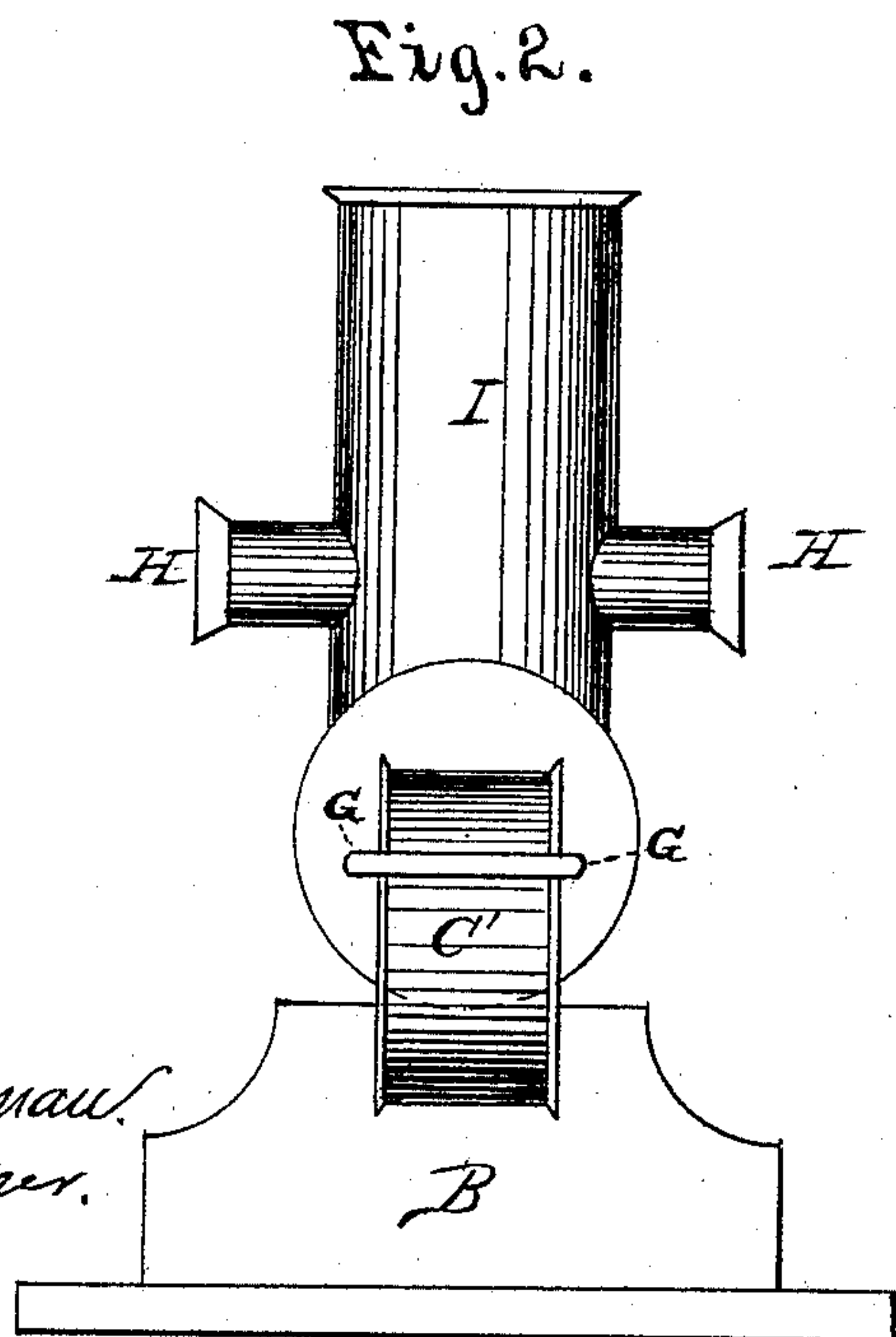
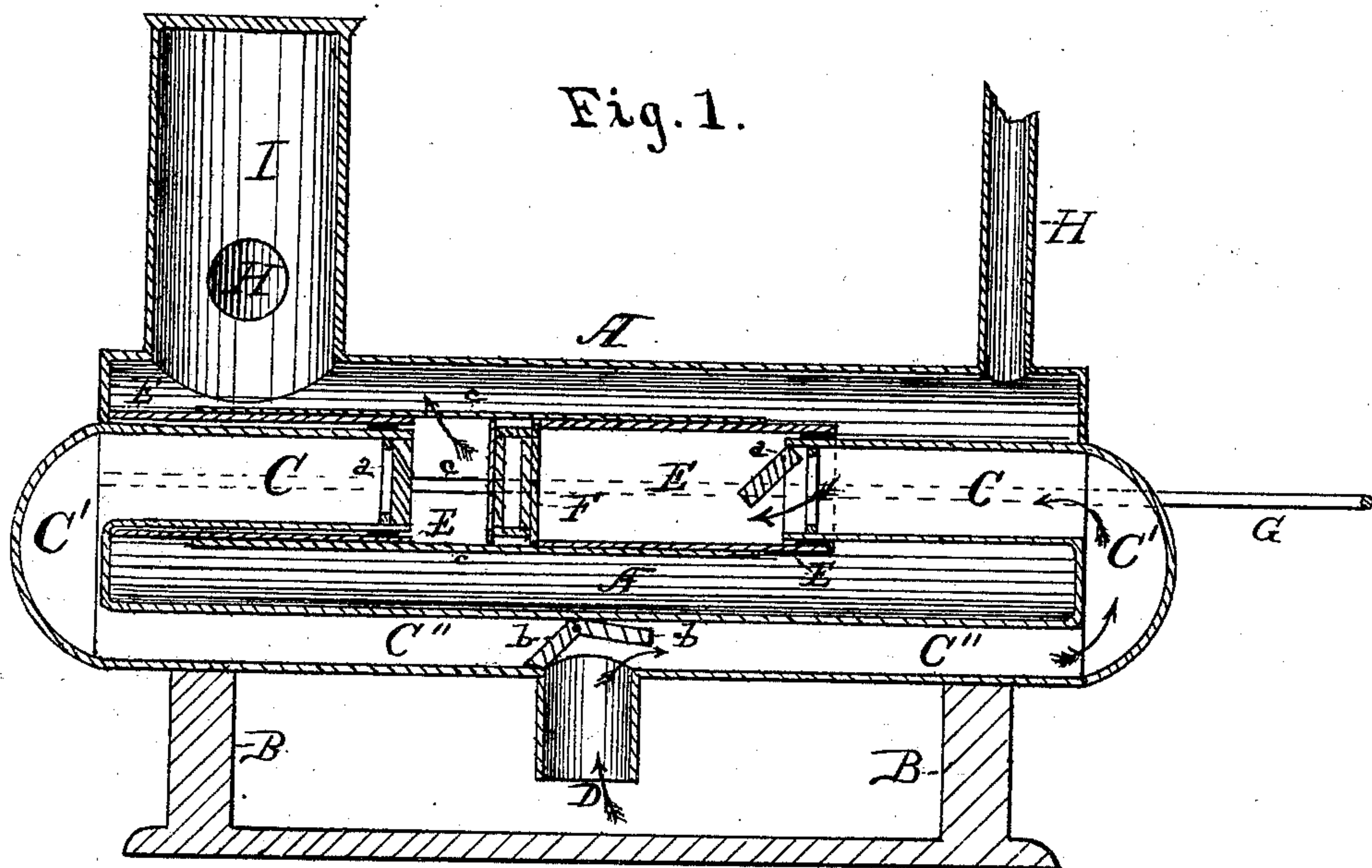


