

April 24, 1951

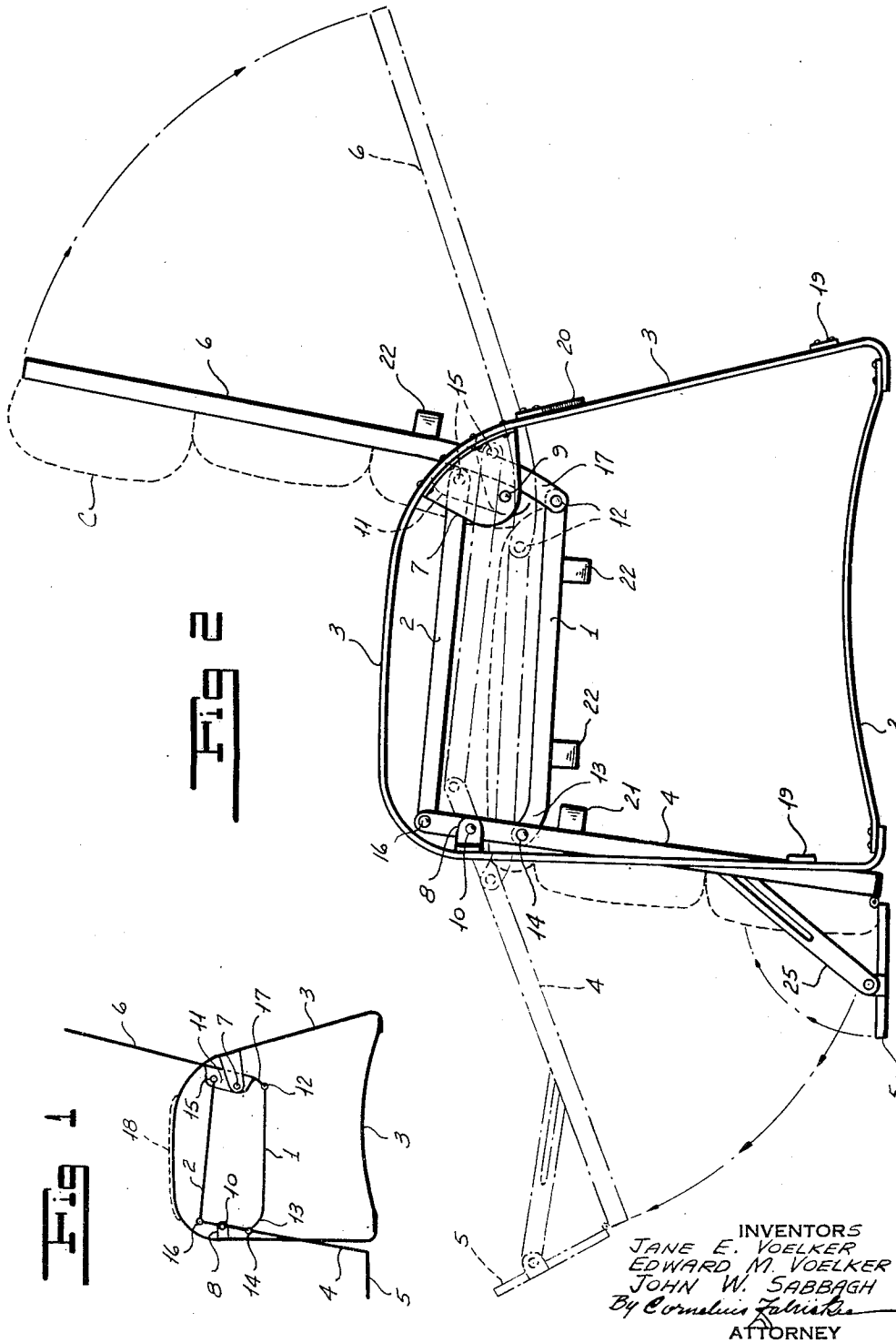
J. E. VOELKER ET AL

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ADJUSTABLE CHAIR

