May 25, 1948. H. D. MAYFIELD 2,442,303

INVALID'S CHAIR

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Fig. 1.

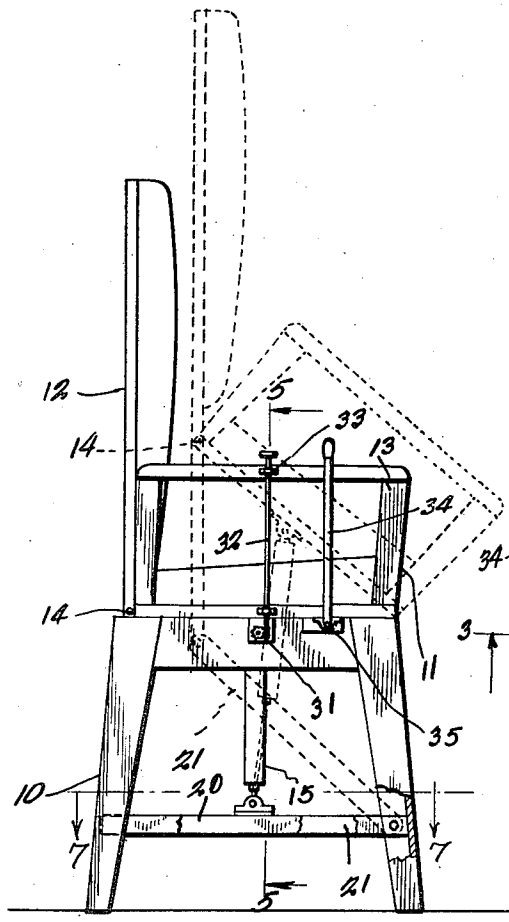
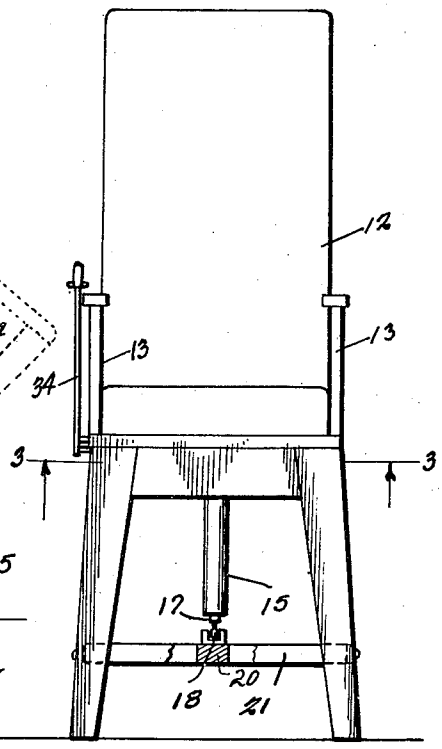


Fig. 2.



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Fig. 5.

