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E. T. STARR.

Chair.

No. 240,476. **Patented April 19, 1881.**

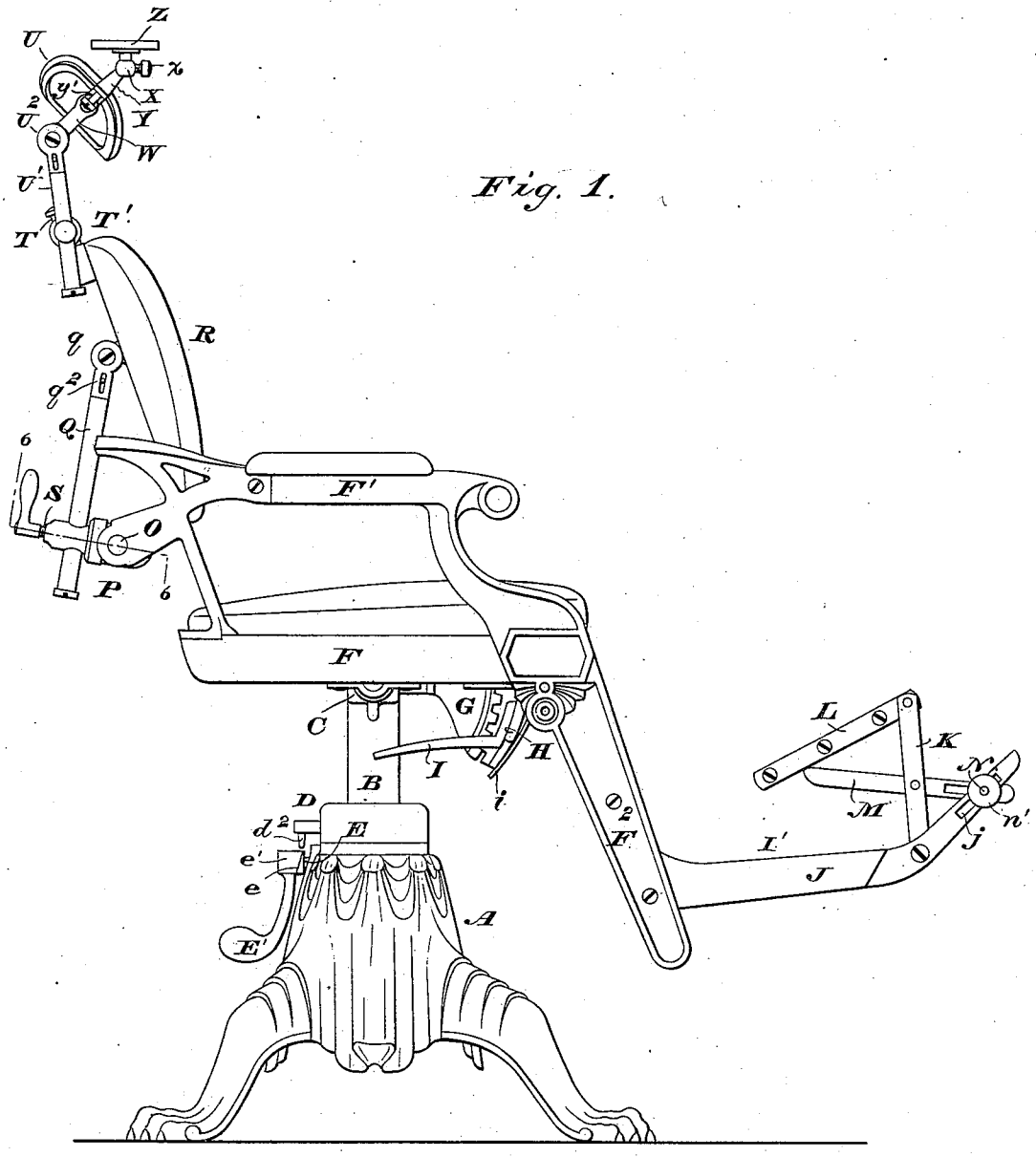


Fig. 1.

WITNESSES

Wm a Skinkle.

Geo W Breck

INVENTOR

Eli. T. Starr.

