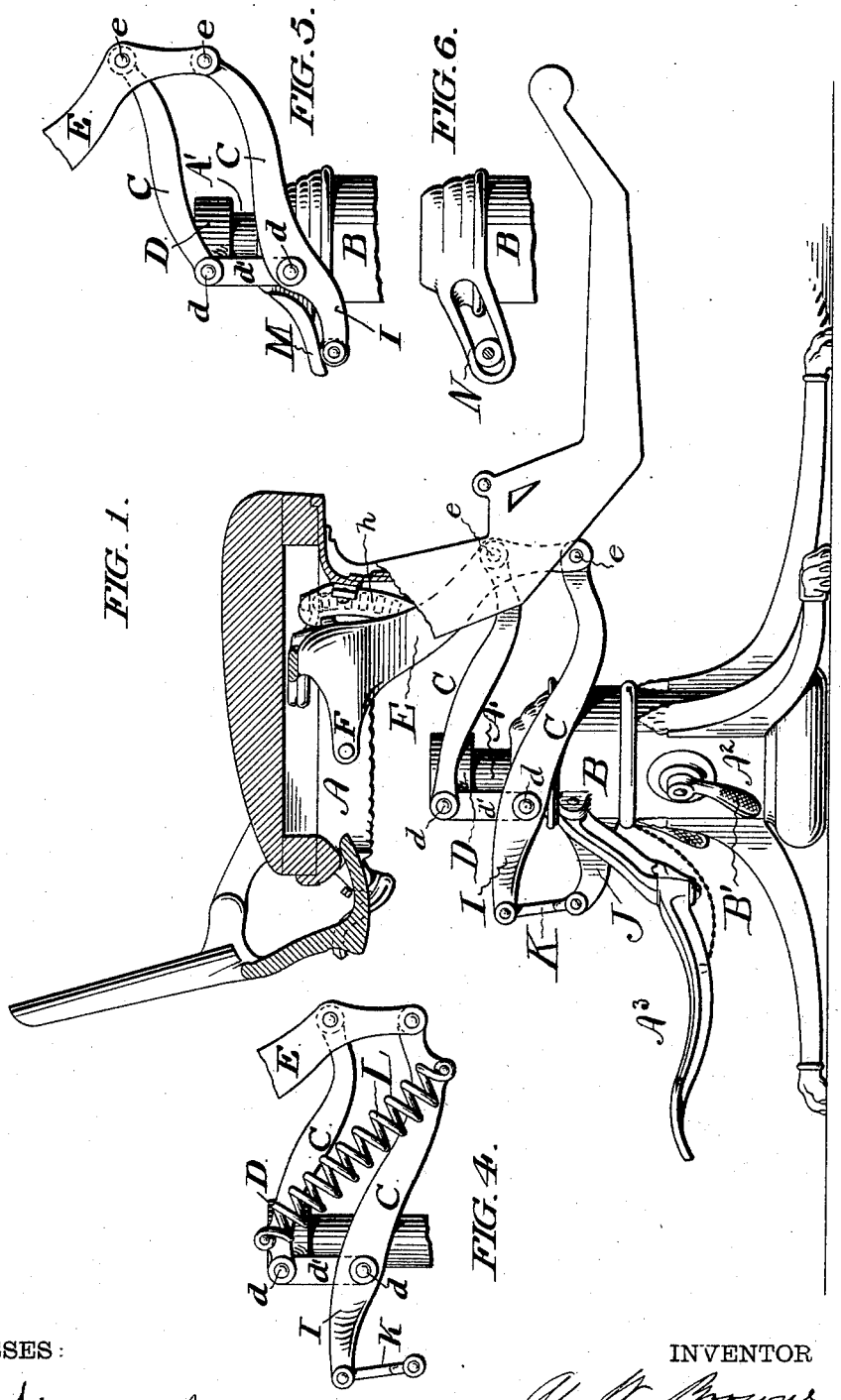
(No Model.) 2 Sheets—Sheet 1.

A. W. BROWNE.

DENTAL CHAIR.

No. 519,883. Patented May 15, 1894.



WITNESSES:

Edwd. D. Simpson, Jr.

Robt. E. Gordon

INVENTOR

A. W. Browne

By Atty J. B. Peyton.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

A. W. BROWNE.

DENTAL CHAIR.

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FIG. 3.

