

F. B. DAVIS & F. W. HENSHAW.
SUBMERGED FORCE PUMP.
APPLICATION FILED MAY 11, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

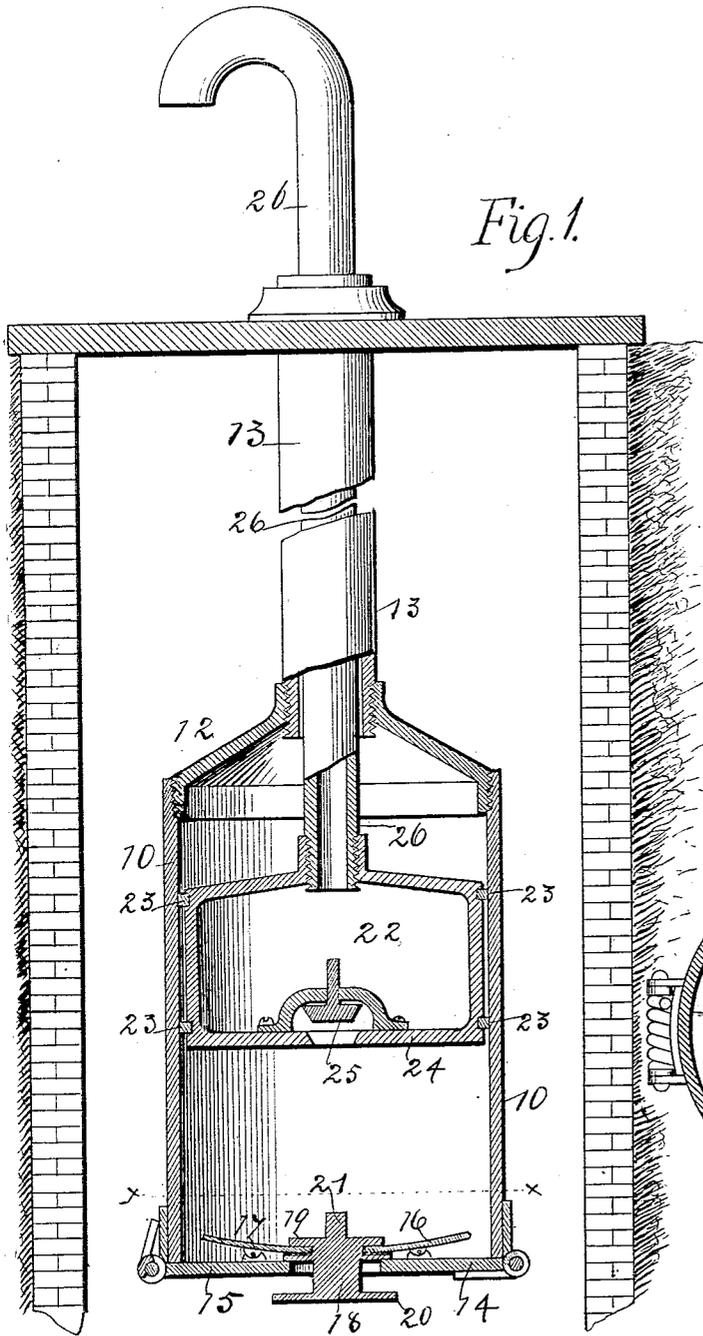


Fig. 1.

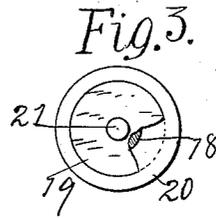


Fig. 3.

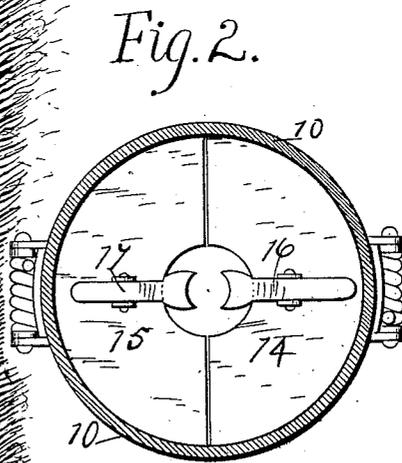


Fig. 2.

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No. 746,038.

PATENTED DEC. 8, 1903.

F. B. DAVIS & F. W. HENSHAW.
SUBMERGED FORCE PUMP.

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2 SHEETS—SHEET 2.

