No. 751,167. PATENTED FEB. 2, 1904.

A. P. GOULD.

SURGICAL CHAIR.

APPLICATION FILED JULY 13, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

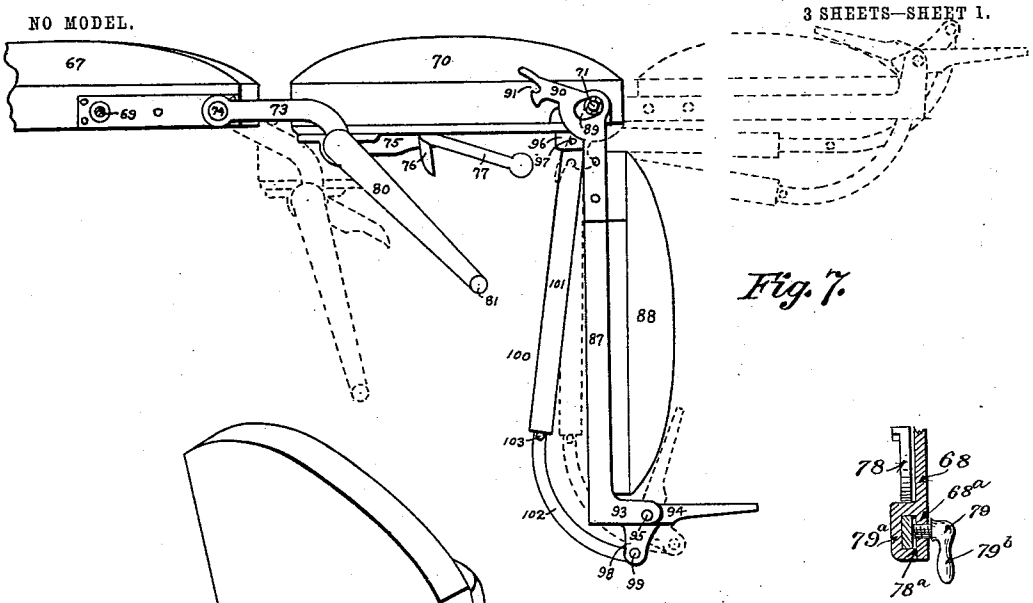


Fig. 7.

Fig. 9.