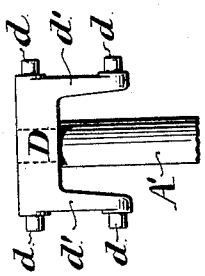
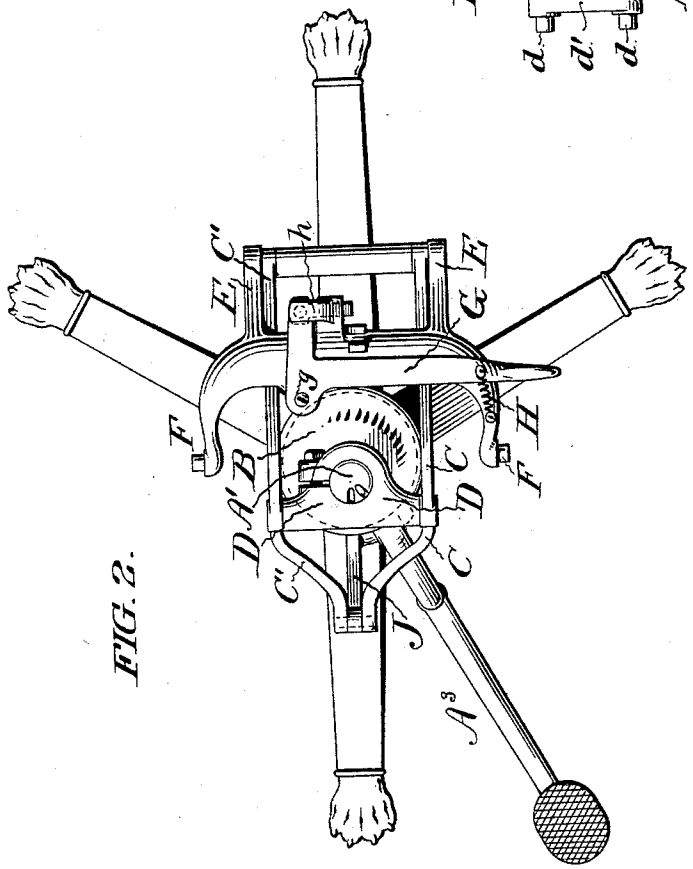


FIG. 2.



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UNITED STATES PATENT OFFICE.

ARTHUR W. BROWNE, OF PRINCE'S BAY, NEW YORK, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 519,883, dated May 15, 1894.

Application filed February 5, 1894. Serial No. 499,049. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. BROWNE, a citizen of the United States, residing in Prince's Bay, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Dental Chairs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements, as hereinafter claimed, in means for supporting and imparting a wide range of vertical adjustment to the bodies of dental chairs.

In the accompanying drawings, which show my improvements as suitably applied to a dental chair of well known construction, Figure 1 is a view mainly in side elevation, with portions of the chair—the particular construction of which is not essential to my invention—in section. Fig. 2 is a plan view, with the chair body omitted. Fig. 3 is a rear elevation showing a portion of the plunger and its bracket for pivoting the parallel arms of the supplementary elevating and lowering mechanism. Figs. 4, 5 and 6 are side elevations showing modifications.

My improvements are in this instance represented as applied to the well known dental chair shown in the United States Letters Patent No. 197,441, dated November 20, 1877, and No. 483,807, dated October 4, 1892. As in said patents there is provided supporting mechanism for a vertically adjustable support (hereinafter termed the main elevating and lowering support) for the chair body A, said support consisting of the plunger A′ having vertically adjustable connection with the base or pedestal A^2 of the supporting mechanism and actuated by means of the jointed elevating lever A^3 and co-operating devices, the lever being jointed to the cylinder B of the supporting mechanism, which cylinder is adapted to turn horizontally in the pedestal and to be locked therein by the locking lever B′. The vertically adjustable support A′ has no horizontal or turning movement in the non-elevating supporting cylinder B to which the elevating lever is attached, and the manner of upholding and of lowering the support is as fully explained in the above mentioned Patent No. 197,441.

Supplementary elevating and lowering mechanism interposed between the chair body, which it carries, and the main elevating and lowering support A′, is provided as follows:—Two pairs or sets of parallel arms C C and C′ C′, a pair at each side of the main elevating and lowering support, have jointed connection with the upper end of this support by way of a bracket-like attachment D thereof removably and adjustably secured to the support in manner such as set forth in the before-mentioned Patent No. 483,807. The pair of arms C C are pivotally connected, one above the other, with the bracket D at one side of the main elevating and lowering support at *d d*, and the pair of arms C′ C′ have similar pivotal connection with the bracket at the opposite side of the support, the lower arm of each pair of parallel arms being pivoted to a downwardly projecting portion or hanger *d′* of the bracket D. At their forward or outer ends the parallel arms are jointed to a chair body carrier E, the pair of arms C C being pivoted to this carrier at *e e*, and the pair of arms C′ C′ similarly pivoted thereto.

It will of course be understood that the distance between the points of pivotal connection of either pair of arms with the carrier at their outer ends is the same as that between the points of their pivotal connection with the bracket of the main elevating and lowering support, so as to prevent tilting of the carrier and maintain it in proper upright position throughout the vertical adjustments imparted to it by rocking the parallel arms about their pivotal connection with the main support.

The chair body carrier E constitutes a part of the supplementary elevating and lowering mechanism, and the chair body has suitable supporting connection with it, while provision is made for tilting the chair body upon the carrier and for locking it in any position to which it may be adjusted by vertically tilting it. The chair body tilting mechanism is such, substantially, as shown in the before-mentioned patents, the lever of the tilting mechanism being, however, mounted upon the supplementary elevating and lowering

mechanism instead of being located as in said patents.

As shown, the chair body is mounted upon journals or trunnions F F of its carrier of the supplementary elevating and lowering mechanism, and a lever G is fulcrumed at *g* upon the carrier and acted upon by the spring H, the tendency of which is to hold the lever engaged with a detent rack *h* on the chair body and thus lock the body in the position to which it may be adjusted by tilting it upon the trunnions F F.

