Nov. 17, 1964 C. E. MURCOTT 3,157,187

TUBULAR CRUTCH

Filed May 7, 1963

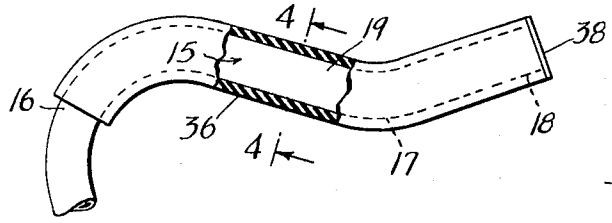
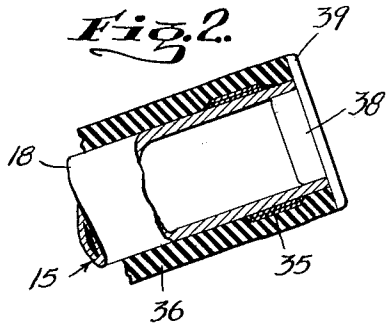


Fig. 2.



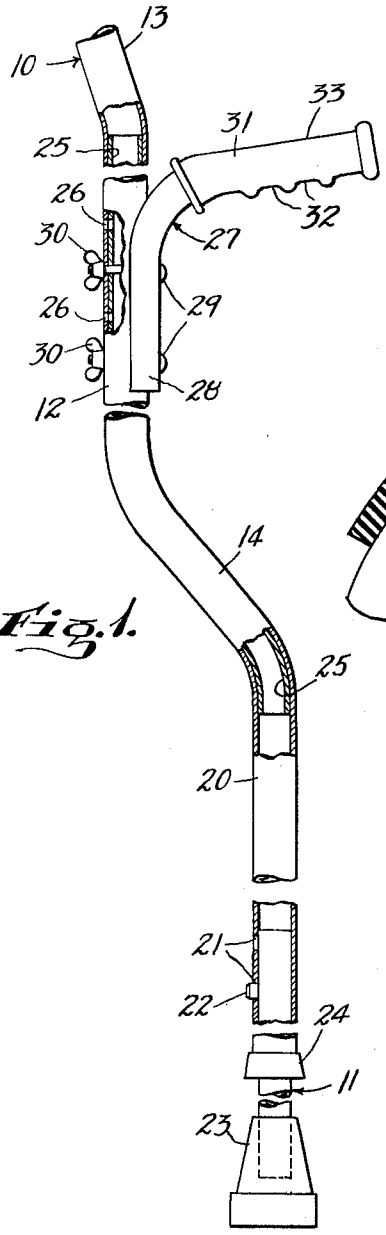


Fig. 1.

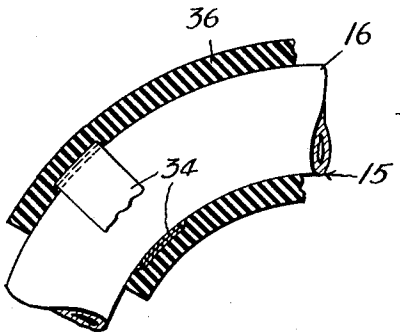


Fig. 3.

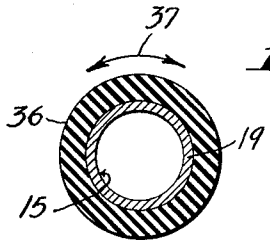


Fig. 4.

INVENTOR.
CHARLES E. MURCOTT
BY
Howard E. Thompson
ATTORNEY

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TUBULAR CRUTCH

Charles E. Murcott, Valley Drive, Bay Crest, Huntington, Long Island, N.Y.

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This invention relates to crutch devices and particularly devices of this type and kind made from aluminum tubing to render the same light in weight. More particularly, the invention deals with a crutch having long frictional contact areas for underarm support of the user and so constructed as to facilitate free arm use while the body of the user is being securely supported by the crutches. Still more particularly, the invention deals with a crutch structure, wherein the central handgrip portion of the crutch, including the lower adjacent offset portion thereof, is reinforced to compensate for stresses or strains to which the crutches are subjected in the use thereof.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and in which the separate parts are designated by suitable reference characters in each of the views and in which:

FIG. 1 is a side view of a crutch made according to my invention, with portions of the structure broken away and with parts broken away and shown in section.

