

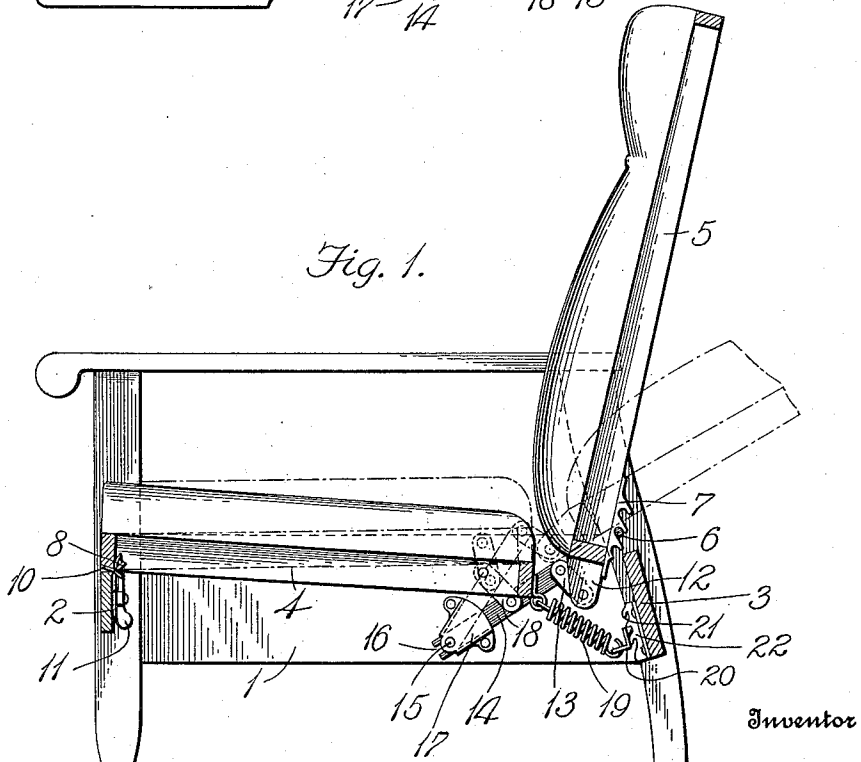
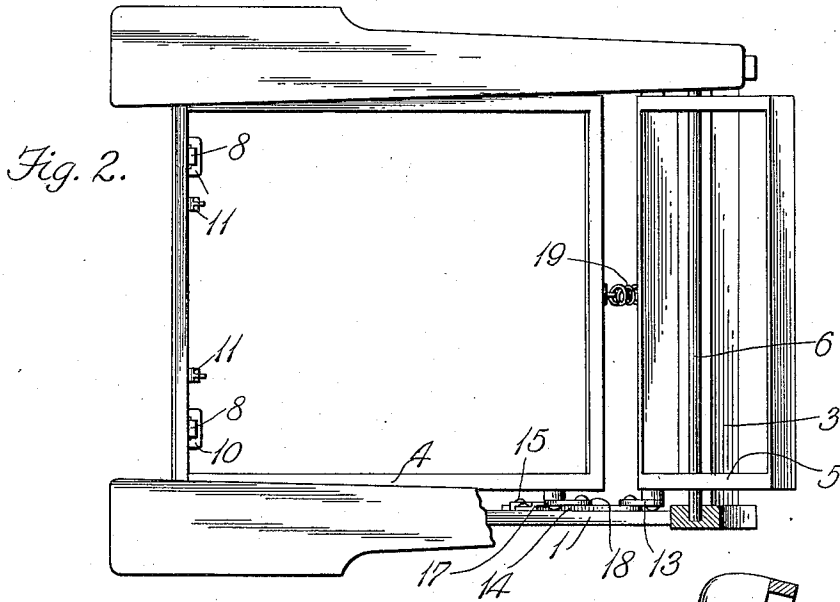
J. F. WILMOT.

CHAIR.

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CHAIR.

1,149,421.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN F. WILMOT, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Chairs, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in reclining chairs and more particularly to chairs of this class in which the back and seat portions are connected by suitable mechanism to move together.

