No. 742,828. PATENTED NOV. 3, 1903.

E. C. BROWN.

PUMP MECHANISM.

APPLICATION FILED AUG. 4, 1900.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

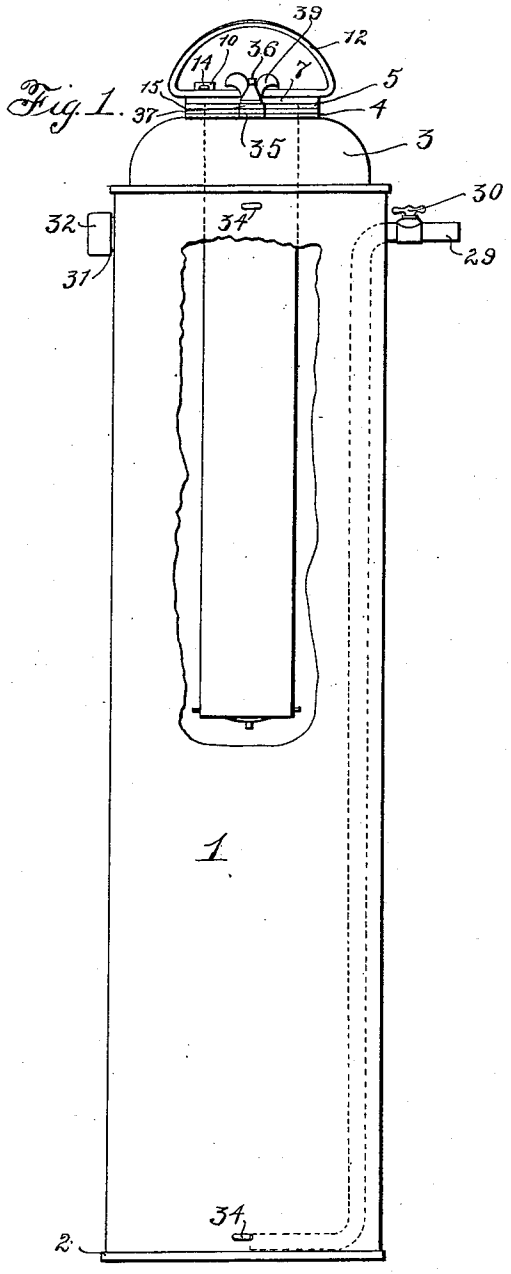
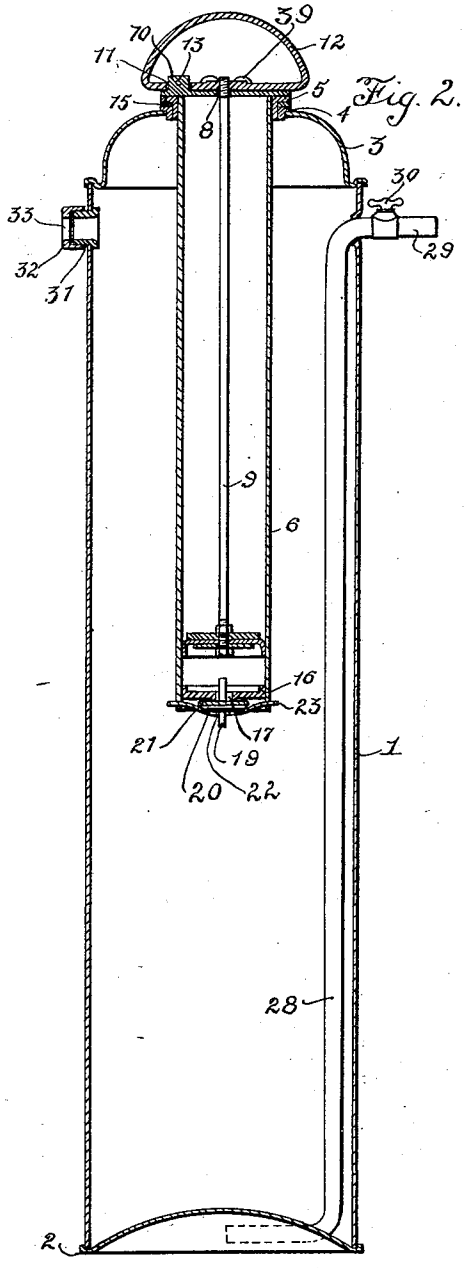


Fig. 2.



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No. 742,828. PATENTED NOV. 3, 1903.

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PUMP MECHANISM.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

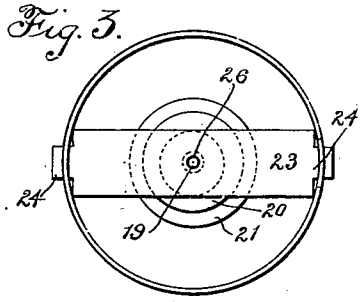


Fig. 4.

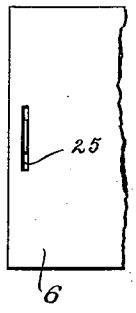


Fig. 5.