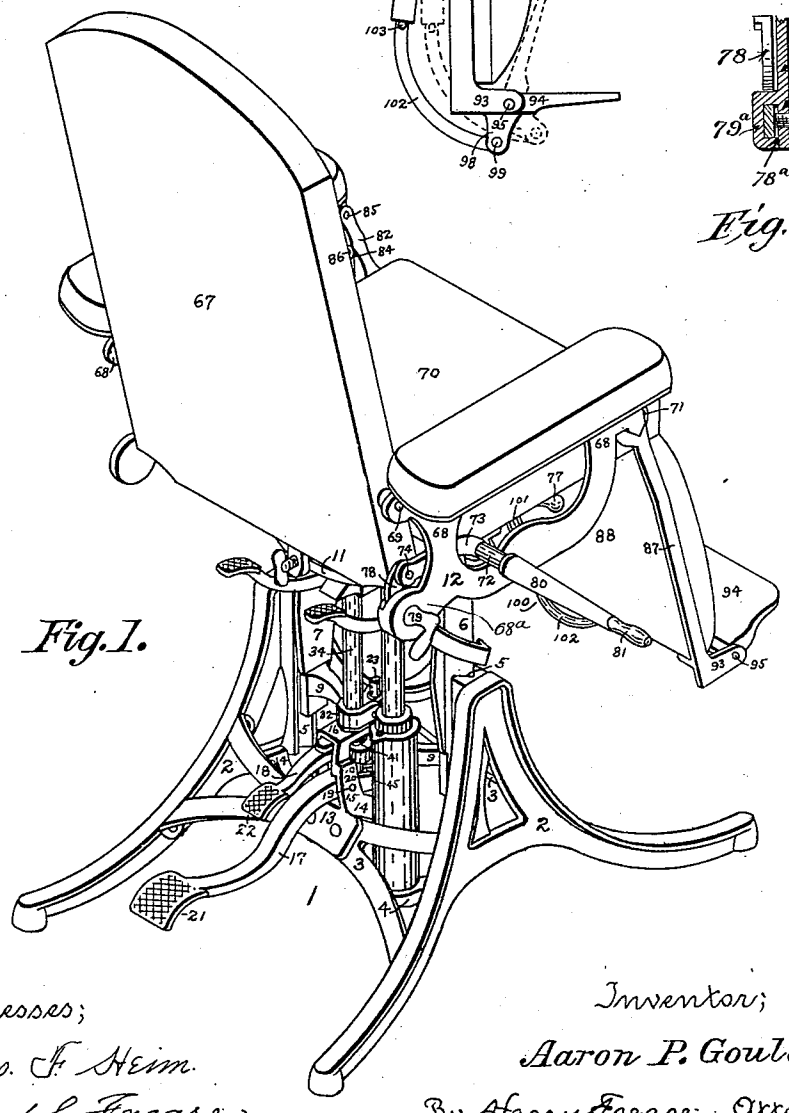


Fig. 1.

Witnesses;
Theo. F. Heim.
Joseph Frease.

Inventor;
Aaron P. Gould,
By Harry Frease, Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 3 SHEETS—SHEET 2.

