

No. 743,508.

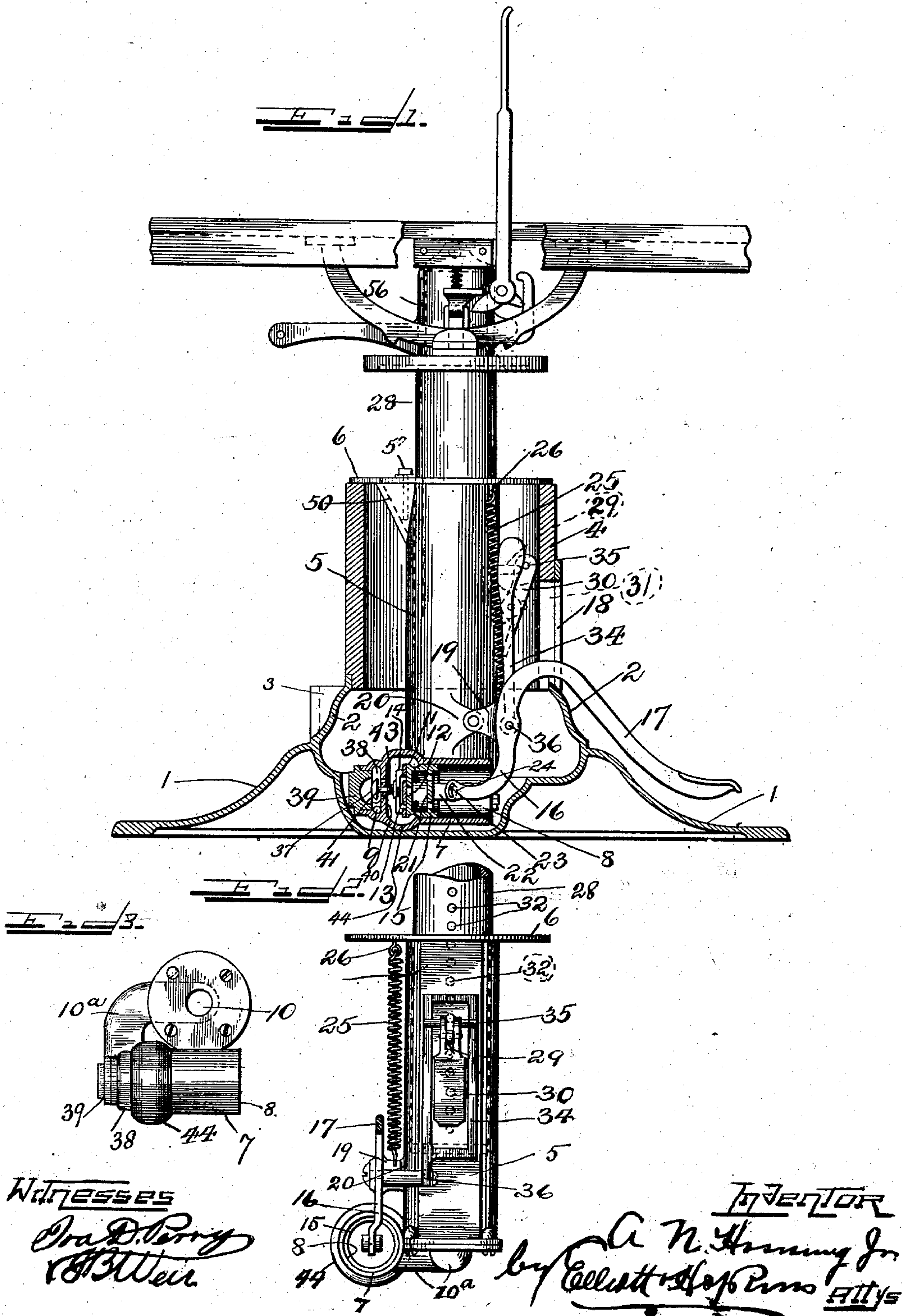
PATENTED NOV. 10, 1903.

A. N. HORNUNG, JR.
FLUID OPERATED CHAIR.

APPLICATION FILED APR. 8, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



No. 743,508.

