(No Model.) 3 Sheets—Sheet 1.

E. P. STILES.

DENTAL CHAIR.

No. 361,906. Patented Apr. 26, 1887.

Fig. 1.

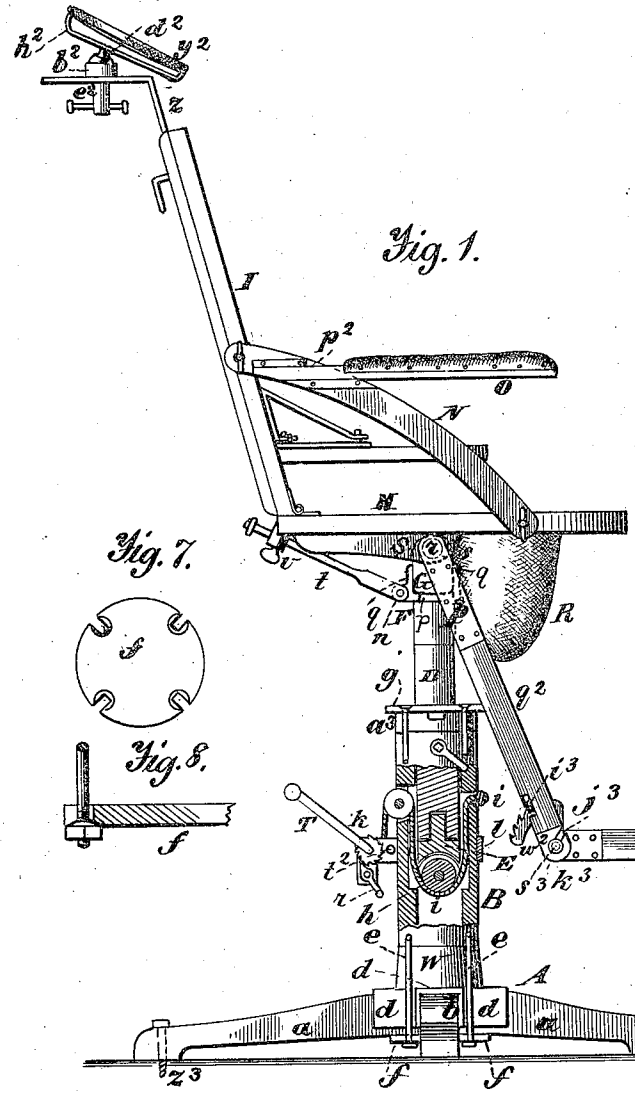


Fig. 3.

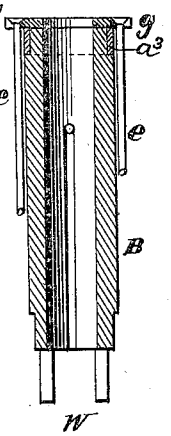


Fig. 5.

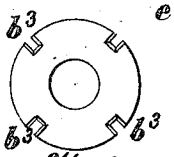


Fig. 6.

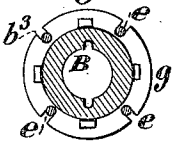


Fig. 7.

Fig. 8.

Fig. 4.

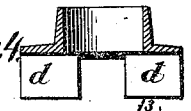
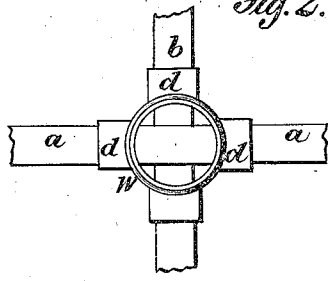
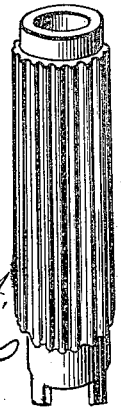
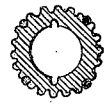


Fig. 2.







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DENTAL CHAIR.

No. 361,906. Patented Apr. 26, 1887.

Fig. 11

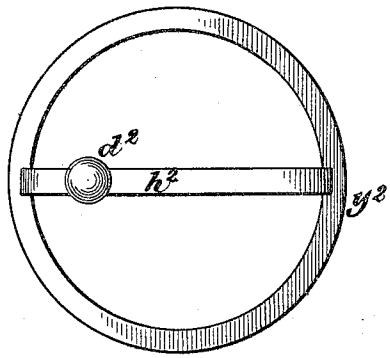


Fig. 12

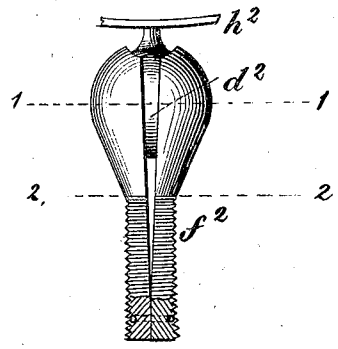


Fig. 10.

