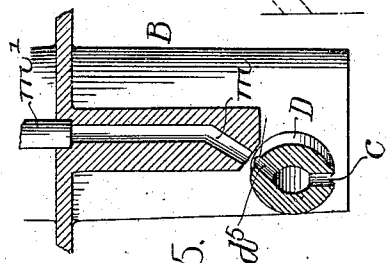
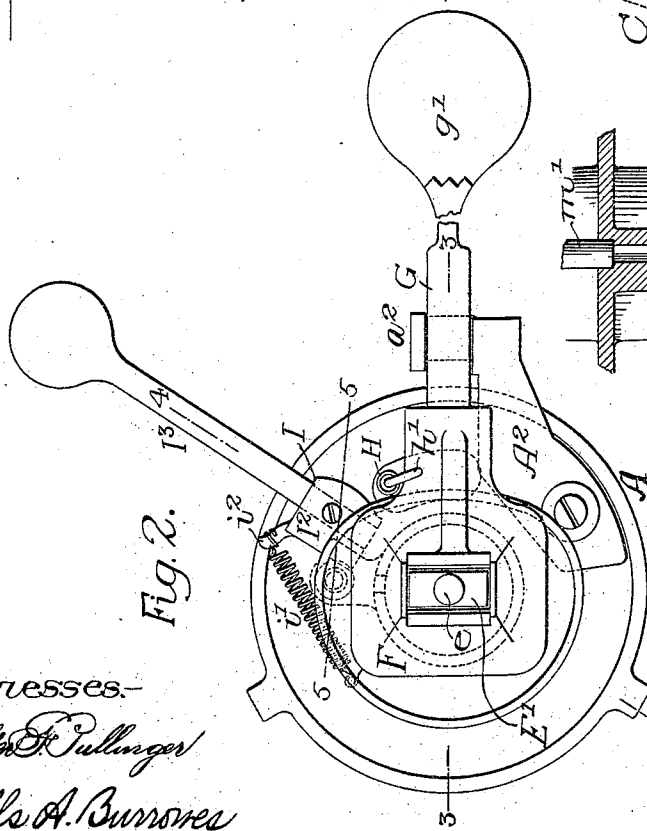
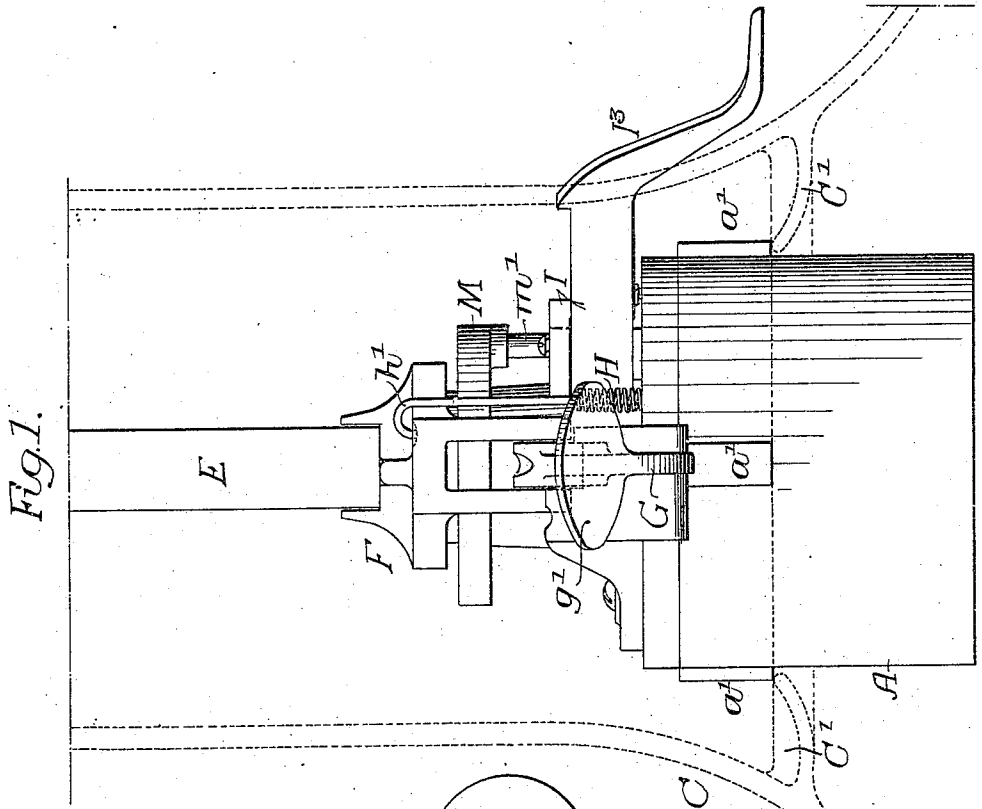


J. BARKER.
 MEANS FOR ELEVATING CHAIRS AND LIKE OBJECTS.
 APPLICATION FILED DEC. 12, 1908.

944,169.

