

No. 725,033.

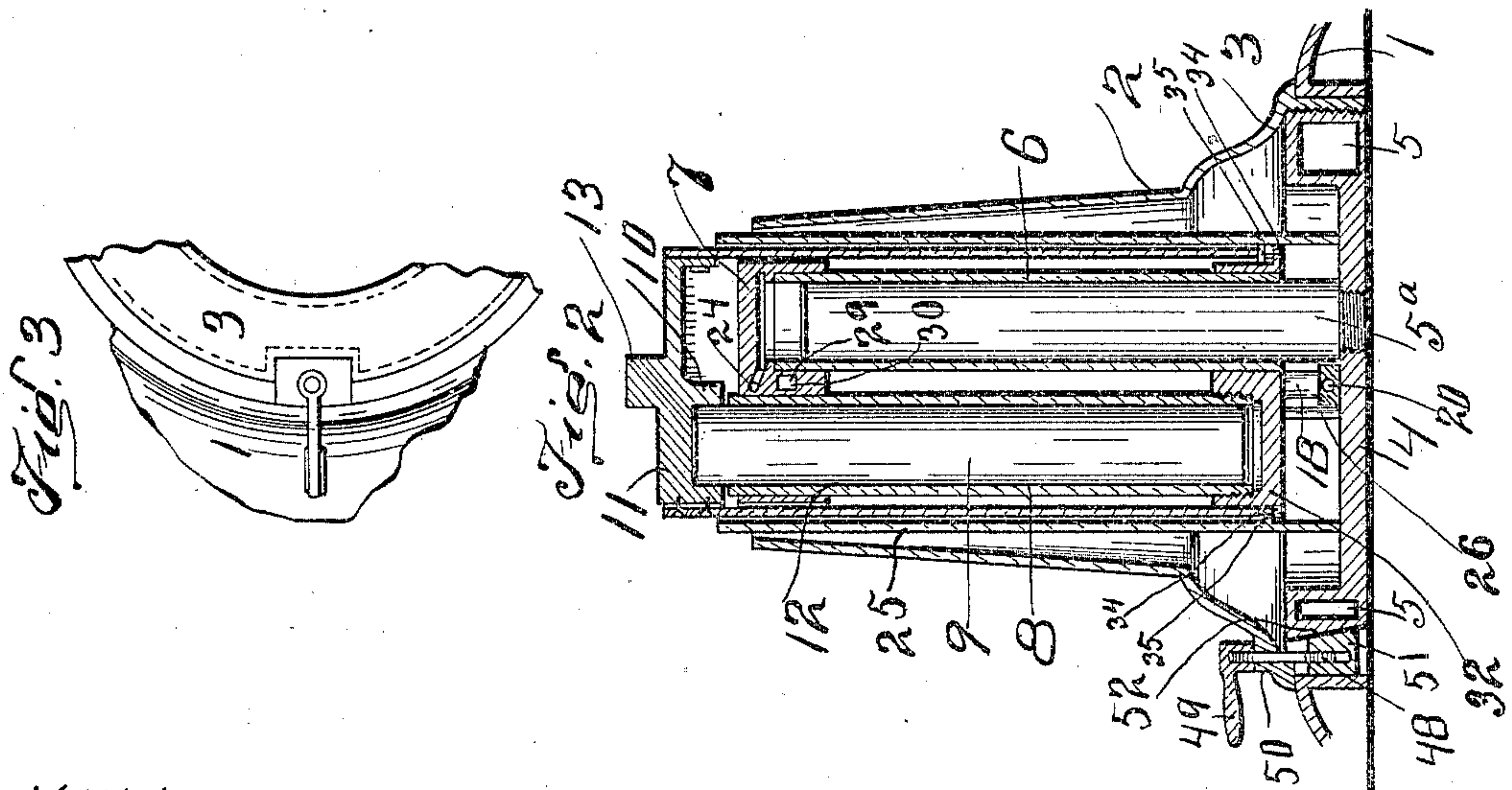
