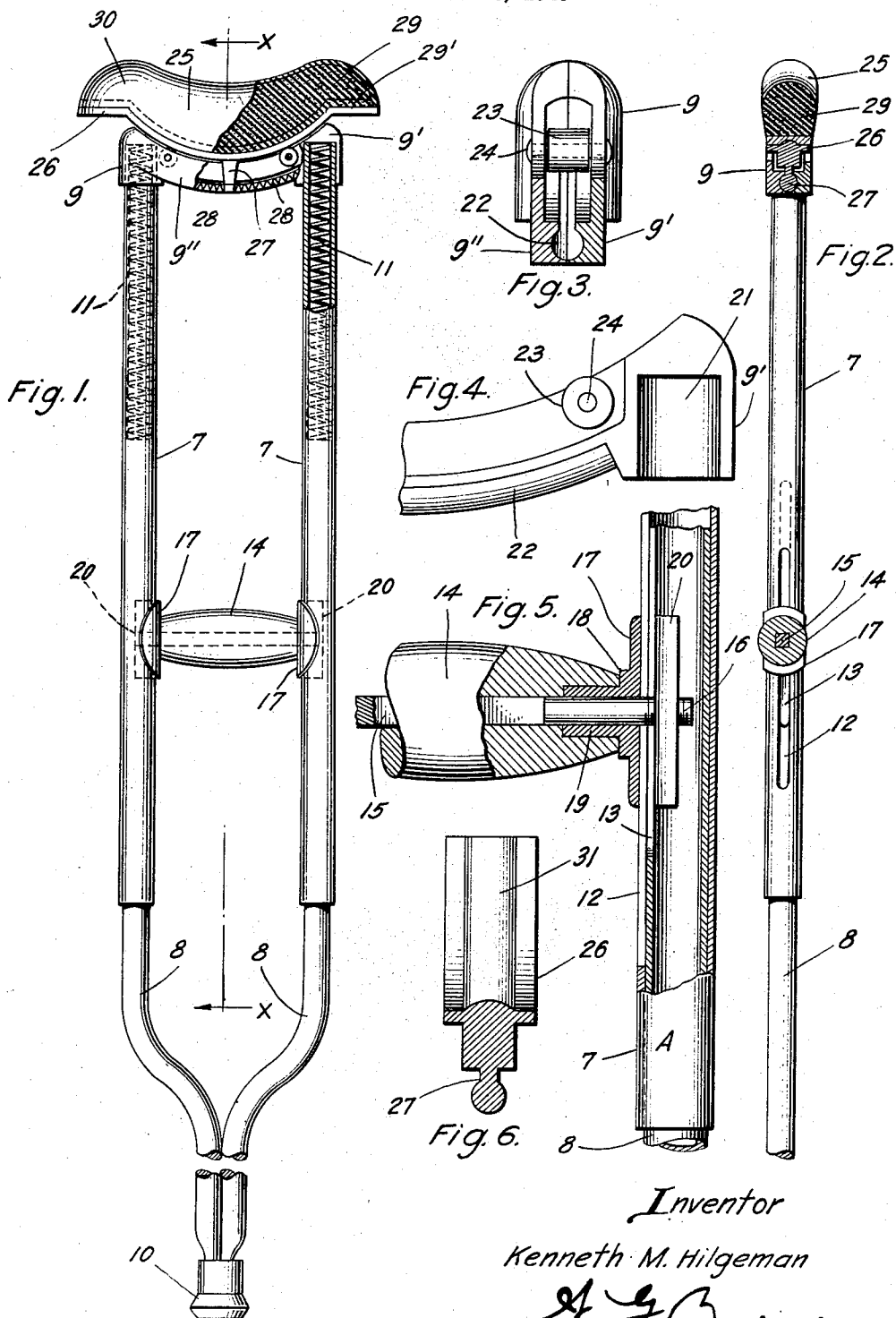


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ADJUSTABLE CRUTCH

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ADJUSTABLE CRUTCH

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This invention relates to improvements in an adjustable crutch, an object of the invention being to afford a crutch structure so constituted as to permit adjustments by which to vary the over-all length of the crutch and secure it in selected positions of adjustment while in actual use.

Another object of the invention is to provide a crutch structure with a hand-grip so arranged in connection with the props of the crutch as to be readily adjusted relative to the arm-pit rest and said props and secure them in selected positions of adjustment by manipulation of the hand-grip during use of the crutch without resort to tools, or temporary disuse of the crutch.

