

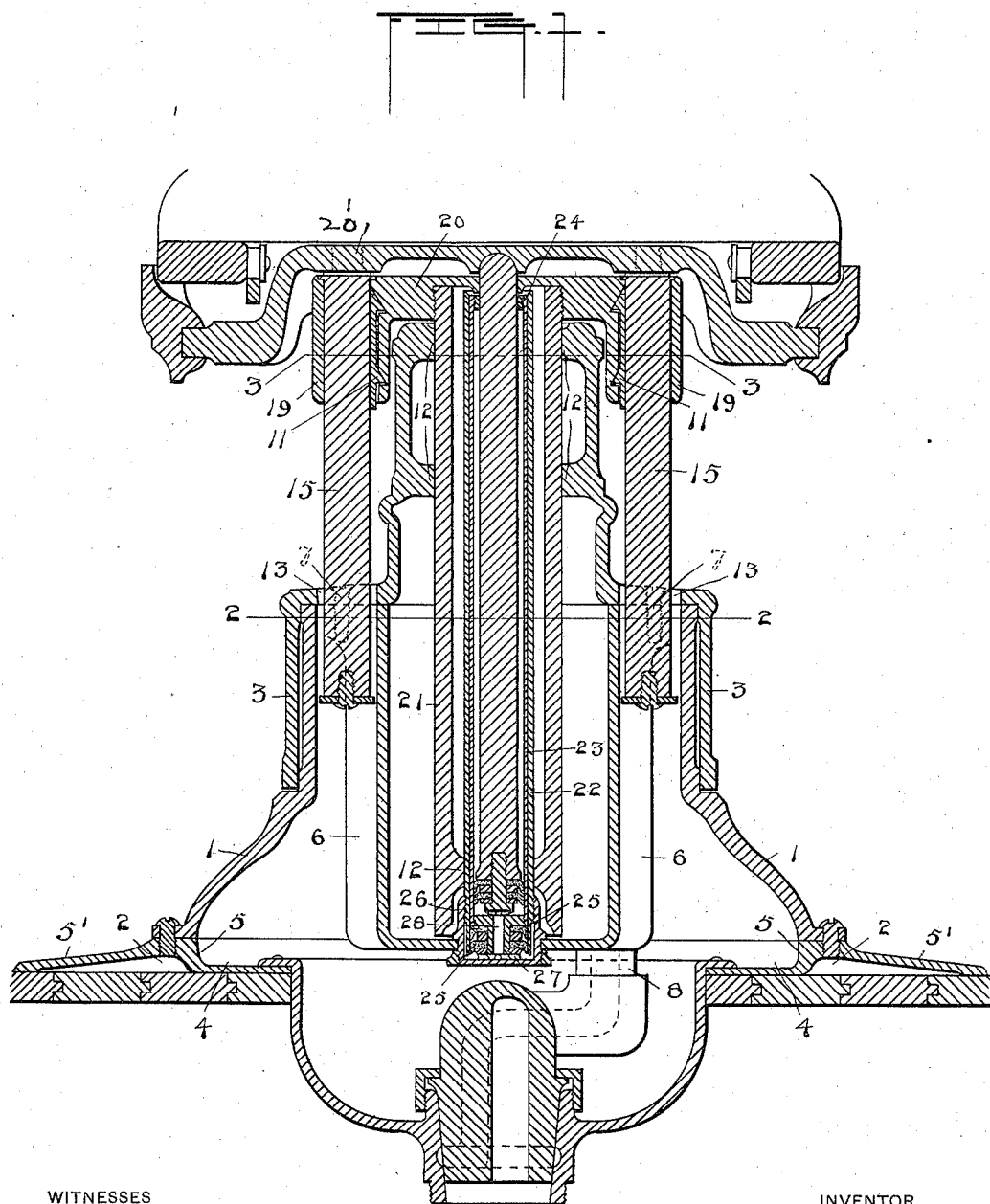
(No Model.)

3 Sheets—Sheet 1.

F. RITTER.
DENTAL CHAIR.

No. 576,471.

Patented Feb. 2, 1897.



WITNESSES

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Geo. Amosher.

INVENTOR

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Atty

(No Model.)

