No. 644,640. Patented Mar. 6, 1900.

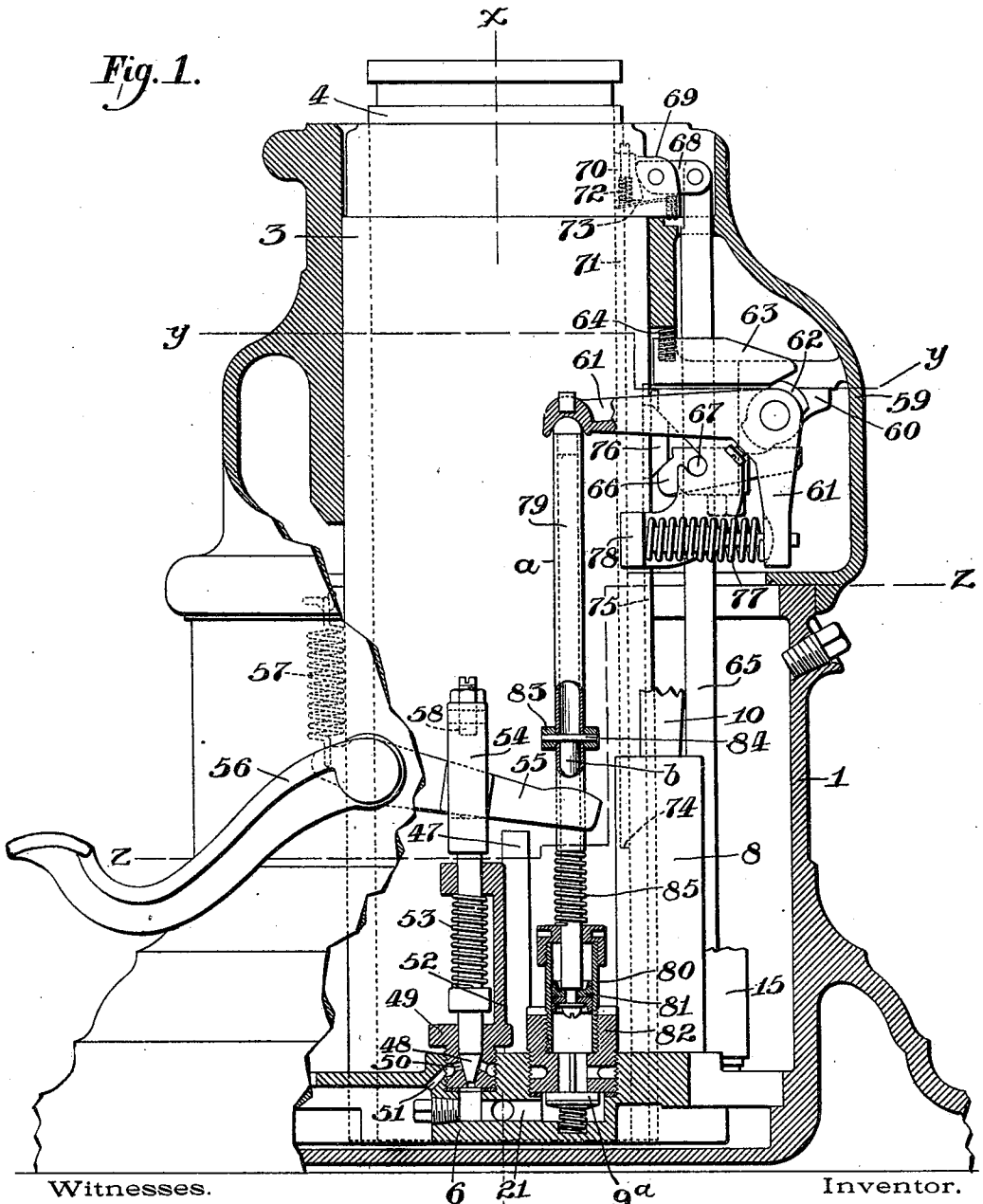
G. SIBLEY.

DENTAL CHAIR.

(Application filed June 3, 1895.)

(No Model.) 6 Sheets—Sheet 1.

Fig. 1.



Witnesses.

Andrew H. Grouse

H. L. Cheeseman

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 644,640. Patented Mar. 6, 1900.

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DENTAL CHAIR.

(Application filed June 3, 1895.)

(No Model.) 6 Sheets—Sheet 2.

Fig. 2.

