Jan. 23, 1951 F. R. RUBY 2,539,034

CHAIR FOR INVALIDS OR THE LIKE

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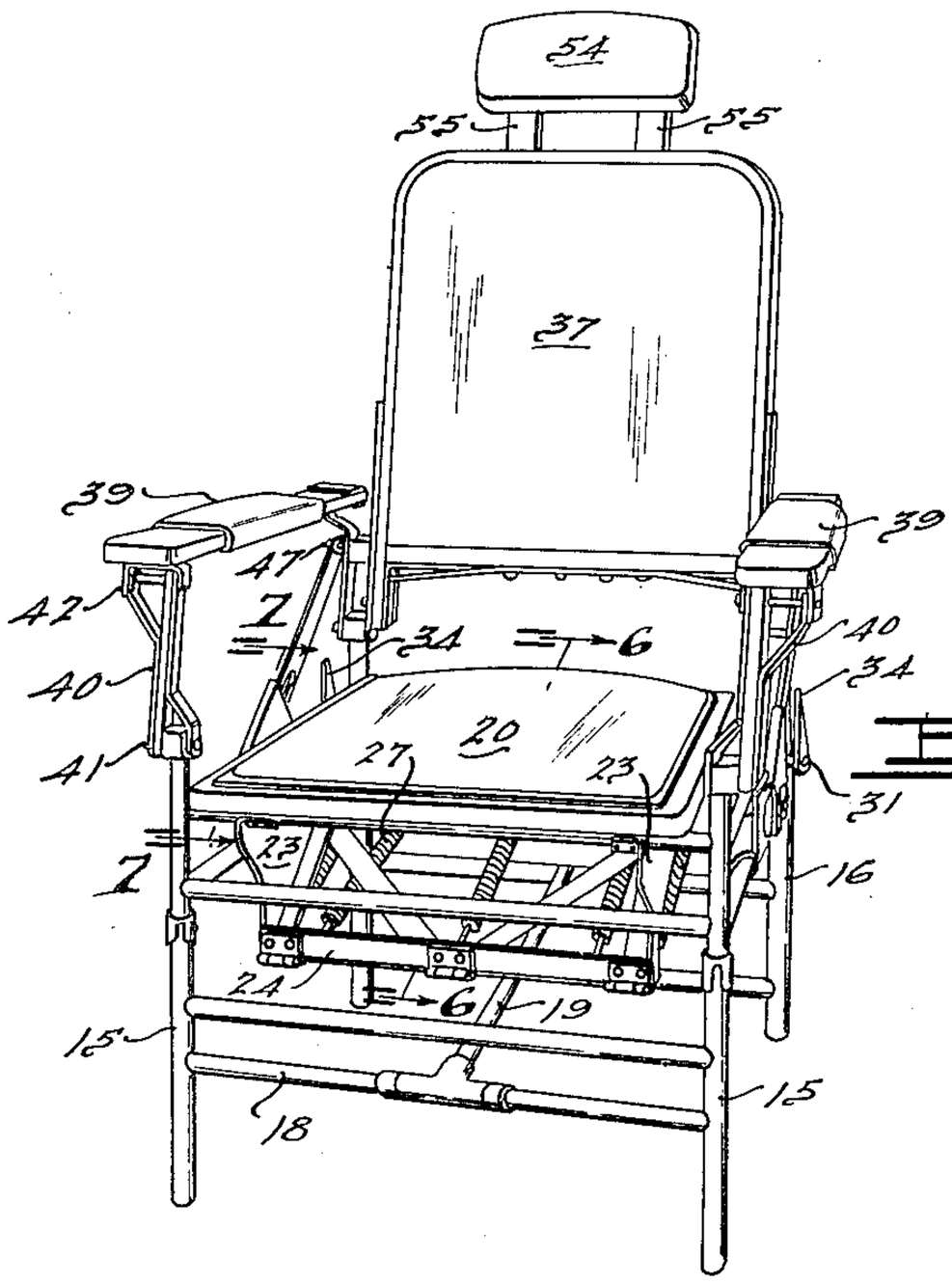

FIG. 1.

