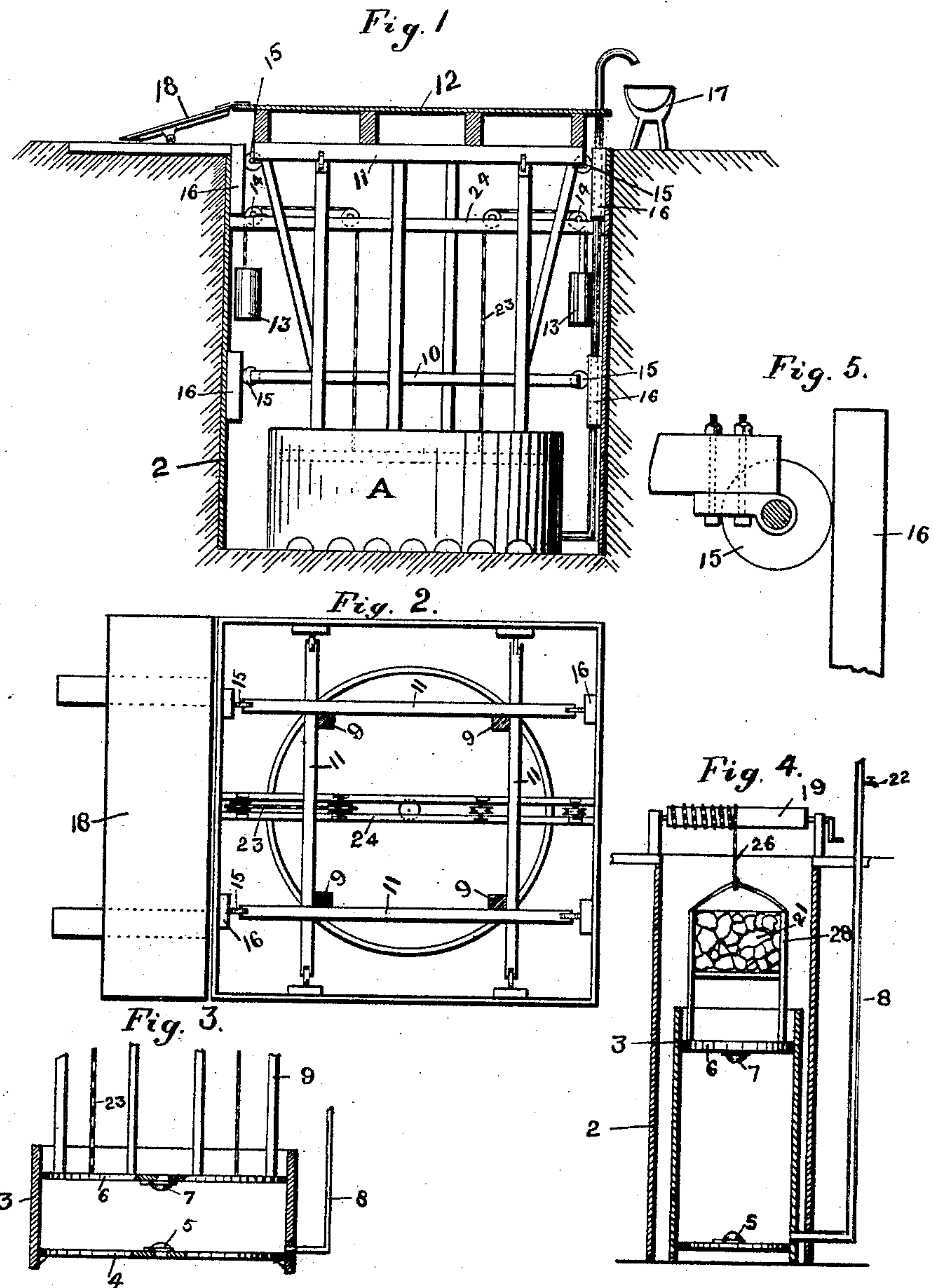


(No Model.)

H. A. STONE.
FORCE PUMP.

No. 435,570.

Patented Sept. 2, 1890.



Witnesses.
S. H. Roberts
A. M. Gaskill

Inventor
Herman A. Stone.
By *Paul M. Allen* Atty's.

UNITED STATES PATENT OFFICE.

HERMAN A. STONE, OF ST. PAUL, MINNESOTA.

FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 435,570, dated September 2, 1890.

Application filed September 16, 1889. Serial No. 324,031. (No model.)

To all whom it may concern:

Be it known that I, HERMAN A. STONE, of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain Improve-
5 ments in Automatic Single - Stroke Force-Pumps, of which the following is a specification.

My invention relates to improvements in force-pumps, its object being to devise means
10 for operating such a pump arranged in the bottom of a well or cistern; and it consists in arranging a platform supported upon the piston of the pump and adapted to receive the weight of animals stepping upon the same and
15 to transmit it to the piston, thus causing it to operate and to force the water upward to a trough or other receptacle, or in employing other means for weighting the piston when desired, so that in either case the piston will
20 act automatically for a single stroke, when the weight is removed to allow the piston to rise and be in position for another operation.