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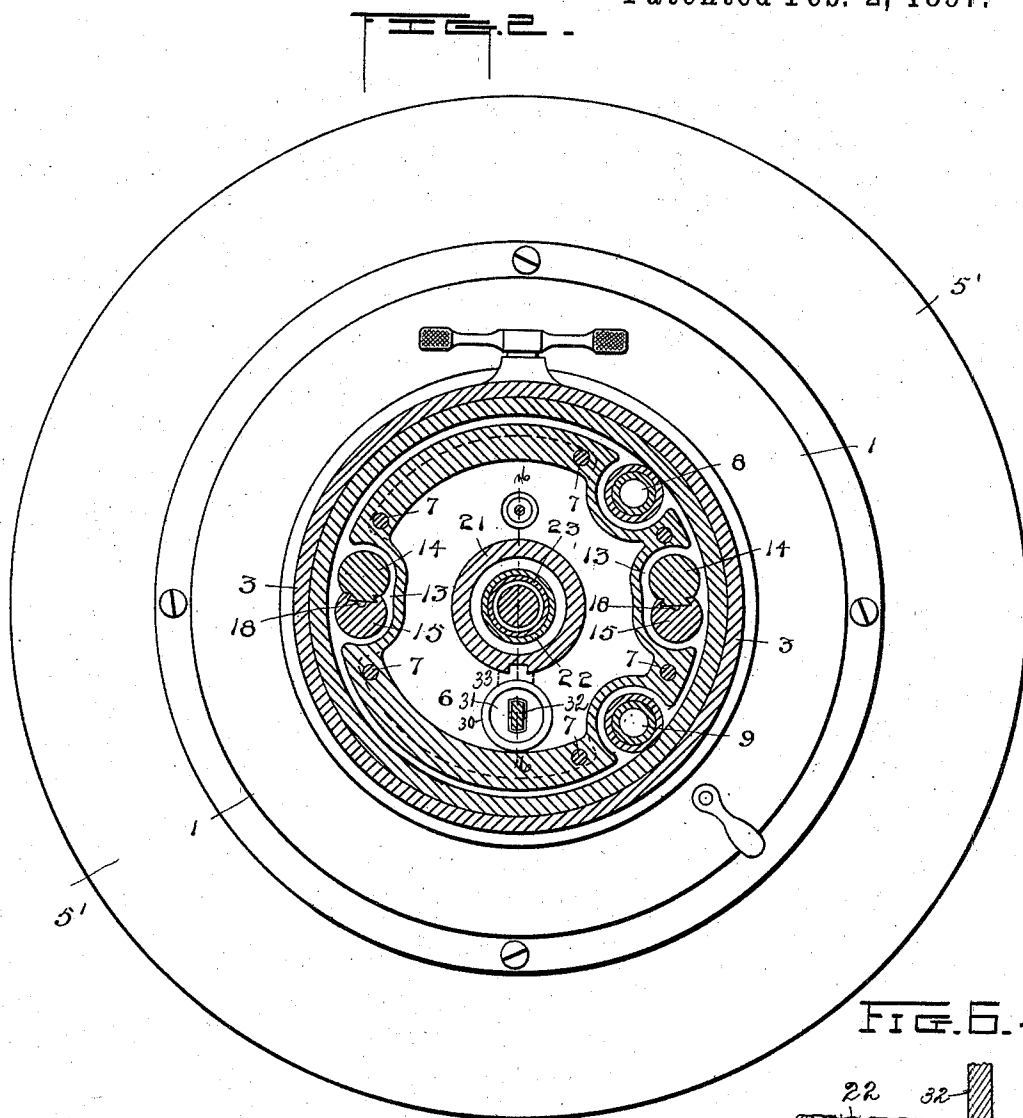
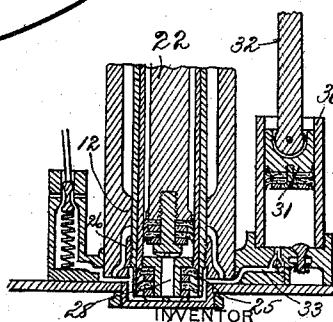


FIG. 5.