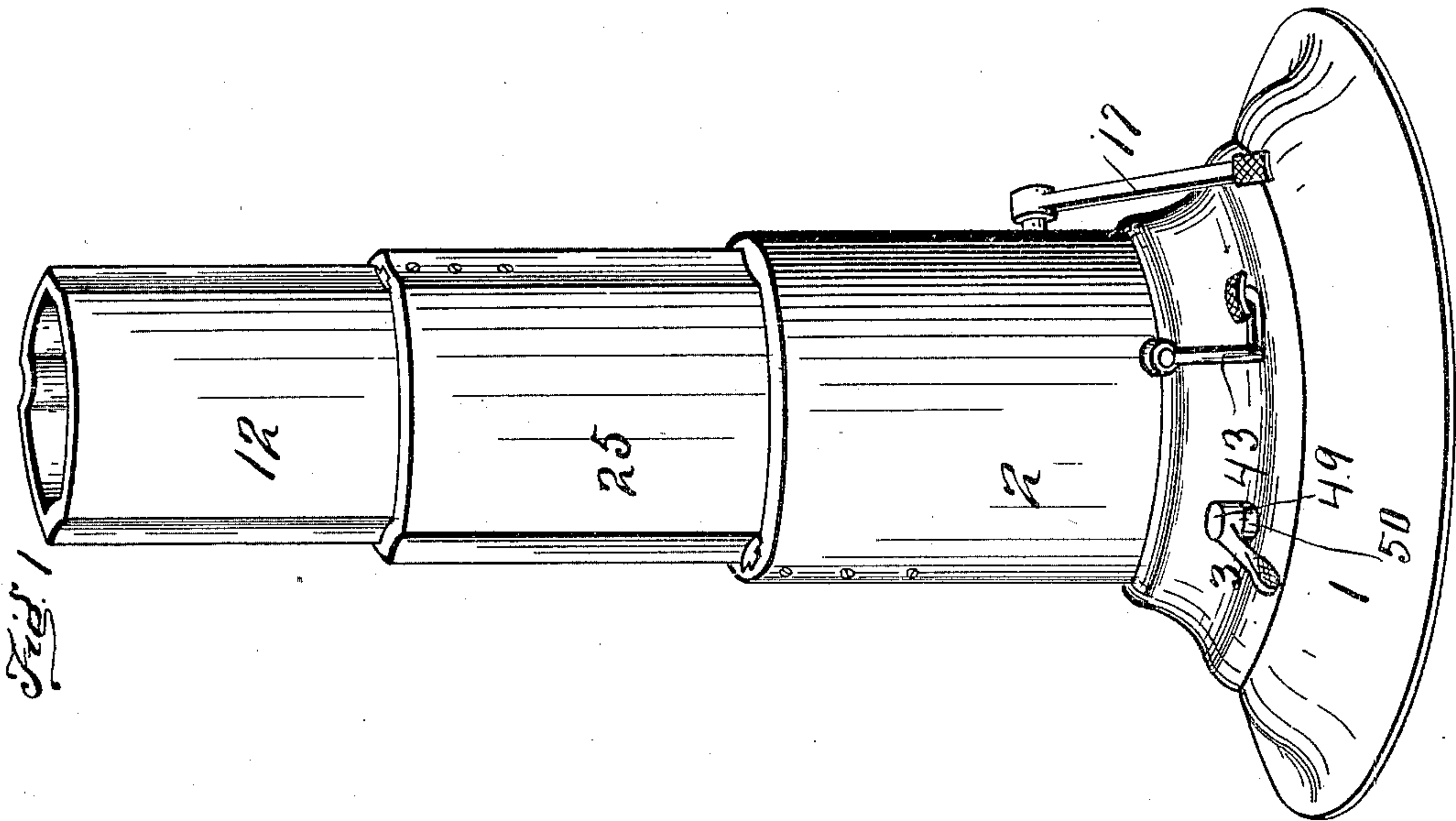
PATENTED APR. 14, 1903.

