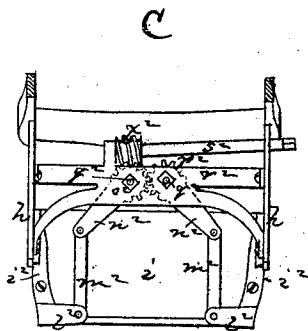
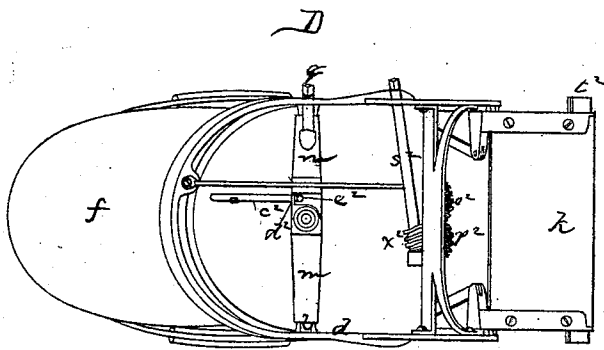
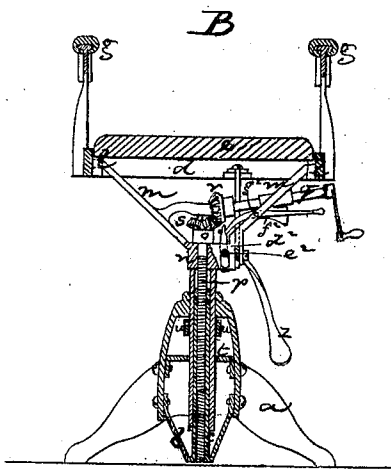
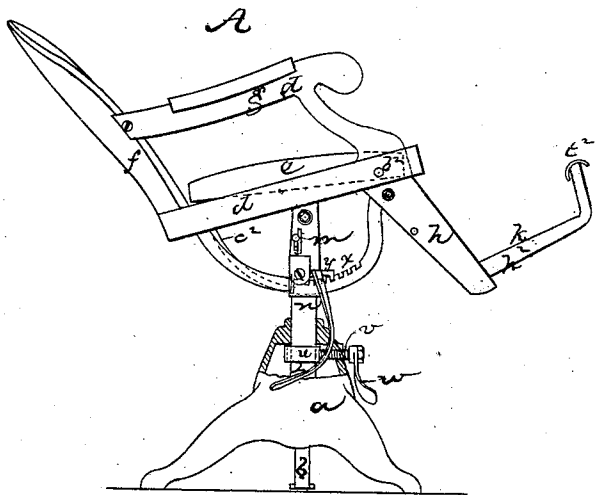


O. C. WHITE.

Improvement in Dentists' Chairs.

No. 130,093.

Patented July 30, 1872.



WITNESSES.

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OTIS C. WHITE, OF HOPKINTON, MASSACHUSETTS.

IMPROVEMENT IN DENTISTS' CHAIRS.

Specification forming part of Letters Patent No. 130,093, dated July 30, 1872.

To all whom it may concern:

Be it known that I, OTIS C. WHITE, of Hopkinton, in the county of Suffolk and State of Massachusetts, have invented an Improved Dentists' Chair; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates to the construction of dentists' chairs, with reference to the organization of mechanism for raising and lowering the seat and back frames, (or the whole chair above the stool or stand,) of the mechanism for retaining the chair in inclined position, of the mechanism for raising and lowering the foot-rest with reference to the seat or seat-frame, and of the mechanism for varying the inclination of the seat with reference to the seat-frame and back.

In my improved chair I make the stationary stand or stool with a central and vertical nut-threaded tube extending down through it, and supported upon a suitable step or bearing near the floor, the top of the tube being at or about in the plane of the top of the stool, the tube being fixed or non-rotative, and from a bar extending under the bottom of the chair-frame I extend a vertical sleeve that is fixed as regards the chair-frame, and encompasses and slides vertically upon the nut-threaded tube, and also turns freely on the tube to vary the facing position of the chair, there being within this tube, and supported so as to turn freely therein, a vertical screw-threaded spindle, which fits and turns in the nut-thread of the stool-tube, the spindle being geared to a horizontal winch-shaft under the chair-seat, so that by turning said shaft the screw-spindle is rotated, and the chair is thereby raised or lowered. This method of supporting, raising, and lowering the seat, and the mechanism therefor, constitute one feature of my invention.

In connection with the chair-seat and its frame, I use a foot-rest having provision for vertical adjustment or adjustment toward and from the seat, and such adjustable foot-rest, and its construction and method of support, also constitute features of my invention.

In connection with the tipping chair-seat

frame and back, I employ a seat pivoted at its front part, and made vertically adjustable, or adjustable as to inclination, with reference to the inclination to which the back and frame may be brought, so that in tipping the back and frame the horizontality of the seat may be, to a greater or less extent, preserved. This constitutes another feature of the invention.

Other minor features of the invention will be understood by the description of the construction.

The drawing represents a chair embodying the improvements.