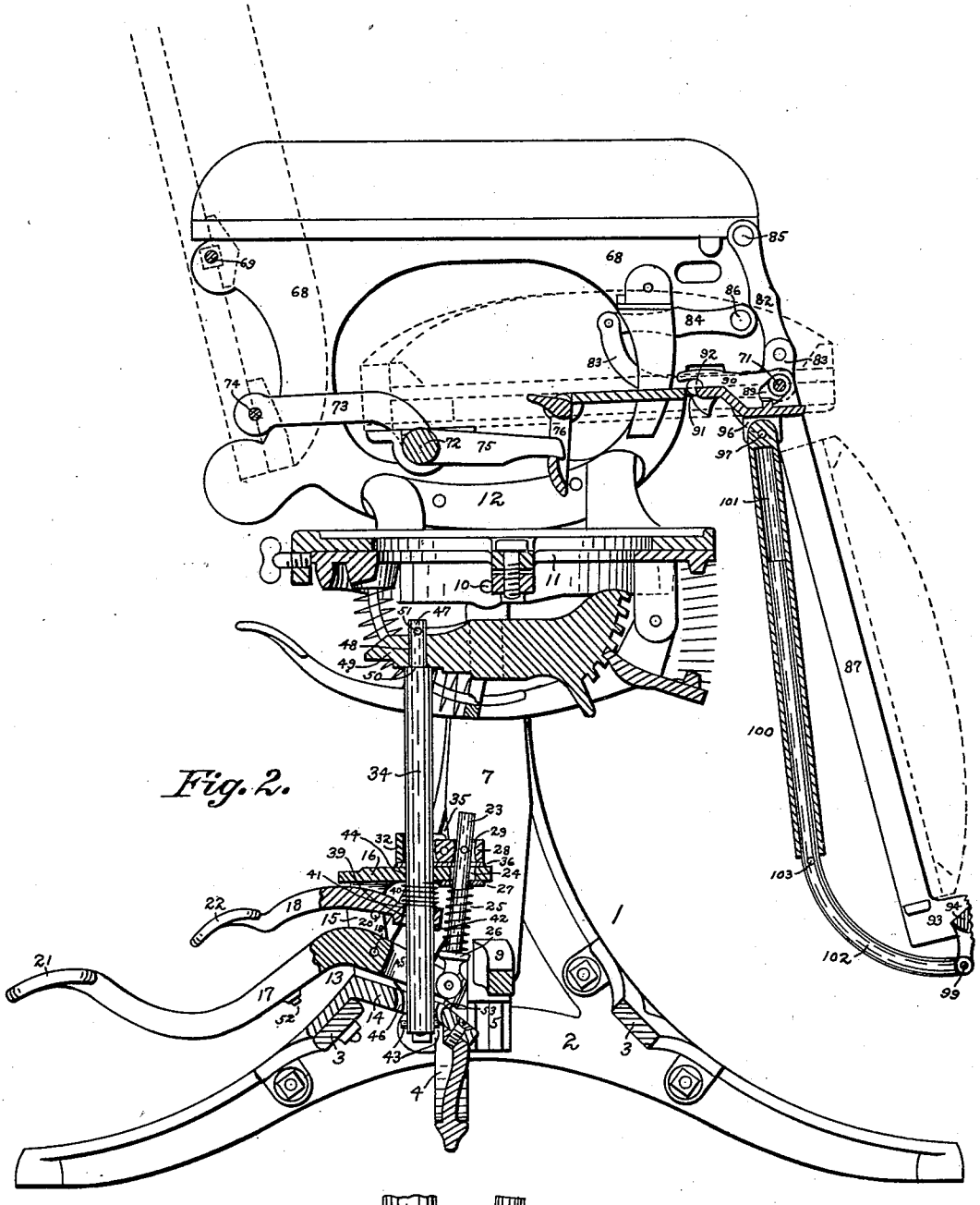


Fig. 2.

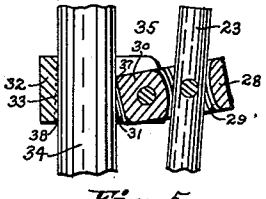


Fig. 5.

Witnesses;
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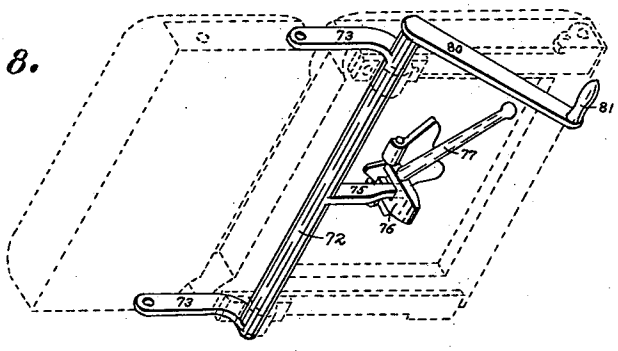
A. P. GOULD.

SURGICAL CHAIR.

APPLICATION FILED JULY 13, 1901.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 8.



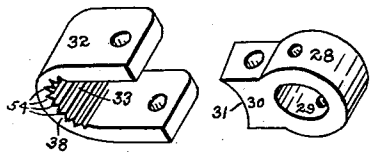


Fig. 6.

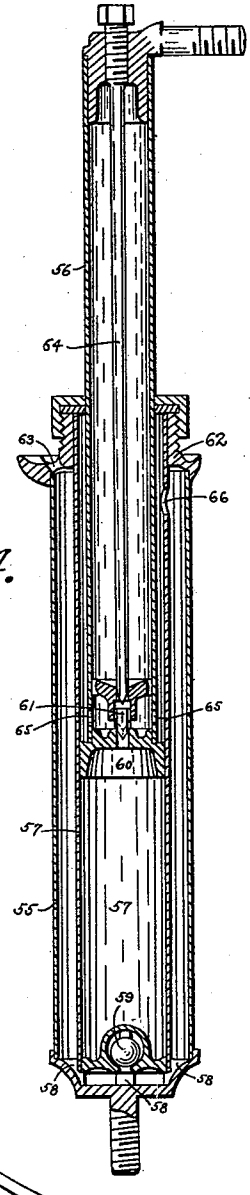


Fig. 4.