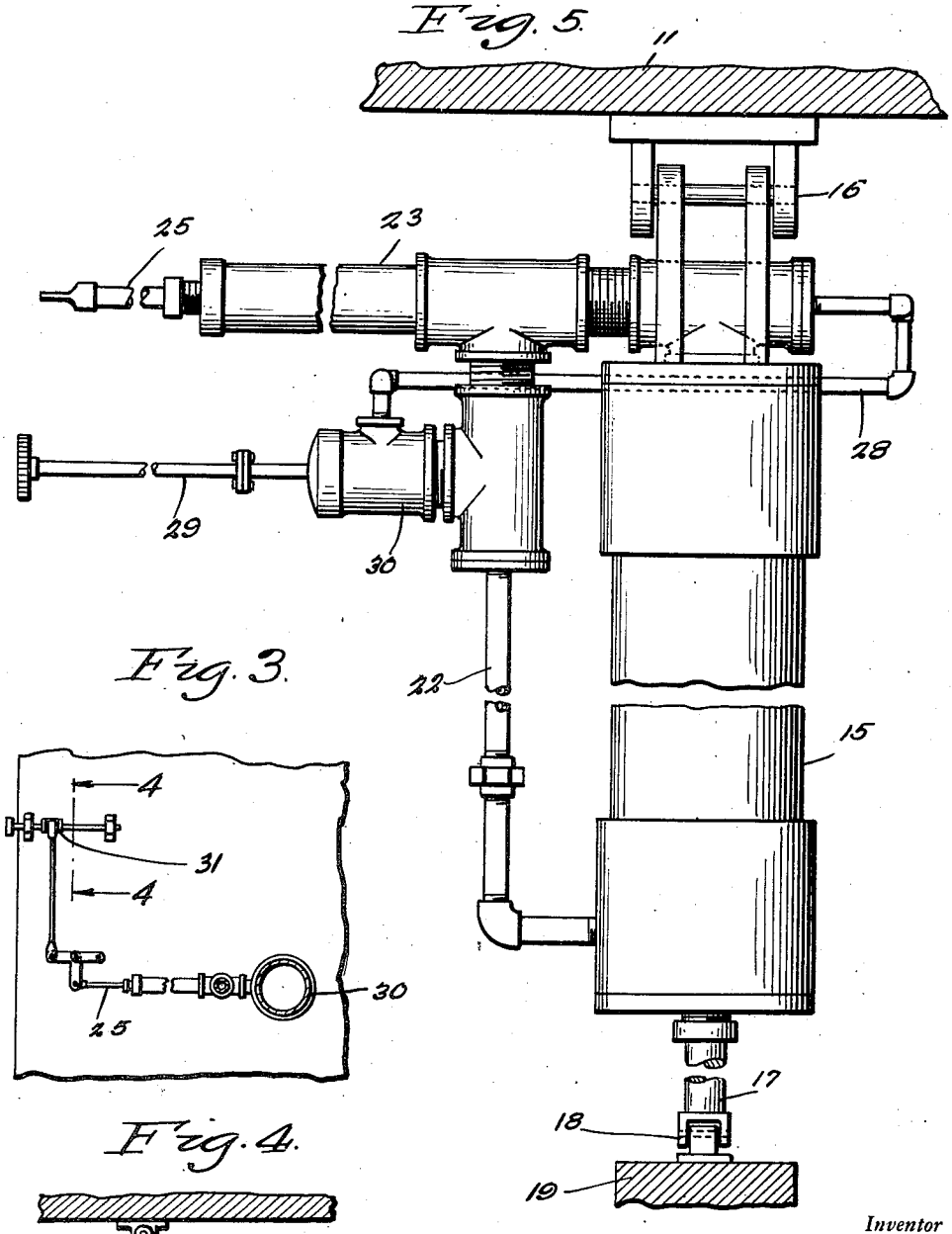
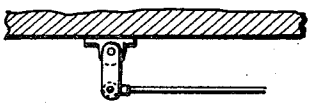


Fig. 3.

Fig. 4.



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Fig. 6.