By his Attorneys

Baldwin, Hopkins & Peyton.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

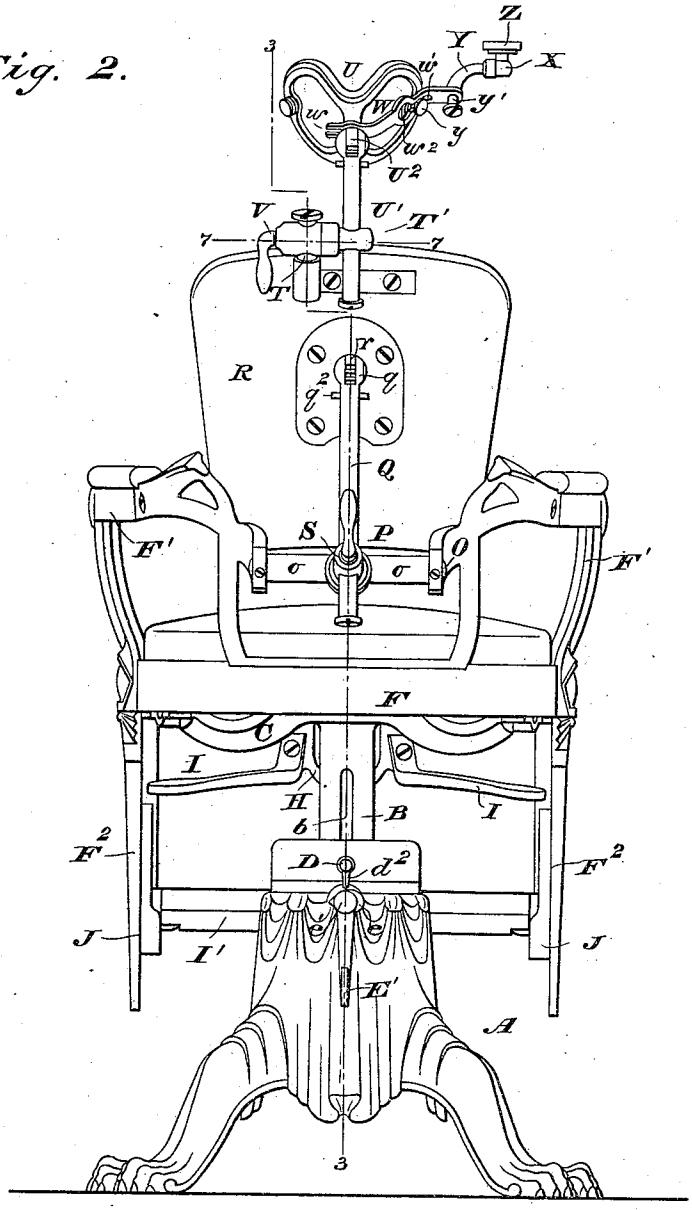
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Fig. 2.



WITNESSES

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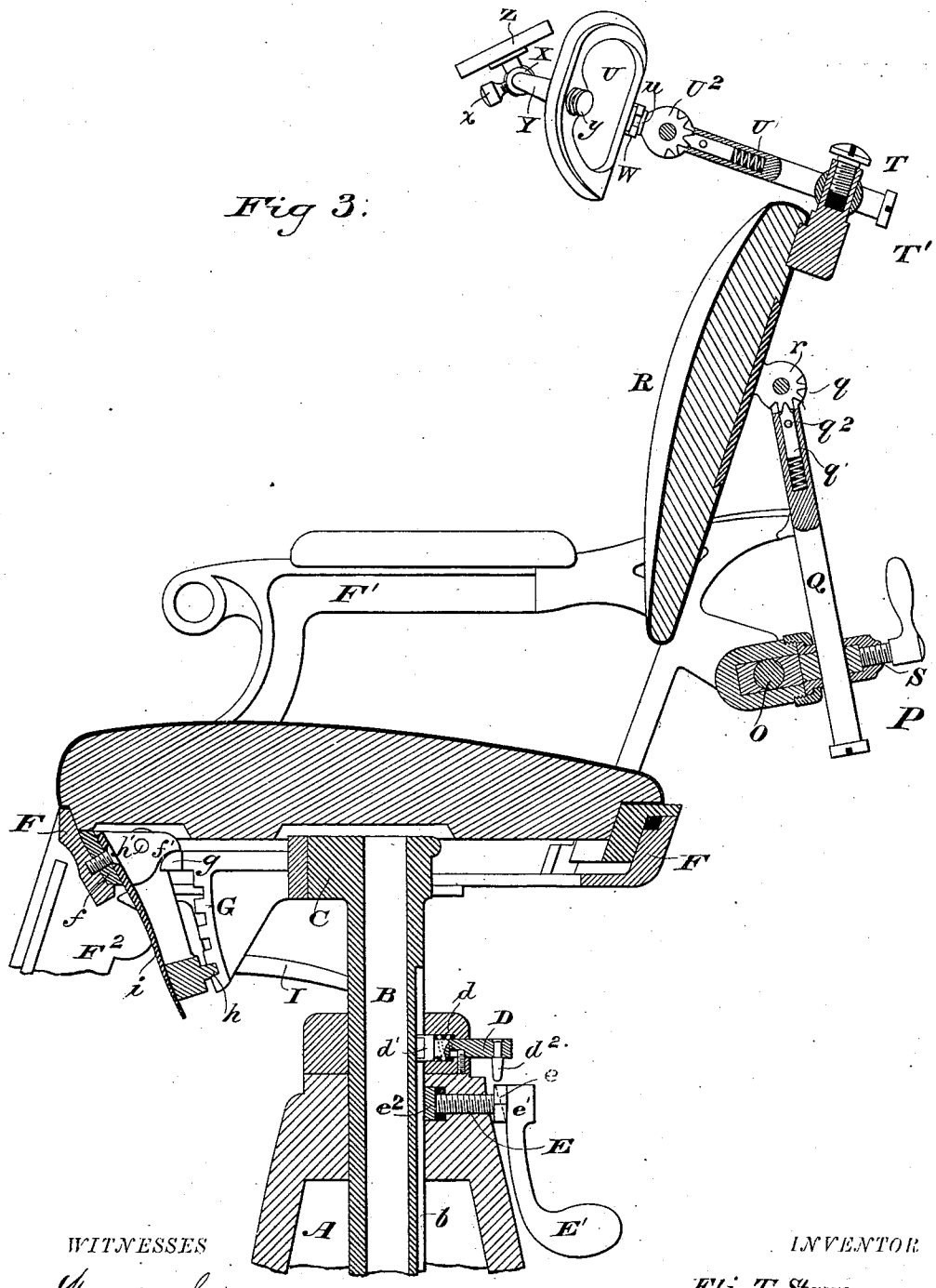
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E. T. STARR.