L. BOUVIER.  
DOUBLE-ACTING PUMP.

No. 171,090.

Patented Dec. 14, 1875.



Attest:  
Charles Shurman.  
C. B. Dyer.

Inventor:  
Louis Bouvier  
by Geo. W. Dyer & Co  
Attys.

# UNITED STATES PATENT OFFICE.

LOUIS BOUVIER, OF SAN JOSÉ, CALIFORNIA.

## IMPROVEMENT IN DOUBLE-ACTING PUMPS.

Specification forming part of Letters Patent No. 171,090, dated December 14, 1875; application filed July 21, 1875.

*To all whom it may concern:*

Be it known that I, LOUIS BOUVIER, of San José, in the county of Santa Clara and State of California, have invented an Improvement in Pumps; and I do hereby declare that the following is a full and exact description that will enable those skilled in the art or science to which it most nearly appertains to construct and use my said invention without further invention or experiment, reference being had to the accompanying drawings and to the letters marked thereon.

The object of my invention is to provide certain improvements in pumps; and it consists principally in a novel method of constructing and arranging the operative parts, so that I secure a maximum flow of water through a pump of given size with the simplest mechanism, there being no complication of parts or liability to get out of order.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a longitudinal section of my pump; Fig. 2, an end view.

Similar letters of reference in each of the drawings indicate like parts.

A is a metallic cylinder, supported longitudinally upon a suitable frame, B. C C are two pipes extending—one from each end of the inside of the cylinder—toward each other, but terminating before they come together, leaving a sufficient space for the play of the piston-valve between them. A flap-valve, *a*, opening outwardly, is attached to the inner end of each pipe C. These pipes open into passages C' on each end of the cylinder, having their outer sides formed on the arc of a circle, so as to present the least possible resistance to the flow of the water. The passages C' connect with a rectangular water-way, C'', on the under side of the cylinder. D is a pipe connecting with the suction-pipe, which opens into the under side of the water-way C''. On each side of the entrance of the pipe D into the water-way is an inwardly-opening flap-valve, *b*, which divides the water-way into two chambers. E E' are two tubes sleeved on the

pipes C C, and connected together by rods *c*, preferably about four in number. The two tubes are rigidly connected to each other a short distance apart by these rods, leaving a space between their ends, in which plays the loose piston-valve F. This valve is placed between the ends of these tubes before all of the rods are secured, the said rods permitting the valve to play loosely on a line with the tubes, but preventing it from moving laterally or vertically. The ends of the pipes C are provided with suitable packing, so that the tubes will slide on them water-tight. Rods G G are connected to one of the tubes E E, and project horizontally through one end of the cylinder. The other tube may also be provided with similar rods.

In operation the rods are worked back and forth, the tubes sliding upon the pipes C, and the loose piston-valve alternately closing the ends of the tubes. This action will create a vacuum alternately upon each side of the piston-valve in the tube which it covers, thus drawing water through the valves *a* and *b*, the water on the other side of the piston being forced out through appropriate exit-holes H. An air-chamber, I, serves to equalize the flow of the water from the discharge-pipe.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the pipes C C, of the tubes E E, rigidly secured together a short distance apart, and a loose piston-valve playing between the ends of said tubes, substantially as described and shown.

2. The combination, with the cylinder A, of the pipes C C, passages C' C', water-way C'', tubes E E, loose piston-valve F, and valves *a b*, when the several parts are arranged to operate substantially as described and shown.

In witness whereof I have hereunto set my hand and seal.

L. BOUVIER. [L. S.]

Witnesses:

J. B. J. SORTOSL,  
B. BOMGUARD.