WITNESSES

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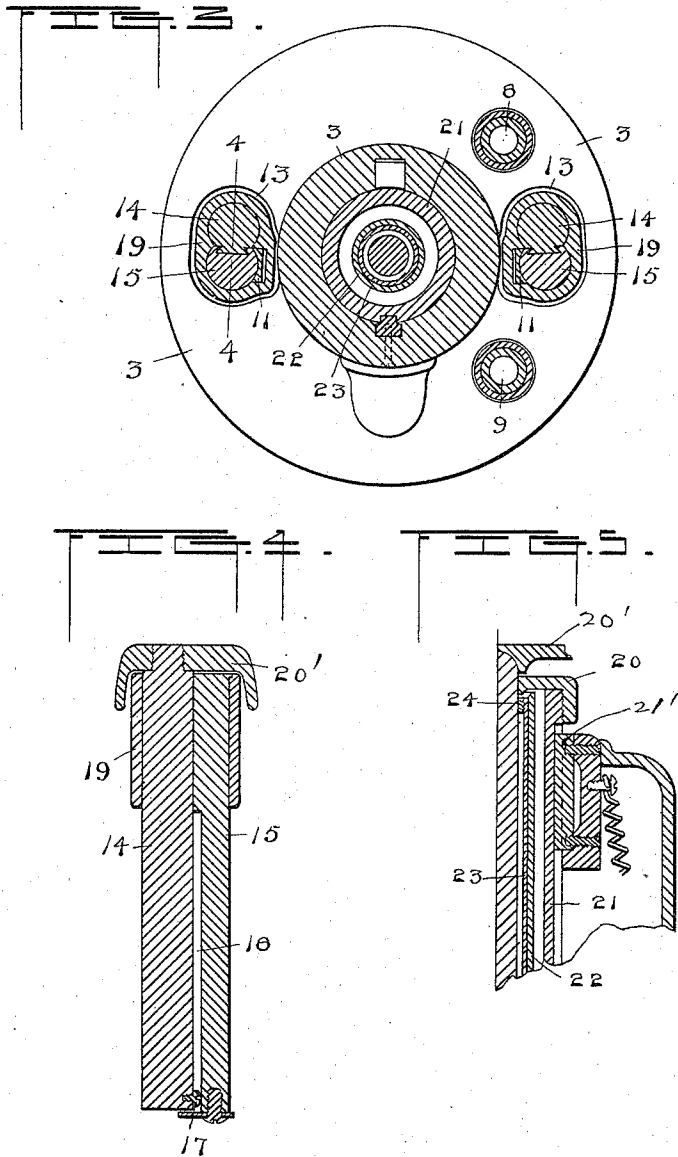
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UNITED STATES PATENT OFFICE.

FRANK RITTER, OF ROCHESTER, NEW YORK.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 576,471, dated February 2, 1897.

Application filed May 8, 1895. Serial No. 548,572. (No model.)

To all whom it may concern:

Be it known that I, FRANK RITTER, a resident of Rochester, in the county of Monroe 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 pertains to make and use the same.

The invention relates to that class of dental chairs in which the seat-frame is supported upon a so-called "plunger" consisting of a piston and rod adapted to be raised in a suitable piston-cylinder by fluid-pressure and to be automatically lowered by gravity.

The object of the invention is to provide simple, convenient, and economic means whereby the range of the vertical movement of the seat may be made larger than heretofore deemed practicable in the class of dental chairs above specified.

The invention consists in the construction hereinafter described and particularly pointed out.

In the accompanying drawings, Figure 1 is a partial vertical section. Fig. 2 is a transverse section on line 2 2 of Fig. 1. Fig. 3 is a similar section on line 3 3 of Fig. 1. Fig. 4 is a vertical section on line 4 4 of Fig. 3, and Fig. 5 is a sectional detail. Fig. 6 is a partial section on line 6 6 of Fig. 2, showing the connection of the pump with the piston-cylinder.

Numerals 1 and 2 denote, respectively, upper and lower sections of a chair-base. These sections are secured to each other by screws or like means and support a pedestal 3 in usual manner. In section 1 of the base a receptacle 4 for overflowed oil is provided by means of the inner wall 5 of the annular base-skirt 5', the bottom of the base being made relatively thin by preference and situated below the main body of the said skirt.

Chair-bases are made of cast metal and are liable to be broken in transportation or otherwise. One object of my sectional construction is to limit such fractures to one part of the base and obviate the necessity of replacing the entire base when broken.

A further object is to provide in the base

a capacious receptacle for oil that may be spilled or that may leak or overflow from the oil-receptacle, such as indicated at 6. This oil-holder is fastened to the pedestal by screws 7 or other like means and is recessed on several sides to provide room for telescoping liquid-conveying pipes 8 and 9 and for steadying guide-rods 14 and 15. These pipes 8 and 9 have a steadying effect and cooperate in that respect with other steadying devices; but they are not specifically claimed herein. These pipes connect with the rotatable part of a coupling situated at the base of the chair, whereby fluids may be conveyed from and to fixed parts of said coupling and through conduits communicating therewith, all as more fully set forth in my patent dated January 14, 1895, and numbered 553,042. To permit said rods 14 and 15 to descend to or near to the floor-level, holes 13 may be provided in the pedestal. The rods are composed of two sections 14 and 15, the first of which is made fast to the cross-bar 20' of the seat-frame. The other section 15 has a dovetailed or like connection to section 14 to permit endwise movement of said section 14 when the latter is raised or lowered with the cross-bar.