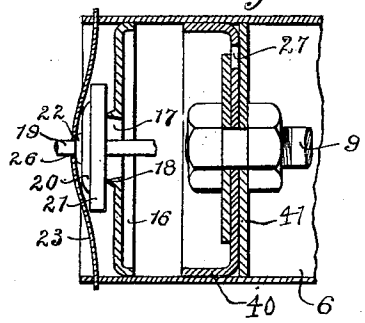


Fig. 6.

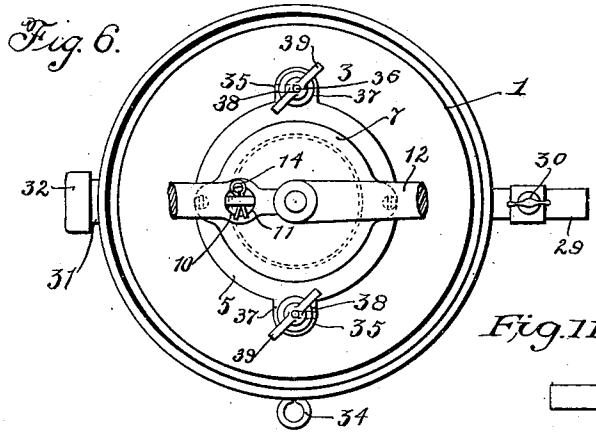


Fig. 7.

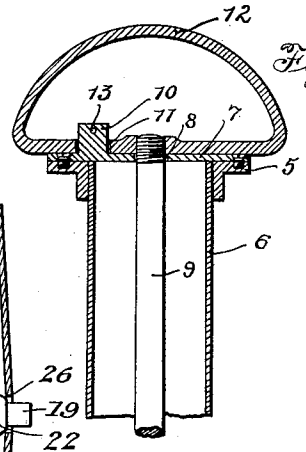


Fig. 11.

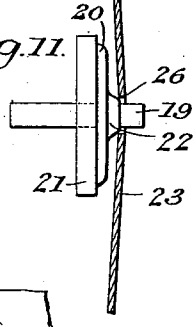


Fig. 8.

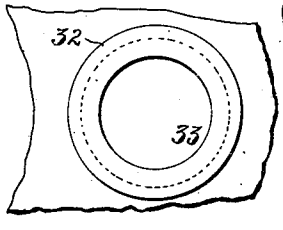


Fig. 9.

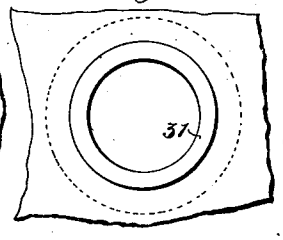
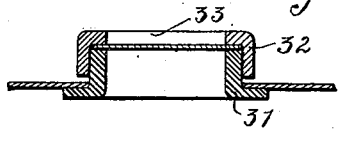


Fig. 10.



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

No. 742,828. Patented November 3, 1903.

UNITED STATES PATENT OFFICE.

EDWARD C. BROWN, OF ROCHESTER, NEW YORK.

PUMP MECHANISM.

SPECIFICATION forming part of Letters Patent No. 742,828, dated November 3, 1903.

Original application filed February 26, 1900, Serial No. 6,516. Divided and this application filed August 4, 1900. Serial No. 25,901. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. BROWN, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Pump Mechanism, (Case No. 2,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to pumping apparatus, and more particularly to pumping apparatus that is employed in connection with spraying apparatus of the type shown in my original application, Serial No. 6,516, filed February 26, 1900, of which this application is a division. I do not wish to be limited, however, in the use to which the invention may be put.

My invention contemplates an improved construction of valve mechanism for pump-cylinders, and may be described generally as consisting of a pump-cylinder and check-valve therefor and a leaf-spring engaging the valve and serving to close the same when relieved of pump-pressure. This leaf-spring preferably engages opposite recesses provided in the pump-cylinder, the ends of the leaf-spring being preferably reduced to form tongues that are inserted within these recesses.

I will describe my invention more particularly with reference to the accompanying drawings, which illustrate the preferred embodiment of the invention, in which—

Figure 1 is an elevation view of my improved apparatus, a portion thereof being cut away to disclose the pump-cylinder. Fig. 2 is a longitudinal vertical section thereof. Fig. 3 is a bottom view of the pump-cylinder, showing the valve. Fig. 4 shows the manner of engagement of the valve-spring with the wall of the pump-cylinder. Fig. 5 is a detail part-sectional view of the check-valve, plunger, and part of the cylinder. Fig. 6 is a top view of my apparatus, the handle being cut away to show the manner of locking said handle to the pump-frame. Fig. 7 is a sectional view of the handle and locking device. Fig. 8 is a plan view of my improved safety-valve. Fig. 9 is the same with the cap removed. Fig. 10 is a sectional view thereof. Fig. 11 is a detail view of the pump-valve mechanism.

Like characters of reference refer to like parts throughout the several figures.

I will fully describe a particular use for the pump of my invention and will point out in the claims the novel features of the pump that are sought to be protected in the present application.

