

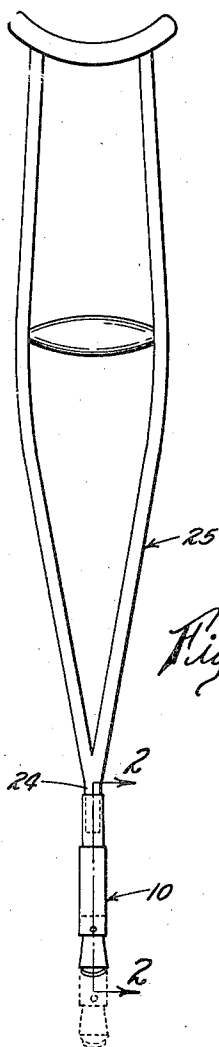
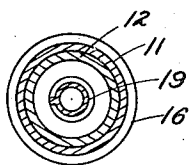
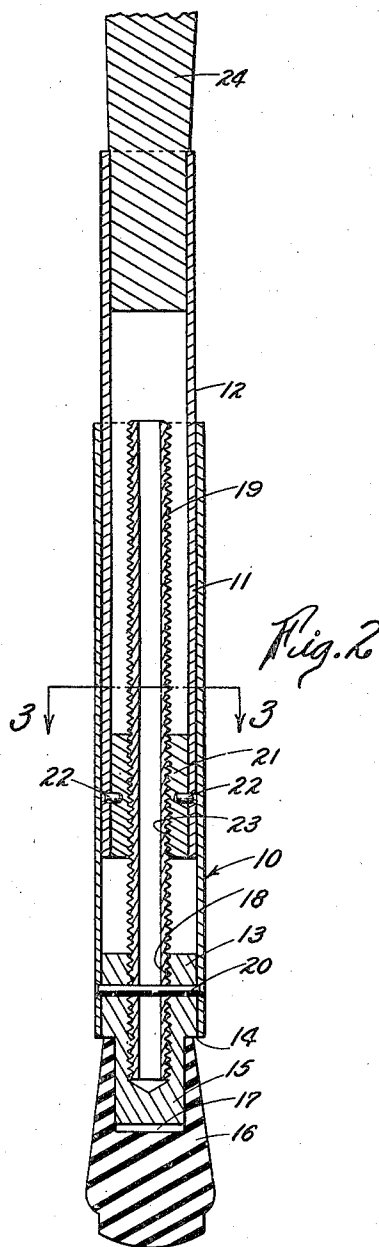
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ADJUSTABLE FOOT STRUCTURE

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ADJUSTABLE FOOT STRUCTURE

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6 Claims. (Cl. 135—50)

The present invention relates to adjustable foot structures, and particularly to a foot for use on a crutch or the like.

An object of the invention is to provide a foot structure that is infinitely variable and which is quickly adjustable to modify the length of a crutch to exactly suit the user without destroying the ability to subsequently modify the same crutch to a greater or lesser length.

Another object of the invention is to provide a device of this kind, a few of which will serve to reduce the necessity of carrying a large assortment of crutches by manufacturers, dealers, institutions, and commissaries.

A further object of the invention is to provide an adjustable foot structure that is steady and effective to reinforce the foot portion of the crutch to which it is applied, thereby reducing the danger of breakage of the crutch at its weakest point. These and other important objects are attained by the means herein described and exemplified in the accompanying drawing in which:

Fig. 1 is a side elevational view of a crutch having a foot with the invention applied thereto, the latter being shown in dotted lines in an extended position.

Fig. 2 is an enlarged fragmental cross-sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 2.

The present day and long standing practice in the art of making crutches has been to manufacture and stock the devices in twelve stock sizes beginning at a three-foot (3') length and increasing by two-inch (2'') intervals to five feet (5') in length. Extra sizes are made to order at increased cost. A complete stock of crutches in a hospital, clinic, commissary or the like from which loans or rentals are made entails a considerable outlay of money, and this stock is added to, at intervals, due to the fact that crutches of odd numbered inches in length or including fractional inch lengths are customarily secured by cutting off the unwanted excess length from the nearest available longer crutch. In certain locations, these loan and rental collections of crutches become excessively large, but nevertheless the custodian of the stock must frequently replenish at least some of the longer sizes.

By the present invention any given stock sizes of crutches may be made to serve in the place of three or four stock sizes. In this way, the initial stock of crutches may be completed by selecting three or four stock sizes in lieu of the customary

twelve stock sizes and by equipping the selected sizes with the adjustable foot structure of the invention.

Referring now to the drawing, the adjustable foot structure, indicated generally at 10 is comprised of a pair of smoothly and snugly telescopic tubular members 11 and 12. The tubes 11 and 12 may be of any selected metal or alloy or high-strength synthetic material selected from the more recently available plastic or other material. In the bottom end of tube 11 is an end plug 13 which fits tightly into the bottom of the tube. The plug 13 is shouldered at 14 to provide a short extension 15 of a reduced diameter for the reception of an anti-slip or cushion tip 16. In the preferred form the length of the extension 15 is slightly less than the depth of the bore in tip 16, so that the shoulder 14 will rest on the top edge of the tip member 16, and thereby provide a closed air space or chamber 17, which serves to further cushion the foot 10 in the tip 16.