Chair.

No. 240,476. **Patented April 19, 1881.**

Fig 3.



WITNESSES

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5 Sheets—Sheet 4.

E. T. STARR.

Chair.

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Fig 4.

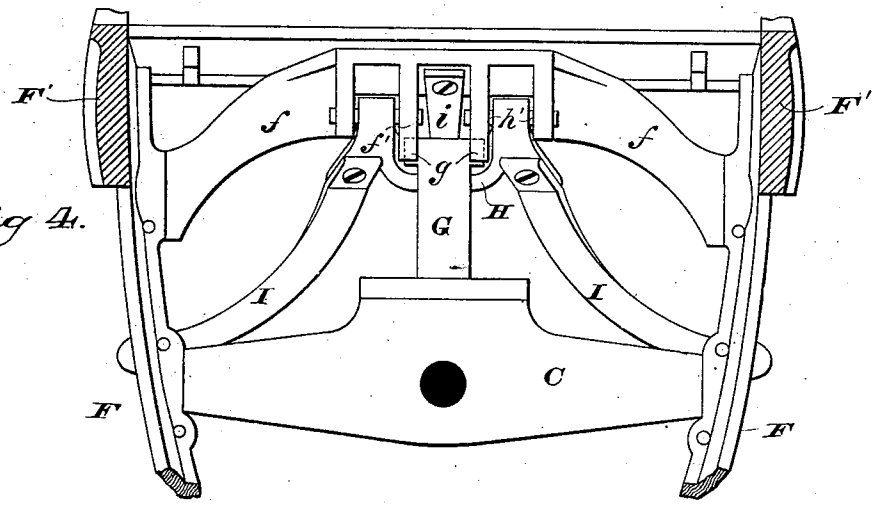


Fig 5

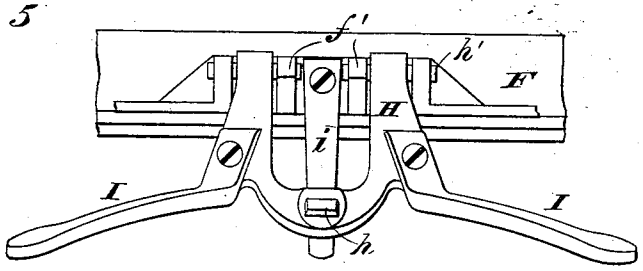


Fig 6.

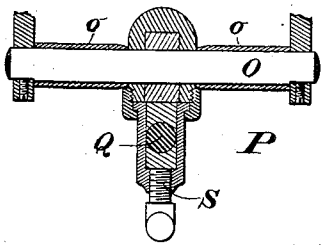


Fig 8

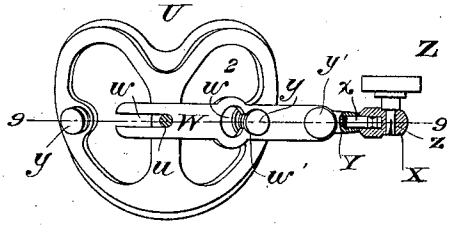


Fig 7.

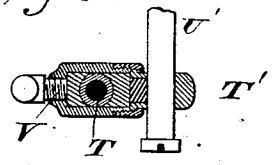
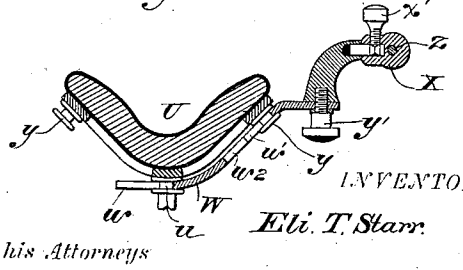


Fig 9



WITNESSES

Wm. A. Skinkle.

Geo. W Breck.

INVENTOR

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5 Sheets—Sheet 5.

E. T. STARR.

Chair.

No. 240,476. **Patented April 19, 1881.**

Fig 10.

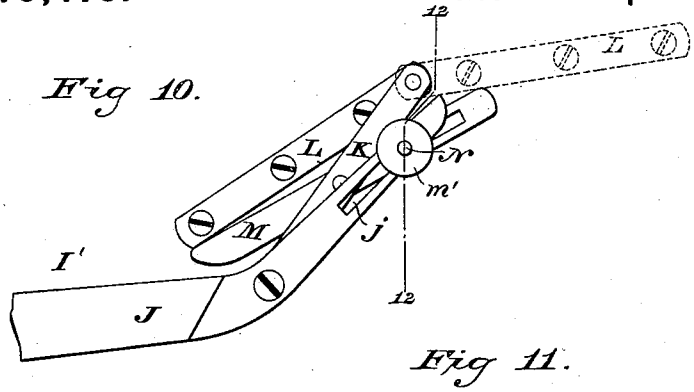


Fig 11.

