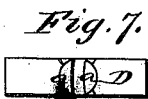
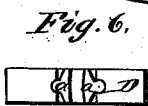
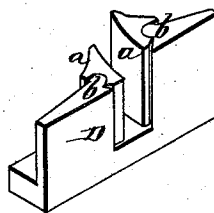
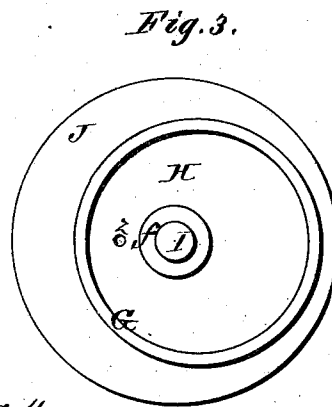
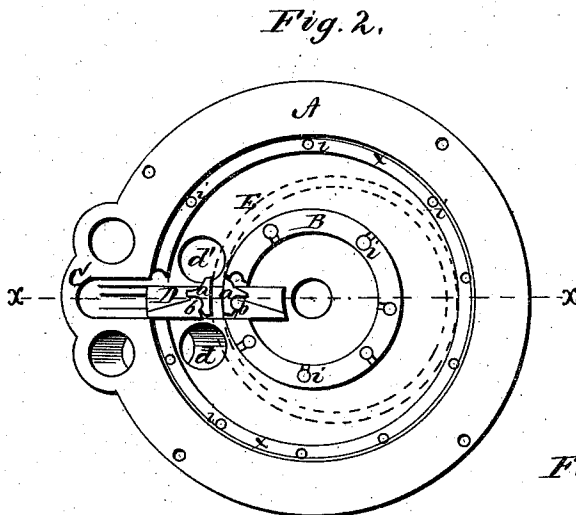
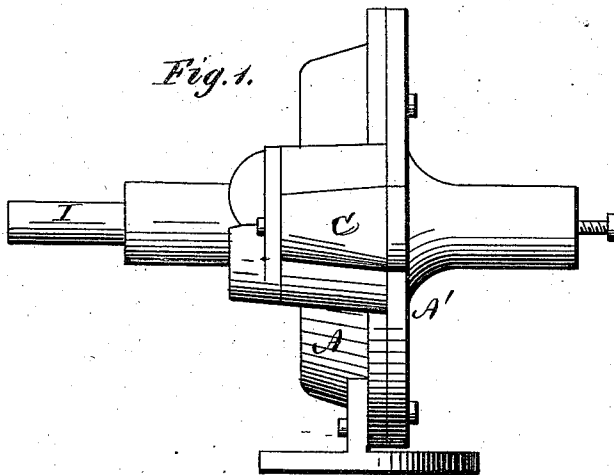


L. D. GREEN.
Rotary Pumps.

No. 155,722.

Patented Oct. 6, 1874.



WITNESSES

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Fig. 5.

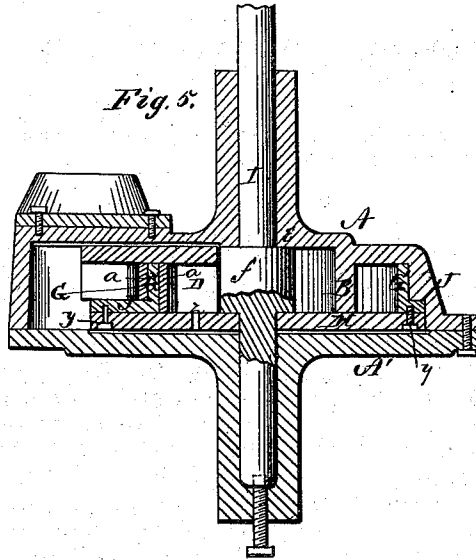
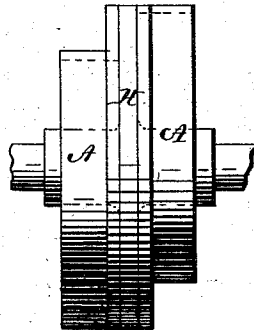


Fig. 6.



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UNITED STATES PATENT OFFICE.

LYMON D. GREEN, OF WATERTOWN, NEW YORK.

IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. **155,722**, dated October 6, 1874; application filed July 29, 1874.

To all whom it may concern:

Be it known that I, LYMON D. GREEN, of Watertown, in the county of Jefferson and in the State of New York, have invented certain new and useful Improvements in Rotary Pump; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a rotary pump, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side elevation of my pump. Fig. 2 is an interior view of the casing, showing the sliding valve. Fig. 3 represents the movable piston-plate with its attachments. Fig. 4 is a perspective view of the sliding valve. Fig. 5 is a horizontal section of the pump through the line *x x*, Fig. 2. Figs. 6 and 7 show modifications of the sliding valve, and Fig. 8 shows the adaptation of my invention to a double pump.