17 denotes a stop to limit the independent movement of section 14 in an upward direction, and 18 is a groove that permits this section to rise until said stop engages the shoulder at the top of the groove. The section 15 is suspended by a flange upon the upper edge of a sleeve 19, formed integral with or fixed to a bar or support 20 for a guiding and steadying sleeve 21. Said sleeve is also fixed to bar 20, and the bar bears upon the piston above the piston-cylinder extension, and thereby guides and steadies each of the aforesaid sleeves thus immediately connected with the piston.

11 denotes a locking device situated between the sleeve 19 and section 15 and made operative by the lifting effect of a plate or projection fixed on the foot of section 15 when the parts are at their highest elevation.

The guide or steadying tube 21 has a bearing at 12 on the pedestal and also on the piston-cylinder 22. Within the latter and between it and the piston is a sliding piston-cylinder extension 23. It is adapted to be moved up by the piston whenever the latter

comes in contact with the ring or projection 24, whereupon it lifts it and the said cylinder extension 23, to which the ring is fixed.

25 is a packing to prevent oil which is forced under the piston from escaping between the cylinders 23 and 22.

The piston-cylinder 22 is secured in a coupling-cup 26, fixed to the bottom of the oil-holder. This cup extends to near the floor-level and a little below the oil-holder and receives oil forced in, as customary, by a pump to raise the piston. If the parts are at their lowest elevation, as shown in Fig. 1, the oil passes through one or more perforations 27 and ascends through passage 28 in a thimble seated in an opening through the packing.

30 denotes a pump-cylinder, 31 the pump-piston, and 32 the piston-rod.

33 indicates a conduit leading from below the pump-piston to the perforations 27, (shown in Fig. 1,) whereby the pump communicates in usual manner with the seat-elevating cylinder as required to force up the seat-raising piston. A returning-spring for said piston and its lever is indicated in Fig. 5 and more fully shown in my patent above named. Said spring is attached to a block rigidly fixed to the pedestal and provided with a spline to prevent rotation of the guide-tube 21.

When oil is pumped in, the piston is first forced up, carrying the chair-seat or seat-frame. The pumping continuing, the piston engages the ring 24 and pulls up the cylinder 23. By this means the piston and piston-rod may be lifted entirely above the level of the ordinary fixed piston-cylinder 22, the cylinder 23 forming a movable extension of the same. The piston being permitted to descend in usual manner can push said tube 23 down until the piston and the foot of tube 23 are near the floor, as indicated in the drawings.

By the ascent of the piston, as just described, the cross-bar 20' is raised, with the effect to pull sections 14 of the steadying-rods up through the sleeves 19 until the stops 17 engage sections 15, whereupon the latter are also pulled up until the projections at their lower ends operate the locking devices 11, whereupon the bar 20 is lifted, pulling up the steadying-tube 21 until it reaches the desired height or is stopped by suitable means, such as piece 21', (see Fig. 5,) engaging the end of a groove therein.

Some of the advantages of the improvement could be secured without extending the sectional steadying guide-rods 14 15 down into the pedestal, but this enables the chair provided with such rods to be lowered farther than would otherwise be practicable unless the sections of the rods were increased in number. It is further obvious that if the steadying-rods were not made in sections, but entire, the openings to permit their descent within the pedestal would provide for lowering the chair-seat or seat-

frame having such steadying-guides lower than would otherwise be possible.

The means above described for increasing the range of movement of the steadying-rods cooperate with the extensible piston-cylinder, and they, together with the steadying-tube, provide that the chair-seat may be moved both higher and lower than heretofore practicable in this class of chairs without shaking or binding and with a firm, easy, and stable motion highly desirable in dental chairs.

Having thus described my invention, what I claim is—

1. In a dental chair, a base, a chair-seat, a piston-cylinder fixed in the base, a piston or plunger, a movable cylinder extension, packing to prevent oil from being forced between the cylinder and movable cylinder extension, and means whereby the extension may be moved by the piston, said packing being secured to the foot of the cylinder extension and provided with an opening to permit the passage of oil to the piston, and perforations adjacent the lower end of said packing for the oil to enter said passage when the said extension is in its lowest situation, substantially as set forth.