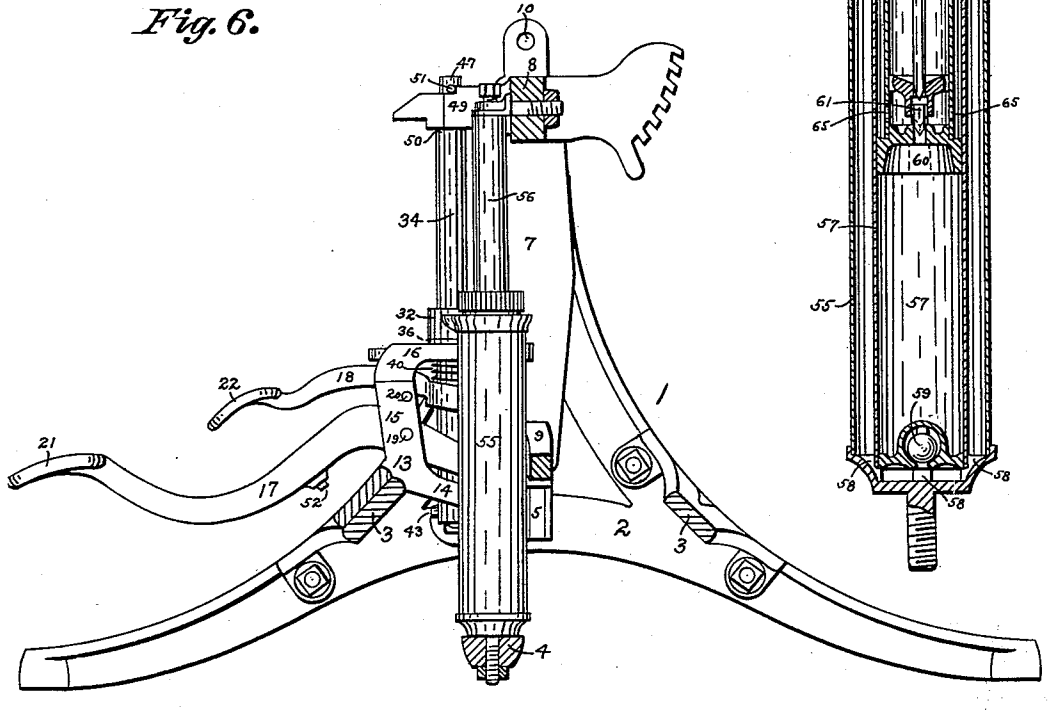


Fig. 3.

Witnesses;

Thos. F. Herm

Joseph Frease.

Inventor;

Aaron P. Gould,

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 751,167. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

AARON P. GOULD, OF CANTON, OHIO.

SURGICAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 751,167, dated February 2, 1904.

Application filed July 13, 1901. Serial No. 68,162. (No model.)

To all whom it may concern:

Be it known that I, AARON P. GOULD, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Surgical Chair, of which the following is a specification.

My invention relates to surgical chairs in which the body has various adjustments with reference to the base; and the objects of my improvements are, first, to provide a mechanism for raising and lowering the body; second, to provide a simple mechanism for lowering the seat with reference to the back, and, third, to provide a foot-rest which automatically adjusts itself to the movements of the back, seat, and leg-rest, and at the same time can be folded out of the way when not in use. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an isometrical view of the chair looking from the right rear; Fig. 2, a vertical section through the middle looking from the right with the back, seat, and leg-rest in broken lines to show the parts beyond; Fig. 3, a vertical section of the base looking from the right, showing the raising and lowering mechanism in elevation; Fig. 4, a vertical section through the middle of the oil-cylinder and piston; Fig. 5, a detached sectional view showing the yoke-grip in engagement with the elevating-bar; Fig. 6, a detached isometrical view of the parts of the yoke-grip; Fig. 7, a right side elevation of the seat, leg-rest, foot-rest, and part of the back; Fig. 8, a detached isometrical view of the rocker-shaft and its latch, showing the seat and part of the back in broken lines; and Fig. 9 is a detached horizontal sectional view showing the arrangement of the back locking-bar and its engaging screw.

Similar numerals refer to similar parts throughout the several views.

The base 1 is composed of the legs 2, which are joined together at the front and rear by the struts 3 and at the bottom by the yoke 4. The legs 2 have on their inner faces the grooves 5 receiving the slides 6 on the outer faces of the sides of the sliding frame 7, which sides are joined together at the top by the bar 8 and at the bottom by the bar 9. The sides of the sliding frame 7 extend above the bar 8 and provide a pivotal connection 10 for the turn-table 11, on which rests the chair-body 12.

For connecting the elevating mechanism the supporting-frame 13 is attached to the rear strut 3 and to the yoke 4 of the base, which frame consists of the bottom plate 14, the side plates 15, and at the top the horizontal plate 16. Between the side plates 15 are located the actuating-levers 17 and the sustaining-lever 18, the actuating-lever 17 being pivoted on the pin 19, the sustaining-lever 18 resting on the pivotal pin 20, and the rear ends of the levers being provided with the pedals 21 and 22, respectively. Any other form of pivotal support for the sustaining-lever 18 that will give said lever freedom of movement in its functions as a grip will serve the general purpose of my invention.

