

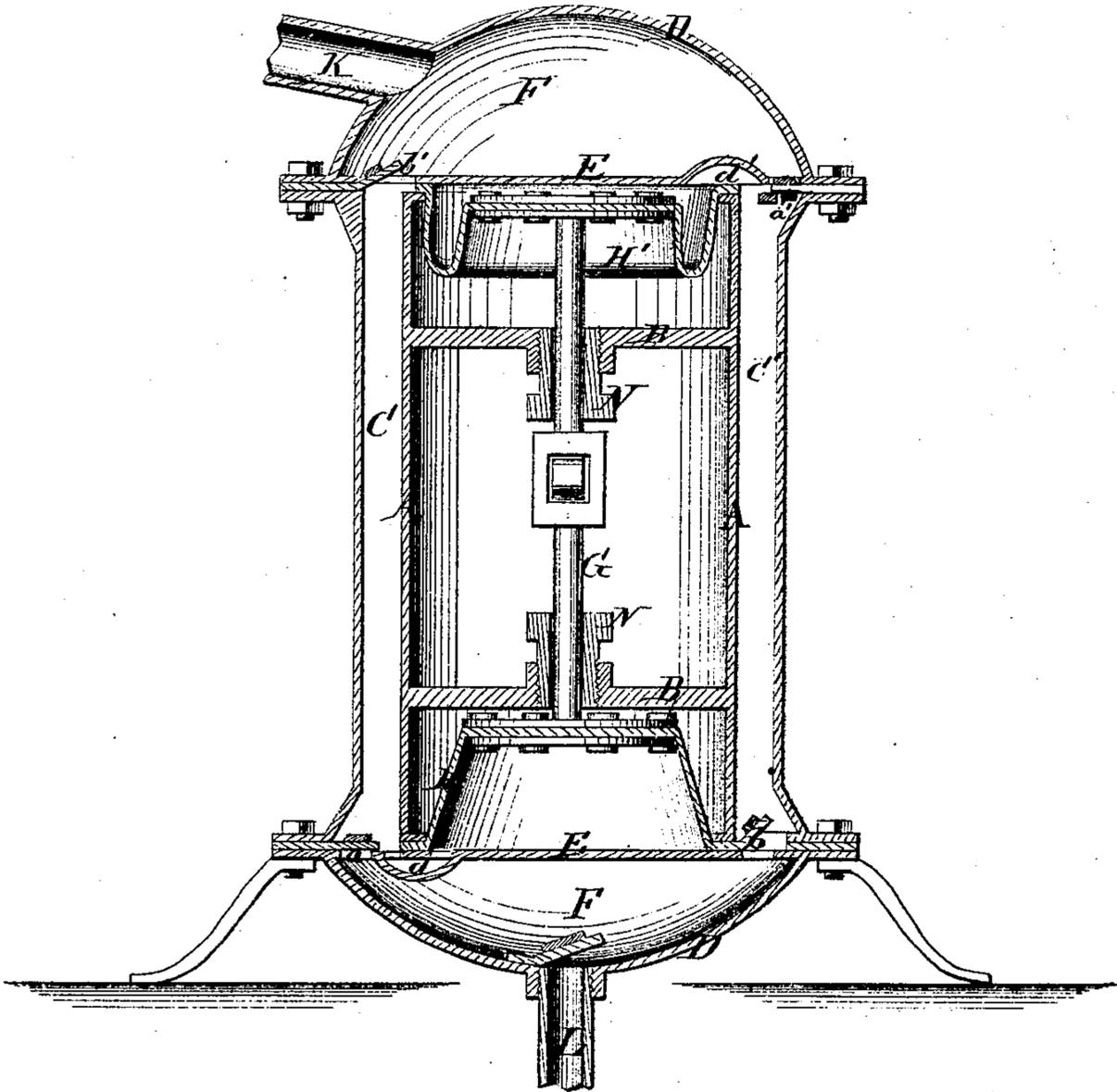
*W. Stearns,*

*Pump.*

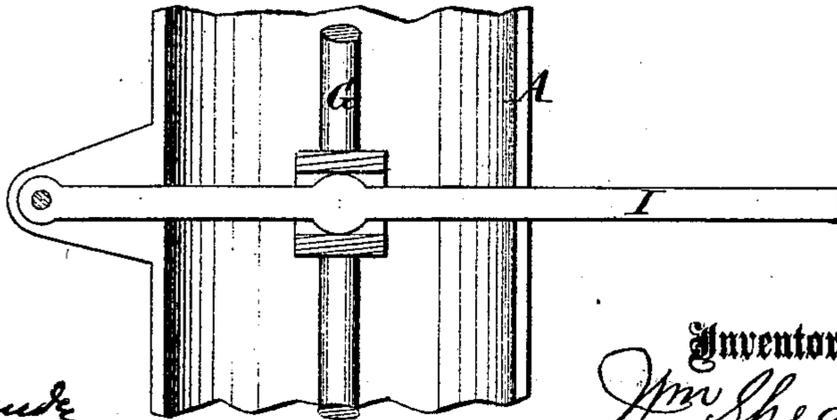
*No. 10,9678.*

*Patented Nov. 29, 1870.*

*Fig:1*



*Fig:2.*



**Witnesses:**

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# United States Patent Office.

WILLIAM SHEARER, OF ATLANTA, GEORGIA.

Letters Patent No. 109,678, dated November 29, 1870.

## IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, WILLIAM SHEARER, of Atlanta, in the county of Fulton and State of Georgia, have invented a new and improved Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in pumps, and consists in an arrangement of diaphragms of leather, India rubber, or other flexible and elastic substance, to be used in substitution for the pistons, for economizing friction, the arrangement being such that no piston or piston-rod packing is needed, and the valves are formed in the diaphragms, and of parts thereof, in a simple and inexpensive manner.

Figure 1 is a vertical sectional elevation of my improved pump, and

Figure 2 is a vertical sectional elevation of a part of the same, the line of the section being perpendicular to that of fig. 1.

Similar letters of reference indicate corresponding parts.

A is a hollow cylinder, open at both ends, and provided with the dividing-plates B and the passages C C', the latter being formed on the outside, preferably opposite each other, and leading from end to end.

Each end of the cylinder has a cap, D, bolted or otherwise attached to it, which has a plate, E, extending across the end of the cylinder, between which plate and the cap is a water-space, F.

These plates have openings, *a b a' b'*, coinciding with the passages, and they have cavities, *d d'*, in the sides, next the cylinder, forming passages under the ends of the cylinder, from the passages C C' to the interior.