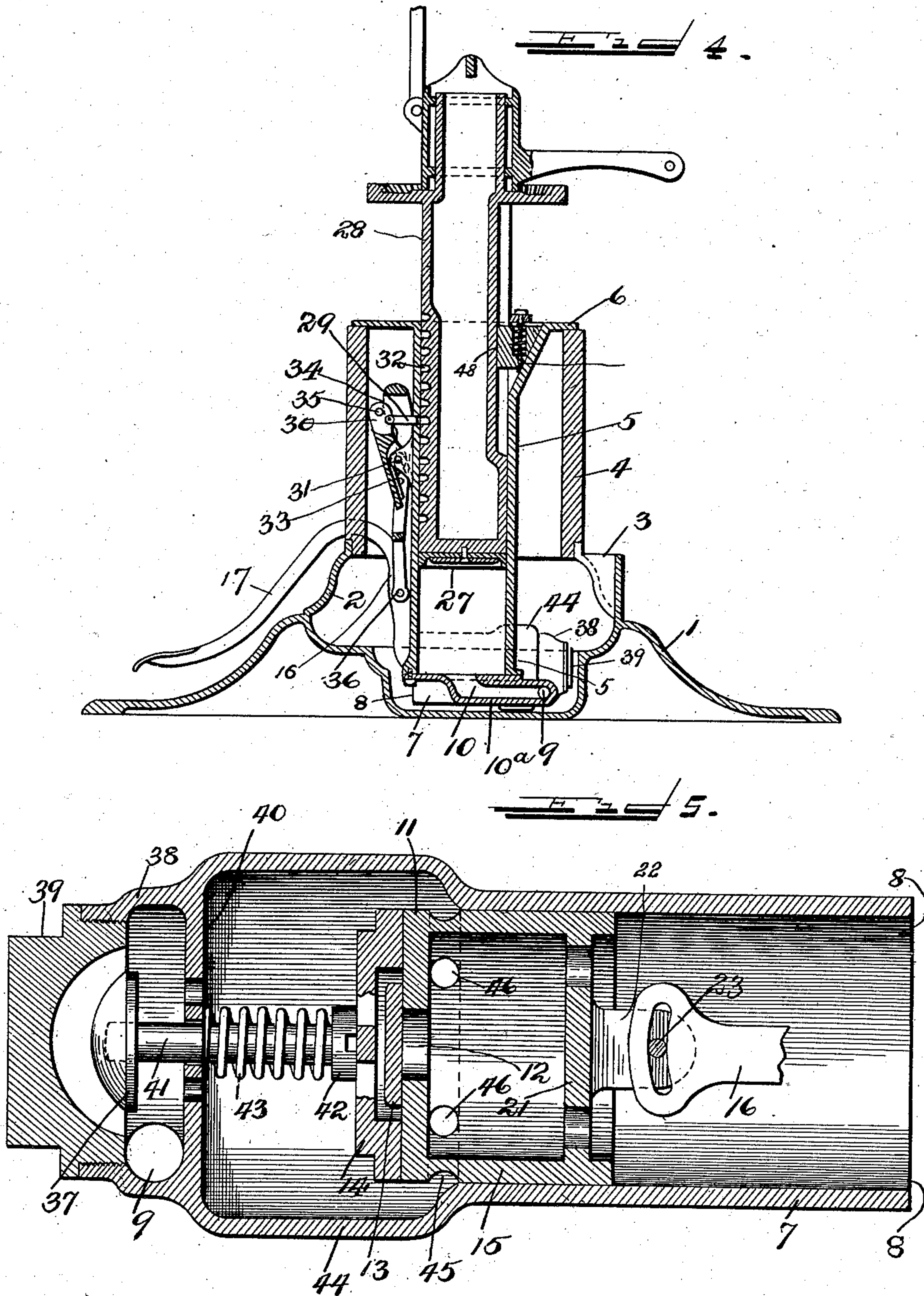
PATENTED NOV. 10, 1903.

A. N. HORNUNG, JR.
FLUID OPERATED CHAIR.

APPLICATION FILED APR. 8, 1901.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES
Ira D. Perry
J. B. Ware

INVENTOR
A. N. Hornung Jr.
by *Ellis & Hopkins*
Attys

UNITED STATES PATENT OFFICE.

ANTON N. HORNUNG, JR., OF CHICAGO, ILLINOIS, ASSIGNOR TO LOUIS HANSON, OF CHICAGO, ILLINOIS.

FLUID-OPERATED CHAIR.

SPECIFICATION forming part of Letters Patent No. 743,508, dated November 10, 1903.

Application filed April 8, 1901. Serial No. 54,833. (No model.)

