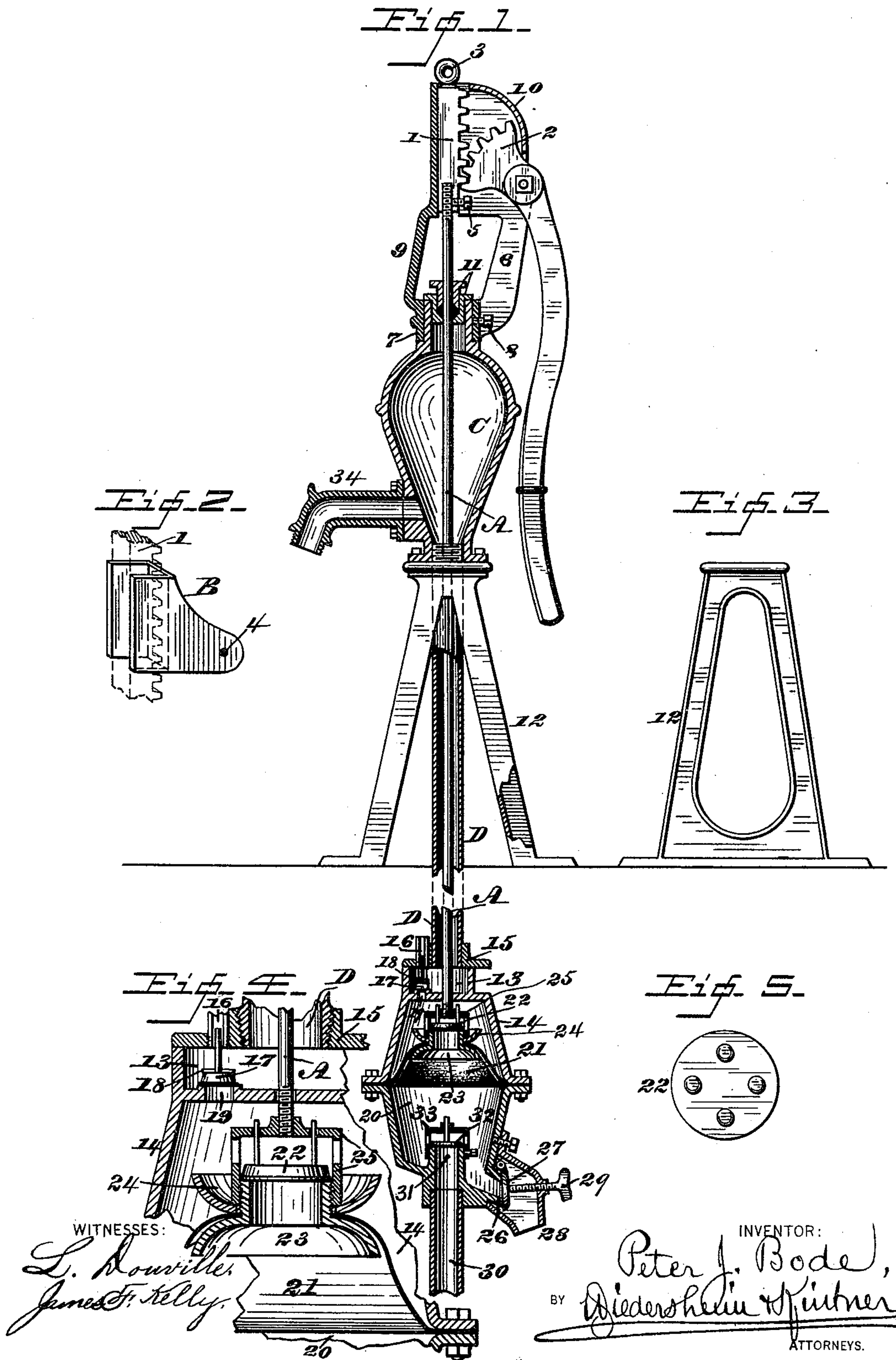


(No Model.)