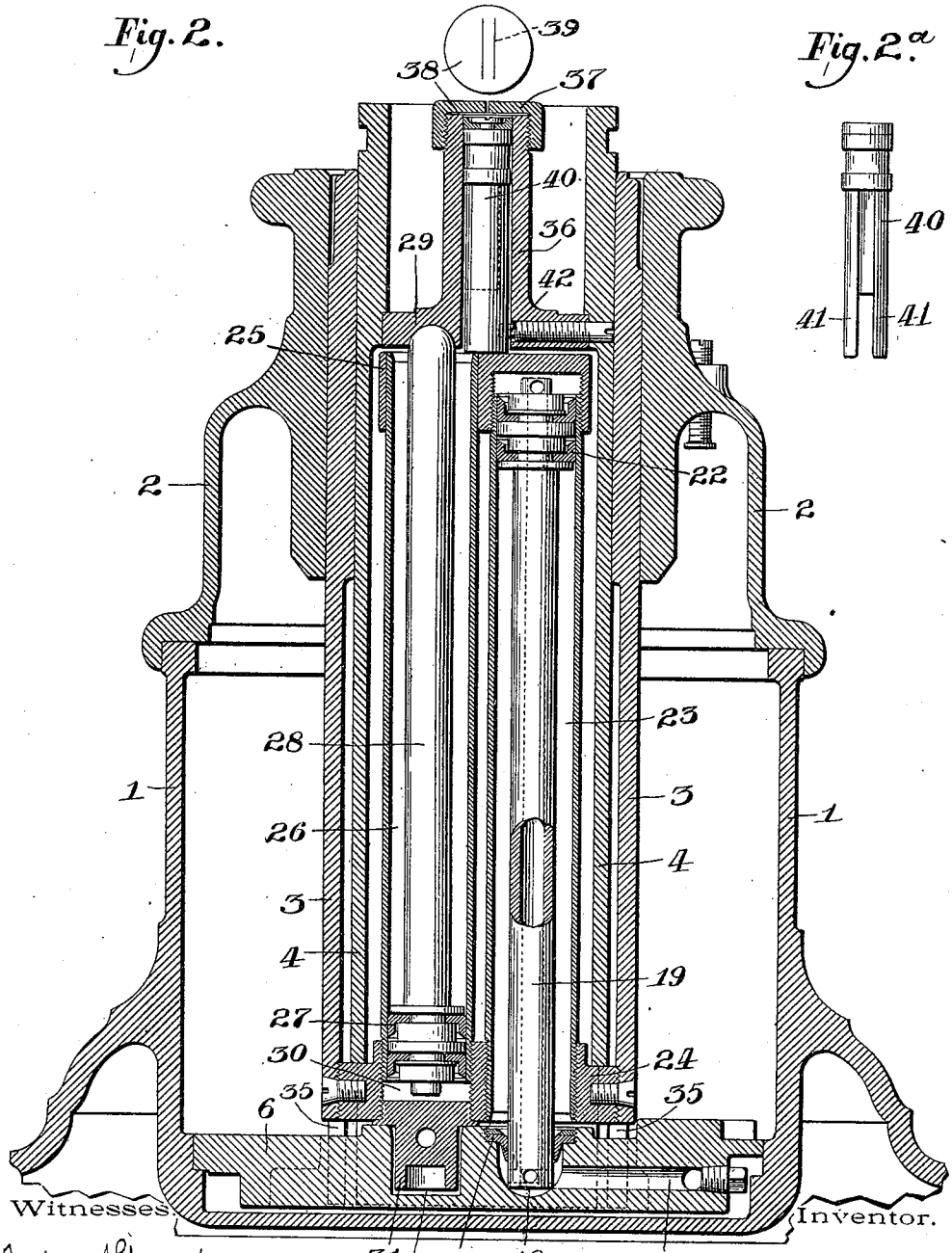

Fig. 2a.

Witnesses.

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DENTAL CHAIR.

(Application filed June 3, 1895.)

(No Model.) 6 Sheets—Sheet 3.

Fig. 3

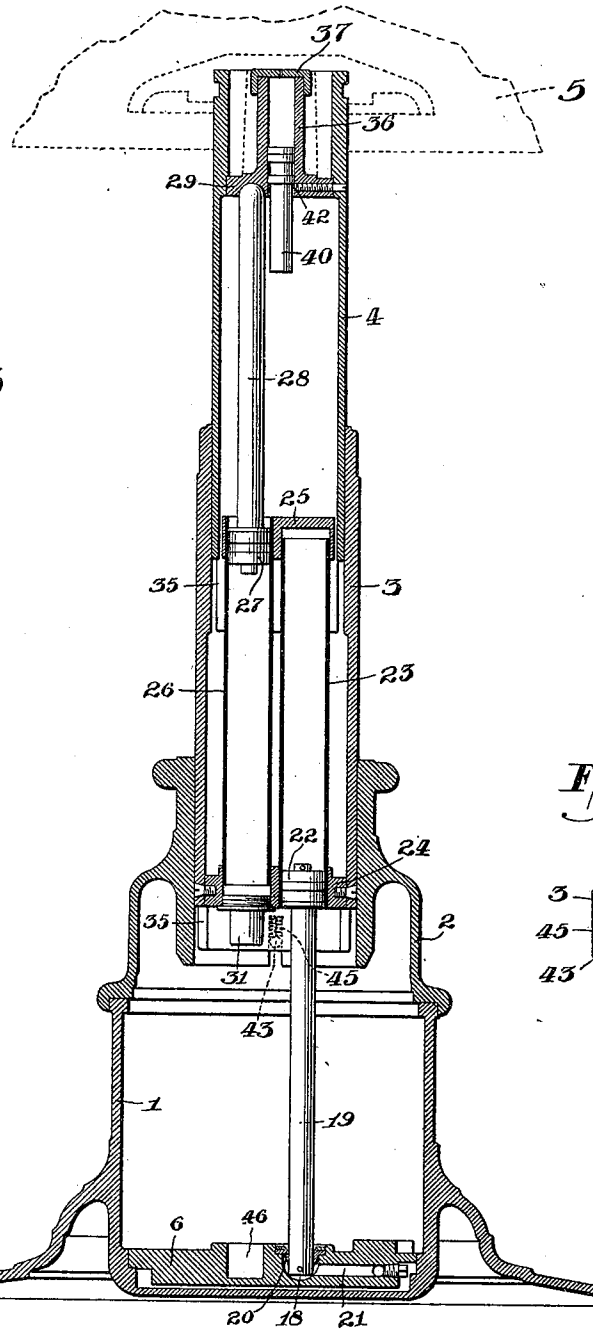
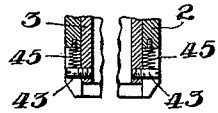


Fig. 3.a



Witnesses.

Andrew H. Goepel

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DENTAL CHAIR.