Filed May 24, 1950

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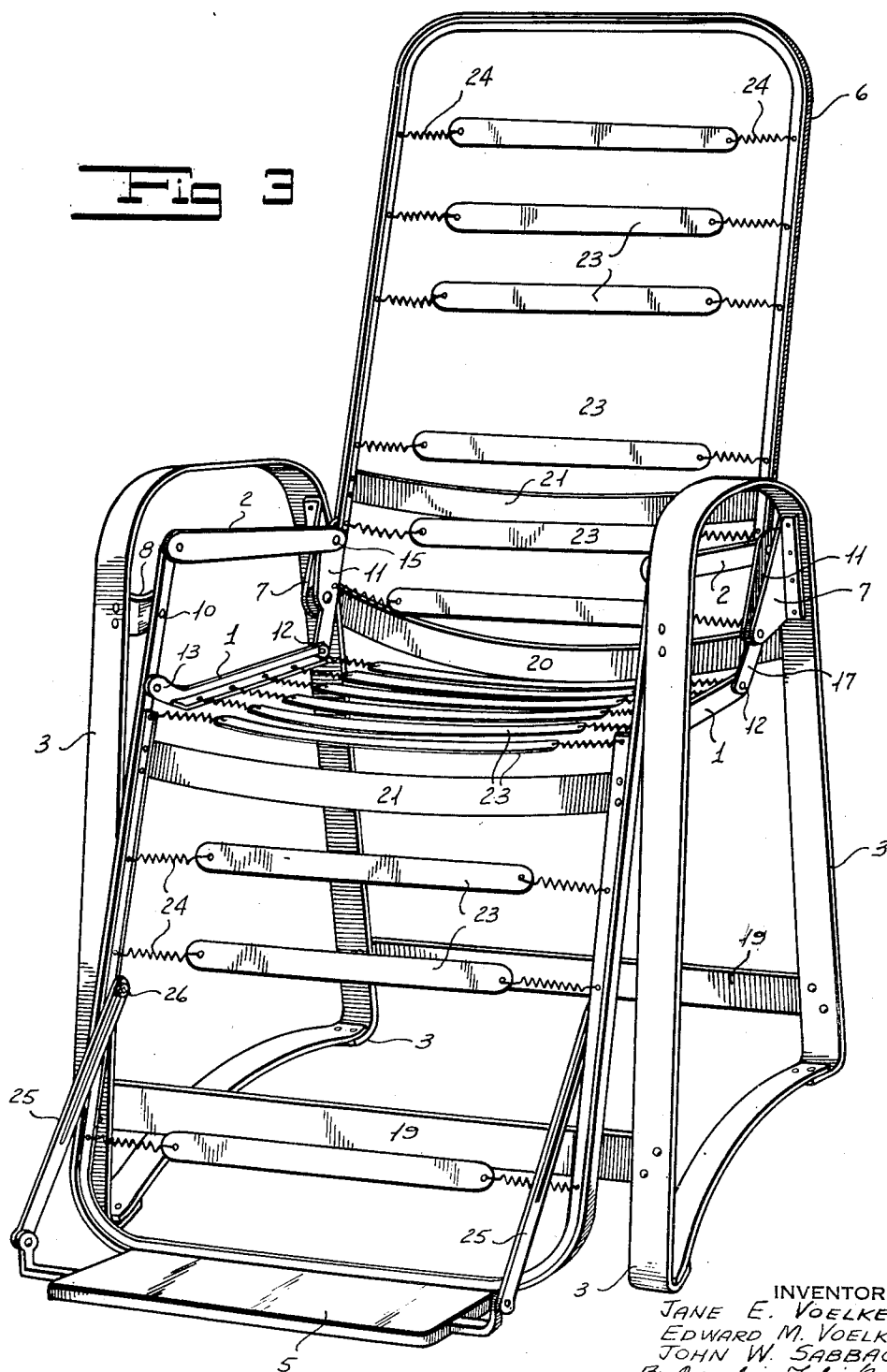