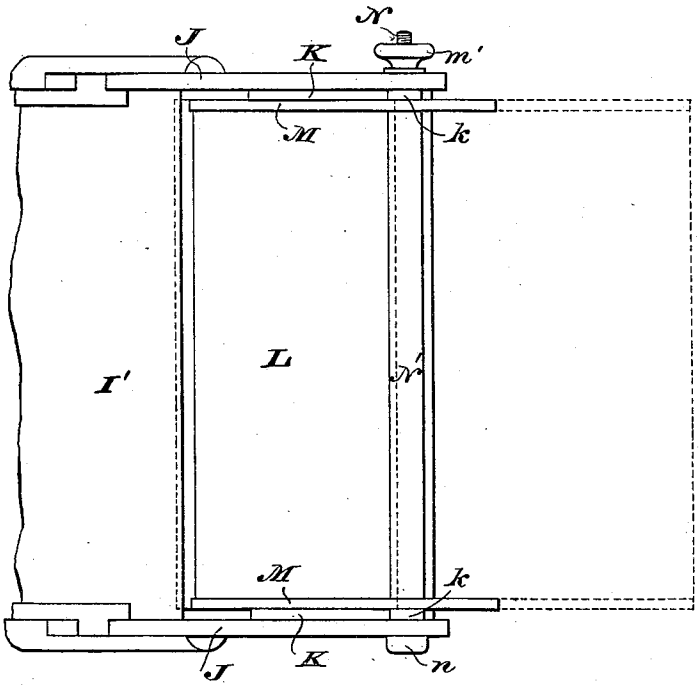
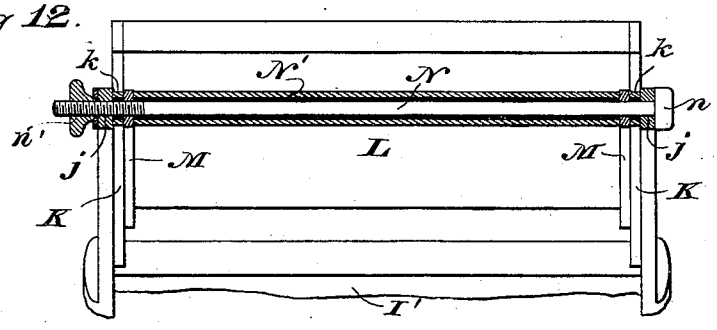


Fig 12.



WITNESSES

Wm A Skinkle

Geo W. Breck

INVENTOR

Eli T Starr.

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UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JAMES W. WHITE, JAMES CLARENCE WHITE, AND H. M. LEWIS, TRUSTEES, ALL OF SAME PLACE.

CHAIR.

SPECIFICATION forming part of Letters Patent No. 240,476, dated April 19, 1881.

Application filed May 17, 1879.

To all whom it may concern:

Be it known that I, ELI T. STARR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Chairs, (for which my assignee obtained Letters Patent of Great Britain, No. 3,052, dated July 26, 1879,) of which the following is a specification.

My invention relates to chairs of the class having a wide range of adjustment, and more especially intended for the use of dentists, commonly called "dentists' chairs," whereby the patient, while in the operating-chair, is completely under the control of the operator, and may be placed in the different positions necessary for the easy and skillful performance of dental operations, the chair being adjustable in its several parts, in order to accommodate persons of different size and insure their ease and comfort.

The objects of my present invention are to give the chair-back, while connected with and sustained by the chair-frame, a universal and wide range of adjustment, enabling said back to be placed with ease and facility in any position desired in reference to the chair-seat, and to be securely locked in its various positions; to give the head-rest carried by the chair-back an independent, universal, and wide range of adjustment; to provide a superior and easily adjusted arm-rest for the operator, also carried by the back; to provide an organization of mechanism constituting an improvement more especially upon the pedal-lever hydrostatic dental chair for which I made application for Letters Patent of the United States November 21, 1878, whereby the rotation or turning of the seat or chair-body supporting plunger or spindle is prevented when said seat or body is raised or lowered, while said plunger may be turned to adjust the chair-body horizontally, when desired; to provide an improved foot-rest or limb-support having a wide range of adjustment to accommodate persons of different size; and, finally, my invention has for its object to provide a dental chair in which the several parts are capable of rapid and easy adjustment, and of being firmly secured in such adjusted positions.

The subject-matter claimed will hereinafter be specifically designated.

The accompanying drawings represent a chair embodying all my present improvements in the best way now known to me. Some of my improvements, however, may be used without the others, and in chairs differing in their details of construction from the one therein shown. The details of construction shown may also be modified in various ways, within certain limits, without departing from the spirit of my invention.

Figure 1 of the said drawings is a side elevation of a dental chair with my improvements attached; Fig. 2, a rear elevation thereof; Fig. 3, a vertical central section through a portion of said chair on the line 3 3 of Fig. 2; Fig. 4, a top or plan view of the mechanism which locks the chair body or seat in its inclined position and aids in its adjustment, a part of the seat-frame being broken away and other parts of the chair-frame shown in section; Fig. 5, a face view of said mechanism, or a view thereof from the rear of the chair; Fig. 6, a longitudinal central section through the universal joint that carries the chair-back on the line 6 6 of Fig. 1; Fig. 7, a longitudinal central section through the universal joint that carries the head-rest on the line 7 7 of Fig. 2; Fig. 8, a view of the head-rest pad from the rear, its supporting or carrying bar being in cross-section, and also of the arm-rest, partly in section; Fig. 9, a section through said head-rest pad and arm-rest on the line 9 9 of Fig. 8; Fig. 10, a side view of my improved foot-rest as folded, the foot-rest board being shown in dotted lines as thrown outward to lengthen the foot-rest; Fig. 11, a bottom-plan view thereof, and Fig. 12 a section therethrough on the line 12 12 of Fig. 10.