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(No Model.) 6 Sheets—Sheet 4

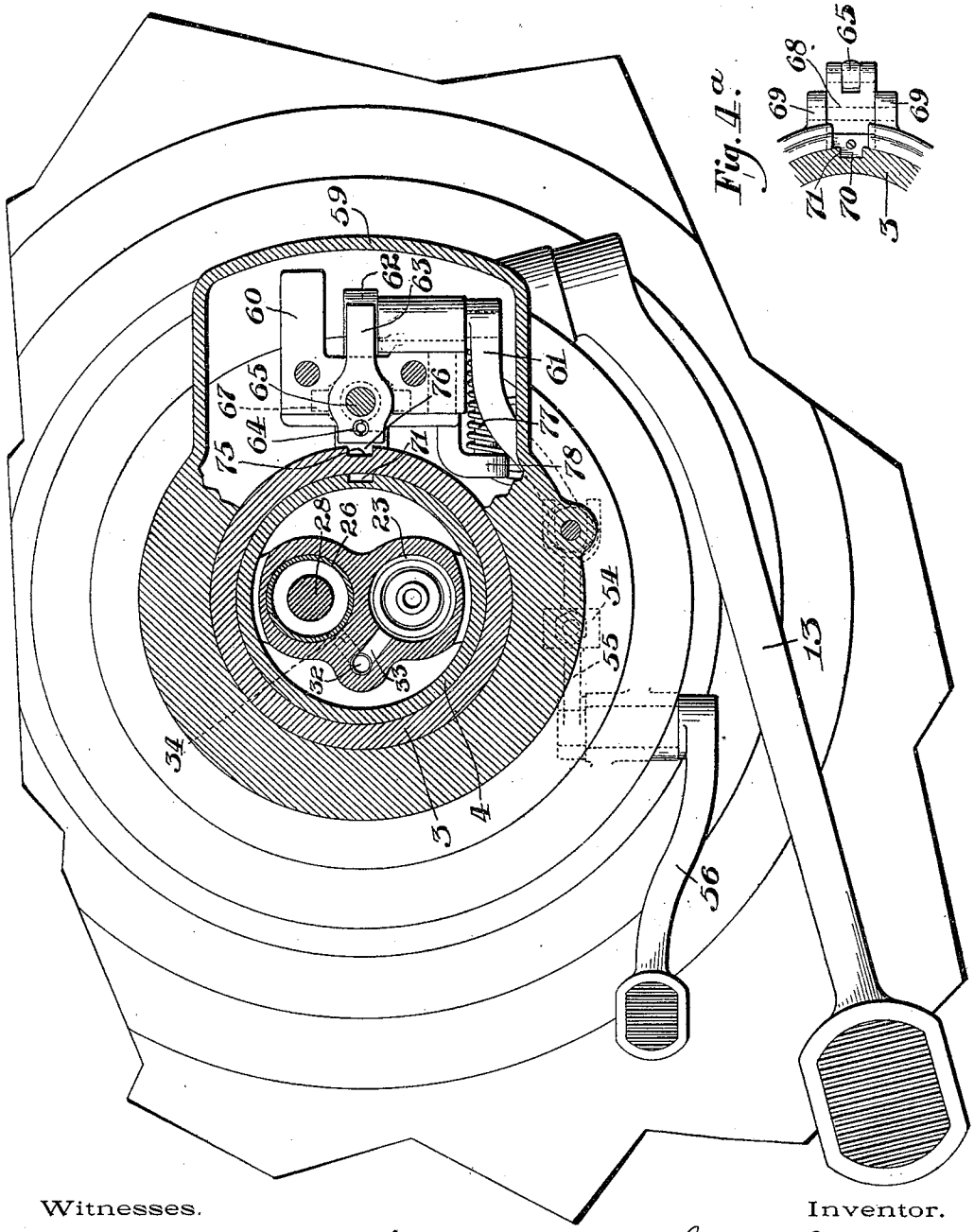

Fig. 4.

Fig. 4a.

Witnesses.

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DENTAL CHAIR.

(Application filed June 3, 1895.)

(No Model.) 6 Sheets—Sheet 5.

Fig. 5.

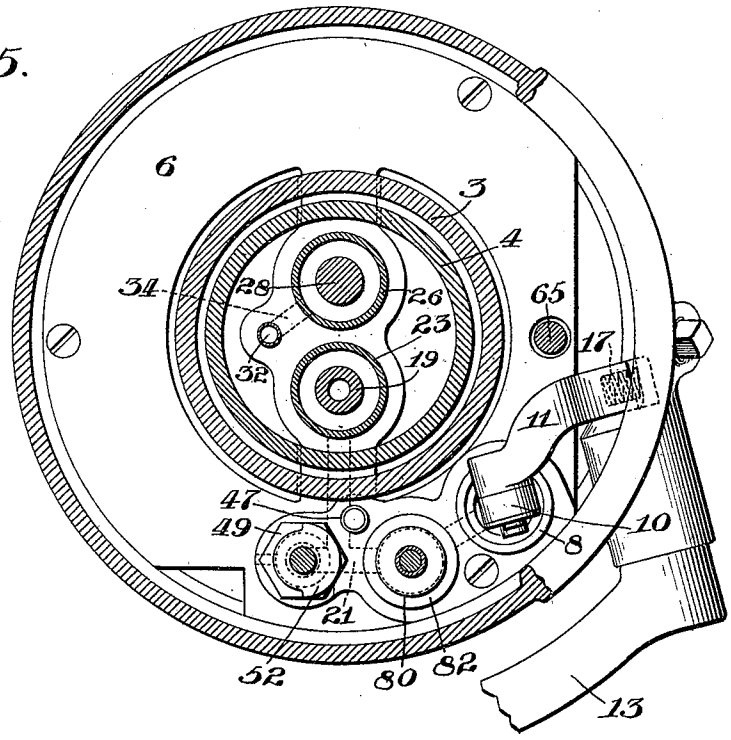
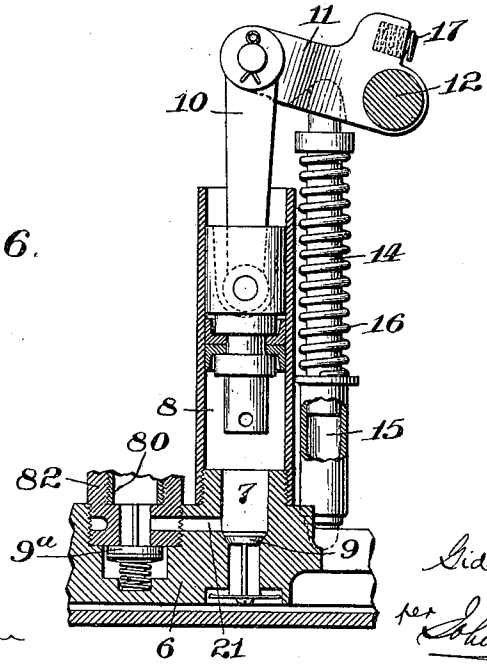


Fig. 6.