I. N. BRIGHAM.
DENTAL CHAIR.

APPLICATION FILED APR. 25, 1901. RENEWED SEPT. 29, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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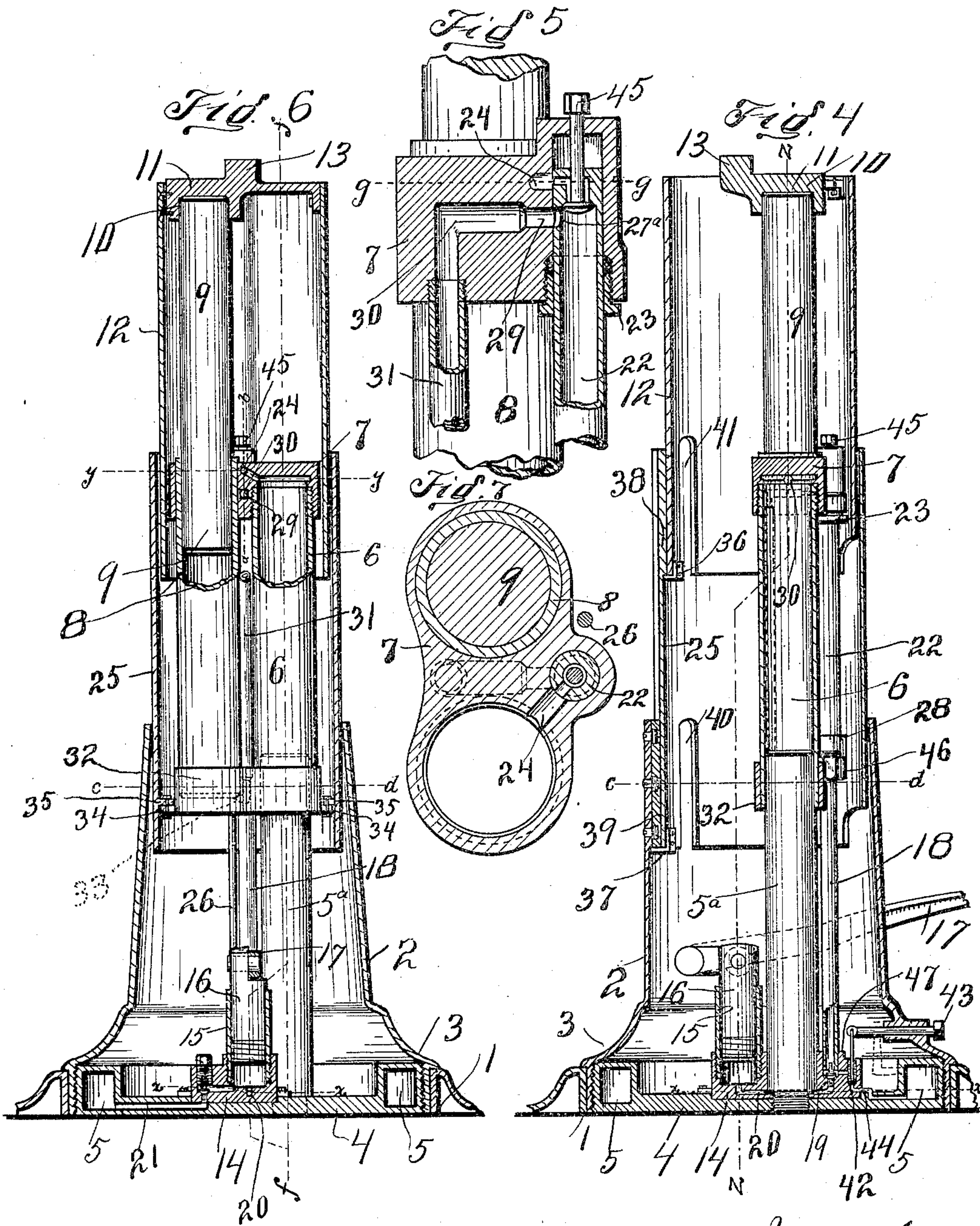
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3 SHEETS—SHEET 2.