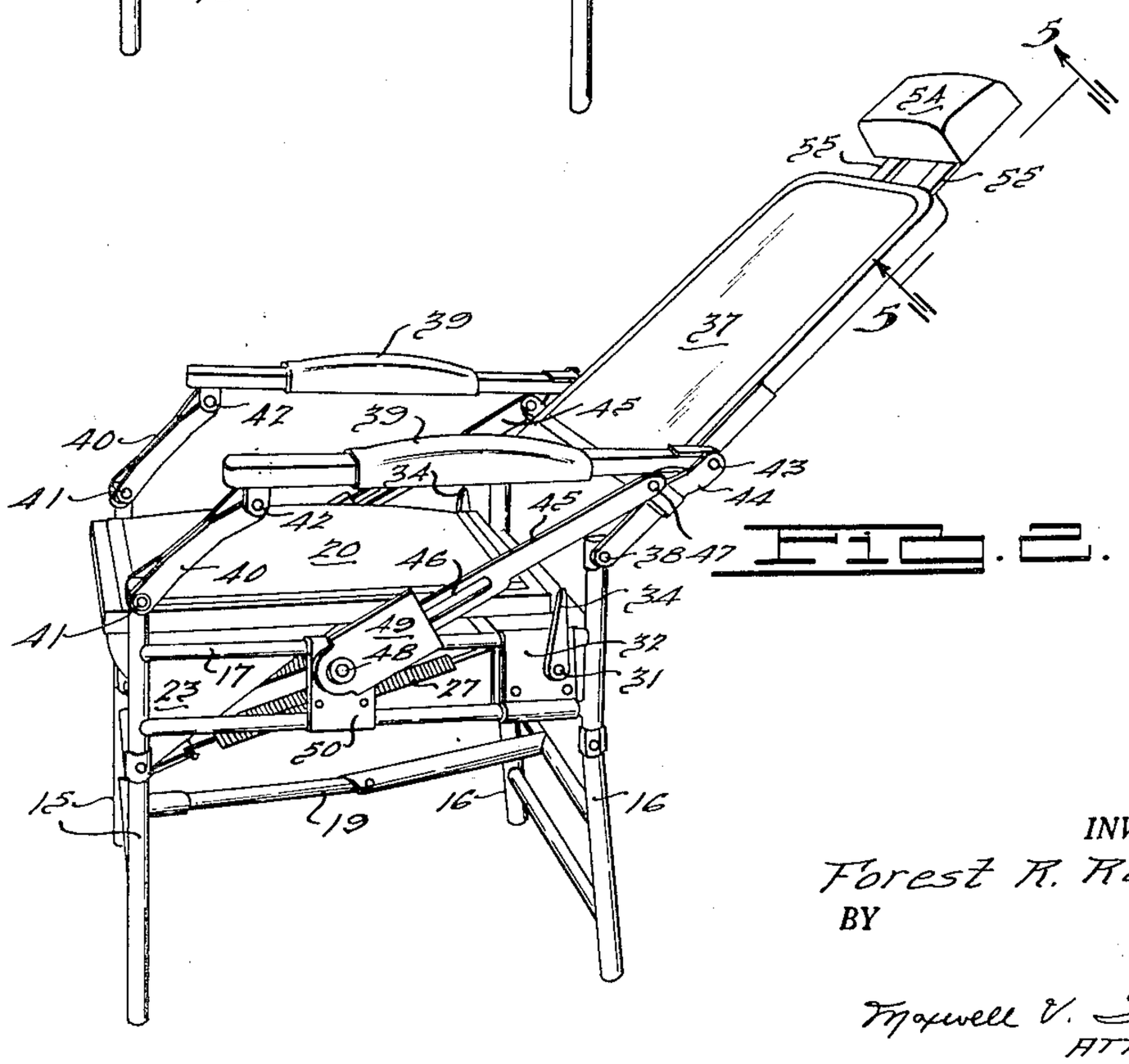

FIG. 2.

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FIG. 3.

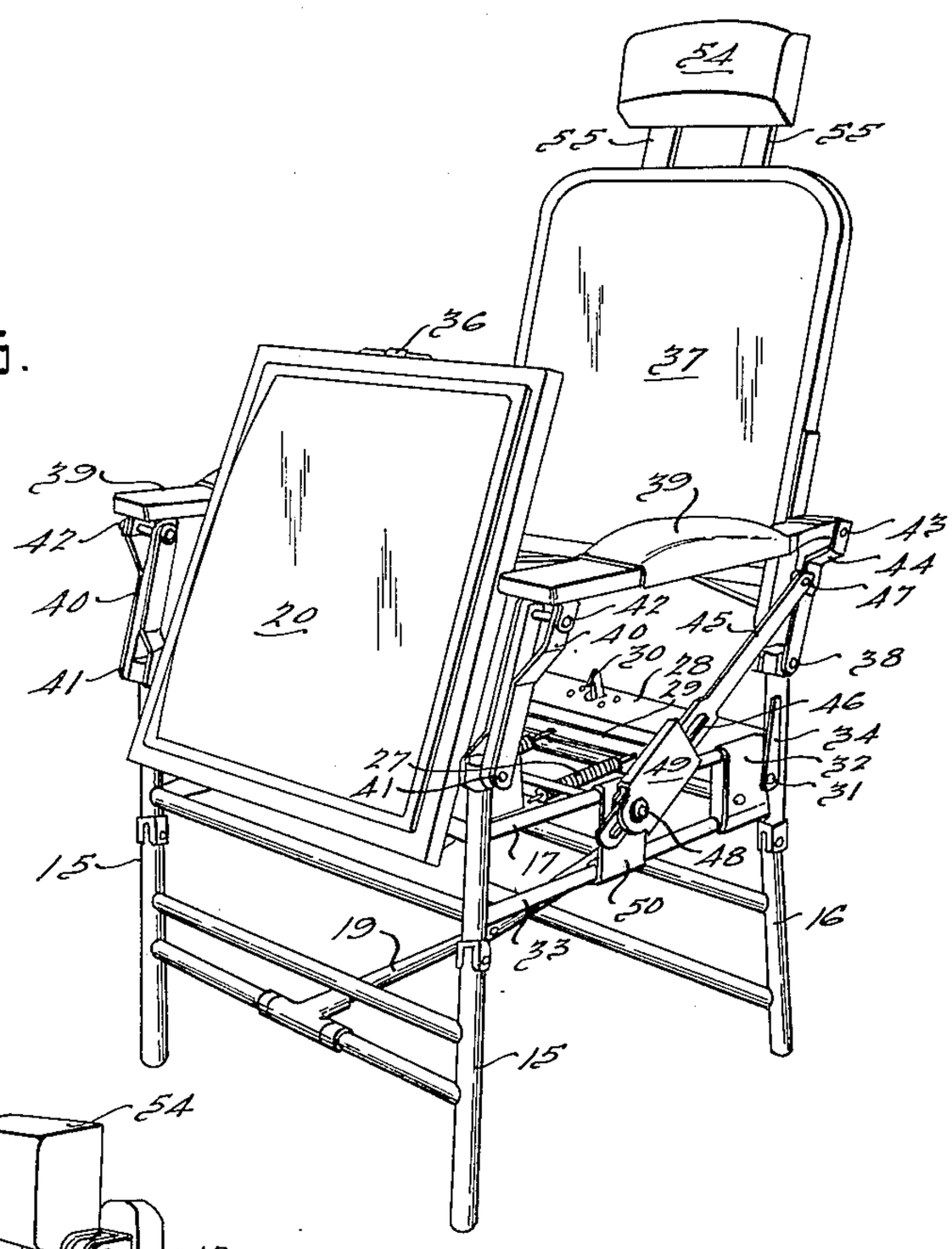


FIG. 4.