To the forward end of the actuating-lever 17 is pivoted the lower end of the actuating-bar 23, which extends upwardly and freely through the aperture 24 in the forward end of the horizontal plate 16. The forward end of the lever 17 is normally depressed by action of the spiral spring 25, located around the actuating-bar 23 between the shoulder 26 near its lower end and the washer 27 on the lower side of the horizontal plate 16. Near the upper end of the actuating-bar 23 and above the horizontal plate 16 is pivoted transversely the collar 28, the aperture 29 thereof being elongated from front to rear to allow considerable freedom of movement on the pivotal point. Projecting rearward from the collar 28 is the lug 30, having its rear face 31 concave in a horizontal plane, to which projection is pivotally connected the yoke 32, the concave face 31 and the inner face 33 of the yoke 32 loosely engaging the elevating-bar 34. The collar 28 and the yoke 32 together form the yoke-grip 35, which normally rests on the upper side of the horizontal plate 16 with the washer 36 intervening to deaden the sound of contact, in which position the elevating-bar 34 is free to pass through said grip without constraint. While a peculiar yoke-grip has been described and illustrated, the general purpose of my invention can be carried out by the substitution of any other suitable form of friction-grip to be attached to the top of the

actuating-bar 23 and engaging the elevating-bar 34. When the actuating-bar 23 is raised by depressing the pedal 21 at the rear end of the actuating-lever, the lug 30 on the rear of the collar 28 is depressed by its own weight and that of the attached yoke 32, so that the upper edge 37 of the concave face 31 engages the forward face of the elevating-bar. This movement will draw the inner face 33 of the yoke 32, and more particularly the lower edge 38 thereof, against the rear face of the elevating-bar, by which embrace or grip the further elevation of the actuating-bar 23 will carry up with it the elevating-bar 34. To accommodate the varying movements of the actuating-bar 23, the aperture 24 in the horizontal plate is sufficiently enlarged from front to rear to give it free passage.

In the forward end of the sustaining-lever 18 is the aperture 39, which is slightly elongated from front to rear in its lower part and through which passes the elevating-bar 34. This end of the sustaining-lever is normally depressed by the spiral spring 40 acting between the top thereof and the bottom of the horizontal plate 16 and around the elevating-bar. In this position the lever 18 engages and grips the elevating-bar 34 by the binding of the rear upper edge 41 of the aperture 39 against the rear side of the elevating-bar 34 and of the forward lower edge 42 of said aperture against the forward side of said bar, by means of which friction-grip the elevating-bar 34 is sustained in any position, the lever 18 resting on the pivotal pin 20. When it is desired to release this grip to provide a free downward movement of the elevating-bar 34, the forward end of the sustaining-lever 18 is slightly elevated by depressing the pedal 22, which releases the engagement of the edges of the aperture 39, thus giving the elevating-bar 34 free passage therethrough.

At the lower end of the elevating-bar 34 are provided the projecting stops 43, which by engagement with the lower side of the sustaining-lever 18 limit the upward movements of said bar and of the sliding frame 7, connected at the top thereof, as below described.

The elevating-bar 34 passes through the neat aperture 44 in the horizontal plate 16, which aperture guides said bar in its vertical movements. The forward end of the actuating-lever 17 is preferably bifurcated, permitting the elevating-bar 34 to pass freely through the space 45 between the sides thereof, and the aperture 46 is provided in the bottom plate 14 of the supporting-frame, of suitable size and section to freely pass the elevating-bar 34 and its projecting stops 43. The upper end 47 of the elevating-bar 34 is reduced in section and passes through the aperture 48 in the lug 49, projecting rearward from the top bar 8 of the frame 7, the lower face of said lug resting on the shoulder 50, formed thereby. The pin 51 passes through the upper end 41 of said bar immediately above said lug and sustains the bar in this position.

Elastic stops 52 and 53 are located, respectively, on the under side of the actuating-lever 17 and the lower end of the actuating-bar 23 to cushion the contact of these parts against the bottom plate 14 of the supporting-frame.

