cavity 2 to receive the end 3 of a crutch. Said tip is also provided with a foot portion 4 adapted to rest upon the floor, pavement or other surface 5, and this foot portion is concaved on its under face thereby to provide the suction cavity 6. The foot portion is of resilient material, preferably rubber, which will readily yield, and which is so constructed that when the crutch supports a load the walls 7 of the foot member will flatten out slightly, as shown in Fig. 2, thus expelling some of the air from the chamber 6 and developing a suction action which holds the tip firmly to the floor 5.

The foot 4 is connected to the body 1 by means of a connecting section 8 that is readily yieldable. This connecting section 8 may conveniently be formed by providing the tip with an annular groove of an appreciable width at this point thereby to reduce the cross sectional area of the tip. The result of this construction is that when the tip supports a weight this connecting section 8 will give in a vertical direction thus reducing materially the width of the groove, as shown in Fig. 2. Furthermore this flexible connecting section 8 is constructed so that it will permit the body portion 1 of the tip to tilt into different angular positions relative to the foot 4 as shown in Fig. 3. The advantage of this is that when the crutch is used and the tip is placed against the floor or other supporting surface 5 the suction cavity 6 will function to hold the foot to the surface and as the user of the crutch moves forwardly, thus giving the crutch a swinging motion about its tip, the crutch with the body portion 1 thereon will swing into angular positions relative to the foot and the resilient connection 8 will permit this swinging movement without lifting the foot from the floor sufficiently to break the suction. Consequently when the crutch is used the foot will always retain a suction grip on the floor or supporting surface 5 notwithstanding the tilting motion of the crutch.

In order to obviate any danger that the tip will be pulled off from the crutch by the suction action when the crutch is lifted from

the floor or other support I propose to use some suitable means for retaining the tip on the crutch. In Fig. 2 the crutch is provided with a spiral rib 9 and the wall of the cavity 2 is formed with spiral grooves 10 to fit the rib. Owing to the spiral nature of this rib the crutch tip may be screwed onto the crutch body and when it is in place the engagement of the rib in the groove 10 will securely retain the tip in place.

In Figs. 4 and 5 I have illustrated an embodiment of the invention wherein the crutch tip is provided with gripping fingers to engage the crutch. This construction is one which might be used where the crutch 3 is made of wood.

Two such gripping fingers are shown, they being indicated at 11. Said fingers are formed on the ends of members 12 which may be molded into the upper end of the tip if desired. Each member 12 may be provided with ribs 13 and apertures 14 so that it may be more securely anchored in the tip. These gripping fingers 11 are constructed so that they will permit the end of the crutch body to be readily inserted into the cavity 2 but they will grip the crutch body and prevent it from being readily withdrawn.

I claim.

1. A crutch tip formed of yielding material as a one-piece integral structure and having a recess in its upper end to receive the end of the crutch and a suction cavity in its lower end, said tip being formed with a plurality of annular exterior grooves, one at least of which is located in the portion of the tip between the suction cavity and the recess, said annular groove permitting a free lateral yielding movement of the recessed end of the tip with reference to the lower end so that a tipping of the crutch can take place without destroying the suction action.

2. A crutch tip comprising a body portion having a recess to receive the end of the crutch, a foot portion of resilient material formed on its under side with a suction cavity and a connecting portion connecting the foot and the body, said body, foot and connecting portions forming an integral structure and the connecting portion having an annular exterior groove of sufficient width and so constructed and located as to allow a yielding movement in the connecting portion which will permit the crutch to assume angular positions without destroying the suction action.

3. A crutch tip formed of yielding material as a one-piece integral structure and having a recess in its upper end to receive the end of the crutch and a suction cavity in its lower end, said tip being formed with a plurality of annular exterior grooves, one at least of which is located in the portion of the tip between the suction cavity and the recess, said annular groove permitting a free lateral yielding movement of the recessed end of the tip with reference to the lower end so that a tipping of the crutch can take place without destroying the suction action, said tip having at its upper end means to interlock with the end of the crutch to prevent the tip from being pulled off from the crutch by the suction action.

In testimony whereof, I have signed my name to this specification.

GEORGE HIPWOOD.