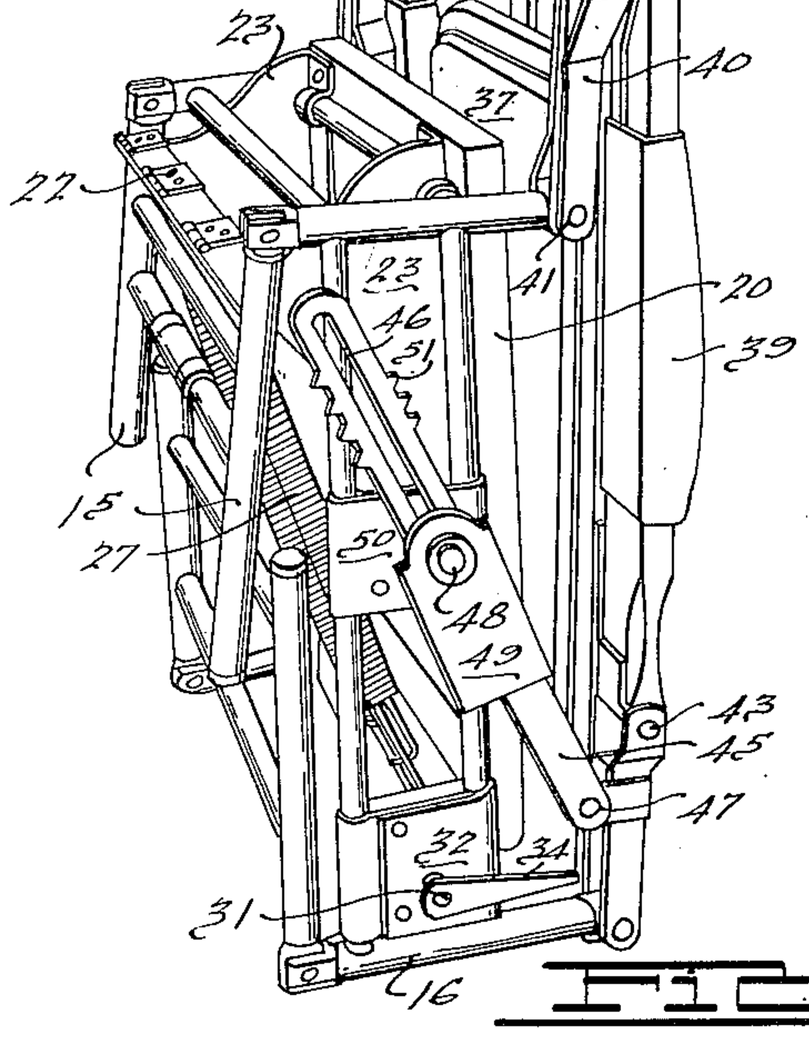
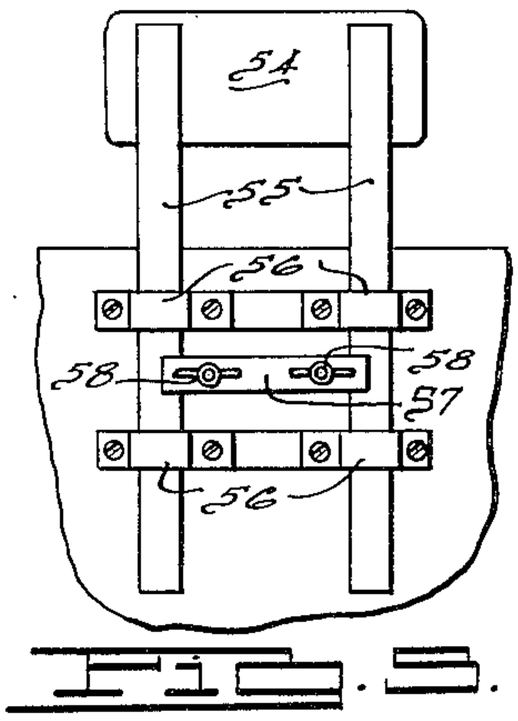


FIG. 5.



