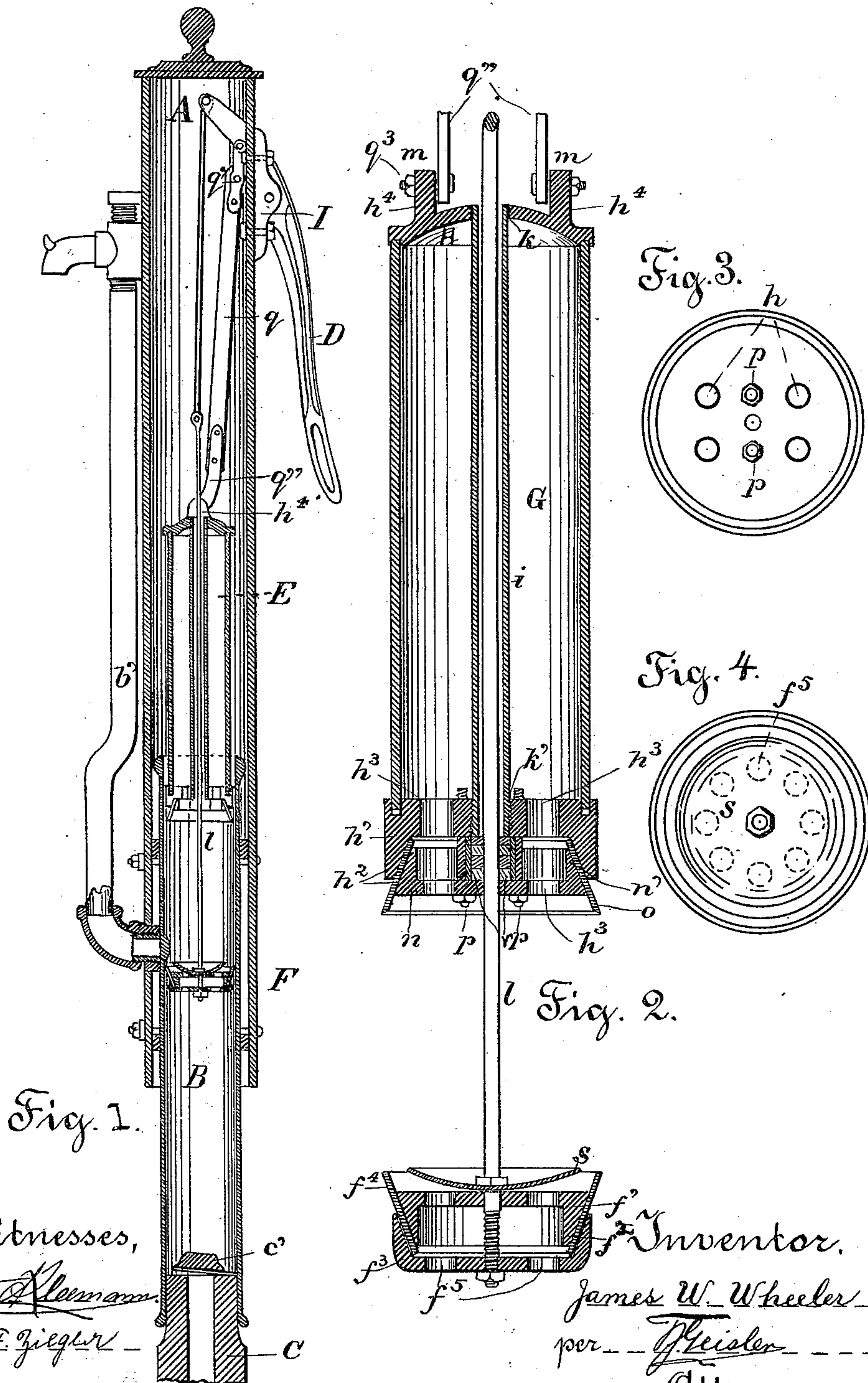


(No Model.)

J. W. WHEELER.
LIFT AND FORCE PUMP.

No. 547,162.

Patented Oct. 1, 1895.



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UNITED STATES PATENT OFFICE.

JAMES W. WHEELER, OF CENTRALIA, WASHINGTON.

LIFT AND FORCE PUMP.

SPECIFICATION forming part of Letters Patent No. 547,162, dated October 1, 1895.

Application filed December 3, 1892. Serial No. 454,012. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. WHEELER, a citizen of the United States, residing at Centralia, Lewis county, State of Washington, have invented a new and useful Lift and Force Pump, of which the following is a specification, reference being had to the accompanying drawings as a part hereof.

The objects of my invention are to construct a force-pump by means of which one may obtain a steady head or flow of water, to have the respective parts of my pump easy of access for repair or otherwise, to adapt the pump to serve and act as a ventilator for the well or cistern, and, lastly, to render the pump antifreezing, all of which objects I attain, as hereinafter shown, by means of the mechanism illustrated in the accompanying drawings, above referred to, the figures in which represent as follows:

Figure 1 is a vertical section of my invention showing its component parts. Fig. 2 is a vertical section of one of such parts, which I will hereinafter term "air-chamber plunger;" and Figs. 3 and 4 are respectively a bottom view of such air-chamber plunger and top view of the suction-plunger.

