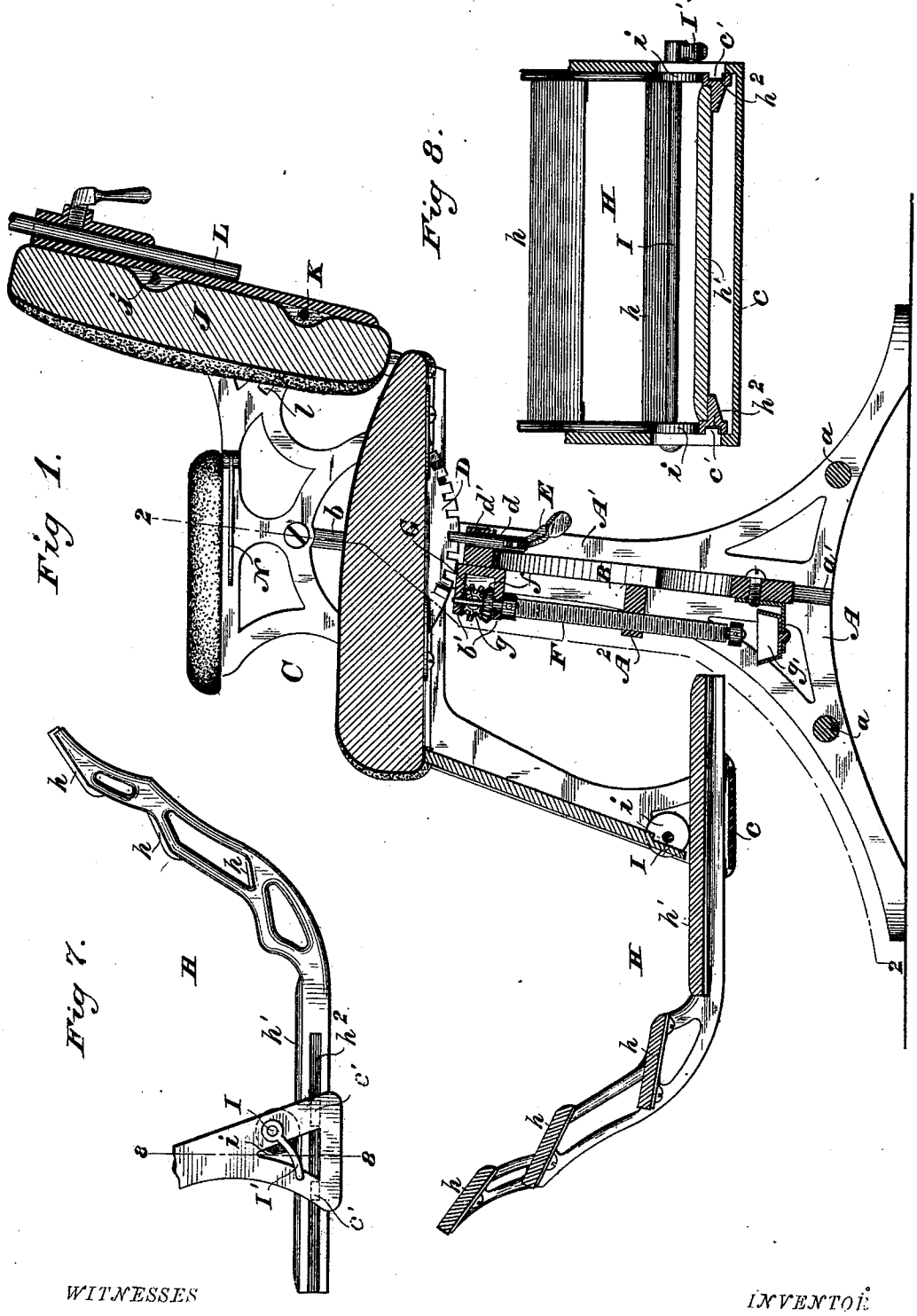
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E. T. STARR.

Dentist's Chair.

No. 215,075. Patented May 6, 1879.