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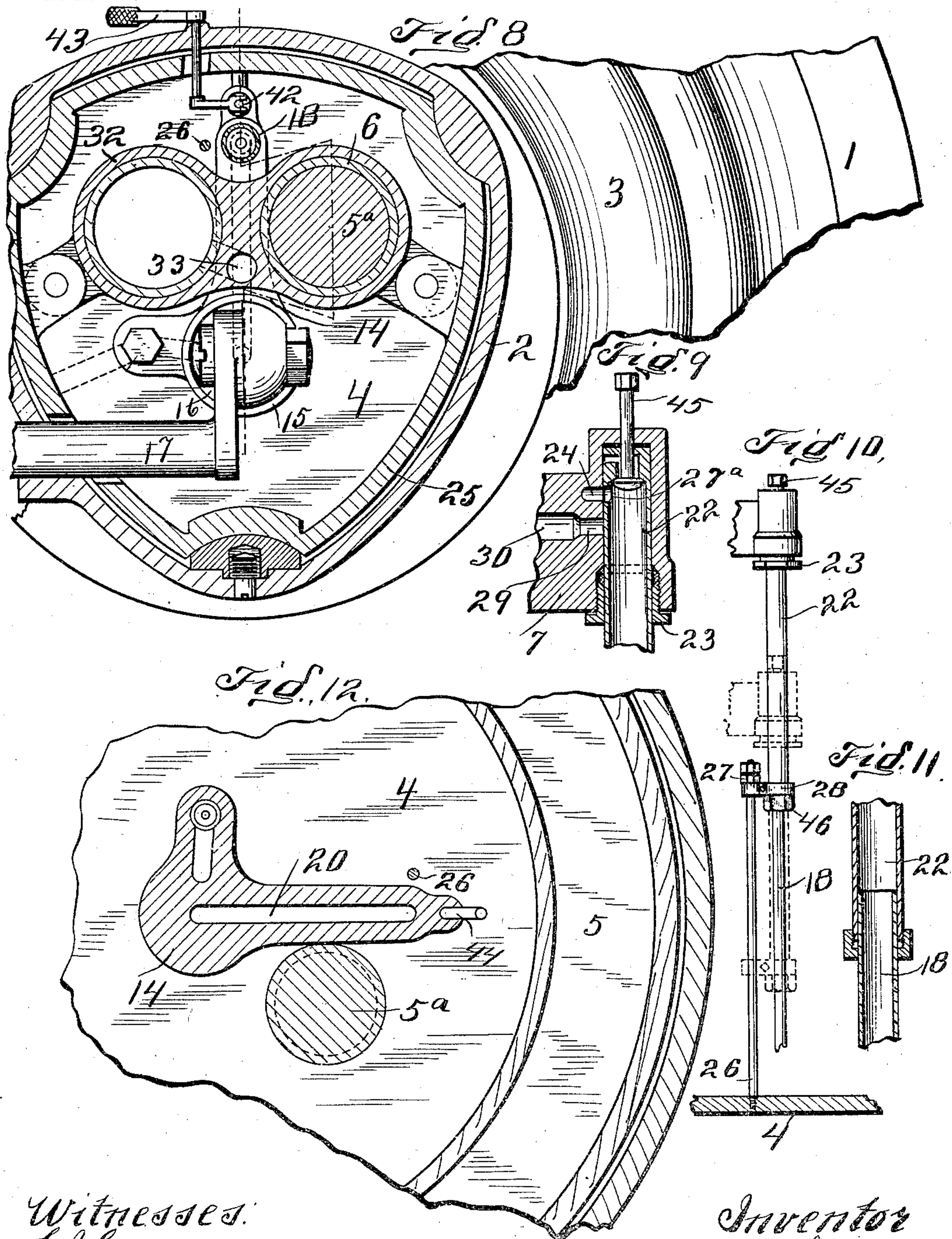
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ISAAC N. BRIGHAM, OF CLEVELAND, OHIO, ASSIGNOR TO ALBERT HOEFFER,
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DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 725,033, dated April 14, 1903.