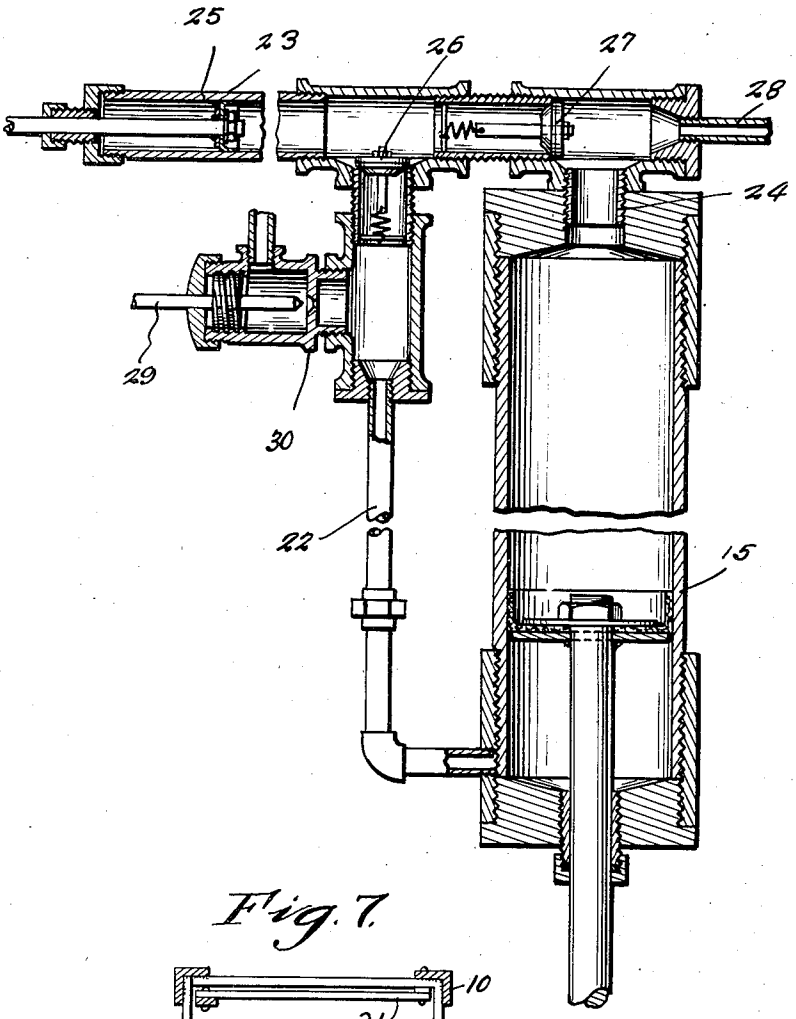
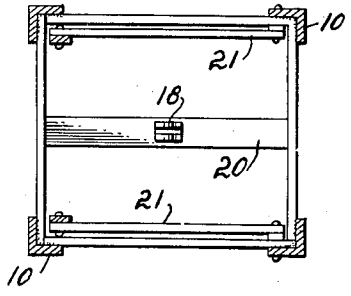


Fig. 7.



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Patented May 25, 1948 2,442,303

UNITED STATES PATENT OFFICE

2,442,303

INVALID'S CHAIR

Herbert D. Mayfield, Middlebourne, W. Va.

Application August 18, 1945, Serial No. 611,291

5 Claims. (Cl. 155—28)

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The invention relates to a chair construction, and more especially to an automatic lifting and seating chair.

The primary object of the invention is the provision of a chair of this character by means of which a user afflicted with muscular disorder can be brought to a standing position or a sitting position as desired without the assistance of another person.

Another object of the invention is the provision of a chair of this character having means whereby the seat and back are raised and lowered through a hydraulic lift unit located beneath the seat of the chair and regulated manually by the occupant whether seated or standing.

A further object of the invention is the provision of a chair of this character, which is simple in construction, reliable and efficient in operation, strong, durable, neat in appearance, readily and easily controlled, possessed of few parts, comfortable, and inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a side view of a chair constructed in accordance with the invention, showing by full lines the seat in normal lowered position and by dotted lines in a raised position.

Figure 2 is a front view of the chair.

Figure 3 is a sectional view taken approximately on a line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a fragmentary sectional view taken on the line 4—4 of Figure 3 looking in the direction of the arrows.

Figure 5 is an enlarged sectional view taken approximately on the line 5—5 of Figure 1 looking in the direction of the arrows.

Figure 6 is a longitudinal sectional view taken substantially through the center line of the portion of the apparatus shown in Figure 5.

Figure 7 is a sectional view taken on the line 7—7 of Figure 1.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings in detail, the chair constructed in accordance with the invention comprises a leg frame 10, a vertically swingable seat section 11, a vertically shiftable back section 12 and upstanding side arms 13, respectively. The seat section 11 is suitably hinged at the frontal portion thereof to the leg frame 10 for vertical swinging movement upwardly and in a forward direction or reversely thereto. The back 12 has horizontal hinge connection 14 to the rearmost portion of the section 11 and is shiftable in a vertical direction on the swinging of the seat section.