The base A is shown as of a shape similar to that of the base of my pedal-lever hydrostatic chair, for which I made application for Letters Patent on or about November 21, 1878, as hereinbefore stated, and is intended to be constructed substantially in accordance with the description contained in said application—that is, with a fluid-reservoir, a plunger-cylinder communicating therewith by means of suitable ducts or channels and valves, and with a pivoted elevating foot-lever which actuates clamping devices, taking hold of the plunger or spindle which carries the chair frame or

body, upon opposite sides to elevate it, the fluid in the said reservoir, as the plunger is raised, flowing through the communicating channel into the plunger-cylinder, so as to follow and cushion or support the plunger at any height to which it may be raised, the descent of the plunger being governed by the opening of an outlet-valve, which permits the fluid to escape from the plunger-cylinder back into the reservoir. The base and the elevating mechanism may, however, be similar in construction and operation to that shown in the hydrostatic stool or chair for which reissued Letters Patent No. 8,294, of June 25, 1878, were granted to S. S. White, as the assignee of Bramble and Deihl.

The elevating and supporting plunger B carries upon its upper end a fixed cross-bar or yoke, C, upon which the chair body or seat, or the frame thereof, is pivoted in a well-known way, so that said chair frame or seat is free to be rocked, tilted, or inclined relatively to the vertically-moving plunger, and to the base in which said plunger is reciprocated in raising and lowering the chair-frame.

The plunger B, instead of having a perfectly smooth periphery or circumference, as shown in the Bramble and Deihl reissue, and in my application aforesaid, is provided with a straight longitudinal groove or recess, *b*, for the reception of a tongue or the suitably-shaped end of a bolt or pin, D, working endwise through the upper end of the base and transversely to the bore thereof. The said tongue or bolt, when the groove or recess in the plunger is in line therewith, is projected into said groove by means of a suitable spring, *d*, surrounding the bolt, and compressed between the enlarged head or end *d'* thereof and the wall of the enlarged socket or opening in which the bolt or tongue moves. This tongue and groove is for the purpose of guiding the plunger in its reciprocations or movements up and down in the fluid cylinder or base, and to prevent it from rotating or turning, while permitting its free endwise movement. When, however, it is desired to change the position of the seat or chair frame horizontally relatively to the base, which is accomplished, as in my improved hydrostatic chair and in the Bramble & Deihl stool, by turning or rotating the plunger in its cylinder, or, in other words, when it is desired to adjust the chair frame or seat horizontally, the tongue or bolt D is withdrawn from the guide-groove in the plunger by means of a lug or pin, d^2, which projects from the bolt outside the base, as clearly shown in Figs. 1, 2, and 3, said lug being acted upon by a suitable cam-surface, *e*, carried by or formed on the turning-hub or enlargement *e'* of a lever, E', connected with the base. The plunger is then free to be turned around horizontally or swiveled to carry the chair body or seat, it being supported as against endwise downward movement by the cushioning and sustaining fluid-column, and may be clamped in any position desired by the clamp-shoe e^2, which, in the present example, is forced against the plunger by means of the foot-lever E', operating through the intervention of the screw E. The pressure of the clamp-shoe locks or secures the plunger and base to each other. As soon as the plunger is turned around to its normal position the groove therein is brought in line with the bolt or tongue, which is immediately automatically projected into said groove and the plunger locked from turning.

In the chair thus far described the clamp for securing the plunger from moving, and the tongue for holding it from turning on its axis, are operated by one foot-lever, and this lever is connected more directly with the clamp; but the foot-lever may be connected more directly with the tongue, and the clamp may be operated by a more indirect connection with the same foot-lever.

The frame of the chair consists, in this instance, of a seat-frame, F, which is pivoted so as to rock upon the plunger or spindle B, as stated, arm or side frames, F', carried by the seat-frame, and a pendent foot-board supporting-frame, F^2, preferably forming a continuation of the side or arm frames. The chair-frame may, however, consist only of the seat-frame carrying the seat.

In order that the chair-frame may be secured in the various positions to which it may be tilted the following mechanism is employed:

Projecting from the front of the yoke or cross-bar C, on which the chair-frame rocks, is a vertical sector or curved rack, G, in the teeth of which engage a lug or locking-projection, *h*, of a pivoted detent-frame, H, (clearly shown in Figs. 1, 2, 3, 4, and 5,) which frame preferably consists of a U-shaped central portion, the upper ends of the arms of which are pivoted at *h'* to the seat-frame, or a suitable extension, *f*, thereof, while from the lower part of said U-shaped portion, upon each side of the chair, extend rearwardly foot-levers I I, the outer ends of which are provided with foot-pieces or suitably-shaped rests, to which the foot of the operator may be applied to release the locking-lug *h* from the rack G, to permit the chair-body to be tilted or rocked to any desired angle. The detent-frame is acted upon by a spring, *i*, secured to the extension *f* of the seat-frame, the force of the said spring being exerted at all times to throw the locking-lug *h* into engagement with the sector-rack, so that the chair-frame may be locked in its tilted position whenever the foot of the operator is removed from either foot-lever.