FIG. 2 is an enlarged sectional portion of the free end of the underarm support of the crutch, part of the structure being shown in elevation.

FIG. 3 is an enlarged sectional view of the other rounded end portion of the underarm support of the crutch, with part of the construction shown in elevation and broken away; and

FIG. 4 is an enlarged section on the line 4—4 of FIG. 1.

The present invention constitutes a continuation-in-part of my prior application, Serial Number 256,901, filed February 7, 1963, now Patent No. 3,133,551.

Considering FIG. 1 of the drawing, it will appear that the crutch comprises a main tubular body portion 10, comprising a single piece of tubing, preferably of aluminum or aluminum alloy, to be light in weight. To the tubular body 10 is adjustably coupled a tubular foot element 11. The body portion 10 comprises a central elongated perpendicular shank 12, having upper and lower offset portions 13 and 14. In the use of the crutch, the portion 13 would be considered outwardly offset; whereas, the portion 14 would be inwardly offset.

The outwardly offset portion 13 terminates in a long underarm supporting substantially hook-shaped member 15 including, as an extension from 13, an upwardly, rearwardly and downwardly curved part 16. The member 15 includes a reversely curved portion 17 terminating in an upwardly extending end 18, shown in enlarged detail in FIG. 2 of the drawing. The curved portions 16 and 17 are joined by a straight portion 19, as will clearly appear from a consideration of FIG. 1 of the drawing.

Extending downwardly from the inwardly offset portion 14, the body portion 10 includes a depending perpendicular lower end 20, which is substantially in alinement with the underarm member 15. The end 20 has vertically spaced apertures, part of which are seen at 21 in FIG. 1 of the drawing, for reception of a standard-type of spring actuated button 22 mounted in the tubular foot element 11. The range of adjustment of the element 11 is sufficient to compensate for different overall length controls in crutches of three or more standard sizes to adapt the crutches for use by small children as well as tall adults.

Mounted on the lower end of the element 11 is a more

or less conventional rubber foot 23 and at 24 I have shown a sleeve mounted on the lower end of 20 to form a finish to said end. This sleeve can also be formed of rubber or any other suitable material. Mounted in the shank 12, including the offset portion 14 and the upper part of 20 and extending from the lower part of 13, is an inner reinforcing tubing 25 to reinforce the central portion of the crutch, to which portion the stresses or strains of the crutch are applied in the use thereof. Arranged in the shank 12 and the reinforcing tube 25 are vertically spaced apertures, parts of which are shown at 26 in FIG. 1, for adjustable mounting of a handgrip member 27 to properly position 27 with respect to the underarm member 15. The member 27 is tubular in form and is fashioned at one end 28 to partially envelop the shank 12 and bolts or other fastening devices 29 are mounted in 28 and pass through two of the apertures 26 and include winged nuts 30 for securing the handgrip in position, the winged nuts facilitating manual adjustment of the handgrip 27 at will.

The other end of the handgrip 27 is extended inwardly and upwardly and mounted thereon is a rubber handgrip portion 31 having, on its lower surface, finger receiving recesses 32, the tubular portion of the handgrip 27 upon which 31 is arranged is preferably flattened to provide a flat upper surface 33 on 31 in accordance with the teachings in the application referred to hereinbefore. This flattened upper surface minimizes the fatigue to which the user of the crutches is subjected.