Witnesses.

Andrew L. Groupé

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No. 644,640. Patented Mar. 6, 1900.

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DENTAL CHAIR.

(Application filed June 3, 1895.)

(No Model.) 6 Sheets—Sheet 6.

Fig. 7.

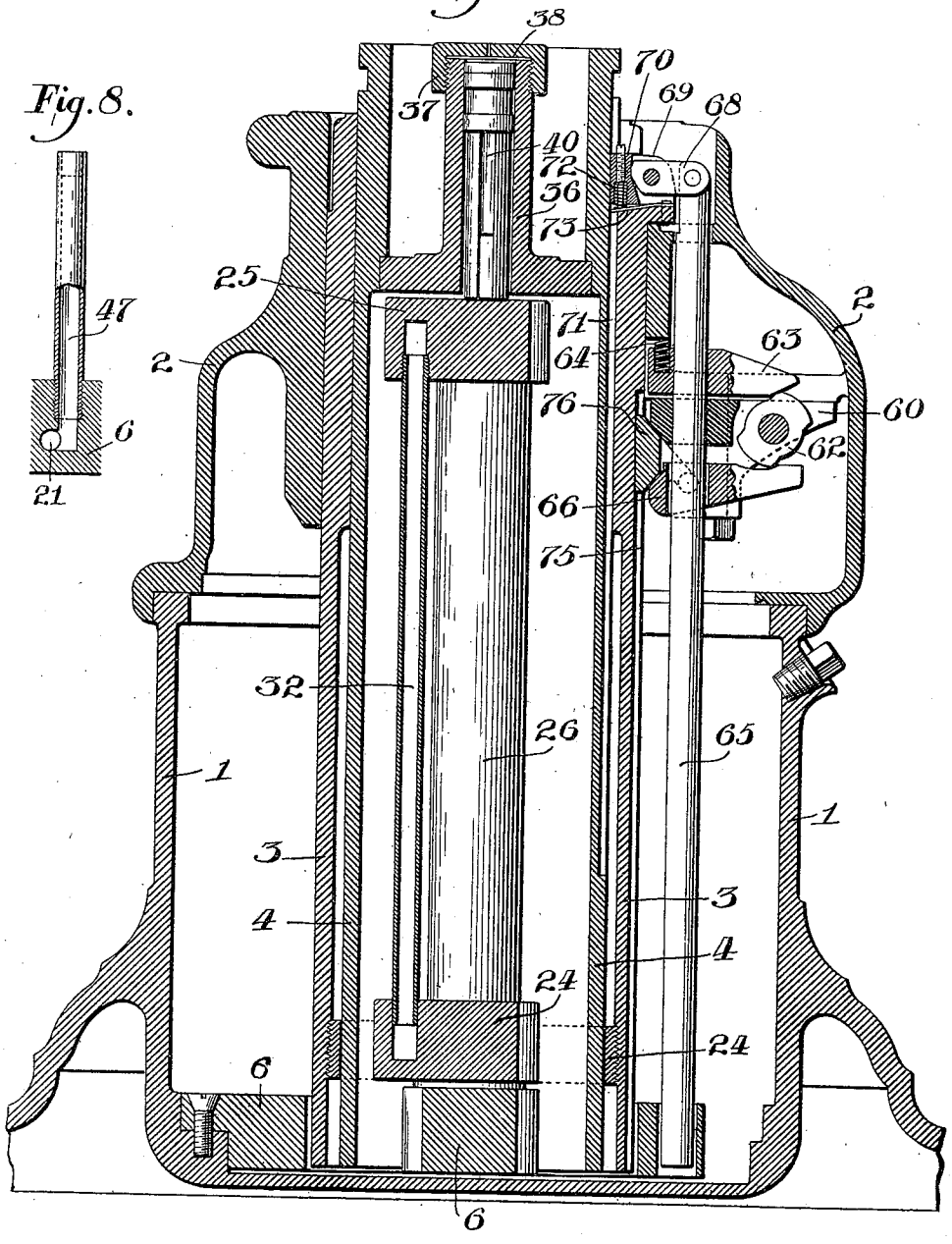

Fig. 8.

Witnesses.

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UNITED STATES PATENT OFFICE.

GIDEON SIBLEY, OF PHILADELPHIA, PENNSYLVANIA.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 644,640, dated March 6, 1900.

Application filed June 3, 1895. Serial No. 551,507. (No model.)

To all whom it may concern:

Be it known that I, GIDEON SIBLEY, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dental Chairs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to that class of dental chairs in which the seat or body of the chair is vertically adjusted and sustained in its positions of adjustment by means of a hydrostatic column, my aim herein being to provide a structure whereby the vertical adjustment of the chair shall range from the lowest to the highest planes to meet the varying requirements of service and whereby the chair shall be held firmly and steadily in place irrespective of its positions of adjustment.

In the particular embodiment of the invention illustrated in the annexed drawings I employ an extensible standard comprising a base or pedestal and a plurality of telescopic sections fitted thereto in combination with a pump and intermediate coacting mechanism to extend or reduce the standard to effect the requisite adjustments of the chair-body, a novel construction and arrangement of valve and cushion devices, and an automatic clamping and releasing mechanism for the telescopic sections, all of which will be hereinafter fully described and duly claimed.