The plug 13 has a threaded bore 18 into which a threaded rod or rigid tubular adjusting stem 19 is inserted. The outer tube 11, plug 13, and threaded adjusting stem 19 are fixed together by means of a rivet 20 or the like, passing through the three members.

The inner tubular member 12 has a hollow threaded plug 21, secured in the bottom end thereof by suitable means, such as short rivets 22. The threads 23 receive the threaded adjusting stem 19 within the outer tube 11 and serve to hold the respective tubular members in adjusted positions which are attained by turning one of said tubular members relative to the other. The foot portion 24 of a crutch, such as 25, is inserted and tightly wedged in the open top of inner tubular member 12.

It will be understood that the application of the adjustable foot to an existing crutch may be accomplished merely by removing the cushion tip from the normal foot of the crutch and inserting the foot into the top of tubular member 12. Initial lengths of the existing foot on crutches of any given lengths may, of course, be varied by cutting off a portion of the normal crutch foot.

It will also be appreciated that extra long crutches are readily derived by the application of an adjustable foot of the invention to one of the longest stock sizes of crutch.

In use, crutches embodying the adjustable foot member of the invention are quickly and easily adapted with extreme accuracy to the exact prescribed requirements of the patient or user by

merely measuring the latter and then selecting the adjustable footed crutch of an approximate size and rotating the outer tubular member 11 in one direction or the other to lengthen or shorten the crutch to the required length. It has been found that the weight of plugs 13 and 21 at approximately the bottom of the crutch serves to facilitate the use of the crutches by the patient. The resiliency of the conventional crutch tip 16 is enhanced by the presence of the air chamber 17. It is furthermore noteworthy that by providing a relatively slow pitch on the adjusting rod 19, there is no tendency whatever to loss of existing adjustment of the foot due to the normal handling and use of the crutch or crutches. Furthermore, should the surgeon's treatment indicate a lengthening or shortening of the crutch during the course of treatment of a given patient, there is no necessity for referring a patent back to the custodian of the loan or rental collection, since the adjustment in either direction may be made either by the physician or by the patient himself.

The device of the invention, will therefore be understood to eliminate the major disadvantages and expenses which are now met with in connection with the use of crutches.

It will be understood that the device of the invention may be adapted to other devices, surgical appliances and equipment, as well as to crutches. It will also be understood that the slidably interfitting tubular members may be of different relative wall thicknesses, the latter being governed to some degree by the strength and weight of the materials employed.

What is claimed is:

1. An extensible foot device comprising an outer tubular member, a threaded rod disposed concentrically therein and fixed thereto at one end, and an inner tubular member having its outer wall surface bearing on the inner wall surface of the outer tubular member and having an internally threaded portion engaging with the threads on said rod.

2. In combination a crutch having a foot portion and a variable extension device removably mounted on said foot portion, said device comprising an outer tubular member, a threaded rod secured at one end in coaxial relation within said outer tubular member, and an inner tubular member having an internally threaded portion

threadedly receiving said rod and having its outer wall slidably bearing on the internal wall of the said outer tubular member.

3. In combination, a crutch having an integral foot portion, a pair of tubular members slidably fitting one within the other, the inner tubular member having an internally threaded portion, and a threaded rod engaging in said internally threaded portion and fixed at one end within the outer tubular member, one of said tubular members being adapted to receive the foot portion of the crutch therein, the other of said tubular members being adapted at its free end for the reception of a crutch tip member.

4. In combination, a crutch having an integral foot portion, a tubular member removably receiving and reinforcing said foot portion, a second tubular member freely slidable over the first mentioned tubular member, a threaded rod substantially coextensive with said second tubular member, the first mentioned tubular member having an internally threaded portion for adjustably receiving the threaded rod, and a friction tip on the free end of said second tubular member.

5. In a device of the class described, the combination of a crutch having an integral foot portion, an inner tubular member into which said foot portion of said crutch is snugly inserted, a plug fixed in the bottom end of said tubular member, said plug having a threaded bore therein, an outer tubular member telescopically mounted on said inner tubular member, a plug fixed in the end of said outer tubular member, a threaded adjusting rod fixed in said last mentioned plug, and extending to substantially the top of said outer tubular member, said adjusting rod threadedly receiving the threaded plug in said inner tubular member.

6. An adjustable foot for crutches and the like, comprising a pair of telescopic tubular members, a plug having an interiorly threaded bore there-through fixed in the innermost of said tubular members, a plug fixed in the end of the outermost tubular member and a threaded rod fixed to said latter plug and disposed within said outermost member and threadedly adjustable in the threaded bore of the plug in the innermost tubular member.

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