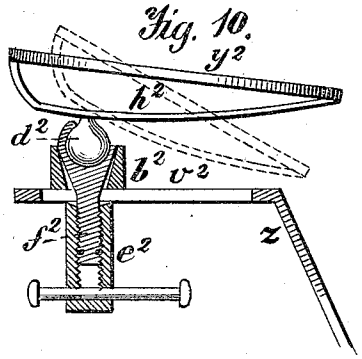


Fig. 13.

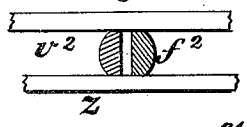
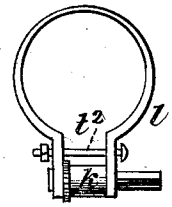


Fig. 9.



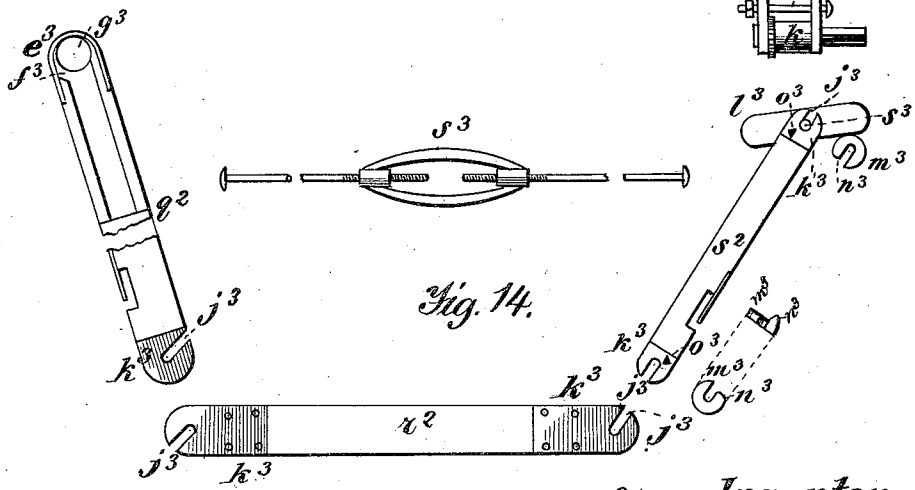
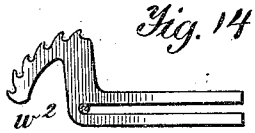


Fig. 14.

Fig. 14ª



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E. P. STILES.

DENTAL CHAIR.

No. 361,906. Patented Apr. 26, 1887.

Fig. 16.

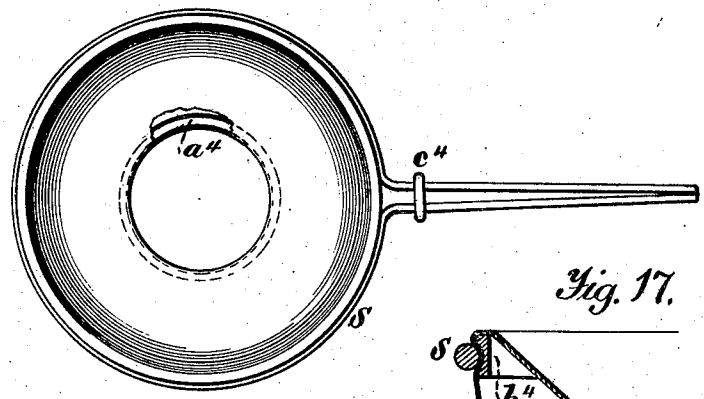


Fig. 17.

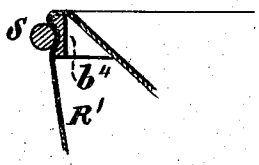


Fig. 15.