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Arranged below the seat section 11 is a hydraulically operated lifting jack 15 which has its piston cylinder connected by a pivot bearing 16 to the underside of the seat section 11 while the operating piston 17 of this jack 15 has pivotal connection 18 with a support 19 carried by a selected cross rung 20 of the leg frame 10. The back 12 has a pivotal linkage 21 with the leg frame 10 so that when the jack 15 is operated to lift the seat section 11 the back 12 will be shifted in a perpendicular direction, the vertical shifting thereof with the lifting of the seat section 11 being shown by dotted lines in Figure 1.

The hydraulic mechanism for the operation of the chair comprises a unit including a fluid pipe 22 which communicates with the lower portion of the cylinder of the jack 15 and also with a plunger barrel 23 which has communication at 24 with the upper portion of the cylinder of jack 15. The operation of the plunger 25 within the barrel 23 exerts fluid pressure on the lower part of the cylinder of the jack 15 through pipe 22 past a check return valve 26 and forces fluid through a check return valve 27 into the upper portion of the cylinder of the jack 15 so that the piston will be forced outwardly of the cylinder thus effecting the lifting of the seat and back of the chair to bring an occupant therein to a standing position. A by-pass tube 28 connects the barrel 23 with the pipe 22 and this by-pass lead is regulated by a manually operated needle valve 29 in a valve casing 30 next to the pipe 22. The valve 29 through worm gear connections 31 is controlled by a turning stem 32 vertically journaled in bearings 33 to one side arm 13 of the chair, while the plunger 25 is actuated by a throw lever 34 mounted at 35 beneath the seat section 11 of such chair. To lower the seat section and the back the fluid is admitted to the cylinder to move the piston thereof inwardly.

When the seat section 11 and the back 12 are raised the chair will stand substantially vertically on the leg frame 10, thus automatically standing the patient. Correspondingly, when the patient wishes to sit down, he or she leans back against

the seat and back while they are in a vertical position. Then the jack is regulated so that the seat section 11 and the back 12 will move to a lowered position against the fluid pressure in the cylinder, thus bringing the patient to seated position.

From the foregoing it will now be seen that there is herein provided a device accomplishing all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of the inventive concept, and as many modifications may be made in the embodiment herein shown and described it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

What is claimed is:

1. A chair of the nature described comprising a leg frame, a cross rung between the legs thereof, a shackle link pivotally secured adjacent one end of said cross rung, a vertically disposed back member pivotally mounted on the other end of said shackle link, a seat pivotally secured at each end to said back and said leg frame respectively and means pivotally secured to said cross rung and said seat at each end thereof for urging the said seat arcuately upward and the said back vertically upward.

2. A chair of the nature described comprising a leg frame, a cross rung between the legs thereof, a shackle link pivotally secured adjacent one end of said cross rung, a vertically disposed back member pivotally mounted on the other end of said shackle link, a seat pivotally secured at each end to said back and said leg frame respectively and means pivotally secured to said cross rung and said seat at each end thereof for urging the said seat arcuately upward and the said back vertically upward, said means comprising a hydraulic jack, manual control means on an arm of the

said chair for controlling the operation of said hydraulic jack.

3. A chair of the nature described comprising a leg frame, a cross rung between the legs thereof, a shackle link pivotally secured adjacent one end of said cross rung, a vertically disposed back member pivotally mounted on the other end of said shackle link, a seat pivotally secured at each end to said back and said leg frames respectively, a hydraulic jack pivotally secured to said cross rung and said seat at each end thereof, arms on said seat and hydraulic control means secured to one of said arms whereby upon actuation of the jack the said pivoted members are restricted in movement such that the back moves vertically and slightly in a horizontal direction while the seat is pivoted arcuately about the pivots on said leg frame.

4. The combination of claim 1, said urging means comprising a jack, means for selectively controlling the actuation of said jack.

5. The combination of claim 4, said jack actuation control means including a rod adjacent the said seat.

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