



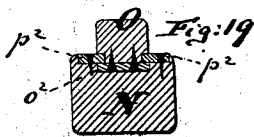
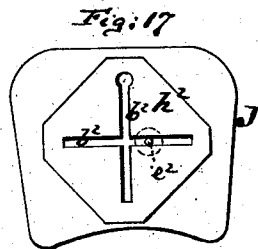
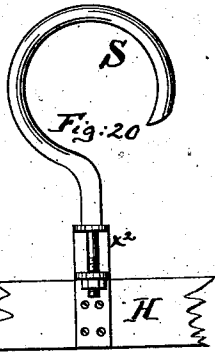
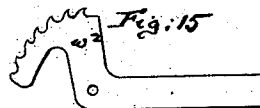
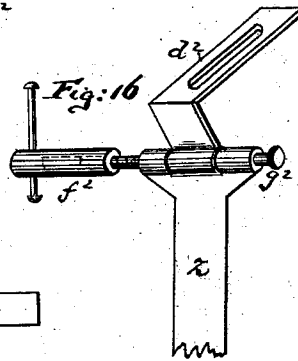
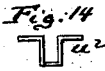
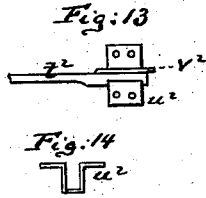
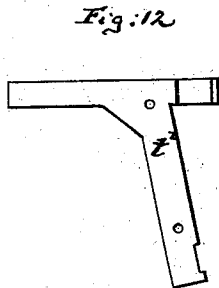
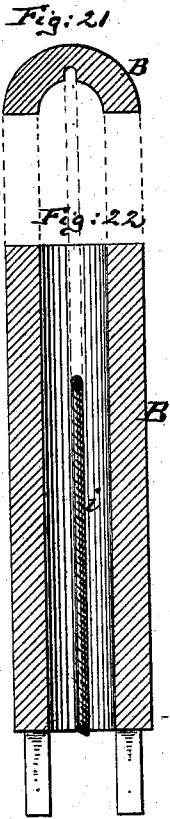
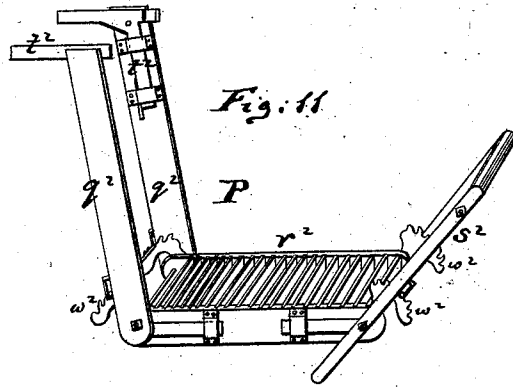
(No Model.)

2 Sheets—Sheet 2.

E. P. STILES.  
DENTAL CHAIR.

No. 294,286.

Patented Feb. 26, 1884.



Witnesses:  
John C. Turnbridge,  
Nedy S. Schultz.

Inventor:  
E. P. Stiles  
by his attorney  
Boniesen & Sheple

# UNITED STATES PATENT OFFICE.

EDMUND P. STILES, OF AUSTIN, TEXAS.

## DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 294,286, dated February 26, 1884.

Application filed April 24, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, EDMUND P. STILES, of Austin, in the county of Travis and State of Texas, have invented an Improved Dental Chair, of which the following is a specification.

Figure 1 is a side view, partly in section, of my improved dental chair. Fig. 2 is a face view of the child's-seat attachment for said chair; Fig. 3, a vertical cross-section of said child's-seat attachment. Figs. 4, 5, 6, 7, 8, 9, 10 are detail views of parts entering into the construction of the swiveled post for the chair; and are hereinafter more fully described. Fig. 11 is a detail perspective view of the foot-rest portion of the chair; Figs. 12, 13, 14, and 15, detail views of parts pertaining to said foot-rest attachment. Fig. 16 is a perspective view of the bracket holding the head-rest; Fig. 17, an under side view of the head-rest. Fig. 18 is a top view of the arm-support of the chair; Fig. 19, a vertical cross-section of the same, showing its manner of attachment to the chair-braces, the line *c c*, Fig. 1, indicating the plane of section. Fig. 20 is a detail top view of the arm for holding the spittoon; Fig. 21, a horizontal section of one-half of the tubular post that supports the chair, and Fig. 22 a vertical longitudinal section thereof.