In the drawings, Figure 1 is a sectional elevation of the pedestal, showing the telescopic sections and the clamping and releasing mechanism therefor. Fig. 2 is a longitudinal section, as on the line $x\,x$ of Fig. 1, certain parts being omitted for clearness. Fig. 2^a is an elevation of a magnetic valve slide or piston hereinafter described. Fig. 3 is a section similar to Fig. 2, but on a reduced scale, showing the telescopic sections extended. Fig. 3^a is a sectional detail of spring-cushion device for the outer telescopic section. Fig. 4 is a transverse section, as on the line $y\,y$ of Fig. 1. Fig. 4^a is a plan of the clamp-shoe and its adjuncts for the inner telescopic section. Fig. 5 is a transverse section, as on the line $z\,z$ of Fig. 1. Fig. 6 is a vertical section of the pump and its immediate connections. Fig. 7 is a longitudinal vertical section through Fig. 1 on a plane at right angles to that of Fig. 2. Fig. 8 is a sectional detail of the auxiliary cushioning-tube 47, hereinafter referred to.

The numeral 1 designates a flanged cylinder which constitutes a base or pedestal to support the various working parts of the structure. The lower end of the cylinder is closed and its upper end is surmounted by a contracted headpiece 2, which is in effect a continuation of the pedestal. To the headpiece is fitted the outer section 3 of a telescopic cylinder, the inner section 4 thereof sustaining a chair body or seat 5 of any approved pattern, whereby the sections may be projected above the pedestal and extended, or they may be telescoped together and into the pedestal, thus securing the maximum or the minimum range of vertical adjustment of the chair-body, as occasion may require. The said sections may be termed "seat-supporting" sections.

Fixed within the pedestal, just above the bottom thereof, is a bed-block 6 of peculiar construction, as hereinafter explained. Extending through the block is a suitably-disposed port 7, which communicates with the vertical cylinder 8 of an appropriate pump. In the lower portion of this port is seated a puppet-valve 9, which is so arranged that during the upward stroke of the pump-piston the oil or other fluid contained in the pedestal is drawn into the pump-cylinder; but during the reverse stroke of the piston the valve seals the lower portion of the port, as ordinarily. The piston is connected by means of a rod 10 with a rock-arm 11, the fulcrum-stud 12 of which is extended through a suitable bearing on the pedestal and is provided with a forwardly-extending treadle-lever 13. By depressing this lever the downward stroke is imparted to the piston, the reverse stroke being effected in this instance by means of a spring-actuated plunger 14, the upper end of which bears against the under side of the rock-arm. The lower portion of the plunger is fitted to a vertical guide 15 on the bed-block, the actuating-spring 16 encircling the plunger and acting upon said guide and a fixed collar on the plunger. A small spring 17, interposed between the rock-arm and the wall of the pedestal, serves as a cushion for

said arm in its upward movement. Any other appropriate pump may be substituted for that above described.

Extended into a suitably-disposed recess or chamber 18 in the upper face of the bed-block is the open lower end of a stationary vertical pipe 19, the mouth of the chamber being sealed and the pipe being fixedly held by means of a screw-collar and gasket 20. This recess or chamber communicates with the port 7 at a point directly above the inlet-valve by means of a duct 21, whereby in the downward stroke of the pump-piston the oil will be forced by way of the duct into the pipe 19. This duct is provided at a suitable point with a check-valve 9^a, which prevents the return to the pump-cylinder of the oil from the duct during the reverse stroke of the piston. Pipe 19 is provided at or near its upper end with an appropriate gasket or gaskets 22, which is or are fitted to a vertical cylinder 23, (termed a "lift-cylinder,") having connection with and forming a part of the outer section of the telescopic cylinder. The lower end of the cylinder 23 extends through and is screwed or otherwise fitted to a head 24 near the corresponding end of the telescopic section 3, this head being in turn screwed or otherwise affixed to said section. The upper end of the cylinder 23 is screwed into or otherwise secured to a head 25, which incloses the top of said cylinder in such a manner that the oil as it is expressed from the top of the fixed pipe will act upon said head, and thereby raise the same and the parts connected therewith. Secured to the heads 24 and 25, adjacent to the cylinder 23, are the respective ends of a similar cylinder 26, (termed a "guide-cylinder,") to which is fitted a piston or gasket 27 on the lower end of a plunger 28. The upper end of this plunger acts upon a head 29 in the inner telescopic section 4, so that when the plunger is raised, as hereinafter stated, such section is correspondingly elevated. The opening 30 in the lower head, to which the cylinder 26 is secured, is closed by a depending plug 31, so as to form a space or chamber below the piston 27 when the latter is in its lowermost position, as indicated in Fig. 2. Fixed to and between the heads 24 25 in proximity to the cylinders 23 26 is a tube 32, the upper end of which communicates with the top of the cylinder 23 by means of a duct 33 in the head 25 and the lower end of which communicates with the space 30 in the cylinder 26 by means of a duct 34. Hence when the oil is forced from the top of the pipe 19, as above stated, it not only acts to raise the head 25 and its connected parts, but it descends in the tube 32 and, entering the cylinder 26, acts upon the piston therein in a manner to raise the same, the plunger 28, and the inner telescopic section.

The plurality of extensible portions inclosed by the pedestal and by the outer telescopic cylinder may be termed "telescopic elevating and lowering sections," by which term I desire, of course, to comprehend in addition to the lateral disposition shown a series of members in direct vertical alinement, and this irrespective of the connection of said members with the outer telescopic cylinder.

The lower ends of the telescopic sections 3 4 are divided or slotted vertically at appropriate points 35, and the depending portions are extended into the bed-block when the sections are in their lowermost position within the pedestal, said block having appropriate slots or openings therein to receive the depending portions of the sections. The head 24 on the outer section is similarly slotted to permit the downward passage therethrough of the divided end of the inner section 4. By this construction the sections may be lowered and raised to the greatest extent possible.

