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CHAIR FOR USE OF INVALIDS AND AGED PERSONS

Filed Dec. 13, 1945

2 Sheets-Sheet 1

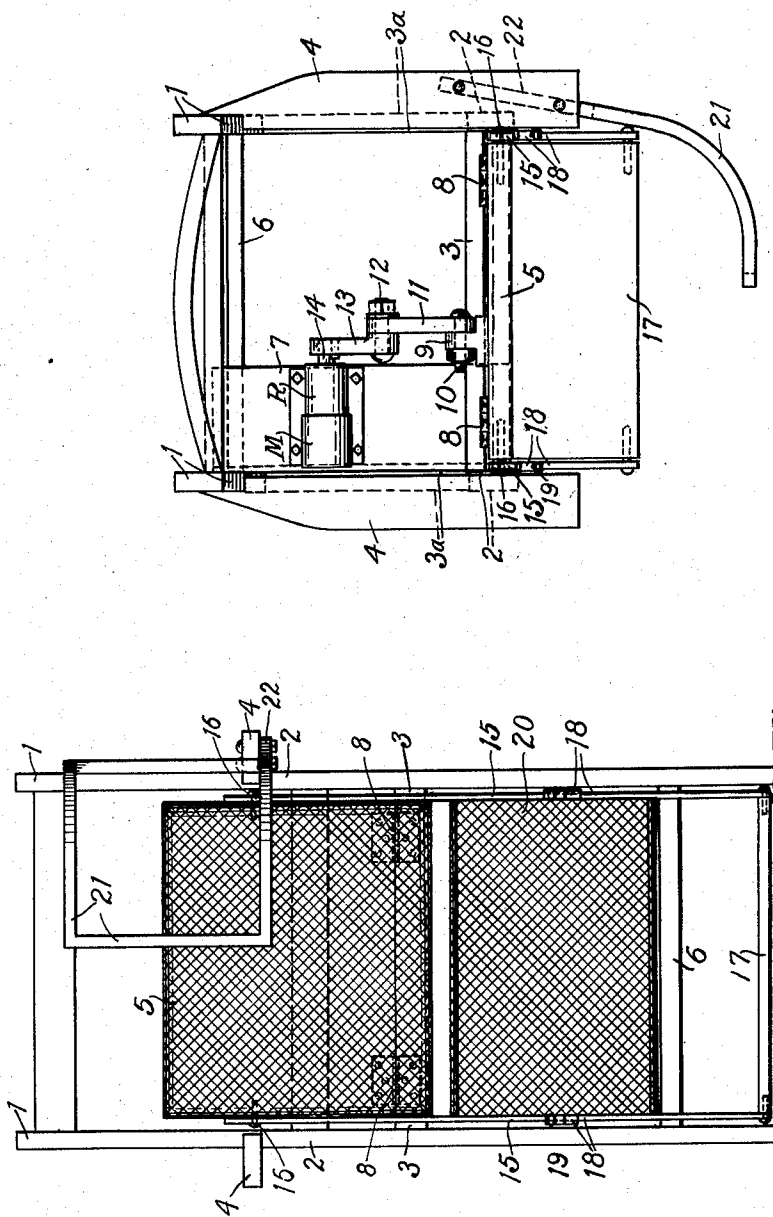


Fig. 2

Fig. 1

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2,550,593

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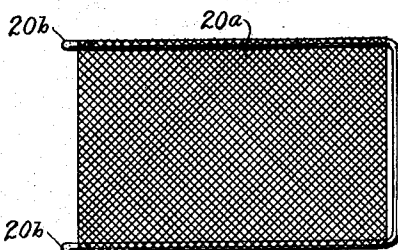
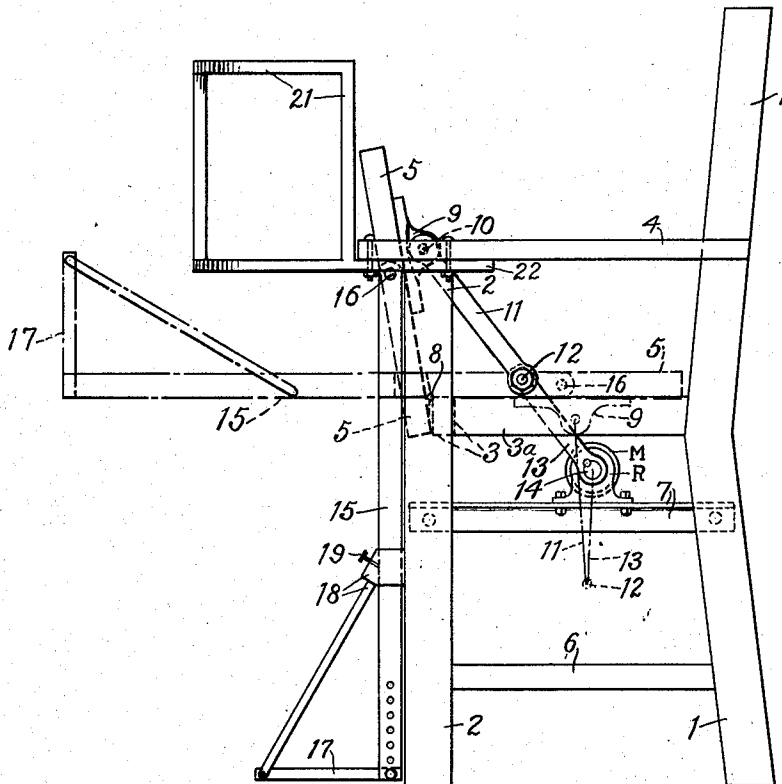


Fig. 4

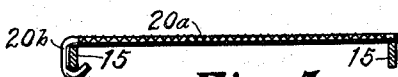


Fig. 5

Fig. 3

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UNITED STATES PATENT OFFICE

2,550,593

CHAIR FOR USE OF INVALIDS AND AGED PERSONS

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8 Claims. (Cl. 155—1)

1

This invention relates to chairs, and especially relates to an improved adaptable chair for use by invalids, convalescents or aged persons.

When any person is compelled to merely sit for a long time in a chair, that person becomes very tired and otherwise uncomfortable; and sometimes suffers pain because of lack of needed exercise and of retarded circulation.

Therefore: One object of this invention is to provide practical and effective means to support a person in standing position and in sitting posture, alternately, at will of the occupant or of the occupant's attendant or nurse.

Another object is to provide this chair with a chair-seat that is movable from its horizontal position whereon the occupant is normally seated, to a substantially vertical position where it constitutes a back-rest for the patient or occupant when standing on a platform which is secured to the chair-seat so it is movable approximately in unison with the chair-seat, to and from the horizontal and substantially vertical positions.

Another object of the invention is to provide the chair with means to support the occupant's lower-leg-portions in a horizontal position, while the occupant sits on the chair-seat, said means comprising a portion that is movable to permit the occupant's lower-leg-portions to hang down, or to be supported in vertical or inclined position by any extrinsic support such as a chair, stool or hassock.

Another object is to provide, in addition to the chair-arms of conventional form, a forwardly and upwardly projecting body-prop that is curved inwardly so as to prevent the trunk of the occupant from falling forward when the occupant is standing on the foot-rest or platform.

Another object of the invention is to provide effective and practical mechanical or electro-mechanical means to move said chair-seat to and from its horizontal and vertical positions at will of the occupant or attendant, and to secure the chair-seat in said vertical and horizontal positions.

Other objects and important features are pointed out or implied in the following description in connection with the accompanying drawings in which:

Fig. 1 is a front elevation of the adaptable chair having its seat, leg-rest and platform adjusted to their proper relation for supporting and propping a person if he were standing on the platform.