Patented Dec. 21, 1909.

3 SHEETS—SHEET 1.



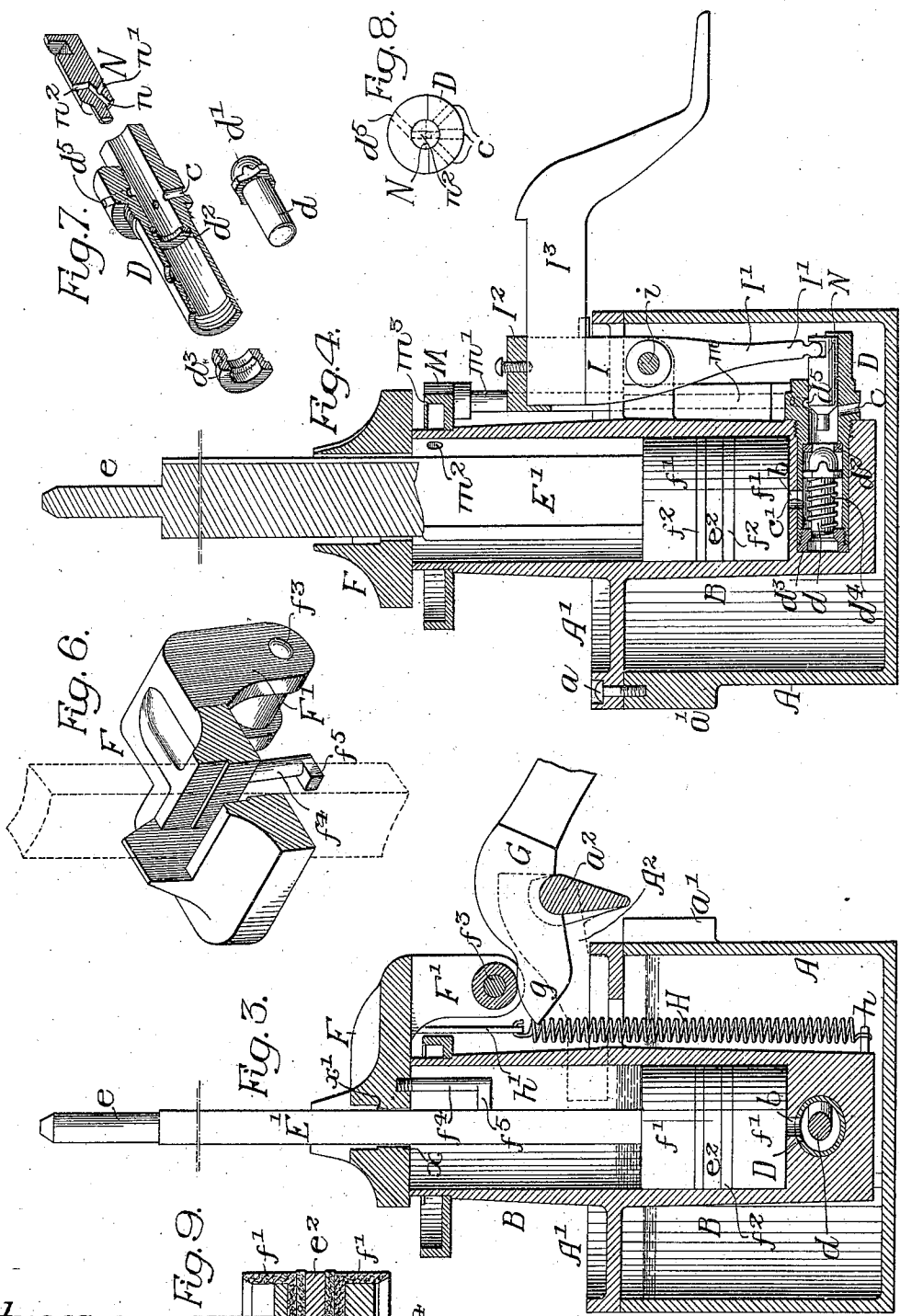
Witnesses:
Walter E. Pullinger
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Witnesses:

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Inventor:
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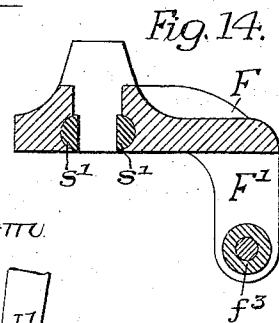
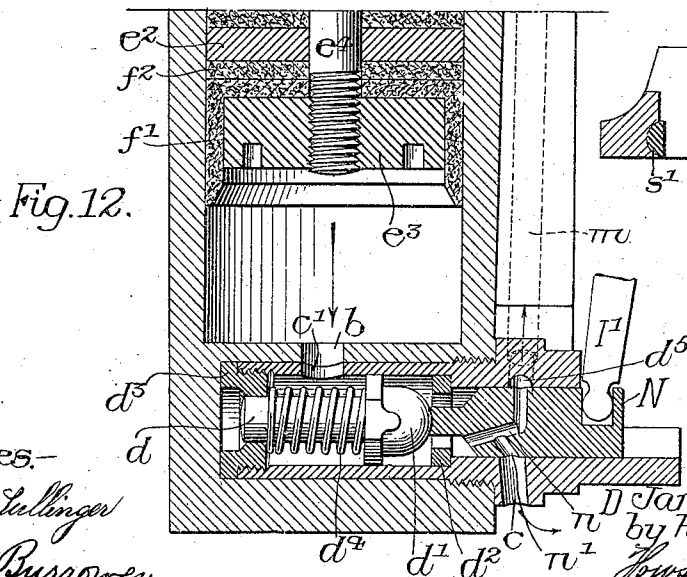
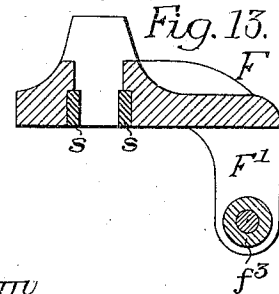
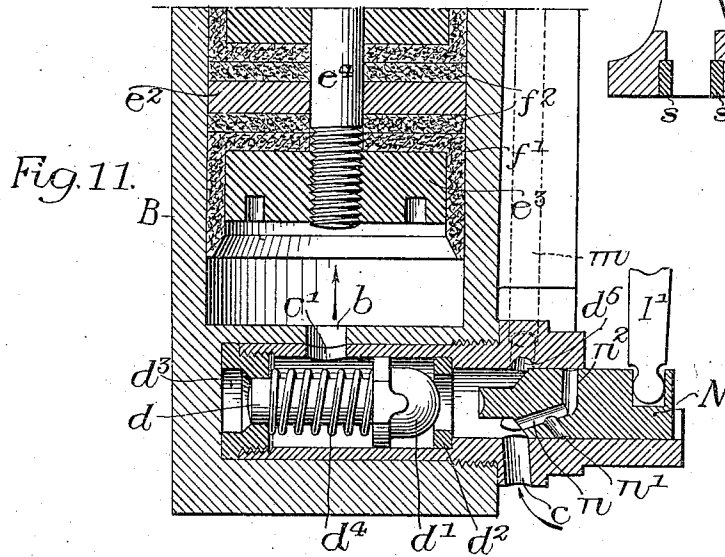
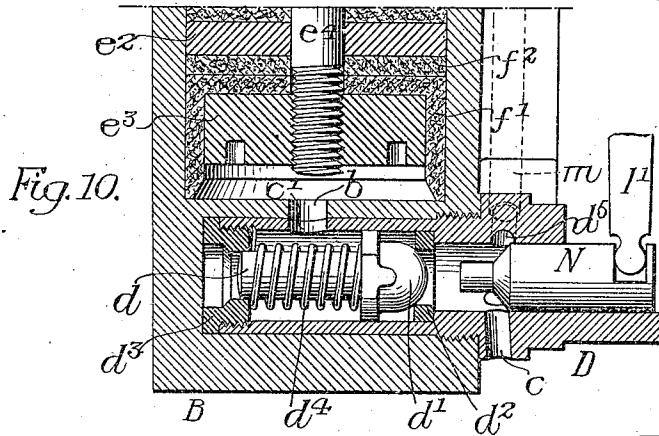
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UNITED STATES PATENT OFFICE.

JAMES BARKER, OF PHILADELPHIA, PENNSYLVANIA.

MEANS FOR ELEVATING CHAIRS AND LIKE OBJECTS.