Referring now to the letters, A represents the case, in the lower end of which is attached a cylinder B, in which my air-chamber and suction-plungers operate, said cylinder B having an outlet b' and suction-pipe C extending into its lower end. The outlet b' should tap the cylinder B at a place about two-thirds its length from the bottom. c' is a check-valve to retain the water in said cylinder B when the plungers descend. The construction of the said air-chamber plunger E and suction-plunger F is shown in the enlarged section thereof in Fig. 2. The air-chamber plunger E consists of a cylinder G, (made out of a piece of boiler-tube or other suitable material,) on the upper end of which is secured a cap H and to the lower end a base or plate h' , these parts being secured together by means of a tube i , threaded at both of its ends and screwed in the threaded central perforations $k k'$, provided in said cap H and plate h' . The tube i likewise provides a passage-way for the rod l to operate in. The under side of the rim of the cap H and the rim of the upper side of the plate h' are

each provided with an annular groove in which to seat the ends of said cylinder G and make the attachments air-tight by means of packing. (Not shown.) The plate h' has an annular flange h^2 beveled on its interior and projecting downward, and in this is another plate n , having an annular flange n' , projecting upward and beveled on its exterior to correspond with the beveled flange h^2 of the plate h' , between which beveled flanges the leather packing or bevel-gasket o is secured, the plates h' and n being bolted together by means of screw-bolts p , and each of said plates having four perforations h^3 , (see Fig. 3,) located above each other to leave a passage-way through which the water can enter the cylinder G and be expelled out again. The air-chamber plunger E is suspended in the cylinder B from the handle or lever D by means of a rod q and connections $q' q''$, the latter having lug-pins q^3 engaging in the ears h^4 provided on the cap H. The rod l is also attached to said handle or lever D, extends through the tube i of the air-chamber plunger E, and carries the plunger F on its lower end. r represents packing for the rod l , which must be provided at either the lower or upper end of the tube i .

The plunger F consists of a plate f' having an annular flange f^2 beveled at the exterior and conforming with the beveled flange of the cap f^3 , these parts being secured together between nuts screwed on the threaded end of the rod l , and hold between them the packing or bevel gasket f^4 , and s represents a suction-valve. The plate f' and cap f^3 have several perforations f^5 (see Fig. 4) corresponding with each other to form water-passage-ways.

I represents brackets affording a bearing for the handle or lever D.

The rod q , suspending the air-chamber plunger, must be so proportioned in length and attached to the lever D that in making the downward stroke in the cylinder B the air-chamber plunger will reach nearly, but yet not quite, to the outlet b' . By this arrangement the suction-plunger F will describe twice the distance of the air-chamber plunger in the cylinder B, and thus I obtain my double action.

The cylinder B is continually filled with

water, and on operating my pump each up-
stroke or rise of the plungers forces one-half
of the bulk of the water lifted out of the out-
let-pipe b' , while the other half follows the
5 air-chamber plunger E, and entering in part
into such air-chamber E through the perfora-
tions h^3 in its plunger, the quantity of water
so entering being in proportion to the force
applied. The water forced into said air-
10 chamber compresses the air therein confined
to a diminished bulk, the reflex of which ex-
pels the water out of such air-chamber plun-
ger in the downstroke as the pressure at the
outlet b' decreases, and thus the flow of water
15 while changing the stroke is maintained. As
soon as pumping is stopped the water in the
delivery-pipe b' , not being restrained by any
check-valve, will seek its level and overflow
the top of the cylinder B, and as this is below
20 the platform of the well or cistern the pump
is not subjected to the immediate influence
of cold weather, and, therefore, becomes anti-
freezing. The overflow of water in the cyl-
inder B also performs a function of its own,
25 in this, that it ventilates the well or cistern
by creating a current of air. Such ventila-

tion is further assisted by an opening or
openings provided in the side of the casing
A, between the platform and top of cylinder
B, and the opening of the handle-slot. 30

Having thus fully described my invention,
what I claim is as follows:

In a lift and force pump, the combination
with the casing, the cylinder telescoping in
the lower end thereof and provided with a 35
check valve and an outlet near its upper end,
of the vertically movable air cylinder having
openings in its lower end, the central verti-
cal tube, the handle connected with said cyl-
inder, the plunger rod also connected with 40
said handle, and the valved plunger secured
to the lower end of said rod, the construction
being such that the plunger will have a longer
stroke than the air cylinder, substantially as
and for the purpose specified. 45

In testimony whereof I have hereunto af-
fixed my signature in the presence of two wit-
nesses.

JAMES W. WHEELER.

Witnesses:

F. D. CHAMBERLAIN,
T. J. GEISLER.