WITNESSES

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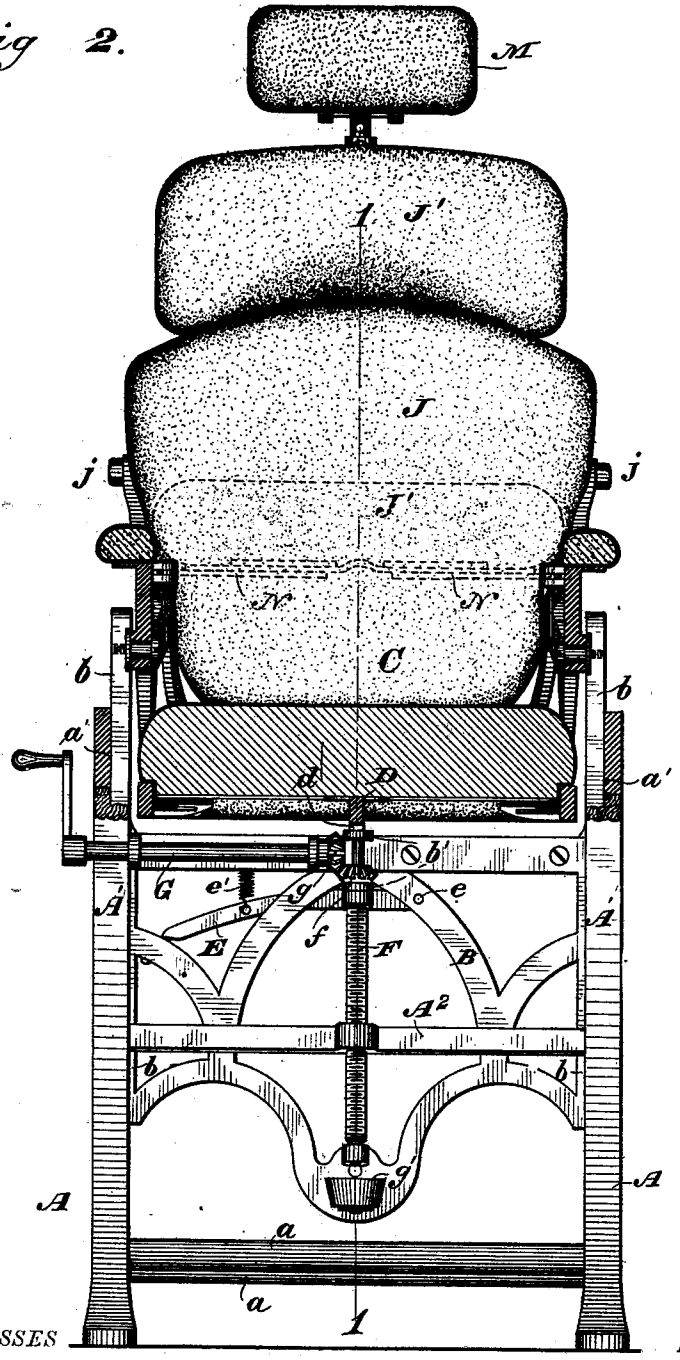
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Fig 2.



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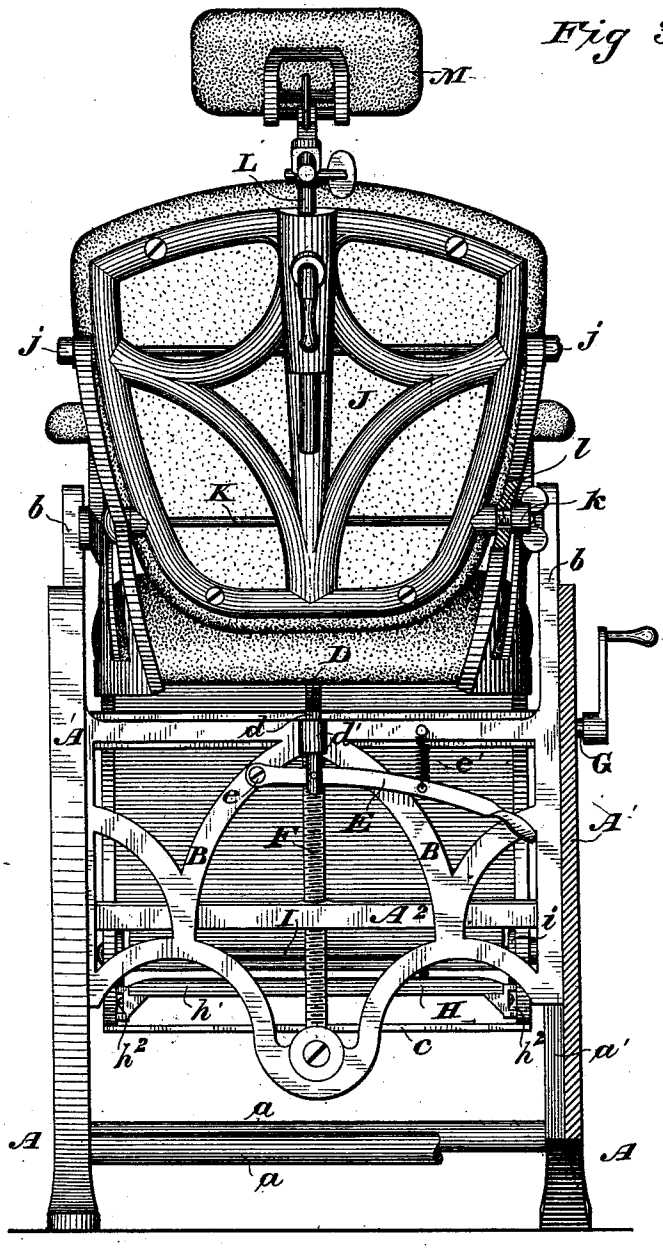
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Fig 3.