P. J. BODE.
PUMP.

No. 403,507.

Patented May 21, 1889.



UNITED STATES PATENT OFFICE.

PETER J. BODE, OF BELLEVILLE, ILLINOIS.

PUMP.

SPECIFICATION forming part of Letters Patent No. 403,507, dated May 21, 1889.

Application filed July 13, 1888. Serial No. 279,827. (No model.)

To all whom it may concern:

Be it known that I, PETER J. BODE, a citizen of the United States, residing at Belleville, in the county of St. Clair, State of Illinois, have invented a new and useful Improvement in Pumps, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in pumps; and it consists of means for automatically draining the pump to guard against freezing.

It also consists of means for readily changing the pump from a lifting and force pump to a sand-pump.

It also consists of other novel and advantageous features, as will be hereinafter set forth.

Figure 1 represents a vertical section of a pump embodying my invention. Fig. 2 represents a perspective view of a detached portion thereof. Fig. 3 represents a side elevation of the stand. Fig. 4 represents a vertical section of a portion on an enlarged scale. Fig. 5 represents a top view of one of the valves.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, A represents the plunger or pump-rod, which has at its upper end a rack, 1, with which meshes a segment, 2, forming part of the pump-handle, common to hand-pumps. The extreme upper end of the rack 1 has a hook or eye, 3, or similar device, whereby it can be readily connected with the operating-stem of a wind-mill or other power for imparting power to the rod A. When I employ such power, I remove the segment 2 and handle, and slip in their place a casting, B. (Shown in Fig. 2.) This piece is provided with openings 4 to receive the bolt holding the segment in place, and forms an angular box, in which the rack is properly and truly guided. The rack 1 is secured at its lower end to the rod proper by means of a set-screw, 5. The arm 6, which carries the segment and handle, is provided with an annulus, 7, which encircles the upper end of the air-chamber C, and is held in place by the set-screw 8, permitting the handle to be located in any desired direction.

Cast with or otherwise secured to said annulus is a brace or support, 9, which assists in securing the plunger-guide and strengthening the upper structure. A cover, 10, is employed at top for preventing foreign matter reaching the rack and pinion, as well as guarding against accidents.

The air-chamber C is provided at its upper end with a stuffing-box, 11, common in pumps, and rests on stands, 12, which are secured thereto in any proper manner, and formed of parts which may be readily removed for repairs, &c., and easily cast, handled, and packed, also securing a strong, durable, and attractive structure.

D represents the pipe of the pump connecting the air-chamber C with the pump proper, and having at its base an offset or draining-valve chamber, 13, the same being on the upper pump-casing 14 and preferably cast therewith, said chamber also serving as a trap for catching pins, pebbles, &c., that may be thrown into the pump from above. A cap or top, 15, is secured to the drainage-valve chamber 13 in any suitable manner and receives the pipe D of the pump. On one side of said cap is an opening, 16, which receives the stem of the drainage-valve 17 and guides the same. The valve is provided on its upper side with packing 18, and has its seat on the opening 19 in the upper wall of the pump-casing 14, as well as at the base of the opening 16.

Between the upper pump-casing, 14, and lower pump-casing, 20, is clamped a flexible diaphragm, 21, the two casings being properly connected by bolts or otherwise. This diaphragm 21 has an opening in its center to receive the seat of the valve 22 of the pump, constructed as follows: A casting, 23, is passed through the opening in the diaphragm and held securely in place by a casting, 24, these two castings or pieces flaring in opposite directions to allow the diaphragm to roll thereon when the pump is operated. Screwed or otherwise secured to the top of the piece 23 is a perforated cap or cup-shaped piece, 25, which acts as a guide to the valve 22, and has connected with it the lower end of the pump-rod A, which latter has a screw-thread on its lower end, which end is adapted to pass through an opening in the cap 25 and bear against the valve 22, so as to force the same

against its seat on the piece 23. By this construction I provide means for guiding the valve without fittings at the top, an essential feature, as no obstructions are offered to the water in its upward passage, leaving the discharge-opening in the piece 23 fully open.

