

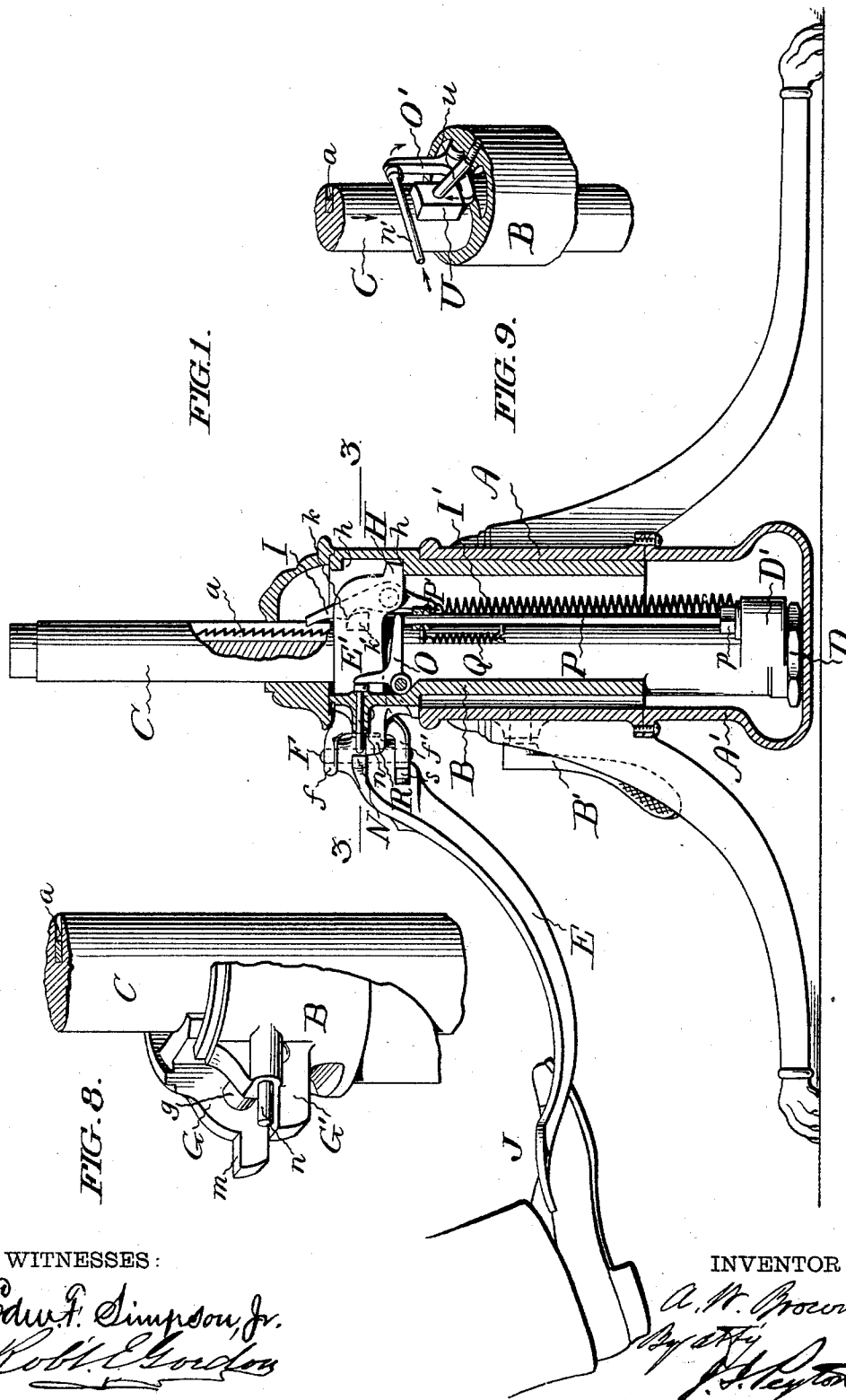
(No Model.)

3 Sheets—Sheet 1.

A. W. BROWNE.
DENTAL CHAIR.

No. 519,756.

Patented May 15, 1894.



WITNESSES:

Edw. F. Simpson, Jr.
Robt. E. Chondos

INVENTOR

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By atty
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(No Model.)