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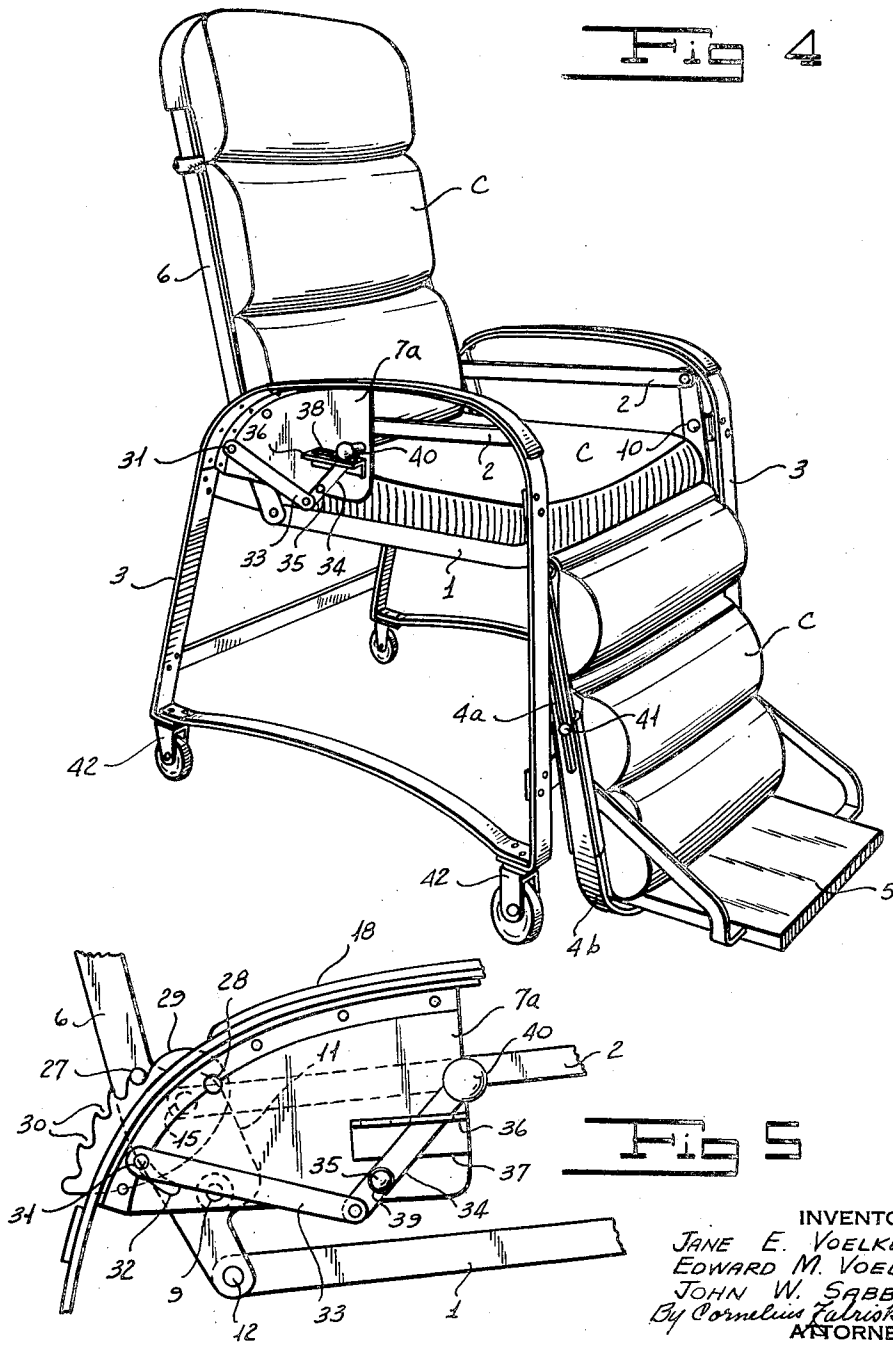
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4 Sheets-Sheet 3