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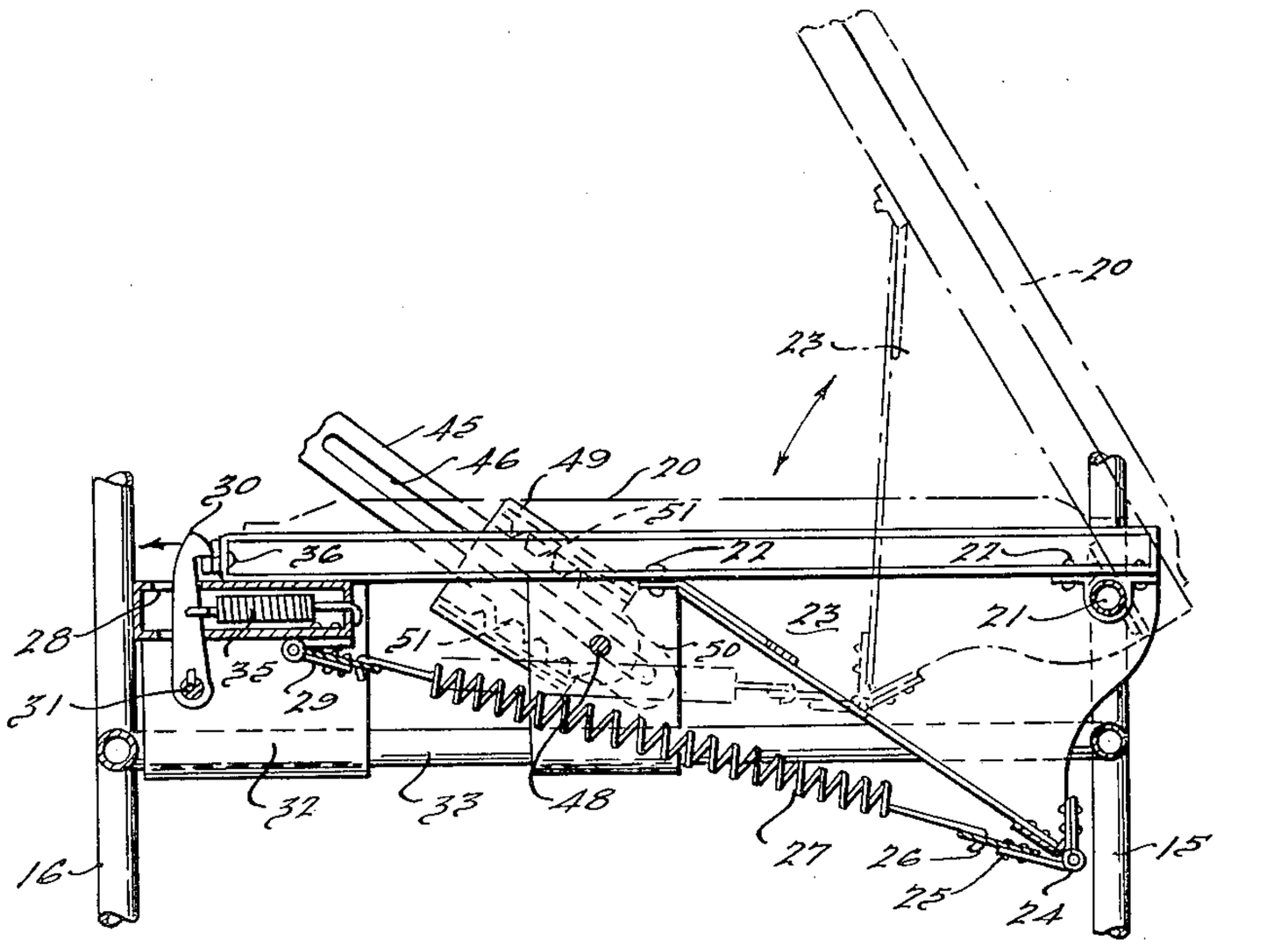

FIG. 6.

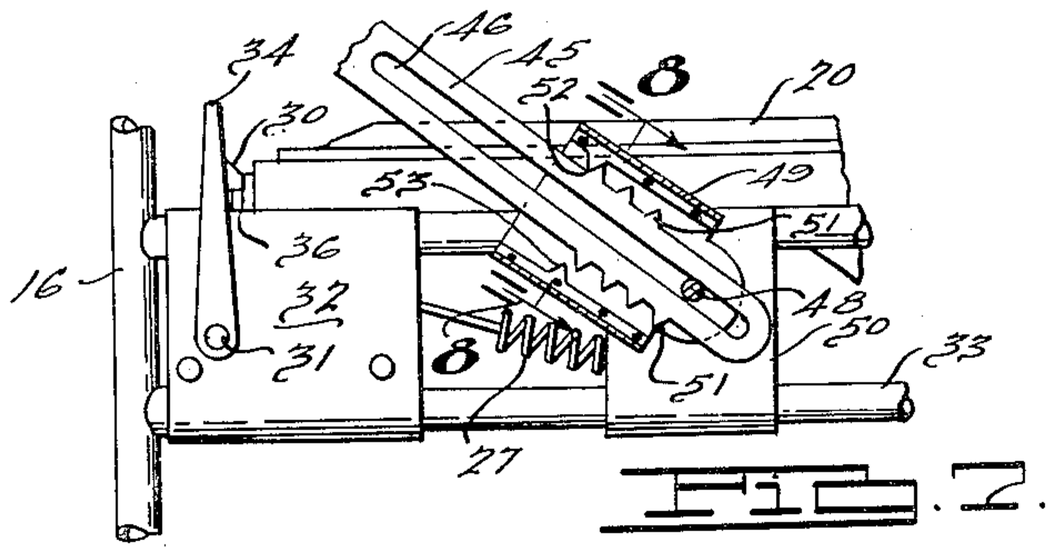

FIG. 7.

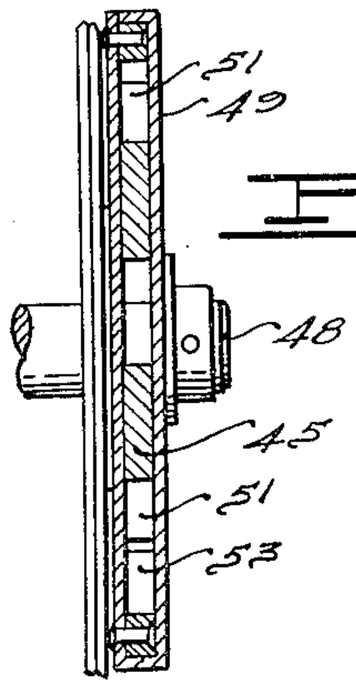

FIG. 8.