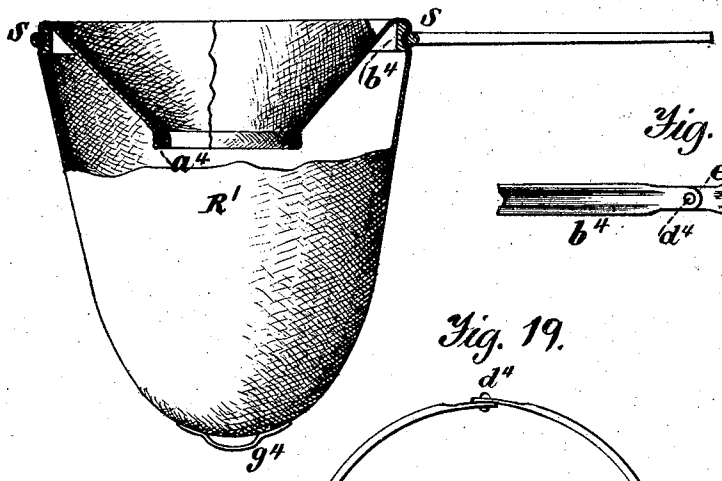
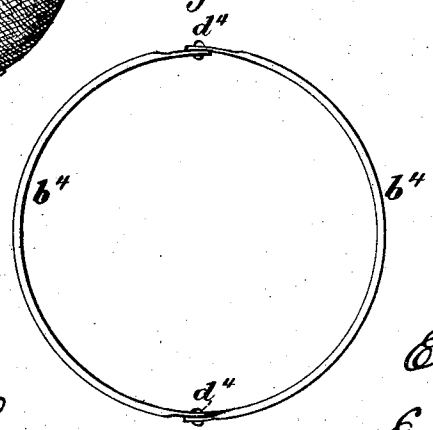


Fig. 18.

Fig. 19.



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UNITED STATES PATENT OFFICE.

EDMUND P. STILES, OF AUSTIN, TEXAS.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 361,906, dated April 26, 1887.

Application filed September 10, 1884. Serial No. 142,669. (No model.)

To all whom it may concern:

Be it known that I, EDMUND P. STILES, a citizen of the United States, residing at Austin, in the county of Travis and State of Texas, have invented certain new and useful Improvements in Dental Chairs, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in dental chairs; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

This invention is an improvement upon that for which Letters Patent of the United States No. 294,286 were granted to me February 26, 1884.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of my improved chair complete. Fig. 2 is a top plan view of the base. Fig. 3 is a vertical section of the cylindrical standard. Fig. 4 is a vertical section of the clamping-brace. Figs. 5, 6, 7, and 8 are detailed views illustrating details of the construction of the supporting-standard. Fig. 9 is a detailed top plan of the clamping-strap and winch. Fig. 10 is a side elevation, partly in section, of the head-rest and its adjusting mechanism. Fig. 11 is an inverted plan view of the head-rest. Figs. 12 and 13 are details illustrating the construction of the adjusting mechanism. Fig. 14 shows the parts forming the foot-rest detached. Fig. 14ª is a detail view of the ratchet used for adjusting the foot-rest. Figs. 15, 16, 17, 18, and 19 are detailed views of the spittoon.

A represents the foot of the chair, which is formed of two wooden bars, *a* and *b*, which cross each other beneath the vertical axis of the tube B. In the end of the longer arm of the bar *a* is a screw, a^2, which is adapted to be screwed into the floor so as to fix the chair thereto, and to prevent its being overturned by the weight of a person standing on the foot-rest. The tube B is reduced at its upper and lower extremities, and around its upper end is placed a strengthening-band, a^3. Its lower end is socketed in the cylindrical portion of a brace, W, which is provided with four outwardly-projecting sets of bearing-lugs or ears, *d*, which fit over the arms *a b* near the point of intersection, as shown in Figs. 1, 2, and 4.

On the upper end of the tube B is placed a circular plate, *g*, which is of greater diameter than said tube, and which is provided with open-ended peripheral rectangular slots b^3. In the center of this plate is made a circular opening, which is equal in diameter to the interior diameter of the tube B. A plate, *f*, slightly larger than the plate *g*, and having open-ended peripheral slots, is placed beneath the arms *a* and *b* at their point of intersection, and is clamped to the plate *g* by means of rods *e e*. These rods are provided with square heads at their upper ends, which heads are beveled on their under sides, and are seated in the slots b^3, which prevent them from turning and from slipping from the slots. The lower ends of these rods are screw-threaded and provided with nuts, which have one convex face, for the purpose of fitting into concavities formed about the peripheral slots in plate *f*, as shown in Figs. 1 and 8. By loosening these nuts it will be apparent that the rods *e* may be readily removed from the clamping-plates, and the various sections of the supporting-pedestal, hereinbefore described, can be detached for convenience in transportation.

D represents a circular post, which extends through the opening formed in the plate *g* and into the hollow standard B. In the lower end of this post is swiveled a roller-block, E, in which is journaled a small grooved pulley, *h*.

l represents a strap, which passes around the standard B, and which has its extremities formed into bearings for a winch, *k*, as shown at Fig. 9. One of these bearings is provided with a downwardly-projecting extension, to which is pivoted a weighted pawl, *r*, which engages with a ratchet-wheel that is formed with the winch *k*.

t^2 represents a bolt, which passes through the extremities of the strap *l*, for the purpose of clamping it upon the standard B. This strap is reduced in thickness at its center opposite to the winch, as shown at Fig. 9, thereby causing its ends to spring apart when the nut upon the bolt t^2 is loosened, and causes the strap to release its hold upon the standard.