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Fig 6

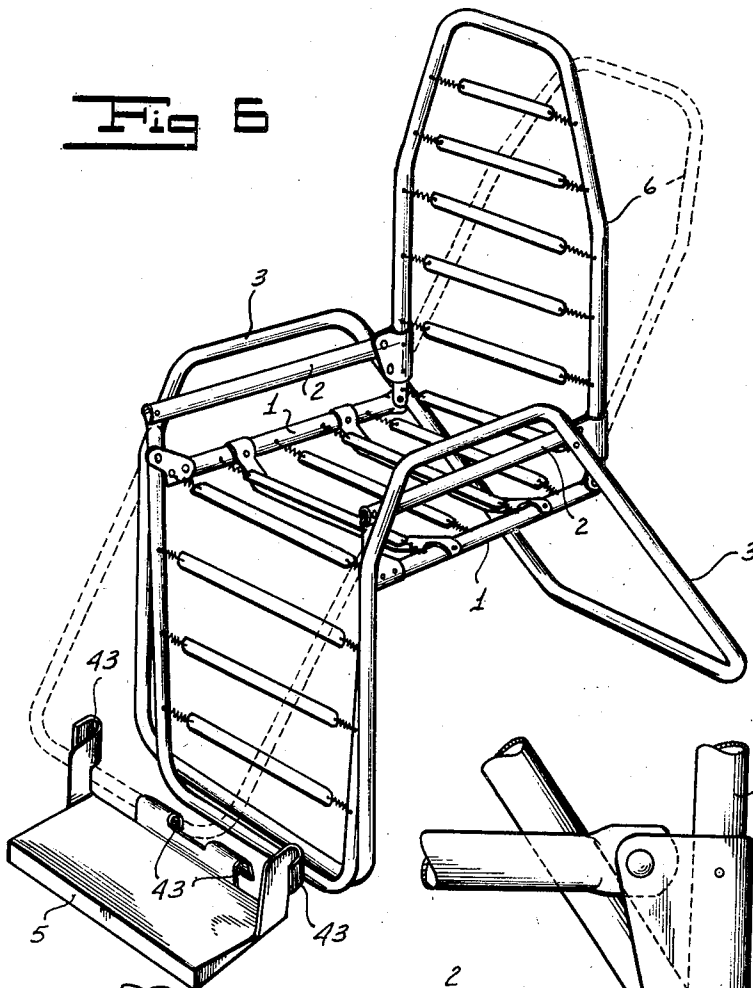


Fig 8

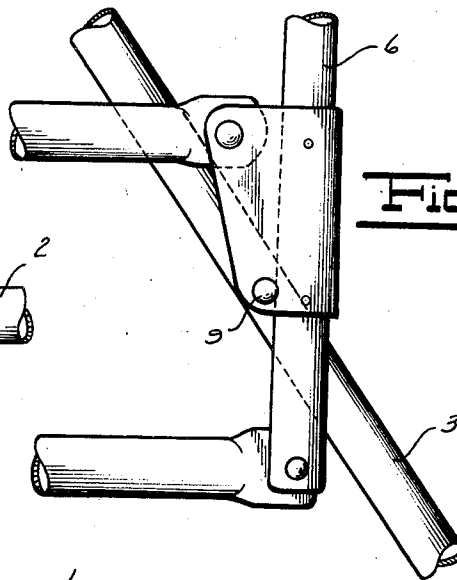
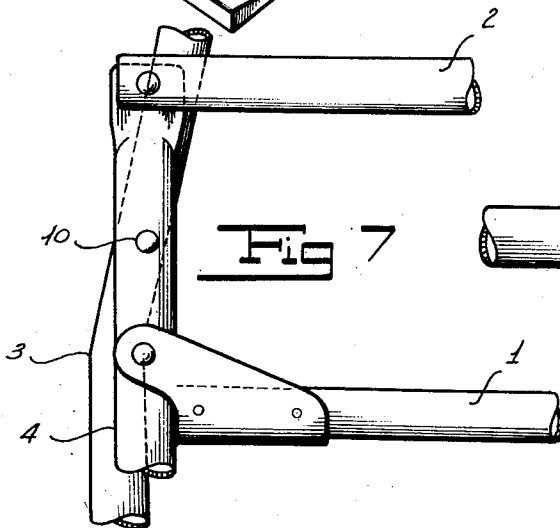


Fig 7



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UNITED STATES PATENT OFFICE

2,549,869

ADJUSTABLE CHAIR

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1 Claim. (Cl. 155—106)

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This invention relates to chairs wherein a person may sit in either an upright or reclining position and shift from one position to the other at will without leaving the chair.

This application is a continuation-in-part of application Serial No. 11,118, which has been formally abandoned.

The primary object of this invention is to provide a chair useful in hospitals for disabled veterans. Many of these ex-soldiers are crippled so badly that they cannot sit comfortably in an ordinary chair and when occupying conventional hospital chairs have to be helped when they desire to shift from an upright sitting posture into a reclining position, and vice versa. Most hospital chairs which permit of these two positions are of complicated character, requiring the services of an attendant.