My invention further consists in the construction and combination hereinafter described, and particularly pointed out in the
25 claim.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of my improved pump, the wall of the
30 well or cistern being shown in section to disclose the arrangement of the pump and its attachments therein. Fig. 2 is a plan view of the same with the platform removed. Fig. 3 is a detail of the pump and piston, showing
35 the arrangement of the standards of the piston and pump valves. Fig. 4 is a vertical section of a modified construction, showing a permanently-weighted piston with a windlass adapted to lift the same after operating
40 the pump; and Fig. 5 is a detail of the anti-friction roll shown in Figs. 1 and 2.

In the drawings, 2 represents the outer wall of the well or cistern, in which are arranged the pump A and its attachments. This pump is
45 preferably arranged upon the bottom of the reservoir or well, but raised sufficiently above the bottom to prevent any sediment being drawn into the pump, which may be accomplished in any suitable manner, as by having
50 the cylinder 3 extend below the bottom of the pump and arched openings cut through the

same, so as to form suitable inlets for water, and yet to furnish suitable standards to support the superimposed weight.

Arranged, preferably, in the bottom of the
55 pump barrel or cylinder is the hinged valve 5, opening inward, a similar valve 7 being arranged on the under side of the piston 6, which valves are closed by the action of the piston in pumping, while both freely open to admit
60 water to the pump from the surrounding reservoir as the piston is again raised. While only one valve is shown in the cylinder and one in the piston, as many may be used as desired. Connecting with the pump barrel or
65 cylinder, preferably near the bottom, is the outlet-pipe 8, extending upward to discharge its contents into a trough 17 or other suitable receptacle.

In order to apply to the piston sufficient
70 weight to operate the same, I prefer to provide upon it suitable standards 9 in lieu of a piston-stem and to secure rigidly to these cross-bars 10 and 11, thus constituting a strong frame, upon which I arrange a platform 12,
75 covering the reservoir and serving as a support for animals stepping upon the same to operate the pump.

In order to hold the frame upon the piston in its true position and to guide it in its ver-
80 tical movement, I prefer to arrange upon the ends of the cross-bars 10 and 11 suitable anti-friction rolls 15, arranged to bear upon suitable guides or ways 16, arranged upon the inner wall of the reservoir.
85

To serve as a counter-balance for the weight of the frame and platform upon the piston, so that when the temporary weight is removed from it it will automatically rise and permit
90 an inflow of water from the cylinder through the valves 5 and 7, I prefer to attach to the piston chains 23, carried over sheaves 14, journaled upon a fixed support 24 and provided with weights 13 of sufficient size to serve the purpose indicated.
95

To serve as a protection to the well or reservoir around the platform 12, I prefer to arrange hinged platforms or ways 18, which will adapt themselves to the changed position of the platform 12 in the use of the apparatus.
100

Where it is desired to use the apparatus for other purposes—as, for example, in dwell-

ings, where a weight cannot be applied as shown and described above—I prefer to arrange an artificial weight upon the piston, which may be raised when the pump is not used and lowered to force the piston downward. This may be done, as shown in Fig. 4, by arranging a windlass 19 above the well, to the chain 26 of which is secured the box or receptacle 28, adapted to bear upon or to be secured to the piston 6. In this I arrange stones 21 or other suitable articles to furnish adequate weight to force the water through the pipe 8 to the desired height. When not in use, the windlass is turned to raise the weight and piston, and when it is desired to pump the water the windlass is simply released and the piston allowed to descend. The flow of the water from the pipe can further be controlled by a suitable stop-cock or faucet 22, arranged in the pipe 8.

In operation, the device being shown in the position shown in Fig. 1, upon the stepping of animals upon the platform in approaching the trough to drink the platform is forced downward by their weight, driving the piston and raising the water through the pipe into the trough. The weight being removed by the animals passing off from the platform, the piston is raised again by means of the coun-

terbalancing-weights into position to be operated again.

Where the modified construction is used to operate the pump, the windlass is simply released, thus allowing the weighted piston to descend and force the water upward through the pipe 8, the flow being regulated, as desired, by the stop-cock.

I claim—

The combination, with the reservoir 2, of the pump A, arranged in its bottom and provided with the outlet-pipe 8 and the inlet-valve 5, the piston 6, arranged in said pump and provided with a valve 7, the standards 9, secured to said piston and supporting the platform 12 and provided with the cross-bars 10 and 11, carrying anti-friction rolls 16, and the counterbalancing-weight 13, supported by the chains 23, passed over suitable sheaves and connected to said piston, whereby the weight of said piston and its attachments will be counterbalanced, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 3d day of September, 1889.

HERMAN A. STONE.

In presence of—

T. D. MERWIN,

FRANK H. BATTLE.