The range of the rocking movement of the chair-frame is limited in a backward direction by a flange or projection, *g*, on the upper end of the rack G, against which the under side of which the bend of the U-shaped detent-frame comes in contact, while the forward tipping or rocking of the chair-body is limited by suitable lugs or projections *f' f'* of the seat-frame extension *f*, said lugs, when the seat reaches a horizontal position, resting upon the upper surface of the flange *g*. The advantages of this locking device are that it may be operated

from either side of the chair to disengage it from the rack, and that the pressure of the foot and weight of the operator may be made available to aid or assist in the operation of rocking or tilting the chair upon its pivots, the position naturally assumed by the operator when releasing the detent from the stationary rack enabling him to brace himself, and, with his hand or hands upon the chair-frame and foot upon the lever, to easily and quickly tilt the chair with the heaviest patient seated therein, the detent being forced into engagement with the rack by its spring the instant the pressure of the foot is removed.

In the chair thus far described the rack is convex, and is secured to the plunger; but if the pressure of the foot of the operator is not to be employed to tilt the chair-frame the rack may be concave and be secured to the chair-frame, while the detent-frame and foot-lever may be connected with the plunger.

The foot-board or platform I′ is supported by side pieces or brackets, J J, preferably of metal, fitted to and supported by the pendent frame F^2, the platform being a fixed or unadjustable one in this instance. The outer ends of the brackets J are shown as bent upward at an angle or curve to the platform and longitudinally slotted at *j*.

To each bracket J, below the slots *j*, and upon the inside of said brackets, are pivoted, at their lower ends, arms or links K K, and upon the opposite ends of said arms is pivoted, at its ends, and at or near one edge, a foot-rest or limb-support, L, capable of being turned backward and forward on its pivots relatively to the seat, so that the foot-rest is reversible relatively to the chair frame or seat, and to the platform or foot-board proper. In order that this foot-rest L may have a wide range of movement with a capacity of being firmly locked in its adjusted position, there are pivoted or jointed to the arms or links K, at or about their center, brace bars or supports M M, said bars or supports being slotted at their outer ends correspondently with the brackets J J. These brace-bars project beyond their points of jointing with the arms K, so as to constitute a support to the foot-rest when turned over toward the seat, as in Fig. 1, for instance, while their opposite slotted ends may be adjusted to support said foot-rest when turned over away from the seat to lengthen the rest, as in Fig. 10, for instance. Through the slots in said brackets, and in said bars from side to side, is passed a clamp rod or bolt, N, having at one end a suitable head, *n*, to abut against the outside of one of the brackets J, and provided at the other end with screw-threads for the reception of a clamp-nut, *n′*, to abut and be tightened, screwed up, or forced against the outside of the opposite bracket J.

Between the supports or brace-bars M M and brackets J J, and surrounding the clamp-rod N, are interposed suitable friction-washers, *k k*, and between the inner sides of the said brace-bars, and surrounding the said clamp rod or bolt, is interposed a tubular rod or sleeve, N′. This arrangement of washers and tubular rod admits of clamping the brackets J J firmly together, and the slotted brace-bars M M between the washers and tubular rod.

To free the connection between the foot-rest and the foot-board or platform proper or its brackets, the clamp-nut is loosened or unscrewed, which leaves the arms and brace-bars free to move about their pivots, and said bars to slide upon the clamp-rod by reason of their slots, and consequently allows the foot-rest to be adjusted backward and forward relatively to the seat to and from the platform or supporting-brackets, and in other various desirable positions, several different positions or adjustments of the foot-rest being exhibited in the drawings.

By tightening or screwing up the clamp-nut the foot-rest will be firmly retained in any position to which it is adjusted. The slots in the brace-bars and brackets may, of course, be lengthened to increase the range of adjustment of the foot-rest, if desired.

It will thus be seen that the foot-rest or limb-support is supported from the platform of a dental chair by connecting devices which permit of a wide range of adjustment relatively to the chair frame and seat, and that these devices, in connection with the pivoting of the rest at its ends at or near one edge, so as to allow of its being turned over backward and forward on its pivots, gives all the required adjustments to accommodate persons of different sizes and insure their ease and comfort.

In order that the back of the chair may be adjusted to different positions it is connected with the chair-frame in the following manner: A cross-bar, O, is supported by the chair-frame at a suitable distance above the rear of the seat, the support of said bar being, in this instance, formed by converging rearward extensions of the side frames or arms of the chair. The said cross-bar is fixed or keyed to its supports, so as to be incapable of turning. Upon this cross-bar, which is preferably round, is mounted a universal clamp-joint, P, which receives and carries the bar Q, supporting at one end the chair-back R. This back bar is fitted to turn and to move endwise in the said joint, and may be secured in any desired position therein by the clamp-screw S thereof; hence said joint forms a universal connection between the chair-back and the body or frame of the chair. This universal clamp-joint, *per se*, is substantially the same as that patented to me December 28, 1875, as No. 171,539, in which patent said joint is shown and described in connection with a head-rest universally adjustable. It will therefore be unnecessary to give an elaborate detailed description of this clamp-joint, it being sufficient for the understanding of my present invention to say that it consists of a sectional frame,

one section of which is capable of turning relatively to the other, and both sections having a transverse opening, one of said openings being for the reception of the cross-bar O and the other for the endwise moving and turning bar Q which carries the chair-back, whereby, by means of suitable clamping-shoes contained within the frame and acted upon by a clamp-screw, S, the frame of the joint is clamped to the cross-bar O, while the movable back bar, Q, is clamped in the frame. The clamp-joint is maintained at or about the center of the cross-bar O by means of loose sleeves *o*, one on each side of the joint, between it and the frame of the chair, while its freedom of movement around the cross-bar is unimpeded, except when the clamp-screw is tightened.