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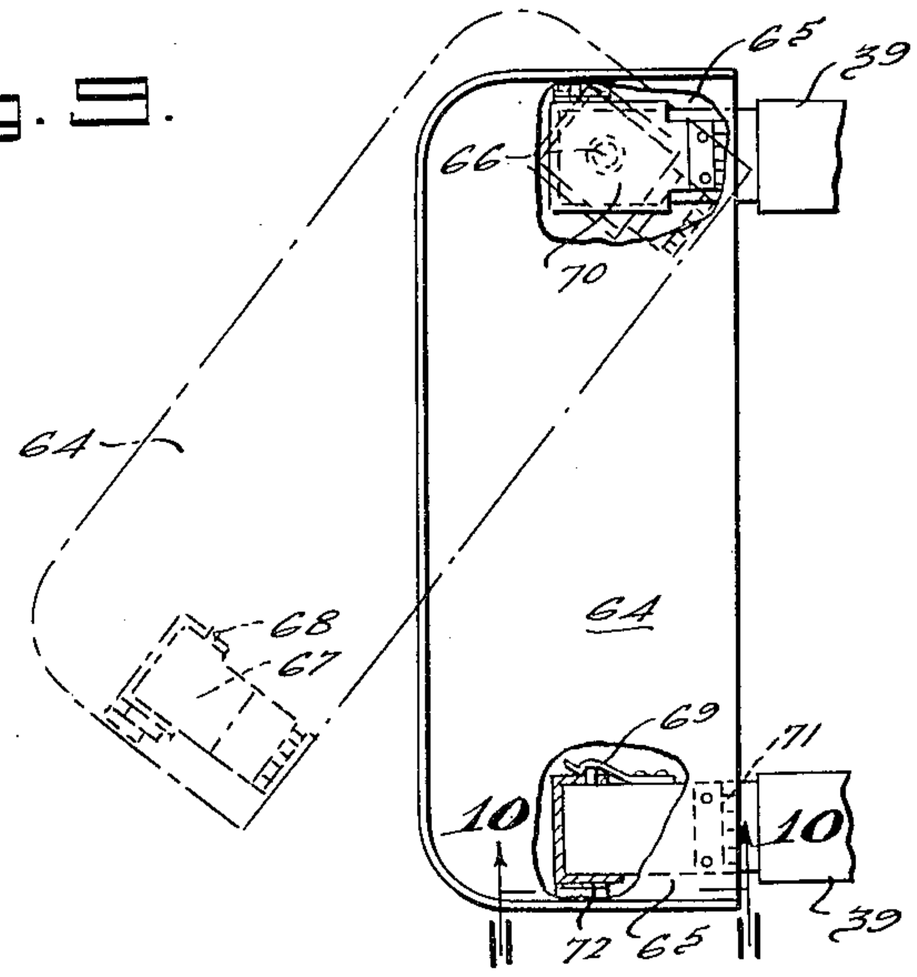
Fig. 9.



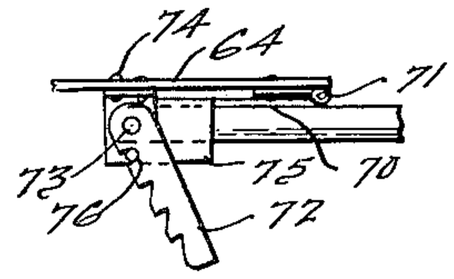


Fig. 10.

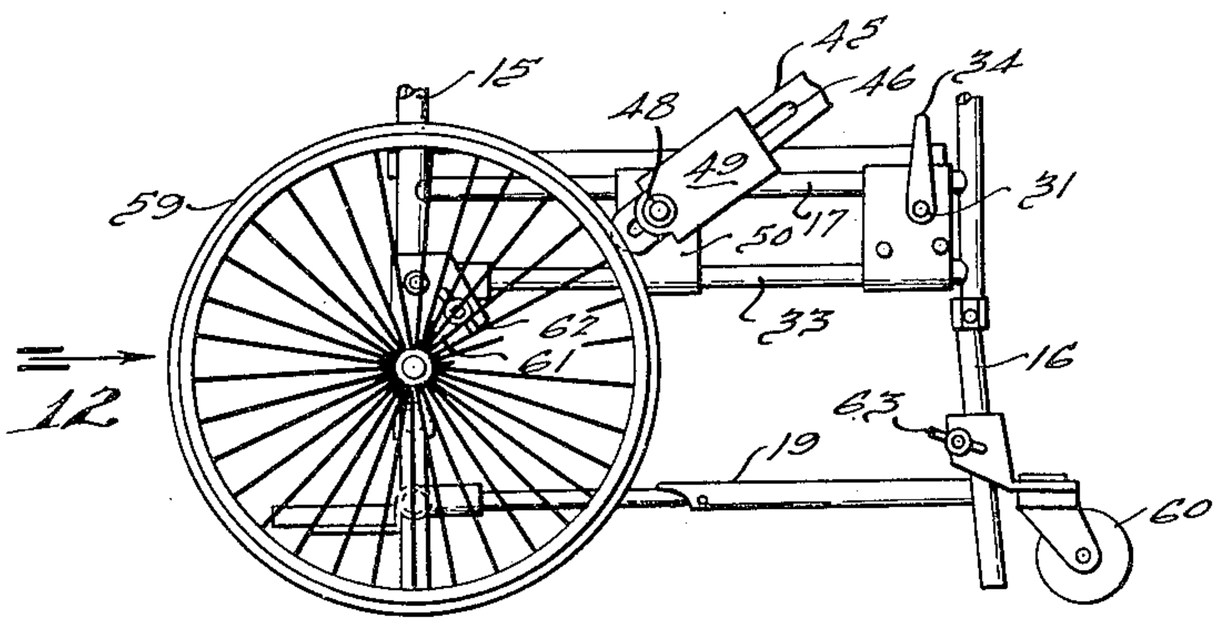


Fig. 11.