Fig. 5

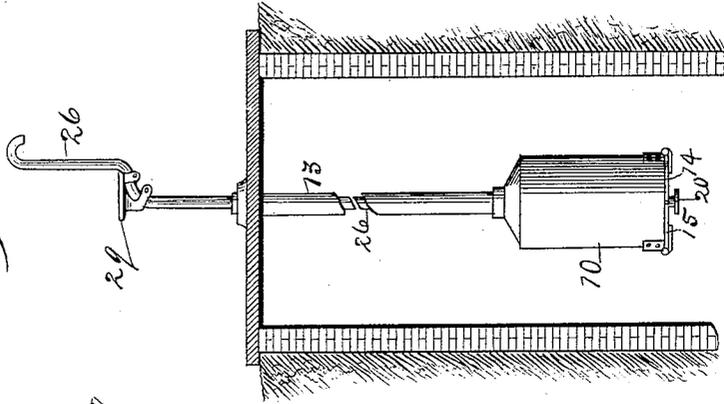
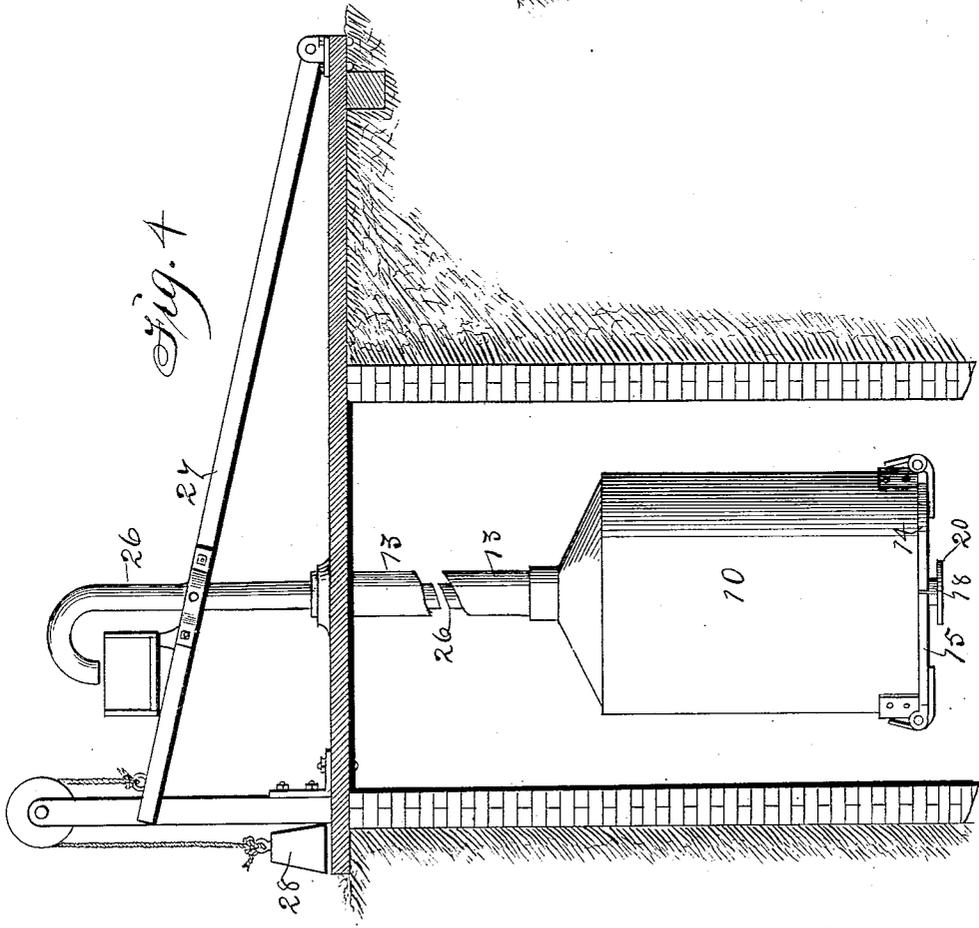


Fig. 4



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UNITED STATES PATENT OFFICE.

FRANK B. DAVIS, OF AUDUBON, IOWA, AND FRANK W. HENSHAW, OF ELKPOINT, SOUTH DAKOTA; SAID HENSHAW ASSIGNOR TO SAID DAVIS.

SUBMERGED FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 746,038, dated December 8, 1903.

Application filed May 11, 1903. Serial No. 156,699. (No model.)

To all whom it may concern:

Be it known that we, FRANK B. DAVIS, residing at Audubon, in the county of Audubon and State of Iowa, and FRANK W. HENSHAW, residing at Elkpoint, in the county of Union and State of South Dakota, citizens of the United States, have invented a new and useful Submerged Force-Pump, of which the following is a specification.

Heretofore a cylinder adapted to be submerged in a well and retained stationary has been provided with a fixed well-tube for elevating water and a piston fitted in the cylinder provided with a reciprocating stem for operating the piston as required to force water up through the well-tube fixed to the cylinder.

Our object is to utilize a well-tube for operating a piston in a fixed submerged cylinder, to provide means for cleaning the cylinder by the use of the well-tube and piston, and also to provide improved means for applying pressure to the reciprocating well-tube and piston.