It will thus be seen that the back of the chair is given a universal movement, or, in other words, it is free to be moved about in various directions, rocked from side to side relatively to the seat, and given a wide range of movement in a backward and forward direction and in an upward and downward direction, all of which is permitted by the rocking of the joint upon the cross-bar O by the swiveling or turning of one section of the clamp-joint upon the other at right angles to its movement on the bar O, and by the turning and endwise movement of the movable back bar, Q, in said joint, the parts being firmly and quickly locked by the clamp-screw to secure the back in its adjusted position relatively to the seat.

The chair-back R is connected to its movable back bar, Q, preferably by a joint which permits the back to tilt upon said back bar, and to be locked at any desired angle thereto, this tilting adjustment being independent of the movements of the back bar in the clamp-joint P. This tilting-joint, in this instance, consists of a circular toothed plate, *r*, projecting from a plate secured to the chair-back, said toothed plate being pivoted in a yoke, *q*, formed on the end of the movable back bar, Q. A locking-tooth, *q'*, slides freely endwise in a socket in the back bar, Q, being thrust outward by a suitable spring to engage it with the teeth of the plate *r*, and thus lock or clamp the chair-back at any desired angle to which it may be tilted relatively to its supporting back bar, while said tooth may readily be retracted against the force of its spring by the projecting ends of a guide-pin, q^2, which works in longitudinal slots in the walls of the socketed back bar.

It will be obvious that a tilting clamp-joint other than the one above described may be used in place thereof.

A head-rest standard, T, is carried by the chair-back R, being connected therewith, in this instance, near its upper end, so that the said standard, or a round portion thereof, is upright or in the longitudinal line of the back. Mounted upon this standard T, so as to turn thereon at right angles or horizontally relatively to the chair-back, is a universal clamp-joint, T', substantially the same as that shown in my patent of December 28, 1875, and to the clamp-joint that supports the chair-back hereinbefore referred to. The head-rest, pad, cushion, or support U is mounted upon the end of a carrying-bar, U', by means of a joint, U^2, similar to that between the back bar, Q, and chair-back R, before described, which joint permits the head-rest to be rocked and secured at any desired angle relatively to said head-rest bar U'. This head-rest bar U' is fitted to turn and move endwise, backward, and forward, and sidewise, relatively to the chair-back, in one of the turning or swiveling sections of the universal joint T', whereby, as will be obvious, the head-rest, pad, cushion, or support may be adjusted backward and forward and turned to any desired position relatively to the chair-back and securely clamped by the clamp-screw V, all of said movements or adjustments being permitted by the turning of the clamp-joint horizontally around the standard T, or at right angles to the length of the back, by the rocking of the head-rest bar U' at right angles to the movement of the clamp-joint around the standard T (incident to the use of the swiveling sectional joint-frame) by the turning and endwise movement of the head-rest bar U' in said clamp-joint, and by the independent tilting capacity of the head-rest upon said bar.

Just behind the head-rest, and intermediate of it and the joint which permits said head-rest to be tilted or inclined independently of its carrying-bar, is mounted an arm-rest for the operator, said arm-rest, of course, partaking of all the variable adjustments of the head-rest, whether permitted by the universal clamp-joint T' or the independent rocking joint U^2. This arm-rest Z is supported by a reversible bent arm or support, W, slotted longitudinally at *w w'*, the slot *w* at the inner end of the arm forming a fork, which is slipped over a reduced part, *u*, of the head-rest bar, while the slot *w'* is provided with an enlargement, w^2, at one end, for the reception or passage of a headed pin or bearing, *y*, one of said bearings being at each side of the head-rest frame, at the back thereof, as shown in Figs. 2, 8, and 9.

Upon the outer end of the reversible arm W a support or bracket, Y, is pivoted or jointed, so as to be capable of swiveling freely relatively to the arm W, it being locked, however, at any point desired in the range of its turning or swiveling movement, by a clamp or set-screw, *y'*. The opposite bent end of this swiveling bracket Y is provided with a journal or pin, *x*, upon the outer end of which is fitted, so as to swivel or turn freely, a joint, X, said joint having the capacity of being locked, as against endwise or turning movement upon the journal *x*, by a set-screw, *x'*, which engages the circumferentially-grooved end of the said journal, as shown in Figs. 8 and 9.

The arm-rest proper consists of a suitable

board, cushion, or pad, Z, and is fitted so as to swivel freely relatively to the joint X, being preferably retained in its bearing or socket therein by a split spring, stud, or journal, *z*, which may be inserted in the socket (which is shown as passing entirely through the joint) from either side of the joint, thus enabling the joint to be reversed. The arm-rest is reversible or capable of being shifted to either side of the chair or head-rest, its reversible arm W being detachable for that purpose, by sliding it in the proper direction to bring the opening w^2 of arm W opposite the head of the retaining-pin *y*, when the reversible arm can be removed or detached from the head-rest and reversed, its slotted end *w* being passed over the bearing *u* from the opposite side of the head-rest, and the enlarged slot w^2 over the head of the retaining-pin; and then by moving the bar endwise, so as to carry the said enlarged end of the slot out of line with the retaining-pin, the arm will be firmly supported and locked in position.