A cord, *i*, having a knot in its outer end, is passed through an opening that is formed in one side of the standard B, near its upper end, down along a groove that is formed on the inner side of the standard to receive it, under

the pulley *h*, up through a similar groove in the opposite side of the standard, over a sheave that is journaled in a slot in the standard at the opposite side from the point where the cord entered and about in a vertical line therewith. The free end of the cord is wrapped around the winch *k*, to which a detachable crank, T, is secured. By turning this crank the post D may be raised or lowered with relation to the standard B, and, being swiveled to the hanger E and having its bearing in the plate *g*, is capable of rotation in the standard.

The upper end of the post D enters a metallic socket, F. Upon the horizontally-projecting wings *p* of this socket F, and between the upwardly-projecting lugs *q* thereof, is placed a horizontal bar, G, which is preferably made of wood, the extremities of which are provided with trunnions *r'*, which enter proper bearings or sockets formed in the cleats *s*, which are attached longitudinally to the under side of the chair-body H. On the trunnions *r'* the chair-body can be swung into any suitable inclined position longitudinally. These trunnions project beyond their bearings to form means of attachment for the foot-rest, whose arms q^2 have bearings at their upper ends for the purpose of such attachment, as shown at Fig. 1. With the socket-piece F is also connected a brace-rod, *t*, which is pivoted to an ear, *n*, that extends rearwardly from said socket. The rod *t* passes through a clamp, *v*, that is attached to the rear portion of the chair-seat. 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 represents the back of the chair, which is constructed in the manner fully set forth in my former patent hereinbefore referred to, and which needs no recapitulation here. The rod *z*, which is adapted to be adjusted vertically in the chair back, has its upper end bent at an angle thereto, and extends rearwardly in a horizontal line. This rearward extension has a slot formed in it, as shown at Figs. 10 and 13. Through this slot is passed a bolt, f^2, which is formed of two or more pieces, which, when put together, form at the upper end a socket, as shown at Figs. 10 and 12. The lower end of this rod is screw-threaded. A cylindrical nut, e^2, secures the bolt in the slot in any desired position, as shown at Fig. 10. A wire loop is passed around the lower end of the bolt in a groove that is formed to receive it, to prevent the pieces of which the bolt is composed from falling apart when the nut is removed. The outer surface of the bolt f^2 above the line 1 1 of Fig. 12 is spherical, while between the lines 1 1 and 2 2 it is cone-shaped.

The sides of the bolt at the line 2 2 are flattened to prevent the turning of the bolt in the slot v^2, as shown at Fig. 13. The upper socket end of the bolt f^2 rests in a cup-shaped collar, b^2, as shown at Fig. 10. This collar moves freely over the upper surface of the bar *z*. Its outer walls are perpendicular, but its inner walls are inclined inwardly, forming an inverted cone-shaped socket. The inclination of its sides from a perpendicular is less than that of the sides of the inverted cone of the bolt f^2, so that only the upper part of the bolt-head comes in contact with the collar. When the parts are in position and the bolt e^2 is turned up against the bar *z*, the bolt is drawn forcibly into the collar, and the ball d^2, which fits in the socket, is held firmly in position by the compression. By having the sides of the socket and bolt a different inclination, the force is applied near the extremity of the bolt and the center of the ball, where it is most needed, and by this construction wear is compensated. The ball d^2 is connected with a rod, h^2, near one end thereof, which rod h^2 is bent in the shape shown in Fig. 10, and has its extremities secured to a circular frame, y^2, which, when properly upholstered, forms a head-rest. By this construction the head-rest is adapted to be moved back and forth and adjusted to any position that may be required, as will be very readily understood.