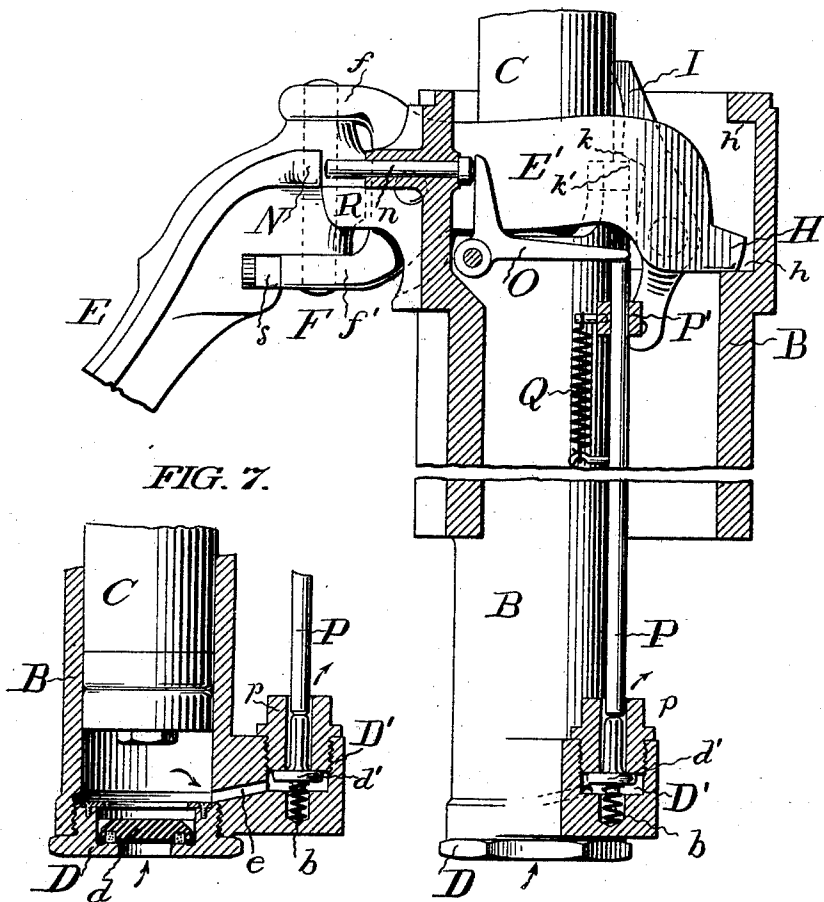
3 Sheets—Sheet 2.

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Patented May 15, 1894.

FIG. 2.



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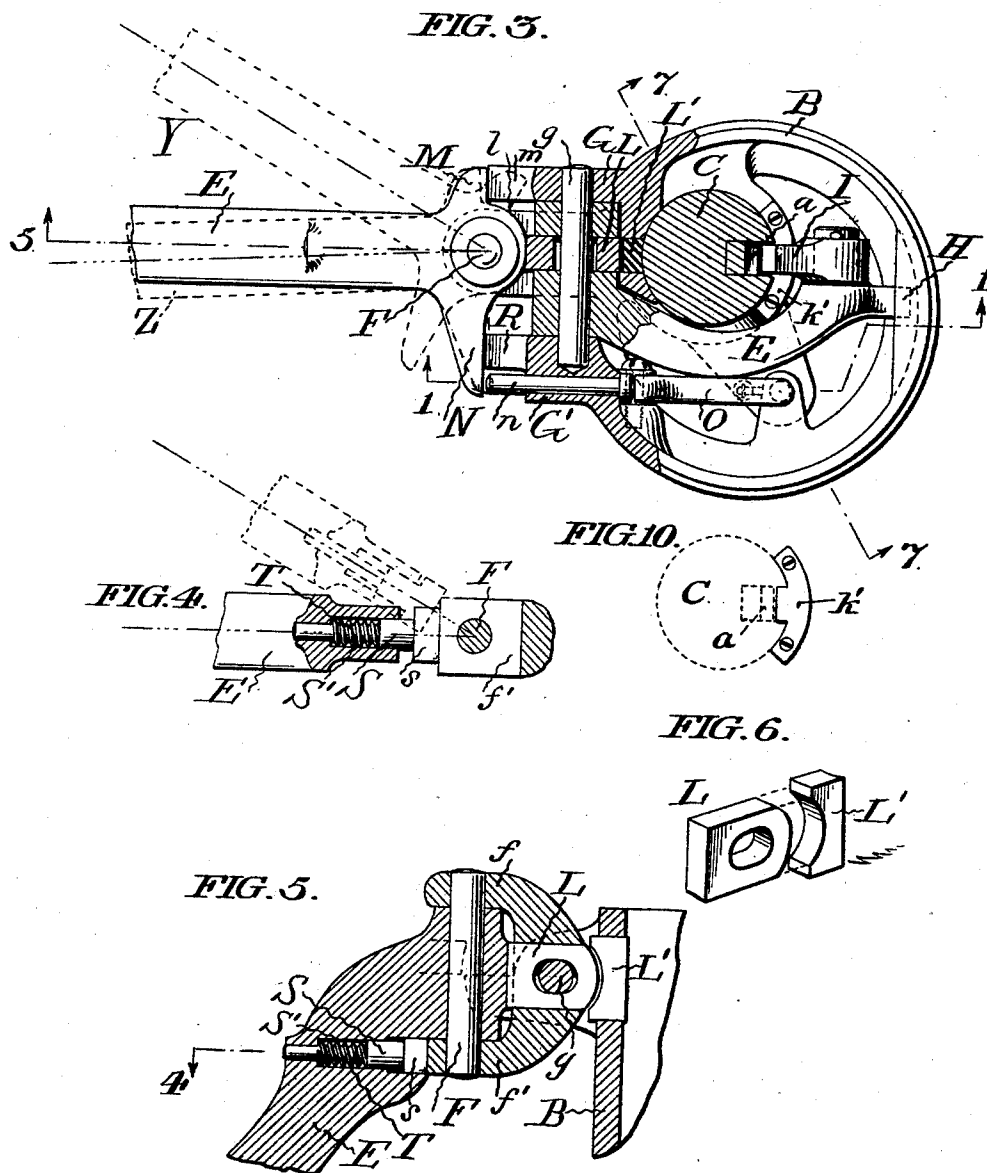
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A. W. BROWNE.
DENTAL CHAIR.