A shows the chair in side elevation. B is a vertical cross-section. C shows the inner side of the foot-rest mechanism. D is a reversed plan of the seat, seat-frame, &c.

a denotes the stationary metal stool, stand, or base upon which the seat-frame and its appurtenances are supported. The center or body part of this stand is hollow, and beneath this body is a step or support plate, *b*, upon which stands the vertical nut-threaded stationary tube *c*, which extends up centrally through the stool, as seen at B. *d* denotes the chair-frame, upon which is supported the seat *e*, the back *f*, and the arms *g*, and from which depend bars *h* and a front piece, *i*, having at their lower ends the foot-rest *k*. The chair-frame *d* is directly supported upon pivots *l* at the tops of two arms, *m*, extending from a sleeve, *n*, and on the top of this sleeve rests a collar, *o*, from which depends a vertical screw-threaded shaft or spindle, *p*, which is located centrally within the sleeve *n*, said shaft being rotative, and being operated by a winch-shaft, *q*, which bears at its end a bevel-pinion, *r*, meshing into and driving a pinion, *s*, on the top of the spindle-collar *o*. The sleeve *n* fits and slides and turns freely in the stool *a*, (the top of the stool being formed with a hole of the size of the outer diameter of the sleeve, and there being a guide-plate or collar, *t*, in the stool-body, through which plate the sleeve passes,) and the screw-spindle or shaft enters and turns in the nut-threaded tube *c*, so that, the nut-tube being stationary, rotation of the spindle *p* will effect the rise or fall of the chair-seat, according as the shaft *p* is turned in one or the opposite direction.

By this method of operating the chair-seat it will be seen that I not only entirely conceal the screw, but that the sleeve N gives a firm support to the seat against lateral-tipping motion and insures a capability of free and easy rotation of the screw-spindle at all times. The sleeve turns freely to permit the chair to face in any direction and to retain the seat in any position, both as to height and as to its facing. A clamp-ring, u , is used, a screw, v , working in a nut-thread in said ring, said screw having at its outer end an arm, w , which is so located that it can be freely moved by the foot of the operator, who, by pushing the arm in one or the opposite direction, tightens the ring against the sleeve, and thereby fastens the sleeve and chair in position, or loosens the ring and thereby enables the sleeve and chair-seat to be turned freely or raised or lowered. The chair-frame tips freely on the pivots l , and beneath the frame d is fixed the curved rack-bar x , which, by means of a pawl, y , sustains the frame in tipped position, the pawl being thrown into engagement with the rack by a suitable spring and having extending from it an arm, z , the location of the lower end of which is such that the operator can readily operate it by foot to throw the pawl out of engagement with the rack and permit the vertical angle of the chair-frame to be varied as may be desirable. It is often desirable to maintain the seat in horizontal position when the frame is tipped, or that it shall not be tipped to the same extent that the frame is tipped. To provide for relative movements or positions of the seat and frame I pivot the seat a^2 at its front, as seen at b^2 , and extend from its under side, near the rear edge, a curved rod or bar, c^2 , said rod passing through a bearing, d^2 . When the frame d is tipped back the seat may be kept from tipping with it, or to the same degree, by means of a stop, e^2 , jointed to the inner arm of a lever, f^2 , pivoted at g^2 , the outer arm of said lever extending out to the side of the chair, so that the operator, by drawing it up, can throw down the stop e^2 , said stop, when thrown down, preventing the rod from moving forward with the rack, thereby keeping the rear side of the seat from moving. By making the top of the rod c^2 with teeth the relative angle of the seat may be regulated by throwing the stop into connection with any part of the teeth. The foot-frame, instead of being immovably attached to the

frame, is made capable of vertical movement and adjustment as follows: The end bars h^2 have extending up from them bars i^2 , the outer edges of which enter and slide in grooves on the inner sides of the frame-pieces h , and ears l^2 extending from the bars i^2 are connected by links m^2 with arms n^2 projecting from segmental gears $o^2 p^2$ pivoted by pins q^2 to a cross-bar or plate, r^2 . The two gears mesh, and with one of them engages a screw or worm, x^2 , on a shaft, s^2 . By turning this shaft the foot-rest may be raised or lowered, the rotation of the shaft turning the segments and thereby raising or depressing the links and elevating or lowering the foot-rest, the rest remaining at whatever position it may be brought by such rotation of the shaft. At the front of the foot-rest is a foot-bar, t^2 , and each end piece is made to embrace the bar-supports u^2 , the slides, and the ears l^2 in one casting.

By these improvements a dentist's chair is made with all desirable provisions as to adjustment, the means of manipulation being very simple and such as may be freely used with ease and facility, and without disturbance or annoyance of a patient occupying the chair.

I claim—

1. The combination of the stationary internally nut-threaded tube c , rotating screw-shaft or spindle p , and sliding sleeve n , the latter encompassing both the tube and spindle, substantially as shown and described.

2. In combination with the sliding sleeve n and its inclosed screw-spindle p , the clamping u , screw v , and arm w , substantially as shown and described.

3. In combination with the tipping-frame d and the pivoted seat e , the bar c^2 and stop e^2 , substantially as shown and described.

4. The combination, with the foot-rest k made adjustable in height or with reference to the seat or seat-frame, of the worm-shaft s^2 , segmental gears $o^2 p^2$ and arms n^2 , links m^2 , and foot-rest frame, substantially as shown and described.

5. The foot-frame pieces, each made with the side bar h^2 , arm i^2 , and ears l^2 , the whole cast in one piece, substantially as and for the purpose shown and described.

OTIS C. WHITE.

Witnesses:

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JOHN A. WOODBURY.