An object of the invention is to provide simple and efficient means whereby the seat is moved by a movement of the back and so connected that the leverage of the back for moving the seat will be the greatest when the back is in upright position and will be decreasingly less as the back is turned downwardly, and conversely, when the seat is in raised position, it will exert the greatest leverage to raise the back which leverage will decrease as the back swings upwardly, thereby substantially maintaining a balance between the seat and back when the chair is in use and the back tilted.

A further object of the invention is to provide certain new and useful features in the construction and arrangement of parts, all as hereinafter more fully described and pointed out in the claims, reference being had to the accompanying drawings in which—

Figure 1 is a vertical section through a chair embodying the invention; and Fig. 2 a plan view thereof.

In the drawings a suitable chair frame comprises side rails 1 and front and back rails 2 and 3 respectively.

Hinge connected to the front rail 2 is a seat frame 4 and a back frame 5 is pivotally supported upon the chair frame by means of a transverse rod 6 extending across the frame a short distance above the back rail 3 and adapted to be engaged by suitable bearing members 7 on the back frame provided with a series of hooks to engage over the rod 6 and form a series of bearings upon which the back is adapted to turn.

The seat frame is hinge connected to the front rail by any suitable means such as two pairs of plates forming hinges, one plate 8 of each pair being secured to the inner face of the front rail and the other plate

10 of each pair of plates is secured to the lower edge of the front bar of the seat frame to interlock with the plate 8.

To prevent any possible rearward movement of the seat frame and accidental disengagement of the plates thereby, a button or similar device 11 is pivotally secured to the inner side of the front rail to be turned into a vertical position with its upper end in engagement with the inner side of the front bar of the seat frame.

The back frame 5 extends downwardly beyond its pivotal support upon the seat frame and is also provided with downwardly extending arms or extensions 12, one at each side of the back adjacent to the side rails 1 of the chair frame. Pivotally attached to the lower end of each arm 12 is a short link 13 and this link is pivotally attached at its opposite end to the end of a lever 14 having a pivot bearing 15 at its opposite end carried by the adjacent side rail 1. Said lever is formed with a slot 16 extending inward from one end to detachably engage the pivot pin 15, which pin extends through the open end of the socket member 17 also secured to the rail 1 and having rearwardly diverging sides adapted to limit the swinging of the lever within the socket. A link 18 is pivotally attached to the lever 14 intermediate the ends of said lever and at its opposite end is pivotally secured to the side of the seat frame 4 at a short distance forwardly from the rear end thereof.

When the parts are in the position shown in Fig. 1, a rearward tilting of the back will, by reason of the link 13 cause the lever 14 to swing upwardly and forwardly, operating the toggle formed by said lever and the link 18 to raise the seat at its rear edge. A movement of the back thus causes a corresponding movement of the seat frame and as the bar 14 is so positioned that it extends directly toward the pivot rod 6 when the back is in upright position, said bar will be swung by a movement of the back, forwardly and upwardly, thus decreasing the leverage of the back to operate the seat as the toggle straightens out and the back is turned rearwardly, and therefore when the back is in upright position and a person is seated in the chair and leaning against the back, the leverage of the back is the greatest at the time when the greatest proportion of the weight of the person is upon the seat,

and as the person's weight is gradually and partially shifted from the seat to the back by his leaning backward, the leverage of the back is proportionately decreased to give a balanced effect. This balanced effect is secured regardless of the weight of the occupant of the chair as no matter what his weight may be substantially the same proportion of it is transferred from the seat to the back as he leans backward. In a like manner, the power of the seat to swing the back from an inclined to a vertical position is aided by the toggle formed by the lever 14 and link 13.

To hold the back in an upright position when the chair is not in use and to cause it to come to that position when the occupant leaves it, a light coiled spring 19 is attached at one end to the seat frame 4 or to any other convenient moving part to exert a pull when the back is tilted backward and cause the same to come to an upright position overcoming the balanced condition of the seat and back. The lower end of the spring is attached to the cross rail 3 of the chair frame or to any other part thereof and is preferably connected to said frame by means of an arm 20 engaged with notches 21 in a bar 22 secured to said rail in a vertical position.

For the purpose of shipping, cleaning or packing, the back and seat frames may be quickly and easily detached from the chair frame by simply unhooking the spring 19, turning the button 11 and then lifting the back from engagement with the pivot rod 6 and raising the seat at its rear end sufficiently to disengage the members 8 and 10 of the hinges, the levers 14 being pulled from their sockets out of engagement with their pivot bearings 15.