Application filed April 25, 1901. Renewed September 29, 1902. Serial No. 125,334. (No model.)

To all whom it may concern:

Be it known that I, ISAAC N. BRIGHAM, a citizen of the Dominion of Canada, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Dental Chairs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a perspective view of the chair-supporting sections, showing said sections in an elevated position. Fig. 2 is a vertical section of the chair-supporting sections, showing the same lowered or telescoped. Fig. 3 is a view showing a portion of the base and the lower chair-section. Fig. 4 is a sectional view on line *ff*, Fig. 6, showing the chair-supporting sections extended and illustrating the devices for elevating the sections and releasing the same to lower the chair. Fig. 5 is an enlarged view on line *ab*, Fig. 6, showing the lower end of the upper plunger and the upper end of the telescopic feed or oil tube, also showing oil-passages and feed-tube. Fig. 6 is a vertical section taken on line *zz*, Fig. 4. Fig. 7 is a transverse section on line *gg*, Fig. 5. Fig. 8 is a transverse section on line *cd*, Fig. 6, looking down. Fig. 9 is a view similar to Fig. 5, except parts are shown in different position. Fig. 10 is a view showing a portion of the lower feed or oil tube and the upper feed or oil tube located thereon and the stop-rod. Fig. 11 is a vertical section showing parts of the lower and upper oil-pipes. Fig. 12 is an enlarged view taken on line *xx*, Fig. 6.

The present invention has relation to dental chairs, and pertains more particularly to the base or lifting mechanism by which the chair proper is elevated and held at any desired point or elevation within the limits of the movements of the various supporting-sections and lower mechanism. The chair is supported in the ordinary manner and may be of any desired construction within itself. Hence the chair proper is not illustrated.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the base or supporting plate, which is formed of a size to properly support the chair and the different parts belonging thereto. From the base 1 extends the lower section 2, which is substantially of the form shown, and, as shown, its bottom or lower end is provided with the integral flange 3, which flange rests upon the base 1, and is so connected that it will rotate or turn upon the base. Within the section 2 is located the bottom 4, which bottom is connected by screw-threads formed upon the inner periphery of the flange 3 and the outer periphery of the bottom 4. The bottom 4 is provided with the chamber 5, which chamber is for the purpose of holding oil used for elevating and sustaining the different sections of the chair-support and the chair carried by the telescopic sections. To the bottom 4 is securely connected, preferably by screw-threads, the upward post 5^a, and around which post is located the tube 6, which tube fits upon the post 5^a. To the top or upper end of the tube or cylinder 6 is connected the cap 7. Said cap also provides a means for connecting the cylinder 8 at its upper end, and in which cylinder is located the plunger 9, said plunger being extended upward and its top or upper end seated in a recess or socket 10, formed in the bottom or under side of the chair-connecting plate 11, which chair-connecting plate is securely attached to the top or upper end of the upper base or telescopic section 12. The upper side of the plate 11 is provided with the bearing 13, which bearing is for the purpose of providing a means for connecting the seat-frame of the chair. To the bottom 4 is securely connected in any convenient and well-known manner the pump base or frame 14, to which pump base or frame is connected the pump cylinder or barrel 15, within which pump-barrel 15 is located the piston 16, which piston is of the ordinary form and is provided with the ordinary pump-lever 17, which pump-lever extends outward and is operated in the

usual manner. To the pump frame or base 14 is connected the lower end of the feed-pipe section 18, at the bottom or lower end of which is located an ordinary check-valve 19.

5 The pump-base 14 is provided with the oil-passage 20, which opens into the bottom or lower end of the pump-barrel 15, as illustrated in Fig. 4, and leads to and communicates with the feed-tube 18.

10 For the purpose of providing a means for allowing the oil to flow or be brought into the pump-barrel 15 the passage 21 is provided, which passage leads to the oil-chamber 5, as illustrated in Fig. 6.

15 Upon the feed-pipe section 18 is located the upper feed-pipe section 22, which feed-pipe section slides upon the lower section 18, as hereinafter described.