2

Fig. 2 is a top plan view of the adaptable chair having its elements approximately in the relation shown in Fig. 1.

Fig. 3 is a left-side elevation of the adaptable chair having its elements approximately in the relation shown in Figs. 1 and 2, in full lines, and in the normal seating position as indicated in dot-dash lines; the lower near-vertical dot-dash lines indicating the longitudinal centers of the seat and motor connecting elements when they sustain the seat in its horizontal position.

Fig. 4 is a top plan view of an adjustable and removable leg-rest that can be used in lieu of the fixedly united leg-rest shown in Fig. 1.

Fig. 5 is an edge-view of the leg-rest shown in Fig. 4, and in addition, cross-sections of the pivotally mounted spaced bars that support the leg-rest and the platform.

Referring to these drawings in detail, in which, similar reference-numerals refer to similar parts in the several views, the invention is described in detail as follows:

A somewhat conventional form of basal chair-frame or supporting structure comprises rear uprights 1, front uprights 2, a horizontal front beam 3, horizontal side-beams 3a and arm-rests 4; the right and left elements or horizontal beams 3a being spaced from one another sufficiently to permit the seat 5 to enter this space to a slight extent; or, if the uprights 1 and 2 are sufficiently well braced by the arms 4, rungs 6 and motor-support 7, these right and left elements 3a may be entirely omitted, for the seat 5 does not depend on them for support, it being hinged at 8 to the front beam 3. A pivot-bearing 9 is secured to the normally lower side of the seat or chair-seat 5, a pivot 10 connects this pivot-bearing to a link 11, a pivot or bolt 12 connects this link to an arm 13 that is fixedly united with a shaft 14 of any appropriate form of speed-reducer R, and this latter is appropriately connected to a motor M that is supported on the beam or support 7 that is appropriately secured to the front and rear uprights 2 and 1. This motor may be either electric, hydraulic, or compressed air type, and may be either reversible or continuously operable in either direction; so thru medium of the reducing member R, it swings the arm 13, its pivot 12, and the link 11 from the full-line positions (of Fig. 3) to the dot-dash-line positions where they support the middle and rear parts of the chair-seat 5 in its horizontal position until the motor is again operated to return the elements 13, 12, 11, 10, 9 and 5 to their full-line positions.

3

Means to support the feet and legs of the chair's occupant are provided as follows: Two normally horizontal supporting bars or strips 15 are respectively pivoted at 16 to the right and left edges of the chair-seat 5, at points near the rear, or rearward of the central part of the chair-seat and are adjustable with the chair-seat from horizontal to vertical, as seen in Fig. 3. A platform 17 is adjustably secured to the normally front ends or foot-supporting ends of these elements or bars 15; a conventional form of adjustable means being shown at lower-left in Fig. 3, so the platform can be moved to different positions along the strips or bars 15 to compensate for persons' legs of different lengths. This adjusting means includes elements 13 and 19 that are movable along the strips or bars 15, the elements 19 being set-screws that are manually operated. A fabricated wire member or leg-supporting sheet 20 is shown in Fig. 1 as being fixedly united with the strips or bars 15; but in lieu of this fixed supporting element, an adjustable and removable leg-supporting element 20a (see Figs 4 and 5) is preferable because the occupant's lower leg-portions may need to hang down from the knee-joints occasionally, frequently or continually while the occupant sits on the chair-seat 5; when necessary or desirable that the lower leg-portions shall rest horizontally, the hooked end-portions 20b of the leg-rest or leg-supporting element 20a can be engaged easily and quickly with either of the strips or bars 15, and swung into the horizontal position of Fig. 5 where the edge opposite to the hooks rests on the adjacent strips or bars 15. This element 20a can be slid along the strips 15 to any appropriate and comfortable position with respect to the legs of the occupant; and one or more pillows or cushions can be placed on this leg-supporting element when desirable to elevate the lower leg-portions or otherwise contribute to their comfort.