A further object of the invention is to provide a crutch with an arm-pit rest that has limited swinging movement in opposite directions and is yieldingly restrained in its movements from a central position to accommodate swaying of the load on the crutch during action, thus avoiding friction between the crutch and the arm-pit.

And a further object of the invention is to afford a crutch having telescopic prop members provided with expansion springs, and having in connection therewith a hand-grip and locking means controlled by said hand-grip, by which to secure the telescoping members in selected positions of adjustment, and so arranged that the hand-grip is also adjustable on the prop members and secured thereon in selected positions by manipulation of the hand-grip, thus to permit both adjustments to be made concurrently.

Other objects and advantages of the invention appear in the following description.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a side elevational view of a structure in which the invention is incorporated, portions thereof being broken away;

Fig. 2 is a view showing a vertical section of Fig. 1 on the line x—x thereof;

Fig. 3 is a detail view of the crutch bridge, shown in section upon the line x—x of Fig. 1;

Fig. 4 is a fragmentary detail view of the crutch bridge in a plane at right angles to that of Fig. 3;

Fig. 5 is a fragmentary detail elevational view showing the clamping connection of the hand-grip and one of the telescoping props; and

Fig. 6 is a detail elevational view of a part of the arm-pit rest, shown in section on the line x—x of Fig. 1.

Figs. 3, 4, 5 and 6 are drawn to an increased scale.

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consists of a crutch structure having a pair of parallel prop members, indicated generally by A, each composed of telescoping tubes 7—8, said members being spaced apart from each other.

The upper ends of the tubes 7 are connected together by an arcuate bridge 9, and the lower end portions of the tubes 8 are bent inwardly and united, their lower terminals being secured together in a common socket 10 that forms the foot of the crutch.

Within the upper portion of each tube 7 is disposed an expansion spring 11, the opposite ends of which bear respectively against the top wall of the bridge and the upper end of the corresponding tube 8, the arrangement being such as to urge movement of the tubes 7 upwardly relative to the tubes 8, thus to lengthen the crutch.

In the opposing sides of the tubes 7 and 8 are made longitudinal slots 12 and 13 that are aligned with each other and overlap.

Between the tubes 7 is disposed a hand-grip 14 having therein a floating bar 15, the midportion of which is square or polyogal, and fits loosely in the bore of the hand-grip which is likewise shaped, the end portions 16 of the bar being round and the outer terminals thereof being threaded. On each end portion of the bar is disposed a jaw 17, that fits against the corresponding adjacent face of the tube 7, and which is provided with a shoulder 18 that bears against the corresponding end of the hand-grip 14, and has also a hub 19 that extends loosely into the hand-grip, the arrangement being such as to permit turning of the hand-grip and the bar relative to the jaw.

Within each of the tubes 8 is disposed a second jaw 20 having threaded relation with the corresponding threaded terminal 16 of the bar 14. The end portions of said bar extend loosely through the slots 12 and 13 in the tubes 7 and 8, the arrangement being such that, upon turning of the hand-grip, the bar thereupon is likewise turned, causing the tubes to be clamped between the jaws 17 and 20 which prevents relative longitudinal movement of the telescoped tubes, or released to permit relative movement thereof, accordingly as the hand-grip is rotated in one direction or the other. It is essential that each pair of jaws be activated alike and concurrently, and for this purpose the threads on the ends of the bar and in the corresponding jaws 20 are made right and left handed respectively, so that turning of the hand-grip in one direction, as clockwise, tightens the jaws, and upon turning of the hand-grip in the opposite direction, as

counter-clockwise, releases the grip of the jaws on the corresponding telescoped tubes thus permitting relative longitudinal movement thereof, and also permits vertical adjustment of said hand-grip and the jaws with respect to the prop members.

The bridge 9 preferably is formed of like parts 9' and 9'', oppositely disposed and shaped to receive the upper ends of the tubes 7 which are secured in sockets 21 formed in said parts by any suitable means. The midportions of the bridge parts, in their lower portions, are grooved to provide an arcuate raceway 22, and adjacent each end of the bridge, above the raceway is disposed a roller 23 that turns freely upon a pintle 24, the projecting ends of which are upset so as to aid in securing the bridge-parts together.