A represents the circular casing, provided with an interior concentric ring, B, and on one side with a valve-chest, C. D represents the sliding valve, moving across the water-space E, between the interior surface of the casing and the exterior surface of the ring B, into said ring and valve-chest C. H represents the piston-plate, fitting in a recess, *x*, in the edge of the casing A, and is attached to a shaft, I, which passes through the center of the casing and through the head A', that closes the open side of the casing. On the shaft I is a hub, *f*, which is of such length that it will rest upon the side or bottom of the case at *e*, and be held to its seat by the pressure of the water. This seals the journal and prevents the escape of water between the shaft and its bearing, thereby obviating the necessity of packing, or of a stuffing-box. It also relieves the friction from the other bearing of the piston-plate and ring. The space between the hub *f* and ring B is

open, and the only bearing upon the plate is the bottom of the ring B, thereby materially reducing the amount of friction on the plate. The surfaces of these parts that are in contact are lubricated by means that will be hereinafter described. To the inner side of the piston-plate H is secured a ring or piston, G, set in an eccentric position, so that its interior fits at one point to the outer surface of the ring B, and its exterior at a diametrically-opposite point to the interior surface of the cylinder A. This eccentric ring or piston passes through a slot in the sliding valve D, which slot is somewhat larger than the thickness of the eccentric ring, and the spaces on each side of the ring in the valve are provided with auxiliary valves *a a*, substantially of the construction shown in Fig. 4, and rocking in or on seats *b b*, formed in the sliding valve D. These auxiliary valves *a a* are forced by the pressure of the water against the sides of the eccentric ring G, and pack the same. *d* is the inlet, and *d'* the outlet, for the water, which are placed one on each side and close to the valve D. The piston-plate H revolving, the water is drawn in on both sides of the eccentric ring or piston G, and also discharged from both sides thereof. The space between the exterior surface of the ring G and the cylinder is as much larger than the space between the inner surface of said ring and the ring B as the portion taken up by the eccentric ring G itself, which will make an uneven stream of water, sometimes heavier and sometimes lighter. To obviate this difficulty I attach a flange, J, around the outside of the eccentric ring G, of sufficient thickness to make the space on both sides of said ring equal, and thus cause the pump to throw a steady and even stream. The eccentric ring G and flange J may be made in one piece, or in two pieces firmly united together. In either case they are made separate from the piston-plate H, and adjusted to the same by means of set-screws *y*. In the ring B, and in the recess *x* of the cylinder A, are made grooves or channels *i i*, to allow the water to enter and form packing, and lubricate between them and the piston. Through the piston are one or more openings, *z*, of suitable size to allow the water

to pass through in between the piston and the head A', and both packs and balance the piston and valve.

The peculiar formation of the auxiliary rocking valves *a a* above described is, in a great measure, immaterial.

Figs. 6 and 7 are modifications of the same, which will answer precisely the same purpose.

The operation of the pump is substantially the same as that of other pumps of this class using an eccentric ring, the water being drawn in by suction through the inlet, and forced out through the outlet. The water passes through the spaces both on the inside and outside of the eccentric ring, and as the water-space on one side of said ring increases the space on the other side diminishes in the same proportion, because the two entire spaces have been made equal by the addition of the flange J, and hence the stream of water will be perfectly even and steady.

The pump may be made double, as shown in Fig. 8—that is, using two casings, A A, with a single piston-plate between them, said piston-plate having an eccentric ring on each side to work in the casings in precisely the same manner as described for the single ring. This balances the pressure of the water.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. The flange J, arranged on the outside of the eccentric ring G, for the purposes herein set forth.

2. The combination of the casing A with valve-chest C, the flange J with eccentric ring G, and the horizontally-reciprocating valve D with auxiliary rocking valves *a a*, all substantially as set forth.

3. In combination with the piston-plate H and eccentric ring G, the flange J, connected to the eccentric ring, and detachably connected to the piston-plate by the set-screws *y*, all substantially as set forth.

4. In combination with the casing A and ring B, the piston-plate H, with one or more apertures, *z*, and the shaft I, with hub *f* resting against the side of the casing, whereby water is admitted back of the piston-plate, to pack the plate and hub against their respective seats, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of June, 1874.

LYMON D. GREEN.

Witnesses:

JNO. M. SIGOURNEY,

R. S. HUNGERFORD.