Suitably secured to the rounded portion 16 and the end 18 of the underarm member 15 are two or more windings of tapes, as seen at 34 on 16 and 35 on 18 to be frictionally engaged by end portions of a tubular sleeve of rubber or other cushioning material 36 extending the full length of the underarm member. The members 34 and 35 definitely retain the ends of the sleeve 36 against movement or displacement on the underarm member; whereas, the portion of the sleeve 36, intermediate the retaining means 34 and 35 is free for rotary movement on the member 15, as diagrammatically indicated by the two-directional arrow 37 in FIG. 4 of the drawing. The purpose of this rotary movement is to provide for free swinging movement of the members 15 of two crutches in swinging body movement of the user, the sleeve 36 establishing frictional engagement with the user or the clothing worn by the user and, in this action, it has been found that a user can fixedly maintain a position with the members under the arms, so as to fully and securely support the body of the user while leaving the arms free for any movement, including swinging sideways motions or reaching motions, so that a disabled person is capable of performing substantially unlimited operations while being assured that the body will be maintained in supported position without danger of any shifting or displacement. To give just a few of such possible uses and free arm movement, an individual could perform operations upon a machine. The user could perform conventional dish washing operations, including the storage of dishes in tall cupboards or cabinets.

In connection with the foregoing, it will be understood that the long reversely curved or substantially hook-shaped underarm members provide a greater continuous contact surface support of the body with assurance that the members 15 will maintain their position under the arms, with no possible chance of accidental displacement. This gives to the user the feeling of security and, by virtue of this underarm structure, it has been found that the ability of a user or patient to use the crutches is materially hastened. It will also be apparent that, by virtue of the arrangement of the foot supporting ends of the crutches in direct alinement with the underarm members, a greater degree of stability and security pre-

vails, giving the user or patient full confidence in the use of the crutches. Considering FIG. 1 of the drawing, it will appear that the curved portion 17 is located inwardly of the lower end 20. This, taken with the outward extension of the offset 13, provides a long underarm member 15.

At this time, it is pointed out that, where two crutches are used by an individual and the individual desires to go upstairs or downstairs, the underarm hook end can be utilized to support one crutch around the neck of the user, while the remaining single crutch is utilized, particularly where there is a handrail to assist the user to travel up and down the staircase.

Considering FIG. 2 of the drawing, it will be apparent that a cap or plug 38 is mounted in the end of 18 to close said end of the underarm member 15, the cap 38 having a flange 39, which overlies the adjacent end of the sleeve 36.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A crutch of the character defined comprising a tubular body, said body having a central elongated tubular straight shank, said shank having outwardly and inwardly offset straight upper and lower portions extending directly from ends of said shank, the upper portion having an inwardly extending underarm member comprising an inwardly and downwardly curved outer part joining a reversely curved inner part in a straight portion, a lower perpendicular end extending downwardly from the inwardly offset straight lower portion, the reversely curved inner part of the underarm member being arranged inwardly of the lower perpendicular end, a foot element adjustable in connection with said lower end, a tubular handgrip adjustably supported on said shank and arranged beneath said underarm member, said shank, outwardly and inwardly offset portions, underarm member and downwardly extending perpendicular end comprising a single tube, said underarm member comprising a sleeve of cushioning material extending the full length thereof, a reinforcing tube arranged in the shank and inwardly offset straight lower portion of the tubular body, the upper end of said tube being arranged at the lower end of the outwardly offset straight upper portion, and the lower end of said tube terminating in the upper portion of said lower perpendicular end.

2. A crutch as defined in claim 1, wherein said handgrip includes a rubber facing, and said shank portion and that part of the reinforcing tube in said shank portion including longitudinally spaced apertures, in which fastener devices are mounted in adjustable support of the handgrip on said shank.

3. A crutch of the character defined comprising an elongated tubular body having a perpendicular straight shank, an outwardly offset upper straight end extending upwardly from said shank and terminating in an inwardly extending underarm member, an inwardly offset lower straight portion terminating in a downwardly extending lower perpendicular end disposed beneath said underarm member, a foot element adjustably coupled with said lower end, a handgrip, means adjustably supporting the handgrip on said shank, a sleeve of cushioning material mounted on the unedrarm member, tape windings fixed to the underarm member at end portions of the sleeve for engaging and retaining said sleeve against movement and displacement on said underarm member, said underarm member intermediate said tape windings being rotatable on the tubular portion of said underarm member, said underarm member comprising an upwardly and downwardly curved outer part joining a reversely curved inner part in a straight portion, and said reversely curved inner part being arranged inwardly of said lower perpendicular end.

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HARRISON R. MOSELEY, *Primary Examiner.*