It will be seen that the arm-rest is given a wide range of movement in order to render it capable of being placed at any angle or position desired relatively to the head-rest, which movement is permitted by the swiveling or turning of the bracket Y upon the reversible arm W, which permits the rest to be moved toward or from and to the front or back of the head-rest, by the swiveling or turning of the joint X upon the bracket Y at right angles to the movements of said bracket upon the arm W, and by the swiveling or turning of the arm-rest, board, or cushion Z upon its pivot in the swiveling-joint.

I claim as my invention—

1. The combination, substantially as herein-before set forth, of the base, the plunger provided with a longitudinal groove or guide, the movable tongue or bolt engaging said groove to prevent the plunger from turning, while leaving it free to move endwise under the operation of the elevating mechanism, the lever or mechanism to retract said tongue or bolt to permit the turning or swiveling of the plunger, and a clamp operated by said lever to lock the plunger and base against independent movement, when desired.

2. The combination, substantially as herein-before set forth, of the base, the plunger having a longitudinal groove therein, the tongue engaging said groove, its spring, the clamp to lock the plunger to the base, the foot-lever for actuating said clamp, and the cam-surface of said foot-lever to retract the tongue from engagement with the plunger.

3. The combination, substantially as herein-before set forth, of the platform or foot-board proper, the arms or links pivoted thereto and carrying the foot-rest, the slotted brace-bars jointed to said arms, and the clamp-rod and nut to maintain said foot-rest in the various positions in which it may be relatively to said platform.

4. The combination, substantially as herein-before set forth, of the reversible foot-rest, pivoted at its ends near one edge, the adjustable supports which maintain said foot-rest in the desired position when turned on its pivots toward or from the seat, and the clamp acting upon said supports to lock them in their adjusted position.

5. The combination, substantially as herein-before set forth, of the platform, its slotted side pieces or brackets, the arms upon which the foot-rest is pivoted, the slotted brace-bars, and the clamping-rod and nut to clamp the parts together.

6. The combination, substantially as herein-before set forth, of the platform or foot-board proper, its slotted side pieces or brackets, the arms upon which the foot-rest is pivoted, the slotted brace-bars jointed to said arms, the clamp rod or bolt passing through the slotted brace-bars and brackets, the tubular rod surrounding the clamp-rod and interposed between the brace-bars, and the clamping-nut fitted upon the clamp-rod.

7. The combination, substantially as herein-before set forth, of the chair-frame, the universal clamp-joint carried thereby, the movable back bar, upon one end of which the chair-back is carried, and which is movable endwise in said joint, and the joint which intervenes between the chair-back and its movable back bar, and which permits the chair-back to be tilted or inclined relatively to said bar.

8. The combination, substantially as herein-before set forth, of the chair-frame, the cross-bar, the universal sectional clamp-joint mounted so as to rock vertically on said cross-bar, and the movable back bar which carries the chair-back and is fitted to move endwise in one section of said clamp-joint, and is also capable of turning at right angles to the plane of movement of the clamp-joint around its supporting-bar.

9. The combination, substantially as herein-before set forth, of the chair-frame, the cross-bar thereof, the universal sectional clamp-joint, mounted so as to rock vertically on said cross-bar, the movable back bar (which carries the back and is fitted to turn and to move endwise in one section of said clamp-joint,) and the tilting-joint between the chair-back and its movable back bar, which permits the inclination of the back relatively to said back bar to be varied.

10. The combination, substantially as hereinbefore set forth, of the chair-seat, the chair-back, the head-rest standard mounted upright upon said back, so as to partake of its movements, the sectional clamp-joint turning upon said standard at right angles to its axial line, or horizontally relatively to the chair-back, the head-rest bar movable endwise in a section of said clamp-joint, which permits it to be turned substantially at right angles to the plane of movement of the joint around the head-rest standard, the head-rest pad or support, and the

joint interposed between the head-rest pad and the head-rest bar, to permit said pad to be tilted or adjusted angularly relatively to said bar.

11. The combination, substantially as hereinbefore set forth, of the head-rest and the reversible arm, which permits the arm-rest to be shifted to either side of the head-rest, with the swiveling bracket carrying the arm-rest, and a clamp or set-screw to lock the reversible arm and bracket together.

12. The combination, substantially as hereinbefore set forth, of the arm-rest, the reversible arm, the bracket swiveling or turning upon said arm, and the rocking or swiveling joint interposed between the arm-rest and said swiveling bracket.

13. The combination, substantially as hereinbefore set forth, of the reversible arm which permits the arm-rest to be shifted to either side of the head-rest, the swiveling bracket mounted on said arm, the joint carried by the bracket to permit movement of the arm-rest in a plane different from that in which the bracket can be moved relatively to the reversible arm, and the arm-rest fitted to turn relatively to the joint.

14. The combination, substantially as hereinbefore set forth, of the head-rest, the headed retaining-pins on said head-rest, and the slotted reversible arm or support to carry said arm-rest to either side of the chair.

In testimony whereof I have hereunto subscribed my name.

ELI T. STARR.

Witnesses:
WM. A. THORP,
ROBERT GIBSON.