The head 29 is provided with a tubular extension 36, the top of which is covered by a centrally-perforated cap 37, with an interposed disk or diaphragm 38, of mica or other flexible material. This disk is slitted, as at 39, so as to provide a central yielding portion, which may be drawn slightly inward, as hereinafter described, to permit the ingress of air to the tubular chamber. Fitted to this chamber is a slide or piston 40, which when the sections are telescoped rests upon the head 25 and extends the entire length of the chamber, or practically so. When the sections are extended—that is, when the inner section is projected above the outer section—the piston 40 is drawn or forced down, as shown in Fig. 3, the partial vacuum thus created in the upper part of the valve-chamber drawing down the central portion of the diaphragm 38 and permitting the ingress of air to the chamber. Hence when the upper section is lowered the depending piston 40 bears upon the head 25 and is forced thereby into the chamber, the air therein retarding the movement of the piston and serving as a cushion for the descending section. While a spring might be used for the purpose of normally depressing the valve-piston, I prefer to effect this operation by magnetic attraction—that is to say, I divide the lower portion of the piston to form the limbs or poles 41 and then magnetize the piston. The head 25 being of iron or steel, it serves as an armature for the magnetic piston, by means of which the latter is held in contact with the head when the sections are telescoped; but when the sections are extended the piston is drawn forcibly down by magnetic attraction, so as to effect the end in view. The piston is held and guided in the valve-chamber by means of a stud 42 engaging a longitudinal groove in the piston. This stud is or may be the inner end of the screw by which the head 29 is affixed to the telescopic section.

As the larger telescopic section completes its extreme upward movement it is cushioned by means of suitably-disposed studs 43 thereon abutting against springs 45, which are sustained at suitable points in the inner de-

pending portion of the headpiece 2, as seen in Figs. 3 and 3ª. This section is cushioned in its descent upon the bed-block by the entrance of the depending plug 31 into an oil-containing recess 46 in the face of the block, the oil slowly exuding from the recess under the pressure of the plug. As an additional or auxiliary cushioning device, I prefer to employ a vertical tube 47, which rises from the bed-block adjacent to the inward branch of the duct 21 and communicates therewith. The top of this tube is closed, so that as the oil is expressed through the duct during the descent of the section such oil is forced into the tube, the confined air therein thus being compressed and performing the function of a cushion.

In order to effect the escape of the oil from the duct 21 during the descent of the telescopic sections, there is provided a normally-closed release-valve 48, which is opened when it is desired to lower the chair-body. To stop the descent of the chair-body at any point, the valve is closed. This valve is fitted to a centrally-perforated head 49, that is screwed into the bed-block in a position to open into the duct. It is also provided with a port or passage 50, that extends from the central opening to a duct 51 in the bed-block, the latter duct leading to the under side of the block, as seen most clearly in Fig. 1. The valve-stem is supported in an overhanging guide-lug on a bracket 52, rising from the head 49, a spring 53, which is interposed between said lug and a collar on the valve-stem, serving to maintain the valve normally depressed. On the upper end of the valve-stem is a vertically-slotted extension 54, through which extends the inner arm 55 of a lever that is fulcrumed in a suitable bearing on the side of the pedestal, the outer arm 56 of the lever extending forwardly and constituting a treadle. The treadle-arm is normally depressed by the action of a spring 57, confined within the pedestal, one end of which spring is secured to a lug on the lever and the other end to a hook or projection within the pedestal. When the treadle-arm is depressed, the inner arm rising takes against the slotted extension or an adjustable screw 58 therein and raises the extension and the connected release-valve. This treadle-lever also performs another function, which will hereinafter appear.

I would remark that the feature in a chair of a series of telescopic sections operated by a fluid column to elevate the chair-body in combination with an outer series of telescopic sections for guiding and supporting said body is an important part of my present invention, for the reason, among others, that should there be a leakage of the fluid from the internal lifting-sections such fluid would not run upon the exterior of the pedestal.

Although, as is understood, the telescopic sections are sustained in their positions of vertical adjustment by the liquid column, yet with the view of maintaining the sections firmly and steadily in place I have provided a clamping or braking mechanism therefor which is brought into operation immediately upon the adjustment of the sections, and which mechanism is released preparatory to the act of adjusting the chair-body. This mechanism in its preferred form is of the following construction: The headpiece 2 on the pedestal is provided with a rearward extension or housing 59, to which is bolted or otherwise secured a bracket 60 of peculiar construction. In this bracket is fulcrumed a bell-crank lever 61, on the fulcrum-stud of which is fixed a double-acting cam 62. The upper part of the cam bears against the inclined end of a vertically-movable cam-head 63, which is held normally depressed by means of a spring 64. This head is snugly fitted to a vertically-movable rod 65, so that when the cam is actuated, as hereinafter described, the head 63 binds against the rod and raises the same. The lower part of the cam 62 acts upon the inclined surface of a cam-lever 66, which is fulcrumed in the bracket, as at 67, to the end that in the movement of the cam said lever shall be actuated simultaneously with the cam-head. Pivoted to the upper end of the rod 65 is one arm of a cam-lever 68, that is fulcrumed between projecting lugs 69 on the outer telescopic section 3 near the top thereof. The inner or cam-shaped arm of this lever acts upon the beveled edge of a shoe 70, that is fitted to a longitudinal groove 71 in the periphery of the inner section 4 in such a manner that when the rod 65 is raised through the action of the cam-head the cam-lever forces the shoe firmly against the section, and when the rod is freed from the binding action of the cam-head the cam-lever releases the shoe and permits the vertical adjustment of the section to be had.

Fitted to a socket in the under side of the shoe is a spiral spring 72, which bears upon a flat spring 73, that is secured between the lugs 69. The free end of the flat spring extends into the groove 71, so that the bottom or shoulder 74 of the latter, when the inner section reaches its extreme upward position, will abut against the spring 73, which in conjunction with the spiral spring will perform the function of a cushion.