The lower part, 20, of the pump-chamber has on its side a cylindrical or other shaped projection, 26, leaving an opening, which forms a valve-seat for a valve, 27. This valve is inclosed by a spout, 28, properly secured to the pump-chamber 20 and carrying a thumb-screw, 29, which bears against the valve 27. The bottom of the lower pump-casting 20 is inclined or sloping, as shown in Fig. 1, the purpose of which is to cause the sand which enters said casting to slide out easily through the discharge or exit opening 26. A great advantage is thus obtained in sloping the wall of said casting, for if the wall were straight the sand would not slide out through the discharge-opening, but would fill the chamber of the pump and prevent the operation of the same.

Centrally located at the lower end of the pump-chamber 20 is the suction-pipe 30, and rising above the base thereof is a projection, 31, on which is seated the lower valve, 32, held in place by a perforated yoke or box, 33, secured to said projection, the yoke serving as a guide for the valve 32.

It will be seen that the handle and segment operate the rod A, and consequently the diaphragm 21. The valve 27 is tightly closed, and it is evident that whatever water or fluid may be at the lower end of the suction-pipe 30 will be drawn into the pump-chamber and discharged through the valve 22, reaching the air-chamber, and discharging from the nozzle or spout 34 of the pump. The pressure above the diaphragm 21 will raise the valve 17 and close the opening 16, thus preventing discharge therethrough. When the pumping ceases, said valve 17 falls, thus opening the passage or opening 16 and allowing the pump to drain automatically.

Should it become necessary to pump sand, as in driven wells, the set-screw 5 is loosened and the pump-rod A turned until it screws down on the valve 22 and closes the same tightly on the piece 23. The set-screw 29 is now withdrawn the required distance and the pump may be operated, the pump-rod A having been again connected with the rack 1 by the set-screw 5. It will be seen that I thus discharge all sand and foreign matter through the spout 28, and thus prevent the objectionable matter from coming upon the pump. When the flow through the spout is such as to resume pumping through the spout 34, the valve 27 is closed by the set-screw 29 and the

valve 22 is opened, and usual pumping may be proceeded with.

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

1. In a pump, the combination of the pump-chamber, the perforated cap above the inlet thereof, the lower or foot valve arranged in said cap, the outlet having a hinged valve or cover, the screw for closing said valve-cover, the diaphragm in the pump-chamber carrying the perforated cap, the valve therein, and the plunger-rod having its lower end screwed into the cap and adapted to be screwed down on the valve, arranged and operating substantially in the manner and for the purpose described.

2. In a pump, the combination, with the pump-chamber having the diaphragm therein, the valve carried by said diaphragm, the perforated cap in which said valve is arranged, the piston-rod having its lower end connected to said cap, the supply-pipe, and air-chamber, of the top bracket having a cover for the operating mechanism, and an annulus or collar embracing the top of the air-chamber, whereby said bracket may be rotated on the air-chamber to place the operating mechanism in a convenient position and may cause the plunger-rod to close the valve of the diaphragm or adjust the play of the same as desired, substantially as and for the purpose described.

3. In a pump, the pump-chamber provided with a foot-valve above the inlet thereof, having its lower wall inclined and an outlet at the termination of said wall, a hinged valve controlling said outlet, a screw for regulating the play of the valve or for closing the same on its seat, a diaphragm in the pump-chamber, a perforated cap carried by said diaphragm, a valve arranged in and guided by said cap, and a plunger-rod having its lower end adjustable in said cap, whereby the play of the valve may be regulated or the same closed on its seat, substantially in the manner and for the purpose described.

4. A pump having a chamber with a foot-valve controlling its inlet-passage, a hinged valve controlling its outlet-passage, a spout surrounding its outlet-passage and having a screw regulating the play of the said hinged valve, and a diaphragm in said chamber with operating-stem, said parts being combined substantially as and for the purpose set forth.

PETER J. BODE.

Witnesses:

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