A cylindrical pressure tank or reservoir 1 is securely fastened to a base-plate 2, preferably of convex shape to afford strength, and to a head-piece or cap 3, preferably arched, and encircling at its center and securely attached thereto an annular collar or bushing 4, said bushing being provided with ears 35, supporting threaded posts 36. Another annular collar 5 surrounds the pump-cylinder 6, being soldered or otherwise securely fastened thereto. This collar is also provided with ears 37, said ears having slots 38, adapted to engage posts 36. Thumb-screws 39 in threaded engagement with said posts serve to clamp both collars together, the pump mechanism being thus firmly attached to the tank portion. A washer 15 of suitable material is preferably interposed between collars 4 and 5 to hermetically seal the opening of the tank. A plate 7, fastened to collar 5, preferably by screws, has at its center an opening 8, serving as a guide for the plunger-rod 9. A post or projection 10, preferably cast integral with plate 7, engages an opening 11 in the base-wall of a stirrup-shaped plunger-handle 12, thus rigidly and not flexibly securing the handle to the plate, a hole 13 through said post accommodating a key or pin 14, said pin serving to lock said handle to plate 7, as best shown in Fig. 6. The plunger-rod 9 is preferably in threaded engagement with said handle. It is readily seen that the handle may serve either as a means for actuating the plunger of the pump or as a means for engaging or disengaging the pump from the tank, or it may serve as a handle to the whole apparatus, in which last two cases said handle is rigidly locked to the pump-frame, as before described.

The pump-cylinder 6 extends down into the tank and terminates in check-valve mechanism. A plate 16, securely fastened into

the cylinder, has a central opening or port 17, the walls of which extend to form a seat 18 for the check-valve, which consists in its preferred embodiment of a valve-stem 19, a metallic disk 20, and a washer 21, preferably of rubber. A collar 22, preferably integral with the valve-stem, forms a seat for disk 20, said disk serving to reinforce the washer 21, said washer being interposed between said disk and the valve-seat, being held against said seat by a leaf-spring 23. This leaf-spring is preferably of the shape shown in Figs. 3 and 5, its ends being reduced to form tongues 24, adapted to engage slots 25 in the pump-cylinder. An opening 26 in the center of said spring is in bearing engagement with collar 22 on the valve-stem, said stem passing through said opening. I preferably make the bearing-face of said collar of a convex shape and bevel the walls of the opening 26 for engaging said convex or sloping surface. This provides a rocking bearing between the spring and the valve and insures at all times the pressure of the spring upon the central portion of the valve. This form of valve mechanism is certain of action and easily removed and assembled. The plunger-valve is of the ordinary type, the air passing through an opening 27 upon the upstroke of the piston. A discharge-tube 28 passes from the outlet 29 to the bottom of the tank and into the liquid, a stop-cock 30 being preferably interposed in the outlet-pipe 29, to which may be attached a hose and suitable spraying means.

A safety-valve, to guard against bursting of the tank or other accidents, consists in its preferred embodiment of a bushing 31, secured in the tank-wall and threaded to receive a cap 32, said cap being provided with an opening 33, adapted to form a continuation of the opening in the bushing. The diaphragm, which may be of thin sheet-copper, is clamped over the opening in the bushing 31 by means of the cap 32 and upon bursting may be readily replaced by another diaphragm.

The piston 40 of the plunger-valve is preferably made of flexible material in which is provided the valve-opening 27. The plate 41 is preferably of metal, and a clearance is afforded between the same and the pump-wall. On the upstroke the piston 40, being flexible, is removed from engagement with the plate 41, so that air may pass through the opening 27 between the said piston and the valve 17. On the downstroke the flexible piston is forced against the plate 41 to seal the opening 27, whereupon the air may be forced through the opening of the valve 17.

As changes in my invention may be readily made without departing from the spirit thereof, I do not wish to be limited to the precise construction set forth; but,

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

1. In a pump, the combination with the pump-cylinder thereof, of a check-valve therefor, and a leaf-spring having its ends reduced to form tongues, the cylinder being provided with slots receiving the said tongues, and said spring serving to close the valve when relieved of pump-pressure, substantially as described.

2. In a valve, the combination with the movable valve-head, of a leaf-spring for forcing the same upon its seat, the said spring being provided with an opening having a beveled wall, while the valve-stem is provided with a collar provided with a convex-curved surface engaging the beveled wall of the said opening, whereby the pressure of the leaf-spring is constantly maintained upon the central portion of the valve, substantially as described.

3. In a valve, the combination with the movable valve-head, of a leaf-spring for forcing the same upon its seat, the said spring being provided with an opening having a beveled wall, while the valve-stem is provided with a collar provided with a convex surface engaging the beveled wall of the said opening, whereby the pressure of the leaf-spring is constantly maintained upon the central portion of the valve, substantially as described.

4. In a valve, the combination with the movable valve-head, of a leaf-spring for forcing the same upon its seat, the said spring being provided with an opening having a beveled wall, while the central portion of the valve is provided with a sloping surface engaging the beveled wall of the said opening, whereby the pressure of the leaf-spring is constantly maintained upon the central portion of the valve, substantially as described.

In witness whereof I hereunto subscribe my name this 21st day of June, A. D. 1900.

EDWARD C. BROWN.

Witnesses:
F. F. CHURCH,
F. C. GLASSER.