944,169.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed December 12, 1908. Serial No. 467,186.

To all whom it may concern:

Be it known that I, JAMES BARKER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Means for Elevating Chairs and Like Objects, of which the following is a specification.

My invention relates to certain improvements in means for raising and lowering chairs and like objects, and particularly the chairs used by barbers and dentists.

The object of my invention is to raise the chair by mechanical means and support it in this raised position by entrapped liquid, and to lower the chair by allowing the liquid to escape from under the plunger supporting the chair.

My invention relates further to details of construction which will be described hereafter.

In the accompanying drawings:—Figure 1, is a side view of my improved apparatus, showing a portion of the base of a chair in dotted lines; Fig. 2, is a plan view; Fig. 3, is a vertical sectional view on the line 3—3, Fig. 2; Fig. 4, is a vertical sectional view on the line 4—4, Fig. 2; Fig. 5, is a sectional view on the line 5—5, Fig. 2; Fig. 6, is a detached sectional perspective view showing the gripping mechanism used in raising the chair; Fig. 7, is a sectional detached perspective view illustrating the valve casing and the valves; Fig. 8, is an end view of one of the valves, showing the ports in dotted lines; Fig. 9, is a sectional view of the plunger; Figs. 10, 11 and 12, are diagram views illustrating the operation of the apparatus; and Figs. 13 and 14, are views illustrating modifications of the pinch lever.

A is a reservoir containing oil or other liquid and provided with a cover A' which is securely attached to the casing by screws *a* or other fastenings. The casing has lugs *a'* which rest upon an internal flange C' of the base C of the chair; the chair in the present instance being of the central pedestal type. It will be understood that this base may be the base of a chair, table, or any device having a section capable of being raised or lowered.

Carried by the cover A' is a vertical cylinder B; the cylinder in the present instance being made integral with the cover. This cylinder extends to a point near the bottom of the reservoir A, Figs. 3 and 4, and has in

its lower extremity a cavity in which is mounted a valve casing D, as clearly shown in detail in Fig. 7. In this valve casing is a valve *d* having a rounded head *d'* which rests against a seat *d²* in the casing, and screwed into the rear of the casing is a threaded plug *d³* having an opening for the stem of the valve *d*, and surrounding this stem in the present instance is a spring *d⁴*.

In the valve casing is an inlet port *c* forming a communication between the reservoir A and the interior of the valve casing D, and there is also a port *c'* in line with the port *b* in the bottom of the cylinder B; the valve *d* is mounted between the two ports *c* and *c'* so there is no communication between the ports when the valve is closed against its seat *d²*, as shown in Fig. 10.

In the cylinder is a plunger E having a stem E' quadrangular in cross section in the present instance, and forming a gripping bar for the pinch lever F to grip when it is desired to raise the plunger and with it the seat. The end *e* of this stem is shaped to fit the chair or other device supported by the plunger.

The plunger in the present instance is made as shown in Fig. 9, having three disks *e¹*, *e²*, *e³* with two cupped washers *f*, *f'* between them, as shown, and I preferably also place washers *f²* between the center disk and the cupped washers so as to aid in preventing leakage of liquid past the plunger. These washers are secured to an extension *e⁴* of the stem E' and the lower washer *e³* is in the form of a nut threaded to screw onto this stem, so as to jam the several washers between a shoulder on the stem and the nut washer *e³*.

By the above construction the plunger when first used is in proper condition to prevent leakage; the two plain washers *f²* being of a sufficient diameter to properly fit the cylinder. After the cupped washers *f*, *f'* have become thoroughly pliable then they fit the cylinder and the fit of the two plain washers is not essential.

The pinch lever F rests upon the upper end of the cylinder B and has a quadrangular passage through which the stem E' extends, and there is sufficient clearance that when the pinch lever is in the position shown in Fig. 3 the stem is free of the pinch lever, but when the pinch lever is tilted slightly its two edges *x* and *x'* will grip the stem E'