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Fig 6.

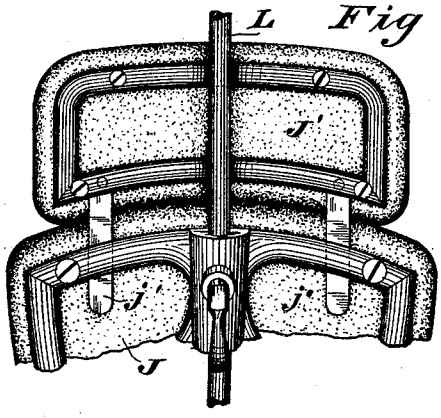
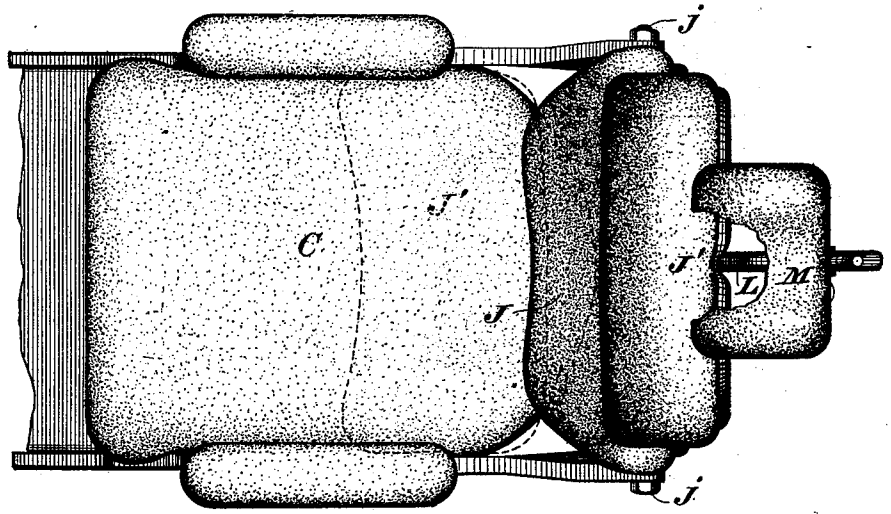


Fig 4.

Fig 5.



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UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO SAMUEL S. WHITE, OF SAME PLACE.

IMPROVEMENT IN DENTISTS' CHAIRS.

Specification forming part of Letters Patent No. **215,075**, dated May 6, 1879; application filed October 18, 1878.

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 Dentists' Chairs, of which the following is a specification.

My invention relates to chairs of the class which are rendered adjustable in order to accommodate persons of different sizes, and to insure their ease and comfort, while enabling the operator, at will, to place the occupant in various positions for the more advantageous and skillful performance of delicate dental operations.

The objects of the invention are to provide a simple, easily-operated, efficient, and comparatively inexpensive chair for dental and similar purposes, having a wide range of adjustment.

The first part of my invention consists in combining a base or frame provided with fixed upright side supporting-standards, a frame or guides adjustable vertically in or upon said standards, a chair-body pivoted to or supported by the vertically-adjustable frame at points above the seat of the chair, and a screw beneath the chair-body to raise and lower it relatively to the base or frame.

The next part of my invention consists in providing the back of a chair with a detachable or supplementary section, forming a continuation of and adding to the length of the back proper when undetached, but adapted to be readily detached, when a short back is desired, without interfering with the adjustability of a head-rest relatively to the back proper.

The next part of my invention consists in providing a chair-body with pivoted or swinging brackets, arms, or supports above the seat, and with a detachable back section, whereby the said section when detached is adapted to form a child's seat, and be supported by the brackets or arms, which are swung out over the seat proper of the chair for that purpose.

My invention consists, finally, of an improved dental chair consisting of a base or frame provided with fixed side supporting standards or uprights, a chair-body pivoted or having its points of support above its seat, and moving vertically between and guided by said standards, so as to be capable of a variable inclination as well as vertical adjustment relatively to the standards or frame, an elevating-screw beneath the chair-body for raising and lowering it relatively to the base, a foot-rest carried by the swinging chair-body, and a head-rest also carried by said body.