Our invention consists in the construction, arrangement, and combination of parts, as hereinafter set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view that shows the cylinder, well-tube, and piston combined. Fig. 2 is a transverse sectional view of the cylinder, that shows a bottom composed of two parts separately hinged to the bottom of the cylinder and levers fulcrumed on top of the hinged parts to aid in opening the bottom of the cylinder for cleaning it by means of the piston and well-tube. Fig. 3 is a top view of the valve adapted to be operated by the piston and well-tube and the levers fulcrumed to the hinged sections of the bottom of the cylinder. Fig. 4 shows our invention combined with a fixed well-cover and a hinged platform as required for use as a cattle-pump. Fig. 5 is a detail view showing the well-tube bent and a foot-rest fixed thereto to adapt our pump to be operated in a well or cistern by foot-pressure.

The numeral 10 designates a cylinder that may vary in size as desired. It has an internal screw at its upper end in which is fitted a removable top 12, and in the center of the top is fixed a tube 13 to extend up to the top of a

cistern or well to be fastened to a fixed cover to retain the cylinder stationary and submerged as required for practical use. Two semicircular flat plates 14 and 15 are hinged to the open bottom of the cylinder to swing downward and outward to let sand or other matter that may gather thereon to drop off, as required for cleaning the cylinder, without lifting the cylinder or separating any of the operative parts from the cylinder. Levers 16 and 17 are fulcrumed on top of the hinged flat plates or bottom sections 14 and 15 to extend inward for supporting and lifting a check-valve when cleaning the cylinder.

A check-valve 18, having an annular flange 19 at its top adapted to rest on the inner ends or short arms of the levers 16 and 17, is also provided with an annular flange 20 at its bottom by fixing a circular plate thereto or in any suitable way so that the flange 20 will prevent the valve from passing up into the cylinder. On top of the valve 18, at its center, is a fixed projection 21, that is engaged by a valve in the piston when the well-tube and piston are forced down for closing the cylinder.

A piston consisting of a short circular shell 22, closed at its top and open at its bottom and provided with packing-rings 23 on its exterior, is fitted in the cylinder 10 and a valve-seat 24 fixed in its bottom, and a check-valve 25, provided with annular flanges 26 and 27, is fitted to the valve-seat as required for opening and closing the valve and retaining it in its place. A well-tube 26 is fixed in the top of the cylinder, as shown in Fig. 1, or in any suitable way as required for reciprocating the piston and well-tube jointly by means of pressure by animals on the platform 27 and a weight 28, connected with the platform, as shown in Fig. 4, by foot-pressure on a foot-rest 29, fixed to the bent well-tube, as shown in Fig. 5, or by hand force applied direct to the top of the well-tube. The projection 21 on top of the valve 18 is designed to extend far enough above the levers 16 and 17 so that the valve 25, carried in the piston 22, will depress the valve 18 and close the bottom of the cylinder 10 before the bottom of the piston will come in contact with said levers. It is obvious reciprocating the well-tube and piston will force water up through the well-tube.

When the piston is pressed down, the valve 25 will be pressed up and open by coming in contact with the projection 21 of the valve 18. To clean the cylinder, the piston is pressed
 5 down upon the levers 16 and 17 to force the hinged plates 14 and 15 downward and open, while at the same time the inner ends of the levers will prevent the valve 18 from dropping out of the cylinder.

10 Having thus described the purposes of our invention and the construction and combination of all the parts, its practical operation and utility will be readily understood by persons familiar with the art to which it pertains,
 15 and

What we claim as new, and desire to secure by Letters Patent, is—

1. In a pump, a cylinder having a fixed top and a tube fixed in the top to extend upward,
 20 two flat curved plates hinged to the bottom of the cylinder, means for retaining said plates in a closed position and a lever fulcrumed on top of each of said hinged plates, for the purposes stated.

25 2. In a pump, a cylinder having a fixed top and a tube fixed in the top to extend upward two flat curved plates hinged to the bottom of the cylinder, means for retaining said plates in a closed position and a lever fulcrumed on top
 30 of each of said hinged plates, and a check-valve, combined for the purposes stated.

3. A pump-cylinder, two flat curved plates hinged to the bottom of the cylinder, means

for retaining said plates in a closed position, a lever fulcrumed on top of each of said hinged
 35 plates, and a check-valve having annular flanges projecting outward at its top and bottom, combined to operate in the manner set forth for the purposes stated.

4. A submerged force-pump comprising a
 40 cylinder closed at its top and a tube fixed in the top to extend upward, two flat curved plates or bottom sections hinged to the open bottom of the cylinder, means for retaining
 45 said plates in a closed position, a lever fulcrumed on the top of each of said hinged bottom sections, a valve having annular flanges at its top resting upon the inner ends of the levers, a flange at its bottom to engage the
 50 hinged plates or bottom sections and a projection on top of the valve, a piston closed at its top and a well-tube fixed in the top to extend upward, an internal flange at the open
 55 bottom of the cylinder, a check-valve fitted to said flange and means for reciprocating the piston and well-tube, combined to operate in the manner set forth for the purposes stated.

FRANK B. DAVIS.

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