To all whom it may concern:

Be it known that I, ANTON N. HORNUNG, Jr., a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fluid-Operated Chairs, of which the following is a full, clear, and exact specification.

My invention relates to chairs, and more particularly to that class of chairs—such as barbers' chairs, dentists' chairs, &c.—which have means for raising and lowering them to different elevations and also tipping them to different degrees of inclination; and my invention has for its primary object to provide an improved chair of the described character which shall be simple, efficient, and of durable construction and one in which the raising and lowering of the chair may be accomplished by one and the same movement of an operating treadle or lever.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a vertical sectional view of the base of my improved chair, showing the chair-standard provided with a part of the superstructure. Fig. 2 is a detail view of the guide-cylinder and pump with connected parts looking at right angles to the view presented in Fig. 1. Fig. 3 is a detail plan view of the pump-casting. Fig. 4 is a vertical sectional view of the base, guide-cylinder, and turret-head with connected parts. Fig. 5 is an enlarged vertical sectional view of the pump hereinafter described.

The chair-base is formed with a foot-piece 1, as usual, and with a base chamber or basin 2, which may be cast integrally therewith and provided with a filling-aperture 3, whereby the basin or chamber 2 may be supplied with water, oil, or other liquid for elevating the chair-standard, as hereinafter described, and upon this chamber 2 is supported a casing 4, which constitutes a support for the

guide-cylinder 5, having a lateral flange 6 resting upon the upper end thereof. The guide-cylinder 5 extends downwardly to near the bottom of the basin 2, and to its lower end is bolted or secured a pump-casting. (Better shown in Fig. 3.) This casting is formed on one side with a pump-barrel 7, which has an open end 8 communicating directly with the chamber or basin 2, while its opposite end has an outlet 9 communicating by horizontal duct or passage 10 in a right-angle branch pipe 10^a with the lower end of the guide-cylinder 5. Within the barrel 7 is arranged a pump-plunger 11, provided with an aperture 12, adapted to permit the liquid entering the open end 8 of the barrel to pass through to the outlet 9 when the plunger moves in one direction. When the plunger moves in the opposite direction, however, this aperture 12 is closed by a check-valve 13, located in suitable cage 14. The rear end of the plunger is formed with a cup-shaped extension 15, which serves as a guide and constitutes means whereby the plunger may be connected to the lower end 16 of an operating lever or treadle, whose outer end 17 is curved upwardly over the upper edge of the basin 2 and passes through a slot 18 in the casing 4, the lever 16 17 having a lug 19, by means of which it is pivoted to a boss 20 on the exterior of guide-cylinder 5. The rear cup-shaped extension 15 of the plunger is connected by a spider 21 to ears 22, which are provided with a cross-pin 23, engaging in a slot 24 in the lower end 16 of the operating-lever, said lower end being extended into the open end of the pump-barrel, as clearly shown in Fig. 5. The plunger 11 is forced toward the outlet 9 by downward pressure upon the lever end 17, and it is returned to its former position by means of a spring or other suitable device 25, secured at one end to the lever-lug and at its upper end to a hook or lug 26 on the under side of the flange 6. This upward movement of the outer end 17 of the lever retracts the plunger and causes the liquid in the chamber or basin 2 to pass through the pump-barrel, unseating the check-valve 13 and entering the barrel at the left-hand side of the pump-plunger as viewed in Fig. 5. The downward movement of the lever forces the liquid through the pump-barrel

outlet 9 into the duct 10 in the right-angle branch pipe 10^a and thence into the lower end of the cylinder 5, thus causing the piston 27 on the lower end of the chair-standard 28, which is inserted in the guide-cylinder 5, to rise. The guide-standard and piston are held at the desired elevation after being lifted by the water in the cylinder 5 by means of any suitable locking mechanism preferably operated in unison with the pump-plunger, so that as the pump-plunger is advanced for forcing the liquid into the cylinder 5 the lock will disengage the standard 28 and permit the liquid to lift the standard, and when the plunger recedes the lock will engage said standard and hold it from downward movement. This locking mechanism preferably consists of a pin or dog 29, pivoted to a lever 30, which in turn is pivoted to an ear 31 on the outer side of the cylinder 5, the dog 29 being normally projected through the side of the cylinder 5 into engagement with one of a series of sockets 32, formed in the side of the standard 28. Any suitable means may be employed for thus holding the dog 29 in engagement. In the drawings I have shown a spring 33 wound around the pivot 31 and forcing outwardly against the lower end of lever 30. The dog 29 is retracted for releasing the standard 28 simultaneously with the downward movement of the end 17 of the operating-lever by means of a cam or wedge frame 34, which is open, so as to fit on both sides of the dog 29 and ear 31, and has its incline or wedge engaging between the side of cylinder 5 and a cross-pin 35, projecting from the sides of the upper end of lever 30, the lower end the wedge-frame 34 being pivoted at 36 to the operating-lever 16 17.