The disks B are placed at some distance from the ends of the cylinder, and form bearings for the working-rod G, passing through them, and having the leather, India rubber, or other flexible diaphragm H H' attached to it, one to each end.

Said diaphragms are clamped, at the outer edges, between the cylinder and the plates E of the caps.

These diaphragms are suitably cut to form valves over the openings through the plates E, all opening upward.

The rod G is worked by a lever, I, arranged in slots or bearings in the cylinder A, between the plates B, but it may be operated by any suitable arrangement of machinery.

K is the supply-pipe, and

L, the discharge.

The movement of the diaphragms toward the plates B draws the water into the spaces made vacant by them, and the movement in the other direction forces it out and into the upper chamber F, as will be clearly seen by inspection of the drawing.

The arrangement here shown constitutes a double-acting pump, but a single diaphragm and working-rod applied to any ordinary cylinder, and provided with a valve opening upward, will make a simple, easily-working, single-acting pump on the same plan.

The valve should be seated at the center of the diaphragm, the rod being forked or otherwise suitably arranged.

In this example, screw-plugs N are inserted in the holes passing through the plates B, to provide sufficient bearing-surface, but other arrangements of bearings may be employed, as preferred. They should not, however, be so tight as to prevent the free passage of air to the spaces in which the diaphragms work; or the plates B may have air-holes through them.

Having thus described my invention,

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

The combination of the cylinder A, caps D, plates E, diaphragms H H', and the working-rod, the cylinder being provided with the passages, the plates E with the openings, and the cavities and the diaphragms with the valves, all substantially as specified.

Witnesses: WILLIAM SHEARER.

ER. LAWSHÉ,

THOMAS SPENCER.