An arm-pit rest 25 surmounts the bridge, and consists of an arcuate base 26 that rests upon the rollers 23 and has swinging movement thereon, there being a pendent lug 27 that extends into the raceway 22, and is engaged by opposing springs 28 confined in the raceway, so that said base is normally held centrally with respect to the bridge. Preferably, upon the base 26 is secured a cushion 29 formed of sponge rubber, felt, or other wadding material. The lower marginal portions 29' of the cushion is made more compact than the overlying portion thereof in any suitable manner. For instance, when the cushion is made of rubber or the like, the lower portion is more thoroughly cured, thus to facilitate securing of the cushion to the base by any suitable attaching means. The exterior of the cushion is provided with a covering 30, preferably of leather or other suitable wear-resisting material. When in operating position, the arm-pit rest is held in connection with the bridge by the lug 27, the lower end of which is enlarged and fits loosely within the raceway and has movement therein in opposite directions, limited by opposition of the opposing springs 28. The upper face of the base 26 has an upstanding bead 31 that is continuous lengthwise throughout the arcuate portion thereof, and the lower face of the base of the cushion is shaped to fit the bead, thus to prevent lateral disalignment of the cushion with respect to the base.

Operation

In use, the crutch is grasped by the handle, and the arm-pit rest is positioned as in the usual manner into the crotch of the shoulder. Then, by manipulation of the handle, the jaws are loosened when the handle is turned in one direction, as counter-clockwise, which permits telescopic movement of the prop tubes in either direction lengthwise, upwardly by urge of the springs 11 with consequent lengthening of the crutch, or downwardly by weight of the person using the crutch, which causes downward movement of the arm-pit rest and shortening of the crutch, and coincidentally permitting vertical adjustment of the handle relative to the telescoping tubular props. Both of these adjustments are made concurrently, and after the over-all length of the crutch and the position of the handle have been determined, the handle then is turned in the opposite direction, as clockwise, to close the jaws, thus securing the telescopic tubes and the handle in the positions into which they respectively have been adjusted. By this arrangement of parts, a person using the crutch is enabled to adjust and

readjust the crutch structure with respect to its over-all length as well as the height of the handle, and then secure the parts in selected positions of adjustment while the crutch is being used.

This feature of the invention is especially desirable as it permits immediate readjustments to be made during actual use of the crutch which is advantageous. For instance, increasing or decreasing the length of the crutch compensates more or less for the varying amount of attire worn by the person using the crutch. Furthermore, by adjustment of the crutch length and location of the handle, the weight of the person is borne by the arm-pit rest and handle equally, or shifted to one or the other selectively as desired, according to the adjustments made. In this manner the load of the person is conveniently shifted from the arm-pit rest to the handle, or vice versa, at will while the person using the crutch is standing erect or in full stride. This is much to the relief and comfort of a person using the crutch.

Variations from the particular construction above disclosed may be resorted to by the exercise of skill in the art, without departure from the spirit or scope of the invention.

What I claim is:

1. A crutch structure the upper end of which has an arcuate bridge, an arm-pit rest having an arcuate base overlying the bridge and provided with a pendent lug, and compression springs disposed within the bridge acting oppositely against said lug whereby the arm-pit rest is yieldingly held in normal position.

2. A crutch comprising prop members, the lower ends of which are secured together to form a foot, a bridge secured to and connecting the upper ends of said members, said bridge having therein a longitudinal raceway, rollers pivoted in the bridge adjacent each end thereof, an arm-pit rest overlying the bridge, bearing on said rollers and having a lug that projects through a slot in the bridge into said raceway, and compression springs disposed within said raceway acting oppositely against said lug and tending to hold said rest in normal position.

3. A crutch comprising a prop structure, a member disposed transversely on the upper end of such structure provided with a transverse raceway therein, an arm-pit rest, overlying said member, having longitudinal movement relative thereto and provided with a lug that projects through a slot in said member into said raceway, and springs disposed in the raceway acting oppositely against said lug, that tend to hold said rest in normal position.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
705,741	Drew	July 29, 1902
991,104	Trask	May 2, 1911
994,584	Flynn	June 6, 1911
1,149,790	Sherwood	Aug. 10, 1915
1,225,364	Sanders	May 8, 1917
1,266,074	Sparrow	May 14, 1918
1,400,600	Glowacki	Dec. 20, 1921