Aug. 19, 1947. J. C. WATTERS 2,426,074

CRUTCH

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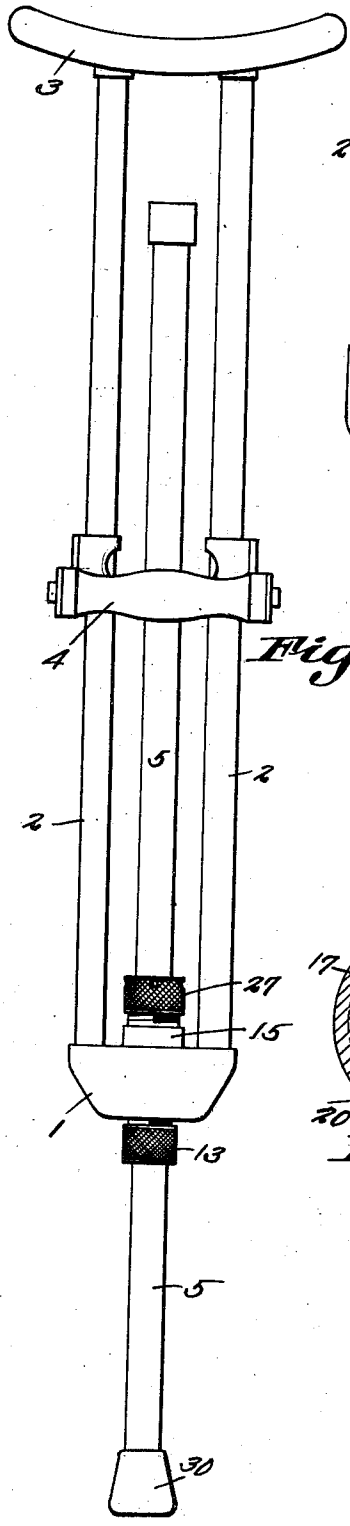


Fig. 1.

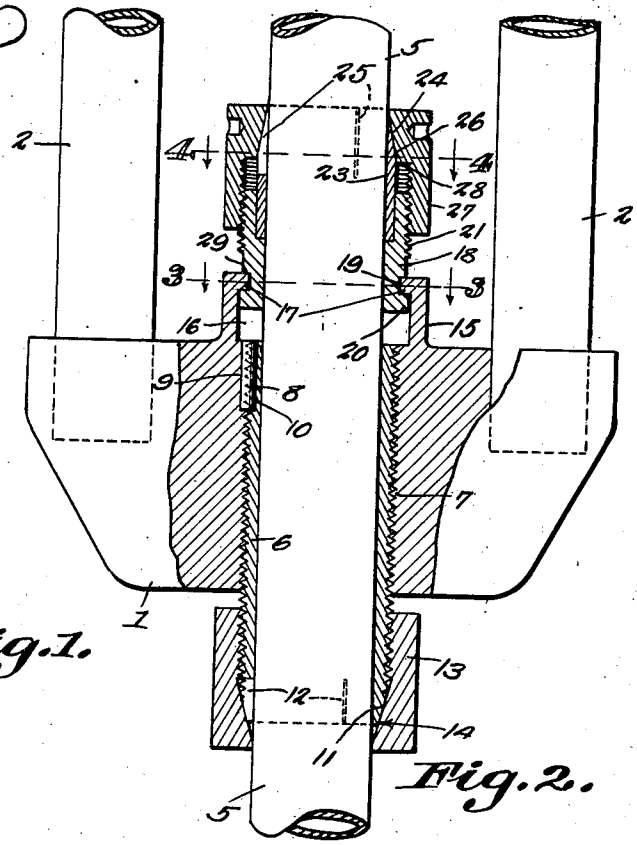


Fig. 2.

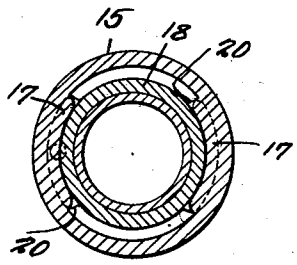


Fig. 3.