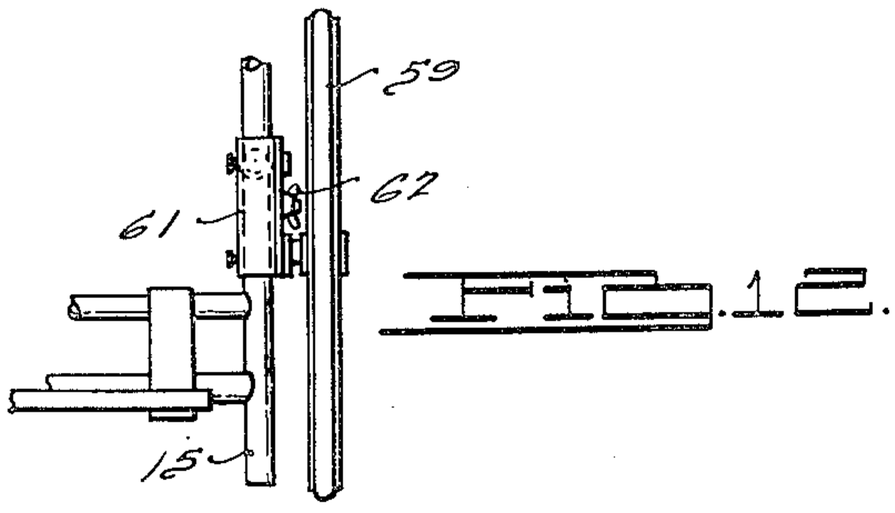


Fig. 12.

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UNITED STATES PATENT OFFICE

2,539,034

CHAIR FOR INVALIDS OR THE LIKE

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Application September 23, 1948, Serial No. 50,808

4 Claims. (Cl. 155—28)

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This invention relates to chairs, and more particularly to a new and improved type of chair for use by invalids, or the like, where it is of great advantage to aid the user in gaining his feet from a sitting position. A great many invalids find it necessary to receive help when they wish to rise from a sitting position, and if this help is not forthcoming from a nurse or companion, some type of hanging support is necessary to enable the invalid to gain his feet.

With the instant invention the above problem is overcome, the invalid having at his command means whereby he may instantly rise from a sitting to a standing position by simply releasing the chair bottom, which in turn acts as a support to force the occupant of the chair from a sitting to a standing position.

The principal object of the present invention is to provide a new and improved chair in which is provided means for elevating the bottom of the chair to aid the user in rising therefrom.

Another object of the invention is to provide a new and improved chair having incorporated therein means for adjusting the angularity of the back of the chair.

A still further object of the invention is to provide a new and improved chair so designed that detachable wheel members may be quickly secured thereto so that the chair may be propelled from place to place by the user.

Another object of the invention is to provide a new and improved chair that may be quickly folded for shipping or storing.

The above and other objects of the invention will appear more clearly from the following more detailed description, and from the drawings, wherein:

Fig. 1 is a perspective view of the chair showing the seat member in its normal position.

Fig. 2 is a perspective view of the chair showing the back member in an inclined positon.

Fig. 3 is a perspective view of the chair showing the seat member elevated.

Fig. 4 is a perspective view of the chair folded ready for shipment or storage.

Fig. 5 is a view taken substantially on line 5—5 of Fig. 2 from the rear showing the head rest construction.

Fig. 6 is a cross-sectional view taken substantially on line 6—6 of Fig. 1.

Fig. 7 is a sectional view, partly in elevation, taken substantially on line 7—7 of Fig. 1, showing the mechanism for holding the back of the seat in a different position.

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Fig. 8 is a section taken substantially on line 8—8 of Fig. 7.

Fig. 9 is a plan view of the movable shelf member.

Fig. 10 is a section taken substantially on line 10—10 of Fig. 9.

Fig. 11 is a modification of the chair showing removable wheels on same; and

Fig. 12 is a section taken substantially on line of the arrow 12 in Fig. 11.

Referring now to the drawings, the chair per se is constructed of tubular material at its base, for lightness and compactness, while the upper portion, i. e., the arms and back are constructed of flat bar material, such as bar steel to compensate for the many moving parts when using the chair as such, or when folding the same for shipment or storage. The numeral 15 designates the front legs of the chair, while the numeral 16 designates the rear legs of same, the legs being identical in construction. The numeral 17 designates a transverse top supporting member which acts to tie the front and rear legs of the chair together, while the numeral 18 designates the lower cross members used to tie the lower portion of the front and rear legs of the chair together and give additional support and strength to the chair. An additional supporting cross member 19 is provided, the same giving additional support and strength to the front and rear legs of the chair. A seat member 20 is hingedly connected, at its forward edge, by means of hinges which are secured to a transverse rod member 21 supported by means of front leg members 15. Rigidly supported at the forward under side portion of seat 20, as by means of bolts 22, are a pair of opposed downwardly projecting substantially rectangularly shaped plates 23, Figs. 1 and 6. A transverse V-shaped bar 24 is supported by means of the lower portion of plates 23, one side of said bar 24 extending outwardly from said plates, as at 25, the same having therein a plurality of spaced holes 26, adapted to receive one end of a coil spring 27. A flat transverse plate member 28 is provided at the top back portion of the chair, the same acting as a rest for the back portion of seat 20, Fig. 3, said plate member 28 having secured thereto a V-shaped angle member 29 which in turn contains a plurality of holes to receive the other end of coil spring 27. A catch member 30 is provided to hold the rear edge of seat member 20 in an horizontal plane by contacting a projecting member 36 secured to seat 20, as shown best in Fig. 6, the same being keyed to shaft 31, said

shaft being journaled in a pair of opposed side housing plates 32 which in turn are supported upon side supporting members 17, 33. A pair of seat catch control levers 34 are secured to the ends of rod 31 and a small coil spring 35 has one end thereof secured to catch 30 and the other end secured to plate 28 to normally hold catch 30 in the locked position shown in Fig. 6.