The accompanying drawings show all my improvements as embodied in one chair in the best way now known to me. Obviously, however, some of my improvements may be used without the others, and in chairs differing somewhat in their general construction from that shown.

Figure 1 is a vertical longitudinal central section through my improved chair on the line 1 1 of Fig. 2; Fig. 2, a front view thereof, partly in section, on the line 2 2 of Fig. 1; Fig. 3, a rear view thereof with the supplementary back section detached; Fig. 4, a side view of the upper portion of the chair-body, and Fig. 5 a plan or top view of a portion of said chair-body; Fig. 6, a rear view of the upper portion of the chair-back, showing a method of securing the detachable back section in position to constitute a portion of the back or add to its length; Fig. 7, a side view of the platform and its raised foot-rests with a portion of the frame of the chair-body which supports it detached, and Fig. 8 a section therethrough on the line 8 8 of Fig. 7.

The base or supporting frame A of the chair consists of side pieces provided with suitable legs, extending the proper distance in front and rear to prevent accidental tipping over of the chair, and connected together and firmly braced in front and rear by suitable rods or bars *a a*. Rising from or forming portion of the side pieces are fixed standards or uprights A^1 A^1, provided on their inner faces with vertical guide-grooves *a' a'*. These side pieces are preferably of metal, each cast with its standard or upright in a single piece, and in skeleton form, for the sake of cheapness and lightness.

Between the standards, and in the vertical guide-grooves therein, is fitted an open or

skeleton frame, B, preferably cast of metal in a single piece. The vertical side bars or guides *b b* of this frame B, which fit the grooves in the standards A^1, are extended in an upward direction, forming arms or standards, in and between which the chair-body C is pivoted or hung by suitable trunnions, at points above the seat, in such manner that the chair is free to tilt or rock backward and forward to any desired angle of inclination relatively to the carrying-frame, and to the base or supporting-standards, upon pivots which are at or above the center of gravity of the person occupying the chair, thus preventing any tendency to tip over.

In order to lock the chair-body in its tilted or inclined position relatively to the base or frame, and to the carrying-frame, I in this instance secure upon the bottom of the seat a curved rack or toothed plate, D, and upon the skeleton carrying-frame, that moves up and down in the standards, a detent adapted to engage the teeth of the curved rack, said detent consisting of a plunger or catch, *d*, moving in a sleeve, *d'*, on the frame, and pin-jointed to a controlling-lever, E, pivoted at *e*. This controlling-lever is acted upon by a spring, *e'*, which normally keeps the catch in engagement with the curved rack, to lock the chair-body in whatever adjusted position it may be. This lever may be operated, either by the hand or foot, to disengage the detent from its rack when a different inclination is to be given to the chair, and when released automatically engages the detent with the rack by the action of its spring.

The side frames of the chair-body C are preferably constructed of metal, and cast each in skeleton form and in one piece.

To control the height of the chair-body and provide easily and conveniently operated apparatus for elevating and lowering the same, together with the occupant seated therein, I employ a screw-spindle, F, of well-known construction, working in a female screw formed, in this instance, in a rigid bar, A^2, passing centrally beneath the chair-body, and having its ends secured in the standards or uprights of the base or frame. The upper end of this screw is journaled in suitable lugs or arms *b' b'*, mounted upon or forming portions of a bar or part of the carrying-frame B; and between these arms, and upon the screw, is mounted a beveled pinion, *f*, which is driven by a corresponding pinion, *g*, mounted on the end of a shaft, G, journaled in the carrying-frame, and operated by a suitable crank or handle in the usual manner.

The turning of the screw-spindle raises or lowers it, and also the carrying-frame in which the body of the chair is pivoted, relatively to the base or frame.

This elevating-screw, it will be observed, is located centrally or nearly so beneath the body of the chair, which is advantageous in operation; and beneath the lower end of the screw, and upon the carrying frame, is mounted a drip-cup, *g'*, for catching oil that may drip from the screw, and thus prevent its escape upon the floor.

The foot-board or platform H of the chair, upon which the patient steps preparatory to being seated, is supported by a continuation or pendent portion of the frame of the chair, being in this instance an extension of the metallic side frames of the chair-body, the said frames being connected together and braced (in this instance beneath the platform) by a suitable bar or plate, *c*.