The present invention, in contradistinction, provides a simple, economical and highly sanitary chair, easy to keep clean and capable of manipulation into its various positions of adjustment by a person sitting therein without appreciable physical effort.

Chairs adapted to partake of either sitting or reclining positions have heretofore been suggested, but for one reason or another they have not been found satisfactory for hospital use. They are either too complicated or they are so hard to manipulate that a cripple or person weakened by illness cannot shift positions without undue exertion. The chair of the present invention has been found by actual use in hospitals to meet all requirements of the ill and crippled because of its simplicity and ease of adjustment. The patient is well adapted to change position without harmful effort, for the balance, due to the particular characteristics of the construction, is such that the slightest movement on the patient's part will bring about the change of posture desired. This balance is accomplished through the particular shaping of the parts and placing of the pivots by which said parts are adapted to articulate for movement of the patient from a reclining to a sitting position, and vice versa, as will hereinafter be more fully explained.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and appended claim,

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when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate different practical embodiments of the invention, but the constructions therein shown are to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a diagrammatic side elevational view of primary elements of the chair of this invention.

Figure 2 is a side elevation of the preferred form of chair.

Figure 3 is a perspective view of such chair arranged so as to show the front and one side thereof. In this view, as in Figure 2, the cushions, with which the chair is ordinarily provided, are omitted.

Figure 4 is a view similar to Figure 3 but showing the chair as viewed from the opposite side and illustrating in addition a modified form of construction whereby the chair may be locked in any position of adjustment.

Figure 5 is a fragmental side elevation of the locking means illustrated in Figure 4.

Figure 6 is a perspective view showing a modified form of chair wherein a number of the chair parts are formed from bent tubing.

Figures 7 and 8 are fragmental side elevations of parts of the chair shown in Figure 6.

Figure 1 of the drawings shows the primary elements of the chair of this invention. In this figure, 1 indicates a seat bar, 2 a tie bar, and 3 a base frame. 4 designates a leg rest provided with a foot rest step 5, and 6 indicates a back rest. The base frame is provided at its back and intermediate its top and bottom with a forwardly extending bracket 7, while a correspondingly placed bracket 8 extends rearwardly from the front portion of the base frame. The bracket 7 carries near its outer end a pivot 9 while the bracket carries a pivot 10.

The lower portion of the back rest 6 is provided with an forwardly extending pivot plate 11 below which plate the back rest is curved forwardly at 17 and is secured at its lower end by a pivot 12 to the seat bar 1. That seat bar extends forwardly and its forward end is turned up, at 13, and permanently secured by a pivot 14 to the leg rest 4. The distance between the pivots 10 and

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14 is the same as the distance between the pivots 9 and 12.

The upper portion of the pivot plate 11 forwardly of the back rest carries a pivot 15 to which is secured the rear end of the tie bar 2, while the other end of this tie bar is secured by a pivot 16 to the upper end of the leg rest. The distances between the pivots 10 and 16 and the pivots 9 and 15 are the same, but said distances are somewhat less than the distance between the pivots 8 and 14 and 9 and 12. The four pivots 12, 15, 16 and 14 are thus placed, in effect, at the four corners of a parallelogram, although the seat bars 5 are not parallel to the tie bars 2.

It will be noted from Figure 1 that the leg rest 4 is substantially parallel to that portion of the back rest above the pivot, but that the lower end of the back rest is curved forwardly at 17 to carry the pivot 12. The base frame 3 extends appreciably above the tie bar 2 so as to form an arm rest at the side of the chair and the upper surface of this arm may be faced with leather, fibre, wood or any other suitable material or padded, as indicated at 18 in Figure 1, so as to be more comfortable to the user.

It will be understood that the elements shown in Figure 1 are duplicated for both sides of the chair and that corresponding elements are tied together by suitable transverse supports adapted to support the weight of the patient.

When a chair is so constructed, it will support a patient with the weight in remarkable balance so that the patient may, by the slightest effort, bring about adjustment of the chair from a sitting position to a reclining position or to an intermediate position according to his desire. The exact reason for this is not fully apparent, but it has been found to be true. The present chair is a result of numerous models and a great many tests and it is made as shown in Figure 1 in the manner specified because it is the only arrangement of parts which we have found to give accurate balance and ease of adjustment. It is for this reason that it has met with such universal commendation by all who have used it.