The frame 7 with the superimposed chair-body 12 may be elevated by depressing the pedal 21 at the rear end of the actuating-lever, which raises the actuating-bar 23 and therewith the yoke-grip 35, which engages and carries upward the elevating-bar 34 and the sliding frame 7, attached at the upper end thereof, the slides 6 in the outer sides of the sliding frame traveling in the grooves 5, and the upward movement being limited by the projecting stops 43, as above explained. Upon releasing the pressure on the pedal 21 the elevating-bar 34 is prevented from lowering by the grip of the sustaining-lever 18, as above explained, and by action of the spiral spring 25 the actuating-bar 23 is impelled downward, the yoke-grip 35 sliding freely down the elevating-bar 34 to its normal resting-place on the horizontal plate 16. This action is repeated as often as necessary to elevate the chair-body to the desired position. To lower the chair-body, it is only necessary to depress the pedal 22, which releases the grip of the sustaining-lever 18 on the elevating-bar 34, which is then free to descend, together with the parts sustained thereon. To prevent a cutting across the rear face of the elevating-bar 34 by the lower edge 38 of the inner face of the yoke 32, the lower part of the inner face 33 is provided with the grooves 54 in line with the length of the elevating-bar 34, the ridges therebetween furnishing adhesion to said bar, and any cutting which may be made on the face thereof will be in longitudinal rather than transverse grooves, and will therefore not present a rough surface in its vertical movements. To prevent a rapid and too sudden descent of the chair-body, a cylinder 55 is attached to the yoke 4 of the base, and its piston-tube 56 is attached to the top bar 8 of the frame 7. Within the cylinder is located the subcylinder 57, which rests on lugs 58 near the bottom on the cylinder 55. At the bottom of the subcylinder is an ordinary ball-valve 59. The piston-head 60 is operated within the subcylinder 57 and is provided with a pin-valve 61. The two cylinders are joined by the collar-cap 62, which closes them at the top, excepting the aperture 63, through which they are filled with oil or other suitable liquid for use.

In operation when the frame 7 of the chair is elevated it carries with it the piston-tube 56 and its head 60, the pin-valve 61 therein closing. The oil contained in the cylinder 55 outside of the subcylinder 57 is drawn by suction into the subcylinder through the ball-

valve 59 at the bottom thereof. When the chair is allowed to lower, the descending piston-head 60, acting on the oil within the subcylinder 57, closes the ball-valve 59, and the piston-tube 56 can only descend as fast as room is made for its head 60 by the escaping of oil through the pin-valve 61, which escapement is regulated by the adjusting-rod 64. The escaping oil passes from the piston-tube through the holes 65 near its lower end and then passes from the subcylinder through the hole 66 near its upper end into the cylinder 55.

The back 67 is swung between the sides 68 of the chair-body on the pivotal rod 69, and the forward end of the seat 70 is swung between the said sides on the pivotal rod 71. On the under side at the rear of the seat is journaled the rocker-shaft 72, from the upper side of which and curving rearward along the outer sides of the seat project the arms 73, to the rear ends of which are attached the lower end of the back by means of the pivots 74. This normal position of the rocker-shaft 72 is maintained by means of the forward projecting arm 75 engaging the gravity-latch 76, which acts by the weight of its operating-arm 77. The back of the chair is secured in any desired position by means of the ordinary locking-bar 78 and its engaging screw 79. The locking-bar 78 is connected at its upper end with one of the pivots 74 and depends therefrom, curving downward and forward, and passes through the eye 78^a, which is formed by the loop 79^a, located on the inner side of the rearward extension 68^a of one side of the chair-body. The engaging screw 79 passes through said rearward extension and is adapted to be turned by its handle 79^b against the locking-bar 78 in the eye 78^a, thereby holding said bar in any desired adjustment. The back of the chair being fixed in any position, the seat can be lowered with reference to the same by merely disengaging the gravity-latch 76 by raising its operating-arm 77, which disengages the arm 75, which leaves the rocker-shaft free to turn in its bearings. The seat can be lowered and raised again to its normal position by means of the operating-arm 80 and its handle 81, which operating-arm extends downward and forward from one end of the rocker-shaft 72. The pivotal rod 71 at the forward end of the seat is carried at its ends by ordinary linked bars 82, 83, and 84, which in turn are pivoted to the sides of the chair by the bolts 85 and 86, which gives the seat freedom of movement. On the outer ends of the pivotal rod 71 are also carried the side plates 87 of the leg-rest 88 by means of the slotted apertures 89, the rearward projection 90 of each side plate being provided with a notch 91, which normally engages a pin 92 on the sides of each linked bar 83. This engagement may be released by a movement of the side plates 87 on the pivotal rod 71 within the limits of the slotted aperture 89. The notches 91 being in engagement, when the pins 92 are lowered with reference to the pivotal rod 71 by the movements of the linked bars 82, 83, and 84 and the seat 70 is carried forward in its various adjustments, the leg-rest will be raised and can ultimately be brought to a horizontal position, as illustrated in broken lines in Fig. 6.