Upon the top or upper end of the feed-pipe section 22 is located the cap 7, said cap being so connected that it can slide up and down a short distance, as hereinafter described, and for the purpose of making a close or tight joint between the pipe-section 22 and

25 the cap 7 the packing-nut 23 is provided and is located in a screw-threaded aperture formed in the cap 7.

When it is desired to elevate the chair, the pump-lever 17 is operated in the ordinary

30 manner, which forces oil into the feed-pipe sections 18 and 22, from whence oil is conveyed through the passage 24 (see Fig. 9) and onto the top of the post 5^a, and as the oil is forced between the top of the post 5^a and the

35 cap 7 the tube 6 is moved upward, carrying with it the telescopic sections 12 and 25, together with the parts 32, 31, and 8, it being understood that at this time both sections 12 and 25 move upward together.

40 To the bottom 4 or its equivalent is connected the rod 26, which rod is located parallel with the feed-tube 18 and its top or upper end provided with a stop-nut 27. The bottom or lower end of the feed-pipe section

45 22 is provided with the arm 28, which arm is extended laterally from the pipe 22, which engages the rod 26 by means of an aperture formed in the arm 28, through which aperture the rod 26 passes. As the pipe-section

50 22 moves upward it carries with it the arm 28 until the arm 28 engages or strikes against the bottom or under side of the stop-nut 27, at which time the upward movement of the feed-pipe 22 is stopped; but when an additional quantity of oil is forced into the tube

55 22 after it has been stopped the cap 7, together with the packing-nut 23, is moved upward upon the tube 22, (see Fig. 5,) which movement brings the oil-passage 27^a into alignment with the oil-passages 29 and 30, which oil-passages lead to and communicate with the second feed-pipe 31, which second feed-pipe 31 is connected to the cap 7, as illustrated in Fig. 5, and extends downward, and

60 its lower end is connected to the coupling-head 32, which coupling-head is provided

with the passage 33, (shown in dotted lines, Fig. 6,) said passage leading to the bottom or under end of the plunger 9. At this time and when the section 25 has been elevated to its extreme limit the oil is forced through the pipe 31 and under the plunger 9, which elevates the plunger, carrying with it the upper section 12, while the lower section 25 remains at rest.

For the purpose of providing a means for connecting the coupling-head 32 to the section 25 said section is provided with the flanges 35 and the coupling-head provided with the flanges 34 and said flanges bolted together by suitable clamping-bolts or otherwise.

It will be understood that suitable stop-blocks, such as 36 and 37, should be provided to limit the upward movement of the telescopic sections 12 and 25, said stop-blocks coming in contact with the blocks or bearing-plates 38 and 39.

For the purpose of allowing the telescopic sections 12 and 25 to extend downward to their full limit their bottom or lower ends are provided with the cut-out portions 40 and 41, so as to allow the sections to pass the pump-lever 17.

When it is desired to lower the chair after it has been elevated to any predetermined point, the release-valve 42 is opened by means of the lever 43, at which time the oil is free to pass through the passage 44 into the oil-chamber 5. As the telescopic section 12 moves downward the bottom or under side of the plate 11 will come in contact with the upper headed end of the valve-stem 45, (see Fig. 5,) at which time the weight of the chair will cause the valve 45 to be depressed and open the oil-passage 24 into the feed-pipes 22 and 18, thereby allowing the oil to flow through the passage 44 into the oil-chamber 5. As the chair descends to near its lowest limit the under side of the nut 46, secured to the pipe 22, strikes the shoulder 47 or its equivalent and stops the downward movement of the tube 22, after which the chair proceeds to move on downward until the oil-passage 24 is in alignment with the oil-passage 27^a, (see Fig. 9,) when the chair is brought to a full stop by resting on the bottom of the lower section.

For the purpose of locking the chair-support proper against rotation the base-section 2 is provided with the screw-threaded rod 48, upon which is mounted the lever 49, the bottom or under side of said lever resting upon the shoulder 50. The rod 48 extends downward and is connected to the tapered block 51, which tapered block bears against the incline 52, formed upon the outer side of the oil-chamber 5. The tapered block is located against the inner periphery of the base 1, and when the block is lowered it is free to move with the rotating base 2; but when the block is elevated it binds between the incline

edge 52 and the inner periphery of the base 1, thereby locking the chair-support proper against rotation.