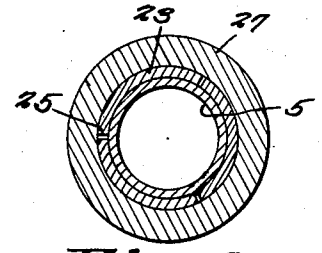


Fig. 4.

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CRUTCH

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4 Claims. (Cl. 135—50)

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This invention relates to crutches and it is more especially an improvement upon the structure disclosed in my copending application filed August 13, 1945, Serial No. 610,454.

In structures of this type it is desirable that the means employed for locking the parts firmly together after the desired adjustment has been obtained, be easy to operate and at the same time positive in action. It is also important that this locking means be of simple construction and few parts so that it will not readily get out of order as a result of frequent handling.

An object of the present invention is to provide all of the desirable characteristics above mentioned.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred form of the invention has been shown.

In said drawing:

Figure 1 is an elevation of a crutch having the present improvements associated therewith.

Figure 2 is a view partly in section and partly in elevation and showing the locking means on an enlarged scale.

Figure 3 is a section on line 3—3, Fig. 2.

Figure 4 is a section on line 4—4, Fig. 2.

Referring to the figures by characters of reference, 1 designates the lower cross-head of the crutch which, in the present instance, can be formed of a solid block of suitable metal in the end portions of which are anchored the lower ends of the parallel side members 2 of the upper section of the crutch. These members are joined at their upper ends by a shoulder rest 3 and also carry a handle 4. The lower member of the crutch can be in the form of a single length of strong members of pipe mounted for longitudinal adjustment within the cross-head and extending between and parallel with the members 2.

The present invention includes a sleeve 6 which is in screw threaded engagement with the cross-head 1, this sleeve being mounted in a screw threaded opening 7 extending through the center of the cross-head. The sleeve, after being inserted into the opening 7 is locked against rotation by a key 8 inserted in matching grooves 9 and 10 formed in the cross-head and sleeve respectively. The lower end of the sleeve projects below the cross-head and is tapered, as shown at 11. Longitudinal slits 12 are provided in this tapered portion to permit contraction of the end of the sleeve when engaged by a binding nut 13, the opening in which has a tapered surface 14 for engaging the tapered end of the sleeve. Obviously by turning the nut in one direction the tapered end 14 will clamp upon the member 5 so as to grip it securely.

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The cross-head is formed on its upper surface with a circular upstanding flange 15 concentric with the opening 7 and forming a cylindrical socket 16. Formed on the inner surface of the flange at the upper edge thereof and at diametrically opposed points are arcuate retaining ribs 17 spaced apart at their ends.

A collar 18 is slidably mounted on the member 5 and is provided with a reduced end 19 proportioned for insertion between the ribs 17 and into the socket 16. This collar has spaced ribs 20 on its outer surface so proportioned and located that, when the collar is moved in the direction of the cross-head 1, the ribs 20 can pass between the ribs 17 and thereafter, by rotating the collar, these ribs 20 will assume positions in lapped relation with the ribs 17, thereby holding the collar 20 against withdrawal from the socket 16. Collar 18 is externally screw threaded as at 21 and is provided with a counterbore 22 at its outer end. This counterbore carries a sleeve 23 which is firmly seated therein. The sleeve projects outwardly from collar 18 and has a tapered end 24 provided with longitudinal slits 25. This tapered end of the sleeve is adjustably engaged by the tapered bore 26 in a clamping nut 27 and it will be noted that the nut is counterbored as at 28 and screw threaded so as to adjustably engage the threaded portion of the collar 18.

In practice the nuts 13 and 27 are loosened. This will permit member 5 to be quickly shifted to any position relative to the members 2 and the cross-head 1 until a crutch of desired length has been obtained. Thereafter the collar 18 and sleeve 23 are slid along the member 5 until the ribs 20 are brought into position within the socket 16. This movement of the sleeve 18 into the socket 16 can be limited by an annular shoulder 29 on the collar, as will be noted by referring to Fig. 2. With the parts thus arranged the nut 27 is tightened on collar 18 so as to contract the tapered end of the sleeve 23 and cause it to bind tightly upon the member 5, the frictional contact of the collar 18 on the member 5 being sufficient to prevent rotation of the collar, while the nut 27 is be-

ing turned to tighten the collar. Thus collar 18 is fixedly joined to the member 5 at the point where it is to be maintained thereafter as long as the crutch is used by the particular person for whom it has been adjusted.