Fitted to a longitudinal groove 75 in the lower or outer telescopic section is a shoe 76, the ends of which are oppositely inclined, as shown. The upper inclined end is in contact with a correspondingly-inclined surface on the bracket 60, while the lower end engages the inclined part of the cam-lever 66, above referred to. Hence when this lever is actuated by the cam 62 its inner arm raises the shoe 76 forcibly against the opposed incline on the bracket, whereupon the shoe is clamped tightly against the section to hold it in position. Cam 62 is held normally in the active or locking position by means of a strong spring 77, that is interposed between

the depending crank-lever arm and a lug 78 on the bracket, a supporting-stem therefor being provided. By this construction it will be seen that when the crank-lever is moved against the force of the spring the cam is turned to effect the release simultaneously of the clamp-shoes.

Bearing against the under side of the horizontal arm of the lever is a plunger 79, the lower end of which extends into a headed cylinder 80 and is provided with a piston 81. This cylinder is supported upon a head 82, that is screwed into the bed-block in a position to intersect the duct 21 between the pump and the primary or stationary pipe 19—that is to say, the head is provided with a vertical port which communicates at its upper end with the cylinder 80 and at its lower end and side with the supply-duct 21, the check-valve 9^a hereinbefore referred to being disposed at the lower end of the port. Hence when the pump is operated to raise the telescopic sections the liquid before its exit through said valve on its passage to the pipe 19 enters the cylinder 80, raises the plunger therein, and actuates the crank-lever 61 against the force of the spring 77 to effect the release of the clamp-shoes. Thereupon the telescopic sections are raised in the manner above stated, and immediately upon the completion of the adjustment the shoes automatically clamp the sections. In fact, during each removal of the elevating pressure in the operation of adjusting said sections the clamp mechanisms automatically clamp the respective sections. This is one of the important features of my invention. The inner arm 55 of the release-lever hereinbefore described is bifurcated to embrace the plunger, and the latter is provided with a suitably-located collar 83, against which the inner arm of the lever acts to raise the plunger and release the clamp-shoes when the outer or treadle arm 56 of the lever is depressed. The collar is so disposed that the lever-arm acts thereon immediately before the release-valve is opened.

The plunger 79 is preferably constructed in two telescopic parts, (noted *a* and *b*,) the upper part being tubular for the reception of the lower part. The collar 83 is fixed to the part *a* by means of a through-pin 84, which normally rests upon the end of the part *b*. Hence when the collar is acted upon by the treadle-lever the part *a* is raised to effect the release of the clamp-shoes independently of the piston, and when the piston is raised by the pressure of the liquid column the part *b*, bearing against the pin, raises the upper part of the plunger and secures a like action independently of the treadle-lever. A cushion-spring 85 is interposed between the head of the cylinder and the lower end of the tubular part of the plunger 79, the function of which spring is to insure the maintenance of the upper part of the plunger in engagement with the recessed arm of the lever 61 irrespective of the position of the piston 81 in its cylinder.

I claim—

1. In a chair, the combination, with a pedestal, of telescopic seat-supporting sections fitted thereto, a vertically-extensible device confined within said sections, means whereby it is connected with the latter, a fixed pipe in the pedestal extending into the said sections and communicating with said extensible device, and a pump having operative communication with said pipe, substantially as described.

2. In a chair, the combination, with a pedestal, of telescopic seat-supporting sections fitted thereto, a head or support on the lower end of the outer section, and a head or support on the upper end of the inner section, a vertically-extensible device connected or engaged at its respective ends with said heads or supports, a fixed pipe in the pedestal communicating with said extensible device, and a pump having operative communication with said pipe, substantially as described.

3. In a chair, the combination, with a pedestal, of telescopic sections fitted thereto, lift and guide cylinders connected with one of said sections, a communication between the upper portion of the lift-cylinder and the lower portion of the guide-cylinder, a stationary pipe extending into the lift-cylinder, a pump having operative communication with said pipe, and a plunger fitted to the guide-cylinder and engaged with another telescopic section, substantially as described.

4. In a chair, the combination, with a pedestal, of two telescopic sections fitted thereto, lift and guide cylinders contained within the inner telescopic section and connected with the outer section, a port or tube connecting the upper portion of the lift-cylinder with the lower portion of the guide-cylinder, a stationary pipe extending into the lift-cylinder, a pump having operative communication with said pipe, and a plunger fitted to the guide-cylinder and engaged with the inner telescopic section, substantially as described.

5. In a chair, the combination, with a pedestal, of telescopic sections fitted thereto, the outer section being provided with a head at its lower end, two cylinders rising from said head, one of said cylinders constituting a lift-cylinder and the other a guide-cylinder, a port or tube connecting the upper end of the lift-cylinder with the lower end of the guide-cylinder, a pipe suitably supported within the pedestal and fitted to the lift-cylinder, a pump having operative communication with said pipe, and a plunger fitted to the guide-cylinder and engaged with the inner telescopic section, substantially as described.

6. In a chair, the combination, with the pedestal, a bed-block therein, a vertical pipe rising from said bed-block, a pump communicating with the pipe by way of a duct or passage in the bed-block, and suitably-disposed check and release valves, of telescopic sections fitted to said pedestal, a lifting-cylinder on one of said sections to receive the vertical

pipe, a guide-cylinder adjacent thereto, a port or tube connecting said cylinders, a plunger in said guide-cylinder, and an abutment therefor on the other telescopic section, substantially as described.

7. In a chair, the combination, with a pedestal, of a vertically-movable seat-supporting section, an air-chamber supported thereon, a valve in said chamber, a vertically-movable normally-depressed plunger or piston within the chamber, a pump and intermediate connections between the same and said section, substantially as described.

8. In a chair, the combination, with a pedestal, of telescopic sections therein, an air-chamber supported on the inner section, a valve in said chamber, a vertically-movable normally-depressed plunger or piston within the chamber, a pump, lifting devices for said sections, and operative connections between said lifting devices and the pump, substantially as described.