Secured to the braces N, which are pivoted to the chair seat and back, are formed ways p^2, for the reception of the inner ends of the removable arms O. The foot-rest is composed of three sections, q^2 r^2 s^2. Section q^2 consists of two bars, which are secured at their upper ends to the trunnions of the bar G, as previously described. The upper ends of these sections have metallic clips e^3. On their outer sides are countersunk plates p^3, and to their lower ends are attached plates k^3, having oblique open-ended slots j^3. The side bars of section r^2 are countersunk at the ends of the exterior surface to receive the shanks of the ratchets w^2, as shown at Fig. 14. Each end of each of these bars r^2 is furnished with plates similar to the plates *k* of the bars q^2. The falling pawl i^3 is attached to the outer sides of the lower end of the side bars, q^2, for engaging with the ratchet w^2 and maintaining said sections in their proper relative position. A bar, s^3, passes through the slots j^3 and pivots the sections together. The section s^2 is composed of side bars, which are constructed similarly to the bars q^2. The foot-board l^3 is pivoted in the upper ends of the bars s^2 by means of a rod, which extends through said foot-board and into the open-ended slots, which are formed in the upper plates, k^3. Washers m^3, having deflected points n^3, which enter perforations o^3, that are formed in the plates k^3, retain the connecting-rods in the slots j^3. This construction is shown at Fig. 14. In order to separate the sections of the foot-rest it is only necessary to withdraw the ratchet w^2, and the rods s^3 will slip out.

The spittoon which I prefer to use in connection with the dental chair is composed of a rubber pouch, R, which has an opening or neck formed at its upper end, in which is secured a metallic ring, a^4, for the purpose of causing it to hang in the form of a funnel. The pouch is supported by means of a hoop,

b^4, and the clamping-bracket S. The hoop b^4 is provided with a groove, as shown at Figs. 15, 17, and 18, and is composed of jointed sections, which are connected together by means of pins d^4 and openings e^4, as shown at Figs. 18 and 19. In applying this hoop to the pouch its sections are folded toward each other, and so passed into the pouch and then opened. This leaves the upper portion of the pouch having the opening therein pendent in the hoop and forms the funnel to the spittoon, as shown at Fig. 15. The spring-rod S passes around the outer side of the pouch and presses it into the groove in the hoop, and thereby retains said hoop in position at Figs. 15 and 17. A hoop, c^4, passes over the extremities of the spring-rod S and binds them together, as shown at Fig. 16. To the lower end of the pouch is affixed a loop, g^4, by which means the pouch may be suspended in an inverted position when the spittoon is not in use and thoroughly drained. The bracket S may be attached to the chair by passing it through loops that are secured to the under side of the chair-seat, or in any other suitable manner.

Slotting the plates f and g for the reception of the rods e is merely doing what has been done heretofore in coupling parts together; but beveling and concaving the edges of said slots and shaping the heads and nuts of the rods to correspond thereto is making a new and useful addition to such devices.

The variation of movement obtained for the head-rest has been obtained heretofore by securing to the cushion-frame a portion of a spherical shell provided with a circular central opening, through which is passed a bolt having a head formed of a segment of a sphere, said head resting within the shell, while the bolt projects down through its central opening and through a slotted bar adjustably connected to the back of the chair, a handle-nut being screwed upon the lower end of said bolt; but in this device the head of the bolt does not permit of a free movement of the cushion, especially in tilting it backward and forward, since the least friction between the head and shell causes the bolt to slide in the slot of the bar. This disadvantage I overcome in the ball-and-socket joint. I also cover the threaded end of the bolt by the cylindrical nut, which adds a finish to the head-rest not possessed by others.

Having thus described my invention, I claim—

1. The combination of the standard B, arms A, plate g, provided with open-ended peripheral slots with beveled edges, plate f, provided with similar slots having concavities formed about their edges upon one face of the plate, rods e, provided with beveled heads to fit in the beveled slots of plate g, and nuts each with a convex face to fit in the concavities about the slots in plate f, substantially as set forth.

2. The combination of the chair-body, a pedestal for supporting it, a transverse bar, G, having trunnions at its extremities for pivoting the chair-body to the pedestal, and a foot-rest the bars q^2 of which are pivoted at their upper ends to the projecting ends of the trunnions of the bar G, substantially as described.

3. In a foot-rest for dental chairs, the combination of the sections q^2 r^2 s^2, having plates k^3, provided with slots j^3, rods s^3, for securing the sections together, ratchets w^2, pawls i^3, washers m^3, and foot-board F^3, substantially as shown and described.

4. The combination, with a dental chair, of a head-rest consisting of the slotted arm z, collar b^2, bolt f^2, having a socket in its upper end and formed in halves, and tapered at its lower end and adapted to be clamped at its upper end by said collar, ball d^2, adapted to fit in the socket in the upper end of said bolt, cylindrical nut e^2, and frame y^2, with its cross-bar h^2, secured to said ball, as and for the purpose set forth.

5. The combination of the pouch R, ring a^4, secured in an opening formed in the upper end of said pouch, a ring, b^4, and clamping-bracket S, substantially as described.

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

EDMUND P. STILES.

Witnesses:

TAZEWELL M. MCCORKLE,

M. B. SWEENEY.