2. In a dental chair, a base, a chair-seat, an oil-holder, a coupling-cup secured in the bottom of said holder, the cylinder secured in such cup, the piston, a movable piston-cylinder extension carrying a packing at its foot to pack the joint between it and the main cylinder, the packing having an opening communicating with the space below the piston, and perforations 27 adjacent the lower end of said packing to permit ingress of oil, substantially as set forth.

3. In a dental chair, the combination of the base, the pedestal, the chair-seat frame, a piston connected to said frame, a fixed piston-cylinder, a movable piston-cylinder extension, a bar 20, the bar and frame being independently movable, and said bar having a bearing on the piston above the top of the cylinder and cylinder extension, said bearing on the piston being movable lengthwise thereof, and a cylinder 21 fixed to the bar and bearing both on the cylinder and on the pedestal, substantially as set forth.

4. In a dental chair, a base, a seat-frame having a cross-bar 20', the steadying guide-rods made in sections connected to slide one upon the other within a guide-tube, one rod-section 14 being fixed to the said seat-frame cross-bar and the other suspended in a bar 20 medially supported from the base, in combination with the piston to lift the cross-bar 20' said rod-section 14 having a lateral projection 17 or the like to engage and elevate the rod-section 15 and medially to engage and elevate said bar 20, substantially as set forth.

5. In a dental chair, a base, a seat-frame having a cross-bar 20', the steadying guide-rods made in sections connected to slide one

upon the other within a guide-tube, one rod-section being fixed to the said seat-frame cross-bar and the other suspended in a bar 20 mediatly supported from the base, and the
 5 steadying-tube 21 fixed to cross-bar 20, in combination with the piston, to lift the cross-bar 20' said rod-section 14 having a lateral projection 17 or the like to engage and elevate the rod-section 15 and mediatly to engage
 10 and elevate said bar 20, substantially as set forth.

6. In a dental chair, in combination a base, a chair-seat frame, a seat-frame cross-bar 20', laterally-situated steadying-rods attached to
 15 said cross-bar, guiding-sleeves for said rods exterior to the pedestal and mediatly supported from the base, a pedestal having openings to permit the descent of the lower portions of the rods situated below the sleeves and
 20 centrally-situated devices for raising said cross-bar, substantially as set forth.

7. In a dental chair, in combination a base, a chair-seat frame, a seat-frame cross-bar, steadying-rods attached to the said cross-bar,
 25 guiding-sleeves for said rods mediatly supported from the base and exterior to the pedestal, a pedestal having openings below and in line with the sleeves to permit the descent of the rods within said pedestal and means
 30 for raising said cross-bar comprising a piston and a piston-cylinder having a movable extension adapted to be moved by the piston, said sleeves being connected by a bar bearing on the piston, substantially as set forth.

35 8. In a dental chair, a rotatable pedestal, a fluid-reservoir fixed to said pedestal, a centrally-situated piston-cylinder fixed in the reservoir, a piston supporting the chair-seat frame, a cylinder extension, a packing to exclude oil from entering between the cylinder
 40 and its extension, said extension bearing on

and fitting the piston at its lower end and provided with a bearing 24 near its upper part whereby the piston-rod is steadied and
 45 whereby when it is forced upwardly the piston will engage said bearing and lift the extension, and a pump to force oil under the piston, substantially as set forth.

9. In a dental chair, the combination of the base, the pedestal, the chair-seat frame, a piston
 50 connected to said frame, a fixed piston-cylinder, a movable piston-cylinder extension, a bar 20, the bar and frame being independently movable, and said bar having a bearing on the piston above the top of the cylinder
 55 and cylinder extension, said bearing on the piston being movable lengthwise thereof, and a bar 15 horizontally fixed to the bar 20 and guided by the chair-base, substantially as set forth.

10. In a dental chair, a rotatable pedestal, a fluid-reservoir fixed to said pedestal, a piston-cylinder fixed in the reservoir, a piston supporting the chair-seat frame, a cylinder
 60 extension, a packing to exclude oil from entering between the cylinder and its extension, said extension bearing on and fitting the piston at its lower end and provided with a bearing 24 near its upper part whereby the piston-rod is steadied and whereby when it is forced
 65 upwardly the piston will engage said bearing and lift the extension, a steadying device bearing on the piston above the cylinder and cylinder extension, and a pump to force oil under the piston, substantially as set forth.

75 In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANK RITTER.

Witnesses:

FREDERIC P. ALLEN,
 WILLIAM B. FARNHAM.