of the plunger and as the pinch lever is forced up it will carry the stem E and the plunger with it. The pinch lever has arms F' between which is a pin having a roller f^3 , and bearing upon this roller is a short arm g of a lever G, this lever is enlarged at its outer end g' to provide a foot-hold, the lever being fulcrumed upon a bearing a^2 projecting from a bracket A^2 secured to the cap A' in the present instance. A spring H is attached at one end to a pin h projecting from the lower end of the cylinder B and at the opposite end to a hooked rod h' which is hooked onto the pinch lever F, as shown in Fig. 1. This spring tends to hold the pinch lever down to the position shown in Fig. 3, while the lever G, when the foot is placed upon it, tends to tilt the pinch lever and raise it. A pin f^4 screwed into the underside of the pinch lever extends into the upper end of the cylinder B and has a head f^5 which is adjusted close to the stem E', so as to prevent the pinch lever binding if it should be tilted in the opposite direction. This pin is a stop for the plunger E so that it cannot be raised above a certain point, thus limiting the upward movement of the plunger. Thus it will be seen that by a continuous pumping movement of the lever G the pinch lever will grip and raise the stem and its plunger a given distance, then will drop back and take another hold and lift again, and as this operation is repeated it will raise the plunger. The lifting of the plunger will cause a suction on the underside of the plunger and this suction will be sufficient to move the valve d from the position shown in Fig. 10 to the position shown in Fig. 11, and the liquid will flow into the valve chest through the port C, past the valve d and through ports c and b into the cylinder on the underside of the plunger. As soon as the upward movement of the plunger ceases then the valve will close again, as in Fig. 10, and entrap the liquid in the cylinder, and thus hold the plunger in its raised position no matter what weight is placed upon it.

In order to release the plunger and allow the chair to be lowered, I provide a second foot lever I which is pivoted at i to a bracket projecting from the underside of the cover A' , and this lever has an arm I' adapted to a slot in a plunger valve N having ports n, n', n^2 and a head n^3 which acts upon the rounded head d' of the valve D to force it off its seat when the plunger valve is moved to the position shown in Fig. 12, in which case the port n' alines with the port c in the casing, so that, the valve D being pushed off its seat, the liquid under the plunger in the cylinder will flow from the space in the cylinder under the plunger through the ports c and b into the chest, past the valve d , through the ports n, n' and

c , and into the reservoir A. The weight of the chair or other device being sufficient to lower the plunger as the liquid escapes.

A certain quantity of the liquid will pass through the port n^2 into the passage m which communicates with the pipe m' and leads to a tray M surrounding the upper end of the cylinder, and the cylinder has an opening m^2 communicating with the tray so that as the liquid is forced up into the tray M it will flow into the cylinder and on top of the plunger, therefore there will always be a small body of liquid, as shown in Fig. 3, in the cylinder above the plunger E, preventing leakage of air into the space below the plunger. The tray may have a cover m^3 directly above the pipe m' to prevent splashing, or the cover may extend entirely around the tray if desired. Attached to the head I^2 of the lever I is a spring i' , Fig. 2, which extends to a pin on the cover A' , so as to return the lever to its normal position when the lever I is released from the pressure of the foot. The treadle arm I^3 is preferably made detachable from the lever I, in the present instance it is mounted in a socket in the head I^2 and held therein by a set screw or other fastening.

By the above construction it will be seen that, in the first place, the entire device can be made complete and inserted in the base of a chair, and the levers I and G can be slipped into their sockets after the parts are in position. In case of repairs all that is necessary is to simply detach the entire device from the base of a chair and ship it to the factory where the parts are made and either another completely assembled device can be shipped and placed in position, or the device can be repaired and returned. Furthermore it will be seen that the construction is quite simple and the valves used are not liable to become clogged. In some instances I may attach steel jaws to the pinch lever, as shown at s, s , Fig. 13, or the jaws may be in the form of swiveled blocks which engage the stem, as at s', s' , Fig. 14. The latter construction prevents the chafing or cutting of the stem.

It will be seen by the above description that a mechanical means is used to lift the chair, while it is held in its elevated position by the entrapped liquid, such as oil, and is lowered by allowing the liquid to escape from the cylinder under the plunger to the reservoir.

I claim:—

1. The combination in means for raising chairs or the like, of a reservoir having a cover, a cylinder, a plunger in the cylinder having a stem for supporting a movable portion of the chair, mechanical means for raising the plunger, means for admitting liquid under the plunger and trapping it in the cylinder to hold the chair in its elevated po-

sition, and means for releasing the liquid from the cylinder, said cylinder with the liquid admitting and releasing means being mounted on and removable from the reservoir with, the cover thereof.

2. The combination in means for raising chairs or the like, of a cylinder, a plunger in the cylinder, said plunger having a stem, a pinch lever including an arm having an opening for the passage of said stem, means for actuating said lever to cause the sides of its opening to engage the stem to raise the plunger and the chair carried thereby, means for admitting liquid under the plunger and entrapping the liquid so as to hold the chair in the elevated position, and means for releasing the liquid under the plunger to lower the chair.