3 Sheets—Sheet 3.

No. 519,756.

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WITNESSES:

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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. 519,756, dated May 15, 1894.

Application filed February 5, 1894. Serial No. 499,051. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. BROWNE, a citizen of the United States, residing at 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, applicable to the well known "Wilkerson" dental chair for which United States Letters Patent were granted November 20, 1877, No. 197,441.

In the accompanying drawings which show all features of a "Wilkerson" chair needed for proper illustration of a suitable embodiment of my improvements, Figure 1 is a view partly in side elevation, partly in vertical section on the irregular line 1 of Fig. 3, and with the pedestal in central vertical section. Fig. 2 is a view partly in side elevation and partly in vertical section on an enlarged scale, with various parts omitted and broken away. Fig. 3 is a view partly in horizontal section on the line 3 of Fig. 1, and partly in plan. Fig. 4 is a view partly in plan and partly in horizontal section on the line 4 of Fig. 5, showing details of construction. Fig. 5 is a view partly in elevation and partly in vertical section on the line 5 of Fig. 3 representing details of construction. Fig. 6 is a view in perspective of the plunger-clamping sectional shoe. Fig. 7 is a view partly in elevation and partly in vertical section in the plane of the line 7 of Fig. 3. Fig. 8 is a view in perspective showing details of construction. Fig. 9 is a view in perspective with parts in section, showing a modification of my improvements. Fig. 10 is a plan view showing the cylinder projection for engaging the longitudinal recess of the vertically adjustable support.

A hollow base or pedestal A provided with supporting legs, has attached to its lower end a liquid-carrying reservoir A'. A hollow cylinder B is fitted to rest upon and turn within the pedestal. A clamp screw operated by a lever B' serves to lock the hollow cylinder

against turning in the pedestal, and a chair body support or plunger C is vertically adjustable in the cylinder. This support C is formed with a vertical groove or recess provided with a row of rack teeth *a*. Suitable packing at the lower end of the support serves to fit it liquid-tight within the cylinder B. At its lower end the cylinder is provided with a screw-attached cap D which has a central opening or liquid passage above which (within the cap) is a loose or float valve *d* opening upwardly and hereinafter termed the inlet valve. A downwardly opening valve *d'* (hereinafter called the outlet valve) upon which a spring *b* acts with a tendency to close it or hold it up to its seat, is located in a chamber D' at the side of the cylinder and having communication by way of a liquid passage *e* with the cylinder below the chair body support C. The chamber D' also has communication with the liquid reservoir A' when the outlet valve *d'* is open. The liquid way or passage controlled by the inlet valve is of much greater area, it will be seen, than the liquid way or passage *e* through which liquid is allowed to flow only when the outlet valve is open.