To the forward ends of the forward projections 93 of the side plates 87 is attached the foot-rest 94 by means of the pivots 95. From the under side of the seat project the ears 96, which carry the pivotal pin 97, located below and slightly to the rear of the pivotal rod 71. From the lower side of the foot-rest project similar ears 98, which carry the pivotal pin 99, which is substantially the same distance below and to the rear of the pivots 95 of the foot-rest as the pivotal pin 97 is below and to the rear of the pivotal rod 71 of the seat. The pivotal pins 97 and 99 are connected by the extensible strut 100. Any form of extensible strut would serve the purpose of my invention; but I have preferred to provide a straight tube 101 for the upper part, the upper end of which is connected by the pivotal pin 97 to the seat, and a telescoping rod 102 for the lower part, having its lower end curved forward and connected by the pivotal pin 99 to the foot-rest. The stops 103 are located on the side of the rod 102 to limit its entrance into the tube 101 when the parts are filling the functions of a strut. This general form of construction has been termed a "parallel movement" and automatically keeps the foot-rest parallel with the seat of the chair in the various positions of the leg-rest; but by my special form of construction when it is desired to fold the foot-rest back against the leg-rest, the leg-rest being in any position, the same can be done, because the withdrawal of the rod 102 from the tube 101 allows a lengthening of the distance between the pivotal pins 97 and 99.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a chair, a base, a sliding frame in the base, an elevating-bar supporting the frame, a horizontal plate in the base having an aperture in which the elevating-bar operates and is guided, a yoke-grip normally resting on the plate comprising a collar having an elongated aperture and a lug on one side adjacent to the elevating-bar and a yoke around the elevating-bar pivoted to the lug, and an operating-bar pivoted in the collar-aperture.

2. In a chair, a body, a back having pivotal connection with the sides of the body, a seat having movable pivotal connection with said sides of the body, a latch on said seat, a transverse rocker-shaft journaled to the rear part of said seat, said shaft having rearward-projecting arms the rear ends of which have pivotal connection with the lower part of the

back, and a forward-projecting arm adapted to engage said latch.

3. In a chair, a body, a back having pivotal connection with the sides of the body, a seat having movable pivotal connection with said sides of the body, a latch on said seat, a transverse rocker-shaft journaled to the rear part of said seat, said shaft having rearward-projecting arms the rear ends of which have pivotal connection with the lower part of the back, a forward-projecting arm adapted to engage said latch, and a handled actuating-arm projecting from one end of said rocker-shaft.

4. In a chair, a seat, a leg-rest pivoted to said seat near its forward end, a foot-rest pivoted to said leg-rest at its lower end, an extensible strut pivoted at its ends to said seat and to said foot-rest respectively below and to the rear from said leg-rest and foot-rest pivotal points.

5. In a chair, a seat, a leg-rest pivoted to the seat, a foot-rest pivoted to the leg-rest, and an extensible strut having its ends pivoted to the seat and foot-rest in similar relation below the leg-rest and foot pivoted points, and being adapted when contracted to hold the foot-rest parallel with the seat and by its extension to permit the foot-rest to be folded back upon the leg-rest.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AARON P. GOULD.

Witnesses:
HARRY FREASE,
THEO. F. HEIM.