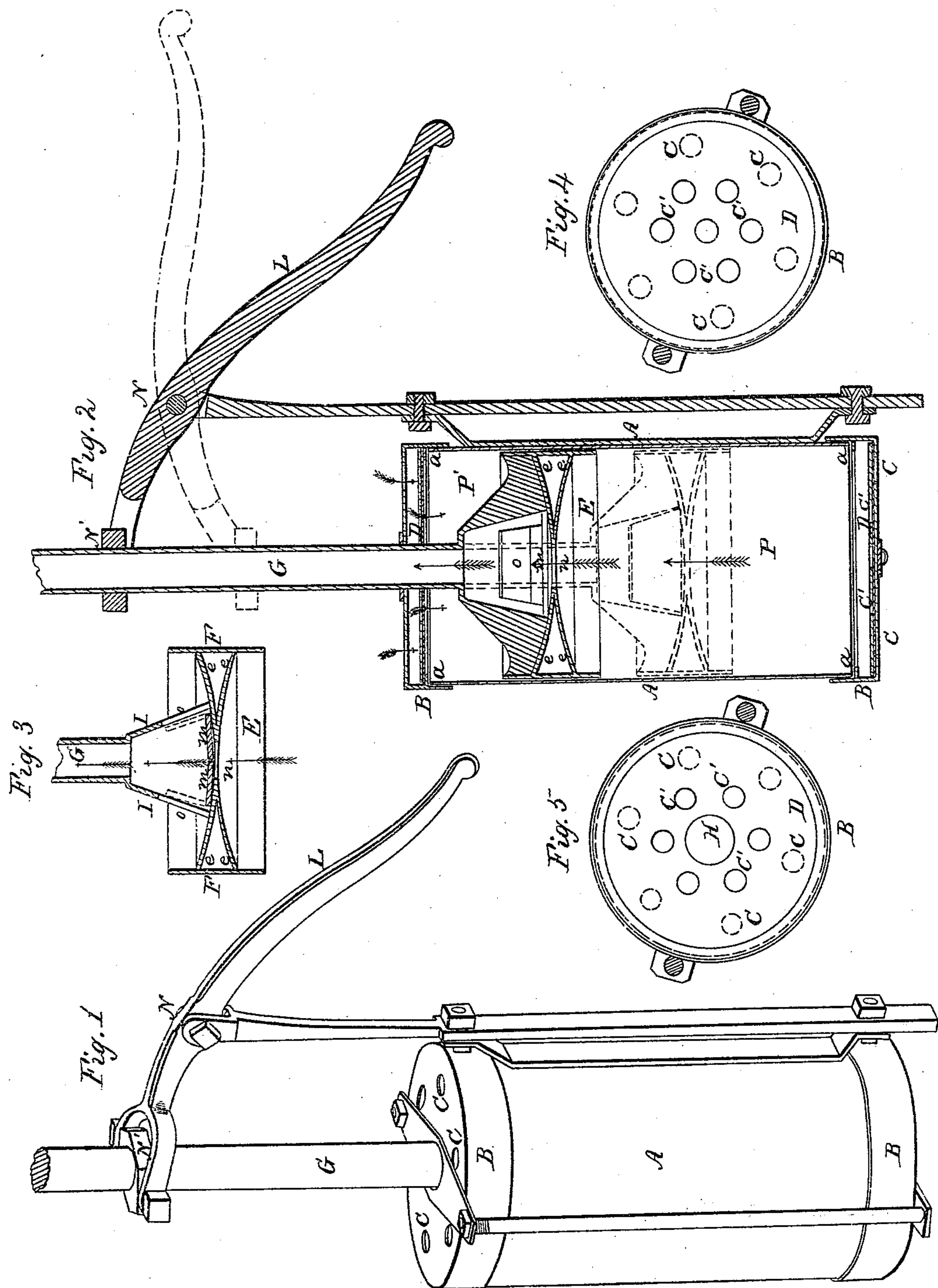


E. Rhoades, Sr.,

Pumps,

No 36,622,

Patented Oct. 7, 1862.



UNITED STATES PATENT OFFICE.

ELIAS RHOADES, SR., OF CLYDE, OHIO.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 36,622, dated October 7, 1862.

To all whom it may concern:

Be it known that I, ELIAS RHOADES, Sr., of Clyde, in the county of Sandusky and State of Ohio, have invented new and useful Improvements in Pumps; and I do hereby declare that the following is a full and complete description of the construction of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view. Fig. 2 is a vertical section, and Figs. 3, 4, and 5 are detached portions.

The nature of my invention relates to such a construction of a pump that any movement of the piston causes a flow of water through the exit-pipe, said pipe being connected to the piston-head and forming the rod by which it is actuated; also to the valves by which the water is admitted into the pump-cylinder, and to the arrangement of the valves in the piston-head.

A in Figs. 1 and 2 represents the barrel or cylinder of the pump. The length thereof may be six or more inches, and the diameter three or more inches, according to the intended use. It may be made of sheet metal or cast-iron and bored out smoothly inside.

a a, Fig. 2, shows a narrow rim projecting inward at each end of the cylinder A, which forms a seat for the valves hereinafter to be described.

B B represent heads attached to the ends of the cylinder, leaving a space of about three-quarters of an inch between the ledge *a* and the head B. Both heads have a circle of holes, C, near the outer margin through which the water passes into the barrel of the pump.

Between the heads B and ledges *a* is interposed the disk-valves D, which consist of a thin plate of metal, perforated with a number of holes, C', equal to those in the heads B, but placed upon a smaller circle, so that when the valve in either rests against the head the holes C are closed by the outer margin of the valves D. This feature is clearly shown in Figs. 4 and 5.

So far as the two heads and disk-valves are concerned, their structure and operation is alike.

E represents the piston-head or plunger. It consists of a broad ring, F, which accurately fits

the inside of the barrel A, and a double diaphragm, *e e*, having their convex sides in contact at the center, their outer edges separated about one-third the width of the ring F and secured in two lines around the inside. The diaphragms thus mutually brace each other. The diaphragm is perforated at the center, as seen at *n*, for a passage of the water upward when the piston descends. This opening is provided with flap-valves *m m*, which close the opening *n* when the piston-head rises, and open upward when the piston head falls.

G represents the piston-rod. This is made hollow, and therefore serves the double purpose of piston-rod and conducting pipe. It passes through the upper head and upper disk-valve, through the opening H, Fig. 5. The lower end of the pipe G, where it joins the diaphragm, expands, as seen at I I in Fig. 3, and is provided with openings *o o* for the purpose of admitting the water from the upper chamber of the cylinder A. These openings *o o* are closed by the flap-valves *m m* when the piston descends.

L is a lever by which the piston is operated. This has a stationary fulcrum, N, and the short arm is attached to the piston-rod by an articulating-joint, N'. The upper end of the hollow piston G is turned downward forming a goose-neck for the convenient discharge of the water. The cylinder of the pump is secured in the water, so that the whole is submerged, and at every downward stroke the water in the lower chamber, P; passes through the valves *m* and is discharged above, and the chamber P' is filled at the same time by the falling of the upper disk-valve, D, and at every upward stroke of the piston the lower valve, D, rises and admits the water into the chamber P.

What I claim as my improvement, and desire to secure by Letters Patent, is—

The disk-valves D, perforated heads B, and ledges *a*, in combination with the hollow piston-rod G, and valves *m*, and openings *o*, when these several parts are constructed, arranged, and operated in connection with the cylinder A, as and for the purpose specified.

ELIAS RHOADES, SR.

Witnesses:

WM. WALLACE ROSS,
WATSON C. SQUIRE.