With the exception of modifications, such as will readily be understood, in the reservoir and the cylinder, and in construction and arrangement of the valve mechanism, all the parts so far as in detail briefly described above are the same as set forth in the before mentioned patent, No. 197,441; and the modified valve mechanism and other parts perform the same functions as explained in said patent. A foot-actuated elevating lever made in sections jointed together serves to elevate the chair body support as in the Wilkerson patent referred to, and in accordance with my improvements is made to serve, also, as the means through or by way of which the chair body support may be clamped against lateral movement in any position to which it may be adjusted, and the outlet valve tripped to permit of gradual descent of this support, as in turn to be explained. Said elevating lever is made in two parts or sections—a main or outer part E and a short inner part E'—which are jointed together by a vertical pivot F passing through lugs or forks *f f'* of the

inner section and through the inner end of the outer section of the lever near a horizontal pivot *g* by which the lever is jointed by its inner section to the cylinder B which is provided with lugs G G' engaged by this pivot *g*. The forks *f f'* of the short arm of the elevating lever embrace the inner end of the long arm of the lever so as to make a strong connection of the parts. It will be seen that the lever (both sections thereof) is adapted to rock or swing vertically, and that the long arm or main section of the lever may be swung horizontally in opposite directions. Stops *h h* within the cylinder, and between which a lug H at the inner extremity of the lever projects, serve to limit the vertical play of the lever. The inner or short arm of the lever is curved about the chair body support and provided with a pivoted pawl I for engaging the rack teeth of the support, and a spring I' secured at its opposite ends to the pawl heel and the cylinder, serves to cause engagement of the pawl with the rack teeth when the main section of the lever is depressed by downward force applied to its foot rest J. The pawl is normally held out of engagement with the rack teeth by the contact of a shoulder *k* on the pawl with a projection *k'* on the cylinder. This projection *k'* projects into the longitudinal recess of the chair body support to keep it from turning in the cylinder.

The operation of the spring-actuated pawl is fully set forth in the above-referred-to patent; and as explained in said patent, when the chair body support is elevated by working the elevating lever the inlet valve opens automatically so as to allow liquid from the reservoir to follow the support and uphold it in its position of adjustment, when the outlet valve is closed; while when this outlet valve of the upholding mechanism is tripped or opened the support is allowed to gradually descend by the flow of the liquid from beneath the support back to the reservoir as indicated by arrows in Fig. 2.

To clamp the support against lateral movement or vibration in any position to which it may be elevated, the main arm of the elevating lever is provided at its inner end with a cam or surface *l* curved eccentrically to the pivot F connecting the two sections of the lever, which cam when the long arm of the lever is moved sidewise by the foot into the position in which it is represented by dotted lines Y, acts upon a sectional clamping shoe to thrust it forcibly against the support to entirely prevent vibration or lateral movement thereof in the cylinder.

The clamping shoe is shown as formed in two parts or sections consisting of the thrust block L and bearing block L' against which the thrust block is forced to bear it firmly against the support. The thrust block of the clamping shoe is slotted to embrace the fulcrum pivot *g* of the lever, and is seated in a guide way in the inner section or short arm

of the lever. When the clamping shoe is actuated by the elevating lever a lateral lug M of the main arm of the lever rests over or upon a projection *m* of the cylinder lug G, thus preventing downward movement of the lever to actuate the support.

To trip the outlet valve of the mechanism for upholding the support and allow the support to descend by escape of the liquid from beneath it, the long arm of the elevating lever is moved by the foot into the position in which it is represented by dotted lines Z, so that a lateral arm N of the lever presses upon a push rod *n* adapted to slide endwise in a guide way or bearing in the cylinder lug G'. This push rod of the valve tripping mechanism actuates a bell-crank lever O pivoted within the cylinder by pressing against one arm thereof, and thus rocks downward the other arm of this lever, and forces a thrust rod P downward upon the stem of the outlet valve, thus tripping or opening the valve against the pressure of its spring. The valve tripping thrust rod moves at or near its opposite ends in a guide-way lug P' on the cylinder and in a guide-way *p* in which the valve stem plays. A spring Q having connection at its opposite ends with the guide-way lug P' and the valve tripping thrust rod, serves to elevate this rod and hold it in its normal position when not depressed by actuation of the bell-crank lever, thus leaving the outlet valve free to close and occupy its normal position. During the time the elevating lever occupies the position to which it is moved for operating the tripping mechanism to open the outlet valve, its lateral arm N rests over or upon a projection R of the cylinder lug G' and thus downward movement of the lever is guarded against. When the lever is relieved from sidewise pressure of the foot after actuating the valve tripping devices, it is automatically returned to its normal position in which it is shown in full lines, by means as follows: A slide rod S having a flat head *s* is mounted to reciprocate in a guide-way or bearing S' in the elevating lever in line with the lower fork *f'* of the inner section of this lever, and is acted upon by a spring T the tendency of which is to thrust the slide rod outward and cause its head to bear evenly upon the end of the fork *f'*, or with the abutting surfaces of the rod head and the lever fork parallel with each other. As will readily be understood when the lever has been moved but slightly to one side—say, to the position represented by dotted lines Z—and is relieved from pressure by the foot it will quickly be returned to its normal position; whereas when moved considerably to one side, as represented by dotted lines Y to clamp and steady the support in the cylinder, the lever will not be automatically returned to its normal position when relieved from lateral pressure but must be moved toward such position far enough to admit of its being actuated by the headed rod to restore it to its normal position and