9. In a chair, the combination, with a pedestal, of a vertically-movable seat-supporting section, an air-chamber supported thereon, a valve in said chamber, a vertically-movable magnetic piston within the chamber, a pump, and intermediate connections between the same and said section, said connections being provided with an armature or surface constructed and arranged to effect the depression and the elevation of the piston during the raising and the lowering of the seat-supporting section, respectively, substantially as described.

10. In a chair, the combination, with a pedestal, of telescopic sections fitted thereto, a head on the inner section provided with an air-chamber, a valve and a coacting magnetic piston in said chamber, lift and guide cylinders within the said sections, a connecting-head for said cylinders constructed and arranged to coact with the magnetic piston, a port or tube connecting the upper end of the lifting with the lower end of the guide cylinder, a pipe suitably supported within the pedestal and fitted to the lift-cylinder, a pump having operative communication with said pipe, and a plunger fitted to the guide-cylinder and engaged with the inner telescopic section, substantially as described.

11. In a chair, the combination of an extensible seat-supporting standard, a pump, operative connections between said pump and the standard, clamping mechanism arranged to automatically clamp said standard, and means whereby the said mechanism, during each stroke of the pump, is released preparatory to the adjustment of the standard, substantially as described.

12. In a chair, the combination, with an extensible standard to support the seat, of a clamping and releasing mechanism therefor, and a pump operatively connected with said mechanism, together with means for releasing said mechanism independently of the pump, substantially as described.

13. In a chair, the combination of a standard comprising a plurality of telescopic sections, means for vertically adjusting said sections, and clamp mechanisms constructed and arranged to automatically clamp the respective sections during each removal of the elevating pressure in the operation of adjusting said sections, substantially as described.

14. In a chair, the combination of a standard, comprising a plurality of telescopic sections, means for vertically adjusting said sections, clamp mechanisms constructed and arranged to automatically clamp the respective sections during each removal of the elevating pressure in the operation of adjusting said sections, and independent means for releasing said clamp mechanism, substantially as described.

15. In a chair, the combination of a standard comprising a plurality of telescopic sections, a pump, operative connections between the same and said sections, and clamp mechanisms constructed and arranged to automatically clamp the respective sections during each removal of the elevating pressure in the operation of adjusting said sections, substantially as described.

16. In a chair, the combination with a base or pedestal, of a plurality of telescopic seat-supporting sections fitted to and extensible in said base or pedestal, means for vertically adjusting said sections, and clamp mechanisms mounted on the base or pedestal and on the outermost section respectively, and constructed and arranged to automatically clamp the respective sections during each removal of the elevating pressure in the operation of adjusting said sections.

17. In a chair, the combination with a pedestal, of a plurality of telescopic seat-supporting sections fitted to and extensible in said pedestal, a plurality of telescopic elevating and lowering sections arranged within said former sections and connected therewith, a pump having operative communication with the inner sections, clamping and releasing mechanism for each of the supporting-sections, and means for simultaneously operating said mechanisms.

18. In a chair, the combination with a base or pedestal, of a series of telescopic seat supporting and guiding sections fitted thereto, a series of telescopic elevating and lowering sections mounted within and incased by said former sections and movable therewith, a pump, and operative connection between the same and the inclosed series of sections.

19. In a chair, the combination, with an extensible seat-supporting standard, a pump, operative connections between said pump and the standard, clamping and releasing mechanism for said standard, and connections between the pump and said mechanism constructed and arranged to be operated by the action of the pump preparatory to the adjustment of the standard, substantially as described.

20. In a chair, the combination, with a pedestal, telescopic sections therein, clamping devices to act upon said sections, a piston operatively connected with said devices, a cylinder for said piston, a pump having communication with said cylinder, lifting devices connected with the telescopic sections and with the pump, whereby the clamping and lifting devices are successively operated, substantially as described.

21. In a chair, the combination, with an extensible standard, a clamping and releasing device therefor, a piston operatively connected with said device, a cylinder for said piston, a pump having communication with said cylinder, a lifting device operatively connected with said pump and with the standard, a release-valve, and means for operating the piston and the release-valve successively, substantially as described.

22. In a chair, the combination, with a pedestal, telescopic sections therein, shoes to clamp said sections, cams to actuate said shoes, a vertically-movable rod depending from the upper cam, a cam-head thereon, a spring-actuated crank-lever, a double cam thereon arranged to act upon the said cam-head and upon the cam-lever for the lower clamping-shoe, and means for operating said lever at predetermined intervals, substantially as described.

23. In a chair, the combination, with a pedestal, telescopic sections therein, shoes to clamp said sections, cams to actuate said shoes, a vertically-movable rod depending from the upper cam, a cam-head thereon, a spring-actuated crank-lever, a double cam thereon arranged to act upon the said cam-head and upon the cam-lever for the lower clamping-shoe, a piston engaged with said crank-lever, a cylinder for the piston, a pump having communication with the cylinder, and lifting devices connected with the telescopic sections and with the pump, substantially as described.

24. In a chair, the combination of an extensible seat-supporting standard, a pump, operative connections between said pump and the standard, clamping mechanism arranged to automatically clamp said standard, and means whereby the said mechanism, during each stroke of the pump, is released preparatory to the adjustment of the standard, together with a release-valve, and independent means for releasing the clamping mechanism and opening the release-valve, substantially as described.

25. In a chair, the combination of the pedestal, the bed-block therein provided with a duct or passage, the cushion-tube, the release-valve, the pump, the adjustable seat-supporting standard, and lifting devices for said standard operatively connected with the pump by way of said duct or passage, the said cushion-tube rising from the bed-block and communicating with the duct or passage at a point intermediate the lifting devices and the release-valve, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

GIDEON SIBLEY.

Witnesses:
JOHN R. NOLAN,
ANDREW V. GROUPE.