Following this adjustment the member 5 can be rotated to disengage ribs 20 from underneath ribs 17 and thereafter the member 5 can be pulled longitudinally so that the tip 30 at the lower end thereof will be brought close to the cross-head 1 and the member 5 will be held almost entirely within the upper member of the crutch. Thus the crutch can be compactly stored and can be supported by the user where it will not interfere with him or with others while he is seated. When it is desired to use the crutch all that is necessary is to slide the member 5 downwardly until the stop shoulder 29 engages the rib 17 and until the ribs 20 are brought into the socket 16. This is as far as the member 5 can be slid without further adjustment. As soon as the member 5 has been brought to this position, thereby elongating the crutch, said member 5 is given a slight turn sufficient to bring the ribs 20 directly under the ribs 17 so that collar 18 thus is locked to the flange 15. Nut 13 is then adjusted along sleeve 6 so as to bind the lower end of the sleeve as tightly as desired upon the member 5.

It is preferred to maintain the nut 13 slightly spaced from cross-head 1 so as to compensate for wear upon the parts.

After the crutch has been elongated as described and locked in its elongated position it can be employed for properly supporting the user and after it has served its purpose it can be collapsed and stored by him in the manner already explained.

It has been found in practice that this crutch can be made very light of strong metal alloys and, therefore, will not become a burden to the user because of its weight.

What is claimed is:

1. A crutch, the combination with an upper member having a cross-head, a socket portion carried by the cross-head, of a sleeve within and extending from the cross-head, a lower member slidably and rotatably mounted within the sleeve, means adjustably mounted on the sleeve for contracting said sleeve upon and gripping the lower member, and means adjustably mounted on the lower member and normally clamped thereto for detachably engaging the socket portion.

2. A crutch, the combination of an upper section having a cross-head, a guide sleeve within and extending from the cross-head, and a socket portion on the cross-head, of a lower member slidably and rotatably mounted in the sleeve, means carried by the sleeve for gripping the lower member, a collar mounted for sliding and rotating movement on the lower member, cooperating means on the collar and socket portion for detachably connecting said collar to the socket portion when subjected to relative rotation, and means carried by the collar for holding said collar against movement relative to the lower member.

3. A crutch, the combination of an upper section having a cross-head, a guide sleeve within and extending from the cross-head, and a socket portion on the cross-head, of a lower member slidably and rotatably mounted in the sleeve, means carried by the sleeve for gripping the lower member, a collar mounted for sliding and rotating movement on the lower member, cooperating means on the collar and socket portion for detachably connecting said collar to the socket portion when subjected to relative rotation, said cooperating means including opposed spaced internal ribs on the socket member and opposed spaced ribs on the collar, said ribs of the collar being insertable between the ribs and the socket member and movable to position thereunder, and means carried by the collar for clamping said collar to the lower member.

4. A crutch, the combination of an upper section having a cross-head, a guide sleeve within and extending from the cross-head, and a socket portion on the cross-head, of a lower member slidably and rotatably mounted in the sleeve, means carried by the sleeve for gripping the lower member, a collar mounted for sliding and rotating movement on the lower member, cooperating means on the collar and socket portion for detachably connecting said collar to the socket portion when subjected to relative rotation, said cooperating means including opposed spaced internal ribs on the socket member and opposed spaced ribs on the collar, said ribs of the collar being insertable between the ribs and the socket member and movable to position thereunder, means carried by the collar for clamping said collar to the lower member said last named means including a slit tapered sleeve extending from the collar and surrounding the lower member, and a binding nut adjustably engaging the collar and having a tapered portion engaging the tapered portion of the sleeve on the collar.

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