yieldingly hold it in such position. It will thus be seen that when the lever has been swung sidewise into position to actuate the clamping shoe it may be relieved from lateral pressure without danger of its return to its normal position; and that immediately upon release of the lever after it has been swung into position to trip the outlet valve this valve closes and arrests the descent of the support and the chair body which may be connected with the support in any suitable way.

As will readily be understood from the above description the clamping shoe is not a means for upholding the support but serves simply to clamp the support in the cylinder and so prevent any lateral or vibratory motion of the support.

Instead of the described upholding mechanism by which a liquid column is confined beneath the support to prevent its descent, other suitable upholding mechanism may be employed, such for instance as shown in United States Letters Patent No. 413,156, dated October 15, 1889, and such equivalent upholding mechanism be released or tripped by means actuated by swinging the main section of the elevating lever sidewise, and so admit of the descent of the support. Fig. 9 shows enough of the mechanism set forth in said Patent No. 413,156, to illustrate how, in accordance with my improvements, a push rod *n'* and bell-crank lever *O'* are adapted to be actuated by the swinging main section of the elevating lever to trip the upholding devices. The knee-jointed rod *u* is moved upward by the lower arm of the bell-crank lever, when actuated, to lift the clamp block *U* and release the support when it is to be allowed to descend.

I claim as my invention—

1. The combination, in a dental chair, of the vertically adjustable support, the cylinder in which it is mounted, the elevating lever pivoted to the cylinder, composed of jointed sections and provided with the cam, and the clamping shoe for locking the support against lateral movement acted upon by said cam when the main section of the lever is swung sidewise in one direction, substantially as set forth.

2. The combination, in a dental chair, of the vertically adjustable support, the cylinder in which it is mounted, the elevating lever pivoted to lugs of the cylinder, composed of jointed sections and provided with the cam and lateral lug, and the clamping shoe for locking the support against lateral movement, acted upon by said cam when the main section of the lever is swung sidewise in one direction to bring its lateral lug above a projection of one of the lugs of the cylinder to which the lever is pivoted, substantially as set forth.

3. The combination, in a dental chair, of the cylinder, the vertically adjustable support mounted in the cylinder, the elevating lever

pivoted to the cylinder and composed of jointed sections, mechanism serving to uphold the support, and tripping mechanism actuated by the main section of the lever when swung sidewise to throw the upholding mechanism out of action and allow the support to descend, substantially as set forth.

4. The combination, in a dental chair, of the cylinder, the liquid-carrying reservoir, the vertically adjustable support mounted in the cylinder, the inlet and outlet valves by which liquid is allowed to pass from the reservoir to the cylinder beneath the support and from the cylinder to the reservoir, the elevating lever pivoted to the cylinder and composed of jointed sections, and the tripping mechanism of the outlet valve actuated by swinging the main section of the lever sidewise, substantially as set forth.

5. The combination, in a dental chair, of the cylinder, the liquid carrying reservoir, the vertically adjustable support mounted in the cylinder, the outlet valve by which liquid is allowed to pass from the cylinder beneath the support to the reservoir, the elevating lever pivoted to the cylinder, composed of jointed sections and provided with the lateral arm, the push rod against which said arm is made to bear by swinging the main section of the lever sidewise, the bell-crank lever acted upon by the push rod, and the thrust rod acted upon by the bell-crank lever to trip the outlet valve, substantially as set forth.

6. The combination of the vertically adjustable chair body support, its carrying cylinder, the elevating lever composed of the inner section pivoted to the cylinder and the main section pivoted to the inner section to swing horizontally, and the spring-actuated slide rod mounted in one section of the lever and acting against the other section thereof to yieldingly hold the main section of the lever in its normal position and restore it thereto from a position slightly to one side thereof, substantially as set forth.

7. The combination of the vertically adjustable chair body support, its carrying cylinder, the vertically rocking elevating lever pivoted to the cylinder and composed of two sections jointed together with the main section capable of swinging sidewise in opposite directions, the clamp for locking the support against lateral movement acted upon by the swinging section of the lever when moved sidewise in one direction, mechanism for upholding the support, and its tripping mechanism acted upon by the swinging section of the lever when moved sidewise in a direction opposite to that in which it is moved to actuate the clamp, 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.