This invention relates to several improvements in the construction of dental chairs, more particularly to a new arrangement of parts for making the chair vertically adjustable, and adapting the chair to the reception of an adjustable child's seat, and to the means for supporting the spittoon.

The invention consists in the new combinations of parts that pertain to the several portions of the chair, and that are hereinafter more fully described.

My new chair is in every respect portable, can be readily taken apart and folded into a small compass, and is adaptable to all the necessities of a dentist, being at the same time very light. It possesses all the movements of the most perfect chair, excepting the lateral oscillatory movement.

In the accompanying drawings, A represents the foot of the chair. The same is formed of only two bars of wood, *a* and *b*, that cross each other beneath the center or vertical axis of a vertical tube, B, which constitutes the

pedestal of the chair. The tube B has at its lower end four outwardly-projecting wings, *d d*, each of which is cap-shaped—that is, hollow underneath and open at the ends—as is more fully shown in the bottom view, Fig. 10, of said tubing B, each wing *d* fitting over the corresponding portion of the bar *a* or *b* of the foot A, which is beneath it, so that thus the said two bars that constitute the foot are properly braced and spaced, and also properly joined to the superstructure of the pedestal. Suitable bolts are added, to render the connection between the bars of the foot and the pedestal more secure.

Fig. 9 shows a top view of the part of the tube B that has the wings *d*. The part of the tube B which is shown in top view, Fig. 9, and in bottom view in Fig. 10, and which has been described as part and parcel of the vertical tube B, may be a separate short metallic socket, into which the lower end of the tube B is received, and in that case the tube B may be made of wood; but I do not wish to limit myself to the making of the lower winged portion that has the extensions *d* either separate from or in one piece with the tube B, nor to the making of any part of the pedestal of any particular material. The bolts *e*, which may be used to render the connection between the bars of the foot A and the superstructure of the pedestal more rigid, may extend, as is indicated in Fig. 1, through a plate, *f*, which is at the bottom of the raised center of the foot, vertically upward either through or alongside the cylinder B, and through a plate, *g*, which rests on top of the cylinder B. Of course the plate *g* is of annular form, to correspond in that respect with the general cross-section of the tube B.

The body of the chair is secured to a vertical post, D, which projects from its bottom, and which is adapted to fit into the pedestal-tube B. To the lower end of this post D is secured, as is more clearly shown in Figs. 5 and 6, a small grooved friction-roller, *h*, which rests, when the post D is inserted into the tube B, on a cable, *i*, of which one end is secured in the upper portion of the tube B, on the inner side of said tube, while the other end passes at about the same level through an opening formed on the other side of the tube,

where it passes over a friction-roller, *j*, and then is secured to a windlass, *k*, all as more generally indicated in Fig. 1. This windlass *k* has its bearings in a strap, *l*, which is rigidly attached to the tube B, as shown. By turning the windlass *k*, which has a proper click attachment to lock it in the position desired, the cable *i* will be moved so as to lift or lower the post D and hold it in the position desired, thus adjusting the entire chair-body to the desired height. The cylinder B, in order to receive the vertical parts of the cable *i* within it, is grooved vertically on opposite sides of its interior, as is more clearly shown in Figs. 21 and 22, Fig. 21 being a cross-section of one half of the cylinder B, and showing one interior groove, and Fig. 22 being a vertical section of the same half of the cylinder B, showing the cable in said groove to the point of exit.

Fig. 5 is a vertical section through the lower part of the post D; Fig. 6, a side view of the lower part of the post D; Fig. 7, a detail face view of the roller *h* and its connections; and Fig. 8 is a plan or top view of the tube B, showing the plate *g* and bolts *e* in their proper relative positions, and showing the post D in horizontal section. The lower end of the post D is hollowed out to receive the spindle *m* of the block E, that carries the roller *h*. It will be seen that when the block E rests on the cable *i*, the post D, resting on the pivot *m* of the block E, will be free to rotate horizontally around the spindle *m*, thus permitting the chair to be turned horizontally to any desired extent; but a set-screw, *n*, which is indicated by dotted lines in Fig. 1, and which passes through the tube B and bears against the post D, will serve to lock the chair in the desired horizontal position to which it may have been turned. The cable *i*, at the end which is definitely secured to the cylinder B, is secured by a knot tied in it, as indicated in Fig. 1, or in any other suitable manner. It will be perceived from Figs. 5 and 6 that the spindle *m* of the block of the roller *h* is slightly longer than the recess or socket in the lower end of the post D, so that the post D really rests upon the upper end of the spindle *m*. The block E, in which the roller *h* is hung, has small notches *o* cut out at each side, which notches allow the cable *i* to pass, without causing undue frictional contact, from the grooves of the cylinder B into the grooved part of the roller *h*. The upper end of the post D enters a metallic socket, F, of which Fig. 4 is a perspective view. Upon the wings *p* of this socket F, and between the upwardly-projecting lugs *q* thereof, is placed a horizontal bar, G, of wood or other substance, which at its ends is turned or otherwise provided with projecting trunnions *r*, that enter proper bearings or sockets, *s*, which are attached to the under side of the seat H of the chair-body. On the trunnions *r* the chair-body can be swung into any suitable inclined position longitudinally.