The parabolic cross-section shown in Figs. 1 and 8 is not claimed in this application, as the same is claimed in application Serial No. 60,526, filed May 16, 1901, and for the same reason telescopic feed-pipes are not herein broadly claimed.

10 Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a base, a section provided with a bottom having an oil-chamber and rotatable on the base, a pump located in the rotatable section, a fixed post secured in upright position within the rotatable base-section, a tube slidably mounted upon the post and provided with a cap having oil-passages, a fixed feed-pipe connected to the pump-base, a sliding feed-pipe adapted to slide upon the fixed feed-pipe and provided with a valve at its upper end and a nut upon its lower end, a rod fixed to the bottom of the base and provided with a stop-nut at its upper end, and an arm fixed to the bottom or lower portion of the sliding feed-pipe and slidably connected to the guide-rod, a tube connected to the cap having oil-passages, and a plunger located within said tube and seated into the chair-connecting plate at its upper end, telescopic sections adapted to slide one within the other, one of said sections provided with a coupling-head, said coupling-head provided with an oil-passage, and a pipe connected to the cap and coupling-head, all arranged, substantially as and for the purpose specified.

2. The combination of a rotatable base-section rotated upon a base, and the sections or standards, a fixed post held in upright position and having located thereon a sliding tube, a coupling-head fixed to and movable with one of the telescopic chair sections or standards, a pipe fixed to the coupling-head and provided with a plunger located within the upper chair section or standard, a cap provided with oil-passages leading to the top of the post and to the bottom of the plunger, a fixed feed-pipe provided with a valve at its bottom or lower portion, a sliding feed-pipe slidably connected to the cap and provided with a valve at its upper end, and an oil-passage formed in the portion of the pipe located within the cap, and a pump and oil-passages leading from the oil-chamber to the pump-cylinder and from the pump-cylinder to the stationary feed-pipe, and a feed-pipe connect-

ed to the coupling-head and to the cap and movable with the coupling-head and cap, substantially as and for the purpose specified.

3. In a dental chair, the combination of a base, a rotatable section having mounted thereon an oil-chamber located in the lower portion of the rotatable section, a pump located in the lower portion of the rotatable section, telescopic sections, two tubes or cylinders fixed at their lower ends to a coupling-head, one of said cylinders provided with a plunger movable with one of the telescopic sections, the other cylinder or tube movable upon a fixed post secured to the bottom of the rotatable section, the cap provided with oil-passages, said cap fixed to the oil-cylinders, the feed-pipe sections 18 and 22, one of said passages communicating with the oil-chamber above the fixed post and the other communicating with the pipe located between the cap and the coupling-head, and a valve located at the upper end of the upper telescopic feed-pipe section, substantially as and for the purpose specified.

4. In a dental chair, the combination of a base having a rotatable section mounted thereon and said rotatable section provided with an oil-chamber, a pump located in the rotatable section, telescopic sections, tubes or cylinders fixed at their upper ends to a cap and at their bottom ends to a coupling-head, a fixed post and one of the cylinders slidable upon the fixed post and the other having a plunger located therein, a cap provided with passages leading to the cylinders at their upper and lower ends respectively, telescopic feed-pipes having ports communicating with oil-passages in the upper cap, and a valve connected to the upper feed-pipe, substantially as and for the purpose specified.

5. The combination of a telescopic chair-support, means comprising tubes 6 and 8 for elevating the telescopic chair-sections, a cap connecting said tubes and provided with oil-passages, a sliding feed-tube slidably connected to the cap the portion of the sliding feed-tube located within the cap provided with an oil-passage, and a valve provided with an extension located above the upper end of the sliding feed-tube, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ISAAC N. BRIGHAM.

Witnesses:

M. M. DISLER,
FRED M. HESSEY.