From the foregoing description, it may be seen that as the chair-seat 5 is swung downward and rearward from its full-line position, the pivots 16 carry the attached ends of the strips or bars 15 therewith, while fulcrum-points of the rear edges of these strips or bars come to rest against the front beam 3, and then the leg-rest and platform are swung upward to the horizontal position; so, if a person be standing on the platform at beginning of this operation, such person will be seated on the seat 5 at the finish of this operation; and, conversely, when desirable to move the occupant from the sitting position to the standing position, the actuating means 9 to 19, R and M, are caused to move the seat 5 and supporting strips or bars 15 to their substantially vertical positions, so the occupant's feet will then rest on the platform 17 while his middle-rear part rests against and is supported or braced by the element 5. When the strips or bars 15 are moved from horizontal position, their normally right ends become their upper ends, and their normally left ends become their lower ends; so the terms "upper and rear," "front and lower" are applicable to the ends of these strips or bars 15.

For supporting and bracing the occupant against undue forward motion when standing on the platform, an element that comprises a supplemental arm-rest and guard and prop 21 is provided, its lower end having a rearwardly projecting arm 22 secured on the lower side of either one of the arm-rest 4, on the left one as here illustrated.

While describing this form of my invention

4

quite specifically, I have no intention to limit my patent protection to these specific details of construction and arrangement, for the invention is susceptible of numerous changes within the scope of the inventive ideas as implied and claimed.

My invention is claimed as follows:

1. A basal chair-frame that includes front uprights, rear uprights, and a substantially horizontal front beam united with the front uprights; in combination with a chair-seat hinged to said front beam in a proper relation to be movable from a substantially horizontal position to a substantially vertical position substantially over said front beam so as to form a back-rest for a standing patient or other person who leans backward thereagainst, a supporting structure that includes normally horizontal spaced bars having normally horizontal front and rear end portions, a platform extending from one to the other of said front end-portions and secured thereto, said normally rear end-portions of said bars being pivotally connected respectively with the right and left edge-portions of said chair-seats in a proper relation to be movable with the chair-seat from a substantially horizontal position to a substantially vertical position, and means operable to cooperate with said front beam for supporting said chair-seat alternately in its substantially horizontal position and in its substantially vertical position.

2. In the combination defined by claim 1, said means comprising a pivotally connected arm and link operatively connected respectively to said supporting structure and chair-seat and operable to lift the chair-seat to its substantially vertical position and to prevent sudden falling of the chair seat to its substantially horizontal position.

3. The structure defined by claim 1, and means normally secured to said supporting structure for supporting the lower leg-portions of a person who is sitting on said chair-seat.

4. The combination defined by claim 1, and means attachable to and removable from said supporting structure for supporting substantially horizontally the lower leg-portions of a person who is seated on said chair-seat.

5. The combination defined by claim 1, and means to secure said platform in a number of adjusted positions along said supporting structure so as to compensate for different leg-lengths of occupants of said chair-seat.

6. The combination defined by claim 1, arm-rests united with said front and rear uprights, and a prop secured to one of said arm-rests and projecting forwardly and being inwardly curved to a point in front of the middle portion of said chair-frame.

7. The combination defined by claim 1, and leg-supporting means comprising an attaching edge-portion and an opposite edge-portion and including hooks at said attaching edge-portion, said hooks being normally attached to one of said spaced bars in a proper relation to position said opposite edge upon the other one of said spaced bars, said hooks being of a proper form to prevent removal of the leg-supporting means when in the position to contact with both of said bars, but adapted to permit said opposite edge to be moved away from said other one of the bars and then to permit said hooks to be disengaged from the adjacent one of said bars.

8. The combination defined by claim 1, the last said means comprising a rotary shaft, an arm secured to and extending radially from said

2,550,593

5

shaft, and a link pivotally connected to said arm and to said chair-seat at a point considerably spaced from said front beam.

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