With the socket-piece F is also connected a brace-rod, *t*, which is pivoted to another ear, *u*, that extends backward from the socket F. The rod *t* passes through a clamp, *v*, that is attached to the rear portion of the chair-seat H. By the thumb-screw of this clamp *v* the inclined position to which the chair may have been adjusted by turning it on the trunnions *r* can be maintained.

I is the back of the chair, formed by preference of three vertical bars, *w*, *x*, and *y*. (See Fig. 2.) The side bars, *w* and *y*, are at their extremities properly braced together by horizontal or diagonal braces, while the middle bar, *x*, is a strengthening appliance or brace. The upper part of the vertical brace *x* is mortised out, as indicated by dotted lines in Fig. 1, so as to form a sheath for the rod *z*, that can be raised or lowered in said sheath at pleasure, and clamped in position by a small set-screw, *a*<sup>2</sup>. The rod *z* serves to support the head-rest J. This head-rest J, of which there is more plainly shown a bottom view in Fig. 17, contains at its bottom a cross-slot, *b*<sup>2</sup>, and rests on an angle-iron, *d*<sup>2</sup>, of which and of whose connections a perspective view is shown in Fig. 16. The upper wing of this angle-iron *d*<sup>2</sup> is slotted longitudinally, and through this slot and into the cross-slot *b*<sup>2</sup> of the head-rest J enters a bolt, *e*<sup>2</sup>, having a thumb-nut, so that when the head-rest has been adjusted by clamping the thumb-nut it will be held to the angle-iron *d*<sup>2</sup> in any desired position. The lower wing of the angle-iron *d*<sup>2</sup> is pivoted to the upper end of the rod *z*, the pivotal connection being such that it will be capable of being rigidly fastened by turning a nut, *f*<sup>2</sup>, on the screw-pivot *g*<sup>2</sup>, that establishes said connection between the parts *z* and *d*<sup>2</sup>, all as indicated in Fig. 16. Thus by clamping the pivot *g*<sup>2</sup> the inclination of the head-rest may be fixed at pleasure. The middle of the bolt *e*<sup>2</sup> is preferably square and closely fitted in the square opening through the shorter arm of the angle-iron *d*<sup>2</sup>, thus necessitating the simultaneous movement of the bolt *e*<sup>2</sup> and angle-iron *d*<sup>2</sup>, and the rigidity of the one with the other.

As far as the bolt *e*<sup>2</sup> is concerned, it is quite evident that its head rests on the plate *h*<sup>2</sup>, which is secured to the under side of the head-rest J, and which plate has the cross-slot *b*<sup>2</sup>, as shown in Fig. 17. The face of the head-rest may be upholstered in suitable manner.

The uprights *w* and *y*, which form the sides of the chair-back I, have attached to their faces iron plates *i*, which are more clearly indicated in Figs. 2 and 3. In each of these iron plates are formed angular or analogous openings, and behind each of these openings is a recess or cavity formed in the face of the chair-back, as more clearly shown in Fig. 3. These plates *i*<sup>2</sup>, with their apertures and with the corresponding recesses in the chair-back, are for the purpose of supporting the adjustable child's seat L. This seat L carries near each end a plate, *j*<sup>2</sup>, with vertically-projecting per-

forated ears  $k^2$ . (See Fig. 3.) Through these ears extend pins that are formed at the ends of a V-shaped bracket, M. The upper end of this bracket M has a downwardly-projecting hook,  $l^2$ , which is adapted to enter through one of the apertures of the plate  $i^2$  and engage with the rear side of the plate  $i^2$ , as indicated in Fig. 3. Meanwhile, for greater security, the rear end of the plate  $j^2$  also enters into one of the apertures of plate  $i^2$ , as also indicated in Fig. 3. Thus by means of these two brackets M M the child's seat L can be held at any desired elevation on the chair-back I; and when the child's seat is to be removed it can readily be taken off by tilting its front end slightly upward, disengaging the hooks  $l^2$  from the plates  $i^2$ , and thereupon entirely disconnecting the child's seat. The brackets M will then readily fold upon the child's seat, and the entire attachment can be put out of the way until again required for use.