By securing the bearing members 7 to the back frame, the leverage of the back may be quickly and easily adjusted by raising or lowering the back and engaging its bearing hooks with the fixed bearing rod 6 on the seat frame, and thus the operation of the chair may be changed to suit the desire of the user, the tilting of the back being made more or less easy as desired.

A chair constructed as shown and embodying the features of the invention not only gives a balanced adjustment for the seat back when in use but also provides a very cheap and efficient construction in which the parts may be readily detached and adjusted if desired.

Obviously, changes may be made in the construction and arrangement of parts without departing from the spirit of my invention and I do not therefore limit myself to the particular form or arrangement shown.

Having thus fully described my invention what I claim is:—

1. In a chair, the combination of a chair

frame, a seat frame pivotally connected near its forward end to the chair frame to have a limited upward and downward movement at its rear end, a back frame pivotally attached to the chair frame intermediate its ends to have an extended swinging movement at its upper end, and pivotally connected links and levers connecting the chair frame and seat frame and with the lower end of the back frame and arranged to increase the leverage of the seat frame in swinging the back frame upwardly.

2. In a chair, the combination of a chair frame, a seat frame having pivotal connection at the forward part thereof with the chair frame to move upwardly and downwardly a limited distance at its rear end, a back frame pivotally connected intermediate its ends to the chair frame to have an extended swinging movement at its upper end and a pivotal connection between the lower end portion of the back frame and the seat frame embodying a toggle joint arranged to increase the leverage of the seat frame in swinging the back frame upwardly.

3. In a chair, the combination of a chair frame, a seat frame pivotally connected to the chair frame near its forward part to move upwardly and downwardly at its rear end, a back frame pivoted intermediate its ends upon the chair frame, and members operatively connecting the seat frame and the lower end portion of the back frame and forming toggle joint connections arranged to exert an endwise pressure to increase the leverage of the seat frame in raising the back frame.

4. In a chair, the combination of a chair frame, a seat frame pivotally connected to the chair frame near its forward part to have a limited upward and downward movement at its rear end, members connecting the chair frame and seat frame and together forming a toggle joint, a back frame pivoted intermediate its ends upon the chair frame and having its forwardly swinging lower end portion operatively connected with said members in a plane below the horizontal plane of the pivotal connection of said members to the seat frame with said members so arranged that the toggle joint formed thereby will exert a strong endwise pressure to assist the seat frame in its limited downward movement in swinging the back frame upwardly.

5. In a chair, the combination of a chair frame, a seat frame, pivotally connected near its forward end to the chair frame and movable upwardly and downwardly a limited distance at its rear end, a back frame pivotally attached intermediate its ends to the chair frame, and pivotally operative means connecting the chair frame and seat frame through a rearwardly and downwardly inclined member with the lower end

of the back frame, whereby in the rearward position of the back frame, the effective power of the seat frame in swinging the back frame upwardly is increased.

5 6. In a chair, the combination of a chair frame, a seat frame pivotally connected near its forward end to the chair frame and movable upwardly and downwardly at its rear end, a back frame pivotally attached intermediate its ends to the chair frame, a link
10 pivotally attached to the lower end of the back frame and extending upwardly and forwardly therefrom, and pivotal link connections between said link and the chair
15 frame and seat frame, whereby in a rear position of the back frame, weight on the seat frame operates the pivotal link connections to produce an endwise pressure thereof against the lower end of the back frame and
20 swing the upper end thereof upwardly.

7. In a chair, the combination of a chair frame, a seat frame pivotally connected to the chair frame near its forward part to move upwardly and downwardly at its rear

end, levers pivotally connected to the sides 25 of the chair frame at one end and extending upwardly and rearwardly from their pivotal supports, links pivotally connected to the seat frame at its rear portion and extending rearwardly and downwardly and
30 pivotally connected at their lower end to the levers intermediate the ends of said levers, said levers and links together forming toggle joints connecting the seat frame and chair frame to raise the seat frame, a back
35 frame pivotally supported intermediate its end upon the chair frame with its lower end portion extending below the plane of the upper end of the lever, and links pivotally connecting the lower end portion of the back
40 frame with the rear end of said lever to form other toggle joint connections.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. WILMOT.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."