To provide, in accordance with my improvements, for actuating the supplementary elevating and lowering mechanism by the main elevating and lowering support by which said mechanism is carried, suitable controlling connection is made between the supplementary elevating and lowering mechanism and a part of the supporting mechanism to which no vertical movement is imparted, so that when upward or downward movement is imparted to the main elevating and lowering support the parallel arms partake of such movement and also are caused to rock by means of their controlling connection and thus quickly raise or lower the chair body to which a wide range of vertical movement may be imparted.

As shown a rearward extension I of the supplementary raising and lowering mechanism is provided by extending the lower arms of the two pairs of parallel arms rearwardly from their pivotal supporting connections with the main elevating and lowering support. The rear ends of these arms incline inwardly or converge toward each other, and have jointed connection with a bracket or arm J rigid with the cylinder B of the supporting mechanism of the main elevating and lowering support. The parallel arms controlling connection thus made between the bracket J and rearward extension of the supplementary elevating and lowering mechanism, as shown, consists of a link K jointed by being pivoted at its opposite ends to the said bracket and the rearward extension of the supplementary elevating and lowering mechanism. In lieu of this link of the controlling connection an equivalent may be employed; and instead of forming the rearward extension of the supplementary raising and lowering mechanism by prolongations of the lower arms of the two pairs of parallel arms, such rearward extension may be formed by backward prolongations of the upper arms of the two pairs of parallel arms; or but a single arm or an attachment to one or more of the arms might be prolonged rearwardly to constitute the rearward extension of the supplementary elevating and lowering mechanism which has connection with a non-elevating portion (in this instance the cylinder B) of the supporting mechanism for the main elevating and lowering support.

From the above description it will be seen that vertical movement of the main elevating and lowering support, to either raise or lower it, imparts similar movement to the supplementary raising and lowering mechanism, but to an increased extent, and that consequently the chair body may be quickly raised or lowered and has a wide range of vertical adjustment. The extent to which the movement imparted to the chair body may be increased over that imparted to the main elevating and lowering support depends, as will be readily understood, upon the relative lengths of the rearward extension of the supplementary raising and lowering mechanism and the parallel arms or those portions thereof in advance of their jointed connection with the main elevating and lowering support.

As shown by Fig. 4 a counterbalancing spring L connects the upper and lower parallel arms C C, the spring being connected with the upper arm near its inner end and with the lower arm near its outer end. A spring may similarly connect the arms C′ C′. It will be seen that the counterbalancing spring (or springs) tends to rock the parallel arms upward to elevate their outer ends, and so, according to the strength of the spring (or springs), counterbalances more or less of the weight carried by these arms, thus reducing the work to be done by means of the elevating lever.

I make no claim herein involving the counterbalancing spring as this feature is embodied in my prior application Serial No. 494,803, filed December 26, 1893.

Fig. 5 shows a modification of the controlling connection between the parallel arms and the supporting mechanism for causing the arms to rock about their pivotal connection with the main raising and lowering support. In this modification the rearward extension I of the parallel arms carries a roller and bears upward against the inclined or curved under surface of a projection M of the cylinder B of the supporting mechanism.

In Fig. 6 a slotted projection N on the cylinder of the supporting mechanism is engaged by a roller carried by the extension of the parallel arms as will be understood although the arms and their extension are omitted in this view.

I claim as my invention—

1. The combination, in a dental chair, of the main elevating and lowering support, its supporting mechanism, the supplementary elevating and lowering mechanism comprising the chair body carrier and the parallel arms pivoted thereto and carried by the main elevating and lowering support with which they have jointed supporting connection, and the controlling connection between said arms and the supporting mechanism, whereby the arms partake of the vertical movements of the main support as well as rock about their jointed connection therewith, substantially as set forth.

2. The combination of the main elevating and lowering support, its supporting mech-

anism, the supplementary elevating and lowering mechanism carried by the main elevating and lowering support and consisting of the chair body carrier and the parallel arms pivoted thereto and having jointed supporting connection with the main elevating and lowering support and controlling connection with the supporting mechanism, and means for elevating and lowering said support and simultaneously actuating the supplementary elevating and lowering mechanism, substantially as set forth.

3. The combination of the main elevating and lowering support, its supporting mechanism, the supplementary elevating and lowering mechanism comprising the parallel arms having jointed connection with the main elevating and lowering support and provided with the rearward extension having connection with said supporting mechanism, and the chair body carried by the supplementary elevating and lowering mechanism, substantially as set forth.

4. The combination of the main elevating and lowering support, its supporting mechanism, the bracket at the upper end of said support provided with the hangers, the supplementary elevating and lowering mechanism comprising the parallel arms having jointed connection with said bracket and provided with the rearward extension, the connection between said extension and said supporting mechanism, and the chair body carried by the supplementary elevating and lowering mechanism, substantially as set forth.

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

ARTHUR W. BROWNE.

Witnesses:
ELI T. STARR,
EDW. F. SIMPSON, Jr.