The chair-back I is hinged at  $m^2$  to the chair-seat H, and is kept in position by the side braces, N, each of which is fastened at its front end to the chair-seat H by a thumb-screw,  $n^2$ , and at its rear end by a similar thumb-screw,  $n^2$ , to the chair-back, as shown, so that it can be readily detached.

The arm-rest O is fastened to the brace N by the means more clearly shown in Fig. 19, which is a cross-section on the line  $ccc$  of Fig. 1. Of course, when speaking of the arm-rest O and brace N, it is evident that the chair has two such arm-rests and two such braces, at least whenever desired. To the inner face of the arm-rest O is rigidly fastened a metallic plate,  $o^2$ , the edge of which forms, with a rabbeted portion of the arm-rest, a groove at top and bottom thereof. The brace N is recessed on its outer face to receive the plate  $o^2$ , and partly overlapping this recess is a continuous plate,  $p^2$ , fastened to the outer face of the brace N, so that its inner edges can enter into the grooves of the arm-rest O, overlapping partly the plate  $o^2$  at the top and bottom, all as indicated in Figs. 1 and 19. By this means of attachment the arm-rest is very rigidly held to the brace N; and yet, whenever it is desired to take it off, it is only necessary to slip it out by drawing it forward from between the plates  $p^2$ . In packing the chair, the arm-rest O is first slipped out, and then the brace is detached, and the two can be packed flat side by side.

The foot-rest P is composed of three sections,  $q^2$ ,  $r^2$ , and  $s^2$ , and is more clearly shown by perspective view in Fig. 11. These sections are so arranged that they can fold into one another in such a manner that the space occupied by them will be little greater than that occupied by the largest section, if it were

packed alone; or the sections may be entirely separated when to be packed for transportation. The section  $q^2$  is the upright section of the foot-rest, and is connected to the seat H of the chair by bracket-pieces  $t^2$ . These bracket-pieces are of angle-iron, and are held by wedges or otherwise in sockets attached to the uprights  $q^2$ , and enter with their horizontal parts suitable sockets formed in or fastened to the seat H. One way of fastening the brackets  $t^2$  to the seat is by forming a recess in the face of the bracket, passing this recessed portion through a clip,  $u^2$ , which is secured to the seat, and then locking it by a wedge,  $v^2$ , as more clearly indicated by the detail figures, 12, 13, and 14. The middle section or floor,  $r^2$ , of the foot-rest is formed by mortising light slats into the frame of that section at distances of about half an inch apart, so that only their edges come in contact with the foot. This arrangement gives strength and lightness, and prevents the accumulation of dust on the foot-rest. The adjustment of the foot-rest may be effected by suitable ratchets,  $w^2$ , (see Fig. 15,) and corresponding pawls that are formed on the respective sections of the foot-rest, and regulate the angles at which these sections are adjusted.

The spittoon R is held in a hook-shaped bracket, S, of which Fig. 20 is a detail top view on an enlarged scale, and which bracket by its shank is hung in ears  $x^2$ , that project upward from the seat of the chair. The spittoon should be made of flexible rubber, so that in packing it will fold flat.

I claim—

1. The dental chair, combined with the downwardly-projecting post D, swiveled block E, roller  $h$ , longitudinally-grooved pedestal-cylinder B, cable  $i$ , roller  $j$ , and windlass  $k$ , substantially as described, the cable  $i$  passing through two apertures that pierce the cylinder B, and resting in the grooves of said cylinder, substantially as specified.

2. The clamp F, having ears  $p$  and lugs  $q$ , combined with the bar G, having trunnions  $r$ , and with the post D, base-support A B, and seat H, having bearings  $s$ , substantially as and for the purpose specified.

3. The child's seat L, combined with the plates  $j^2$ , having upright perforated ears  $k^2$ , and with the detachable brackets M M, having horizontal pins that extend through said ears, and having downwardly-projecting hooks  $l^2$ , and with the perforated plates  $i^2$  and recessed chair-back I, substantially as and for the purpose herein shown and described.

EDMUND P. STILES.

Witnesses:

FRANK HYATT,  
W. SPENCE.