The platform or foot-board consists of metallic side pieces, brackets, or arms, curved upward at their outer ends, as shown, where they are connected by suitable foot-rests or supporting-bars *h*, three in number in this instance, one above and a little beyond the other, while the inner ends or straight portions of the metallic side pieces are connected together and braced by a suitable board or bars, h^1, constituting the platform proper. This platform, with its raised and extended foot-rests or foot-supporting bars, is adjustable in its pendent support, being capable of sliding freely therein at right angles, or nearly so, to its support, to carry the foot-rests toward and from the seat or chair-body, and is supported, guided, and steadied by suitable guide-grooves h^2, formed in the outer edges of the metallic side pieces, in which grooves fit lips or projections *c' c'* on the pendent frame. (See Figs. 7 and 8.)

The platform is locked at any desired point by suitable mechanism or by friction, the device employed in this instance being cam-surfaces *i*, one at each side of the platform, the cams being mounted on a suitable shaft, I, having its bearings in the pendent frame. The shaft is adapted to be rocked to bring the cam-surfaces in engagement with the platform, or carry them away therefrom, in this instance, by a short foot-lever, I', mounted on one end of the cam-shaft at the side of the chair.

It will thus be seen that I not only render the foot-rests or supports adjustable to accommodate persons of varying size, but the platform also which carries them, the depth of the platform being sufficient to accommodate any of the ordinary adjustments required.

The back of the chair is composed of a main portion, J, or back proper, and a detachable or supplementary section, J'. The back proper is pivoted near its upper end, at *j*, between extensions of the side frames of the chair, so as to rock, yield, or allow its lower end to swing or be adjusted backward and forward to fit the back of the occupant. The back is locked at any desired angle of inclination by a suitable thumb-wheel, clamp-nut, or handle, *k*, carried by one end of a shaft, K, mounted in bearings in the skeleton back frame, and having its ends working in curved slots *l*, formed in the side frames of the chair-body.

Upon the skeleton metallic frame of the main portion of the chair-back is mounted a vertically-adjustable bar, L, of well-known

construction, carrying a variably-adjusted head-rest, M, (or one having a wide range of adjustment,) which may also be of any well-known construction or form.

The supplementary or detachable back section J′, when undetached, forms a continuation of the back proper, or adds to its length, (see Figs. 2, 4, and 5,) the head-rest being adjusted up above it. This detachable section is secured in place upon the back proper, in this instance, by two pivoted arms or catches, *j′*, which are passed down between the back and its skeleton metallic frame, (see Fig. 6;) but other ways of detachably securing the section will readily suggest themselves.

When a short-bodied person is seated in the chair, the detachable back section may be removed, and the head-rest adjusted relatively to the back proper, (see Figs. 1 and 3,) while, if the patient be very short, or be a child, said back section is transformed into a seat, being supported above the seat proper of the chair, as shown by dotted lines in Figs. 2, 4, and 5, by means of suitable brackets or supports N N, Fig. 2, adapted to be swung out from under the arms of the chair, where they lie normally lie out of the way for the purpose.

The operation, adjustments, and advantages of my improved chair will be understood and appreciated without further elaboration.

It may be well to state that chairs constructed with side supporting standards or uprights, in which move vertically a carrying-frame supporting a seat and back, in combination with elevating mechanism, are very old; but they differ widely from my improved chair, organized as hereinbefore fully described.

It is also old, broadly considered, to pivot a chair-body in such manner that the pivots are above the center of gravity of the person occupying the chair; but it is new in a chair constructed and organized as mine is, and is a feature in its organization of considerable value.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of the base or frame provided with fixed side supporting-standards, the frame or guides adjustable vertically in or upon said standards, the chair-body pivoted to or supported by the vertically-adjustable frame at points above the seat of the chair, and the screw beneath the chair-body to raise and lower it relatively to the base or frame.

2. The chair-back constructed substantially as hereinbefore set forth, with a supplementary or detachable section, forming a continuation of and adding to the length of the back proper when undetached, but adapted to be readily detached when a short back is desired, without interfering with the adjustability of a head-rest relatively to the back.

3. The chair-body provided with pivoted brackets or supports above the seat, and with a detachable back section, whereby the said section, when detached, is adapted to form a child's seat, and be supported by the brackets which are swung out over the seat proper of the chair for that purpose.

4. The improved dental chair consisting of a base or frame provided with fixed side supporting-standards or uprights, a chair-body pivoted or having its points of support above its seat and moving vertically between and guided by said standards, so as to be capable of a variable inclination as well as a vertical adjustment relatively to the standards or frame, an elevating-screw beneath the chair-body for raising and lowering it relatively to the base, a foot-rest carried by the swinging chair-body, and a head-rest also carried by said body.

In testimony whereof I have hereunto subscribed my name.

ELI T. STARR.

Witnesses:
WM. J. PEYTON,
JOHN F. PARET.