The liquid is prevented from receding from the cylinder 5 by means of a check-valve 37, located at any suitable point between said cylinder and the discharge side of the pump. In the example of the invention shown in the drawings said check-valve is located in a housing formed by an extension 38 on one end of the pump-barrel 7 and a screw-cap 39, closing said extension, the seat for the check-valve 37 being constituted by a web or perforated diaphragm 40, through which passes the valve-stem 41, having a head 42, between which latter and the diaphragm 40 bears a coil-spring 43, which is sleeved on the stem 41 and tends to hold the valve closed.

At a point between the extension 38 and the main portion of the pump-barrel 7 said pump-barrel is provided with an enlargement 44, which constitutes a by-pass around the plunger 11 when the latter is projected into said enlargement, and thus establishes free communication between the cylinder 5 via 9 and 10 when the check-valve 37 is opened, thereby permitting the liquid in cylinder 5 to recede through the pump-barrel into the chamber or basin 2, thus allowing the chair-standard to descend with a velocity dependent upon the freedom with which said

liquid is allowed to escape. In order that the liquid may pass the plunger 11 when projected in the manner shown in Fig. 5, the guide extension 15 of the plunger is provided with a peripheral groove 45 and a series of apertures 46 at suitable intervals apart in said groove.

When the foot-lever 17 is depressed within certain limits, so that the plunger 11 does not project into the enlargement 44 of the pump-barrel, the chair-standard will be elevated, as already described; but should the lever be depressed beyond such limit, so as to project the plunger into the position shown in Fig. 5, the plunger will strike the inner end of the valve-stem 41 and force the valve 37 from its seat and hold it unseated while the liquid recedes from cylinder 5 back into chamber or basin 2 via the passages 10 9 45 46 and the inlet end 8 of barrel 7, the locking-dog 29 being at the same time held out of engagement by the wedge-bar 34 engaging behind the pin or lug 35.

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

1. In a device for the purpose described the combination with a cylinder and a piston therein, of a pump connected with said cylinder, means for operating said pump, a locking-dog for holding said piston and a wedge or incline member connected with said pump-operating means, for releasing said dog, substantially as set forth.

2. In a device for the purpose described the combination with a cylinder and a piston therein, of a horizontally-arranged pump, a basin in which said pump is wholly located, a pump-operating lever passing over the edge of and curved downwardly into said basin and having a laterally-extending arm connected with said pump and a lug pivoted to the cylinder, and a spring connected with the cylinder for returning the lever, substantially as set forth.

3. In a device for the purpose described the combination of a cylinder having an ear, a piston having a series of sockets and working in the cylinder, a basin, a pump-barrel wholly located in the basin, a branch pipe connecting the pump-barrel with the cylinder and located under the latter, a plunger, an operating-lever connected with the plunger, a spring-lever having a pivoted dog adapted to be projected through the cylinder into engagement with one of the sockets and pivoted to the ear of the cylinder, and a cam connected with the operating-lever and working between the spring-lever and the cylinder.

4. In a device for the purpose described, the combination of a basin, a casing supported on the basin, a guide-cylinder supported by the casing, a standard located within the guide-cylinder and carrying a piston, a pump-casting located in the basin and formed on one side with a pump-barrel having an open end, an enlargement, an exten-

5 sion and a perforated diaphragm between the enlargement and the extension, and a right-angle branch pipe extending from the extension and secured to the guide-cylinder, a check-valve located within the extension having a stem working in the perforated diaphragm and provided with a head, a coil-spring surrounding the stem between the diaphragm and the head, a plunger having an

aperture, a cage secured to the plunger, a check-valve located within the cage, a cup-shaped extension to the plunger, having a perforated groove and a spider, and an operating-lever connected with the spider.

ANTON N. HORNUNG, JR.

Witnesses:

F. A. HOPKINS,

EDNA B. JOHNSON.