A back member 37 is provided, the same being pivotally mounted upon rear leg members 16 by means of pins 38. A pair of arm members 39 are provided, the same being supported by members 40 which are pivotally affixed to front chair legs 15 by means of pins 41 and the upper portion of support 40 being pivotally secured to arm members 39 by means of pins 42 which pass through flanges on the front end of arm members 39 provided therefor. The rear portion of arm members 39 is secured to back member 37 by means of pins 43, which pins also pass through a connecting link member 44, the lower portion of which is held in place by means of pin 38. To adjust the angularity of back member 37, to suit the user of the chair, there is provided an adjusting mechanism comprising a bar 45 having a longitudinal slot therein 46. One end of said bar 45 is pivotally secured to link member 44 by means of pin 47, the lower slotted portion of said bar member 45 being adapted to receive a rod member 48 which passes through and is keyed to a hand-grip member 49, as shown in Fig. 3. Rod 48 passes transversely to the other side of the chair proper where it passes through slot 46 in bar member 45, these members being identical on each side of the chair. To allow for rotation of rod 48 there is provided a pair of opposed supporting members 50 held rigid between cross chair supporting means 33, 17. The back adjusting means comprises a plurality of projections or teeth formed on the outside edges of slotted bar 45, Figs. 6 and 7, and a projection 52 formed on one side of hand-grip member 49 and a similar projection 53 formed on the other side of said grip member.

A head rest 54 is provided, the same being adjustable, as shown in Fig. 5. Supporting members 55 being formed to slidably engage strap members 56, which in turn are fastened to the back of back member 37. A stop means 57 to secure the head rest 54 at the desired height is provided and comprises bar 57, the end of which partly overlaps supporting member 55 sufficiently to force said supporting members against the back of the chair to prevent movement of said supporting members 55. To tighten the bar member 57 there is provided a pair of wing nuts 58.

When it is desired to convert the chair shown in Figs. 1 through 4 inclusive, into a wheel chair, so that the user may move the same from place to place, detachable wheels 59, 60 are provided, Fig. 11. The large front wheels 59 are secured to front chair legs 15 by means of a triangularly-shaped bracket member 61 which fits over the leg member and is held securely thereon by means of wing nut 62. The rear wheel bracket 60 is a single unit that clamps upon rear chair legs 16 and is held securely thereon by tightening wing nut 63. The front and rear wheels are secured to the chair legs so that the chair proper is supported above the floor level and may be rolled about when desired.

To provide means so that an invalid may eat in the chair, and also use the same tray supporting member for an adjustable reading board, there

is provided a detachable tray member 64 which has provided on the under side thereof sleeve members 65 adapted to engage the ends of chair arm members 39 and slide over same to hold the tray in place upon the chair arms. The tray is provided with a pin member 66 so that it may be swung in an horizontal plane to allow the user to get in and out of the chair when the tray is attached. To lock the tray there is provided a locking member 67 adapted to telescopically slide within sleeve member 65 until projection 68 on locking member 67 engages spring catch 69, which tends to hold the tray in place. To adjust the elevation of tray 64 for reading purposes the plate 70, which in turn holds pin member 66, is hinged, as at 71 to allow tray 64 to be raised or lowered, Fig. 10. A notched tray supporting member 72 is pivotally secured to the under side of tray 64 as at 73 through flange member 74 secured to tray 64. A downwardly extending flange member 75 is secured to plate member 70, the same having thereon a pin 76 adapted to receive the selected notch on member 72.

The manner in which the chair operates is as follows:

The chair, as shown in Fig. 1, is set in what may be termed its normal position where the user wishes to sit in the chair as one would in the living room chair used in a home. When the user wishes to elevate seat 20 and be aided from the chair, he has simply to push backward on lever 34, an identical lever member being provided on each side of the chair, and inasmuch as the levers are mounted on rod 31, which in turn has secured thereto catch member 30, catch member 30 is thereby moved against spring 35 until it is disengaged from projection 36 on back of seat 20. The front portion of seat 20 is hinged to rod 21 and a plurality of coil springs are interposed between bar 24, which connects triangularly shaped opposed projections 23 on the bottom of seat 20, and cross plate 28 at back of chair, said springs tend to normally tilt seat 20 upwardly, as shown best in Figs. 3 and 6. The springs are of such length, that when they are installed beneath the chair seat proper, and the seat is locked in place ready for use, they are under tension. The releasing of seat 20 at the rear edge of same allows the springs to tilt the seat which is hinged to the leading front edge of the chair proper, the opposed projections secured to the under side of the seat which in turn have the plurality of springs secured to a transverse bar member supported thereon act as levers to snap the seat upwardly. The number of coil springs used determines not only the speed with which the seat is elevated, but the weight that can be lifted. To return seat 20 to its locked position, Figs. 1 and 2, the same is forced against springs 27 downwardly until projection 36 on the seat forces catch 30 backwardly against spring 36 and the projection is engaged, spring 36 at all times tending to hold catch 30 forward, as shown in Fig. 3.

When it is desired to adjust the height of the headrest 54 and the angularity of back member 37, simply loosen wing nuts 58, Fig.5, which in turn releases bar 57, and with the pressure supporting members 55 relieved, the headrest 54 may be moved up or down to the desired height and bar 57 again tightened.