The preferred form of chair embodying this invention, as shown in Figure 1, is shown in Figures 2 and 3. In these figures, the two sides of the base frame 3 are made of flat metallic strips bent into the shape shown and they are secured together transversely by braces 19 and 20. The braces 19 are straight while the brace 20 is longitudinally curved to clear the patient and the moving parts.

Extending across the leg and back rests are transverse curved braces 21 and between the seat bars are curved braces 22. Also across these parts are resilient ribbons 23, the opposite ends of each of which are perforated for attachment with coil springs 24 which hook into holes in the seat bars, leg rest and back rest. Cushions are laid over these ribbons which constitute the body supports. These cushions are indicated in dotted lines by the reference character C. The foot support 5 is shown in Figures 2 and 3 as hinged to the bottom of the leg support 4 and the inclination of this foot support may be regulated by adjustment of slotted links 25 held in adjustment by bolts 26.

With the chair, as thus far described, the parts are at all times free for adjustment by the occupant. However, in Figures 4 and 5 I have shown a modified form of construction wherein the parts may be locked in any desired adjust-

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ment. In this showing the back rest 6 is provided at one side with a fixed pin 27 which projects laterally at the right hand side of the chair. In this construction the bracket 7 is in the form of a plate 7a somewhat larger than the bracket 7 shown in the preceding figures and on this bracket is mounted a pivot 28 which supports a ratchet 29, the slots 30 of which are adapted for cooperation with the pin 27.

To the ratchet is secured a stud 31 projecting through a slot 32 in the bracket plate 7a to permit of pivotal movement of the ratchet into and out of engagement with the pin 27. The stud 31 is connected by a link 33 to an operating lever

34. The lever 34 is pivoted at 35 and it extends upwardly through a slot formed in the horizontal flange 36 of an angle piece 37. The slot 38 of this angle piece has formed therein teeth or notches to lock the lever 34 in either of two positions of adjustment, one that wherein the ratchet is engaged with the pin and the other that wherein the ratchet is withdrawn from the pin. A compression spring 39 coiled around the pivot 35 between the head of the pivot and the lever 34 normally holds the lever in engagement with either notch in which it may be positioned. The upper end of the lever is provided with a handle 40 which the operator may grasp for the purpose of shifting the lever to engage or disengage the ratchet with the pin. When the ratchet is engaged with the pin, the parts of the chair will be locked in adjusted position. When disengaged from the pin, the ratchet will permit adjustment of the chair at the will of the occupant.

In the chair of Figures 4 and 5, the leg rest embodies upper and lower adjustable sections 4a and 4b, respectively, so that the rest may be shortened or lengthened to adjust the foot rest to the requirements of the occupant. Both of these sections are slotted and bolts 41 are passed through the slots to permit the sections to be locked in the desired position of adjustment. The chair in these figures, moreover, is provided with cushions which may be removed for cleaning and replaced thereafter. This chair is also provided with castors 42 so that the chair may be readily rolled from place to place. These castors may be swiveled or not as desired and they may be provided on all the chairs of this invention, if desired.

In Figures 6-8, the chair is shown as constructed in part from bent tubular stock. A chair so constructed is more applicable to uses other than hospital use, such as on a porch or patio. For such use, the step may be readily demountable and it is shown in these figures as formed from sheet metal with hooks 43 to detachably hook over the U-shaped leg rest of this particular chair.

The foregoing detailed description sets forth the invention in its preferred practical form, but the invention is to be understood as fully commensurate with the appended claims.

This case is a continuation in part of our application filed February 26, 1948, under Serial No. 11,118.

Having thus fully described the invention, what we claim as new and desire to secure by Letters Patent is:

A chair comprising: a firm supporting base having upstanding side members laterally spaced apart, a back rest positioned between said side members and pivoted in spaced relation to its lower end to said side members, a leg rest positioned between said side members and pivoted in

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spaced relation to its upper end to said side members, seat bars pivoted at their rear ends to the lower end of the back rest below the pivotal connections between the back rest and the side members and provided at their forward ends with upwardly and forwardly extending projecting portions pivotally connected to the leg rest below the point of pivoting between the leg rest and said side members, and tie bars the forward ends of which are pivoted to the upper ends of the leg rest and the rear ends of which are pivoted above the pivotal connection between the back rest and the side members on brackets rigid with the back rest.

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