3. The combination in means for elevating chairs and like objects, of a reservoir for liquid, a cylinder, a passage forming communication between the cylinder and the reservoir, a valve in said passage, a plunger in the cylinder, the plunger having a stem supporting the chair or like object, a pinch lever having an opening for the reception of said stem and free to be moved to cause the sides of the opening to grip the stem for raising the plunger, and means for actuating the valve to lower the plunger independently of the pinch lever.

4. The combination of a reservoir, a cylinder, means connecting the cylinder with the reservoir, a valve for regulating the flow of liquid to and from the cylinder, a plunger in the cylinder, said plunger having a stem adapted to support the chair or other object to be raised and lowered, a pinch lever having an opening for the stem, jaws in said opening placed to engage the stem to raise it, and means for actuating the pinch lever.

5. In apparatus for lifting chairs, etc., the combination of a reservoir, a cap for the reservoir, a cylinder carried by the cap and extending into the reservoir, a plunger in the cylinder, a stem extending upward from the plunger, a pinch lever mounted on top of the cylinder through which the stem extends, a foot lever for actuating the pinch lever, a main valve for regulating the flow of liquid to and from the cylinder, and a plunger valve for actuating the main valve and allowing the liquid to escape from the cylinder into the reservoir.

6. The combination of a reservoir, a cap for the reservoir, a cylinder carried by the cap and extending into the reservoir, a plunger in the cylinder, a stem projecting upwardly from the plunger, a pinch lever mounted on the cylinder and having an opening through which the stem extends, the edges of the opening being so formed as to grip the stem when the pinch lever is tilted, a foot lever for actuating the pinch lever, the cylinder having a passage forming

a communication between the bottom of the cylinder and the reservoir, a spring actuated valve in said passage, and means for operating the valve independently of the pinch lever so as to allow the liquid to escape from the cylinder.

7. The combination of a reservoir, a cylinder mounted within the reservoir, a plunger carried by the cylinder having a stem, a pinch lever mounted on the cylinder and having an opening through which the stem extends, an arm on the pinch lever, a foot lever, a bracket carried by the reservoir upon which the lever is mounted, said foot being adapted to engage the arm of the pinch lever, and a spring tending to hold the pinch lever to its seat.

8. The combination of a reservoir, a cylinder within the reservoir, a plunger mounted in the cylinder and having a stem, a pinch lever resting on the cylinder and having an opening through which the stem extends, a bracket on the reservoir, and a detachable foot lever having its fulcrum on the bracket and engaging the pinch lever.

9. The combination of a reservoir, a cylinder, a plunger within the cylinder, means for raising the plunger, said cylinder having a passage leading into the reservoir, a spring valve in the passage adapted to close against pressure from the cylinder so as to retain the plunger at any point desired, a plunger valve, a foot lever for actuating the same, said plunger valve having a port so that as the plunger valve is forced against the spring valve it will open the port and allow the liquid to escape from the cylinder.

10. The combination of a reservoir, a cylinder, a plunger in the cylinder, a stem supporting the chair or other device to be raised, means for raising the plunger, said cylinder having a passage communicating with the reservoir, a spring valve in the passage adapted to close against pressure from the cylinder so as to retain the plunger in the position to which it is adjusted, a passage leading to the upper end of the cylinder above the plunger, a plunger valve having a port, said plunger valve being arranged to open the spring valve so that the liquid will escape from the cylinder into the reservoir and a portion escape to the upper part of the cylinder in order that a body of liquid will be retained above the plunger.

11. The combination of a reservoir, a cylinder within the reservoir, a plunger having a stem, a pinch lever engaging the stem to raise the plunger, a projection on the pinch lever adapted to form a stop for the plunger and thus prevent the raising of the plunger by the pinch lever.

12. The combination of a reservoir, a cylinder, a plunger within the cylinder, a stem extending upward from the plunger, a pinch

lever through which the stem extends, means
for operating the pinch lever, a spring tend-
ing to hold the pinch lever to its seat, a pin
depending from the pinch lever and extend-
5 ing into the cylinder and having a head
adapted to bear against the stem and also
act as a stop to limit the upward movement
of the plunger.

13. The combination of a cylinder, a plun-
10 ger therein having a stem, a pinch lever

adapted to engage said stem and having
swiveled jaws, and means for actuating the
pinch lever.

In testimony whereof, I have signed my
name to this specification, in the presence of 15
two subscribing witnesses.

JAMES BARKER.

Witnesses:

WM. E. SHUPE,

WM. A. BARR.