To adjust the angularity of back rest 37, as shown in Fig. 2, the user has simply to reach down and contact hand grip member 49. One of these grip members is provided on each side of the chair and the same are rigidly connected to rod mem-

ber 48. As the weight of the body contacts back member 37, grip 49 is then rocked back and forth, which movement is imparted to rod member 48 and the hand grip at the other side of the chair. The working of hand grip members 49 is best illustrated in Figs. 6 and 7, the outer edges of slotted arm 45 having thereon a plurality of projections or teeth 51 and the opposed end portions of the hand grips each having single projections 52, 53, formed therein. As the hand grip is rocked, the projections 51, which are not opposed, but staggered, contact opposed projections 52, 53, in an interlocking fashion as when gear teeth mesh with teeth on another gear, and allow member 45 to move. The hand grip mechanism acts as a stop and with same the movement of the back rest may be checked at the angle most suited to the occupant of the chair. As shown in Fig. 2, the arms of the chair are also pivotally linked to the front portion of the chair and to the hinged back member 37 so that the back is permitted to extend the allowable distance determined by slot 46 in arm member 45. To return back 37 to its normal upright position it is not necessary to touch hand grips 49, but simply push the back upwardly.

The tray member, shown in Fig. 9, is optional, but when desired may be quickly attached to the ends of arm member 39 by simply sliding sleeve members 65, which are secured to the bottom of tray 64, onto the ends of the arm members. To get in and out of the chair when the tray is secured thereto, catch member 69 is released, and the tray is swung upon pin 66 to an open position. To adjust tray 64 for reading purposes to the angle desired, tray 64 is hinged, as at 71, so that it may be tilted and held at the desired angle by means of notched bar 72, the notches therein being adapted to rest upon pin 76 in plate 75.

The chair may be quickly converted to a self-propelled wheel chair by simply attaching wheel members 59, 60, to the legs of the chair, Figs. 11, 12, the large front wheels being secured by means of an integral bracket member 61, which fastens to the leg of the chair and is tightened thereon by means of wing nut 62. The rear small wheel 60 is secured to the rear legs of the chair as an integral unit and tightened thereon by means of wing nut 63. The wheel brackets are fastened a sufficient distance down on the chair legs so that the entire chair is elevated above floor level to allow the chair to be rolled where desired.

As a convenience in shipping or storing, the chair may be folded, as in Fig. 4, by simply moving back member 37 forward on pins 38, which in turn forces arms 39 and supports 40 to fold until back member is flush upon seat member 20. Cross brace member 19, which is formed in two interlocking sections, is then broken and the two parts folded back. This allows the folding of leg members 15, 16, inwardly upon each other, as shown in Fig. 4, and presents one compact assembly.

It will be seen from the above disclosure that herein is provided a really novel and useful chair assembly that is a real help to an invalid. He can wheel himself about and when desired can adjust the back of the chair to the angle most comfortable for him. When he wishes to leave the chair, it is not necessary to call for help, but by simply tripping a lever he can release the seat upon which he is sitting so that the same will be elevated and force him a sufficient distance out of the chair so that he can gain his crutches or other supporting means and walk about.

While I have described and illustrated a satisfactory disclosure that has proven highly successful in practical operation, it will be understood that the invention is not limited to specific constructional details shown and described, but that many changes, variations and modifications may be resorted to without departing from the principles of my invention.

I claim:

1. A chair of the class described comprising a base, a seat frame supported upon said base, a seat member, having a projection at the rear thereof, hingedly connected to the forward portion of said seat frame, downwardly projecting members supported upon the bottom of said seat, a transverse bar member connecting said downwardly projecting members, spring members interposed between said transverse bar member and the rear of said seat frame, a catch mechanism to normally lock said seat in an horizontal plane, said catch mechanism comprising a rod supported by means of plates mounted in said base, a catch member secured to said rod and adapted to engage said projection on said seat member, and spring means for normally holding said catch member in engagement with said seat projection.

2. A folding chair of the class described comprising a base, a seat frame supported upon said base, a seat member, having a projection at the rear thereof, hingedly connected to the forward portion of said seat frame, downwardly projecting members supported upon the bottom of said seat, a transverse bar member connecting said downwardly projecting members, spring members interposed between said transverse bar member and the rear of said seat frame, a catch mechanism to normally lock said seat in an horizontal plane, said catch mechanism comprising a rod supported by means of plates mounted in said base, a catch member mounted upon said rod and adapted to engage said projection on said seat member, and spring means for normally holding said catch member in engagement with said seat projection.

3. A chair of the class described comprising a base, a seat frame supported upon said base, a back member hingedly supported by said base, arm members hingedly supported by said seat frame and said back member, and means for adjusting the angularity of said back member, said means comprising a rod member supported by said base, a pair of slotted connecting link members each having one end thereof connected to said back member and the slotted end thereof supported upon said rod member, the slotted portions of said link members having a plurality of projections on the outer sides thereof, and hand grip members mounted on said rod member having opposed projections therein adapted to engage the projections on said slotted links and hold the same in predetermined locked engagement.

4. A chair of the class described comprising a base, a seat frame supported upon said base, a seat member having a projection at the rear thereof, hingedly connected to the forward portion of said seat frame, downwardly projecting members supported upon the bottom of said seat, a transverse bar member connecting said downwardly projecting members, spring members interposed between said transverse bar member and the rear of said seat frame, a catch mechanism to normally engage said seat projection and lock said seat in an horizontal plane, a back

member hingedly supported by said base, arm members hingedly supported by said seat frame and said back member, and means for adjusting the angularity of said back member, said means comprising a rod member supported by said base, a pair of slotted connecting link members each having one end thereof connected to said back member and the slotted end thereof supported upon said rod member, the slotted portion of said link members having a plurality of projections on the outer sides thereof, and hand grip members mounted on said rod member having opposed projections therein adapted to engage the projections on said slotted links and hold the same in predetermined locked engagement and hence said back member.

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