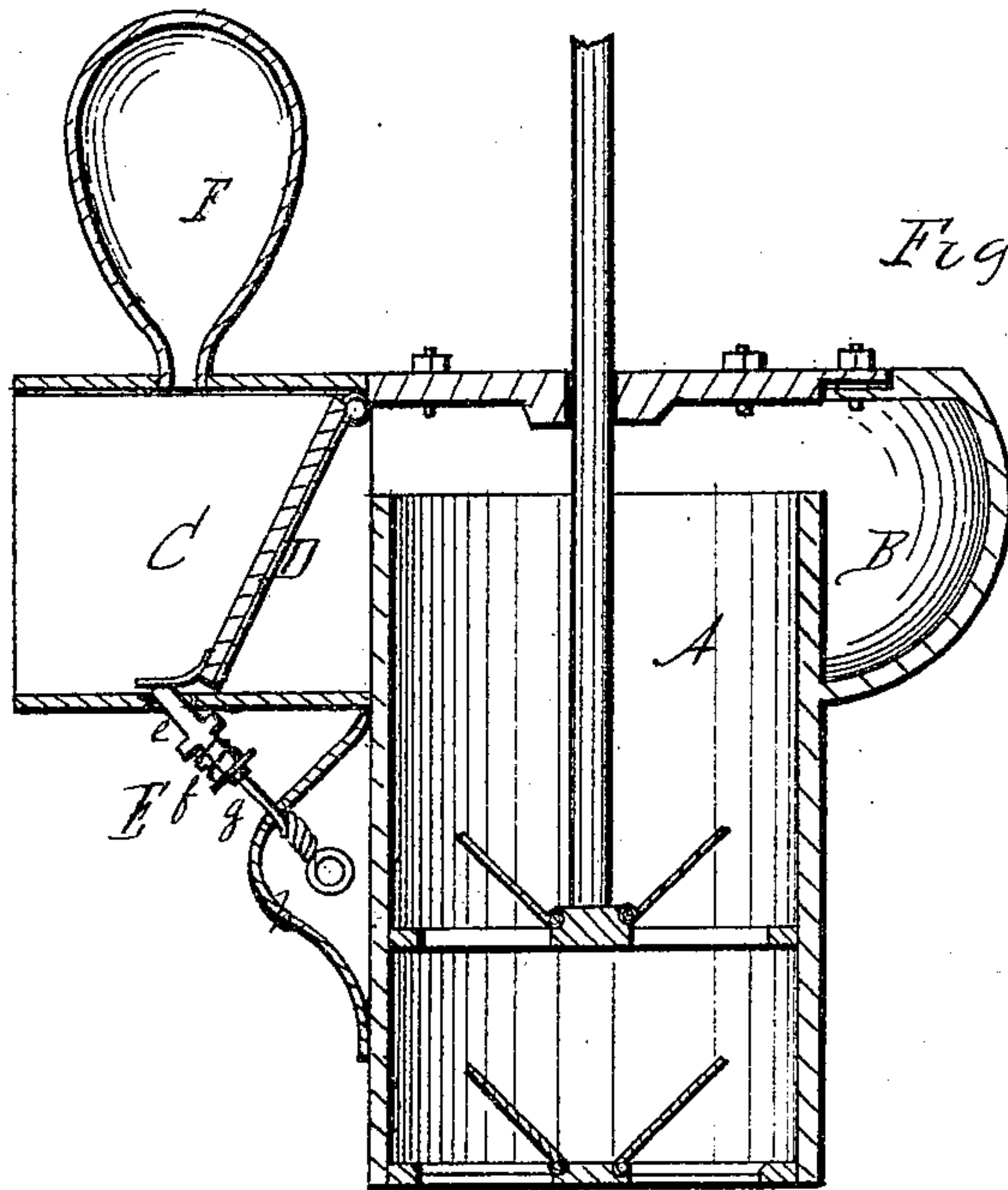


*C. Markley,*

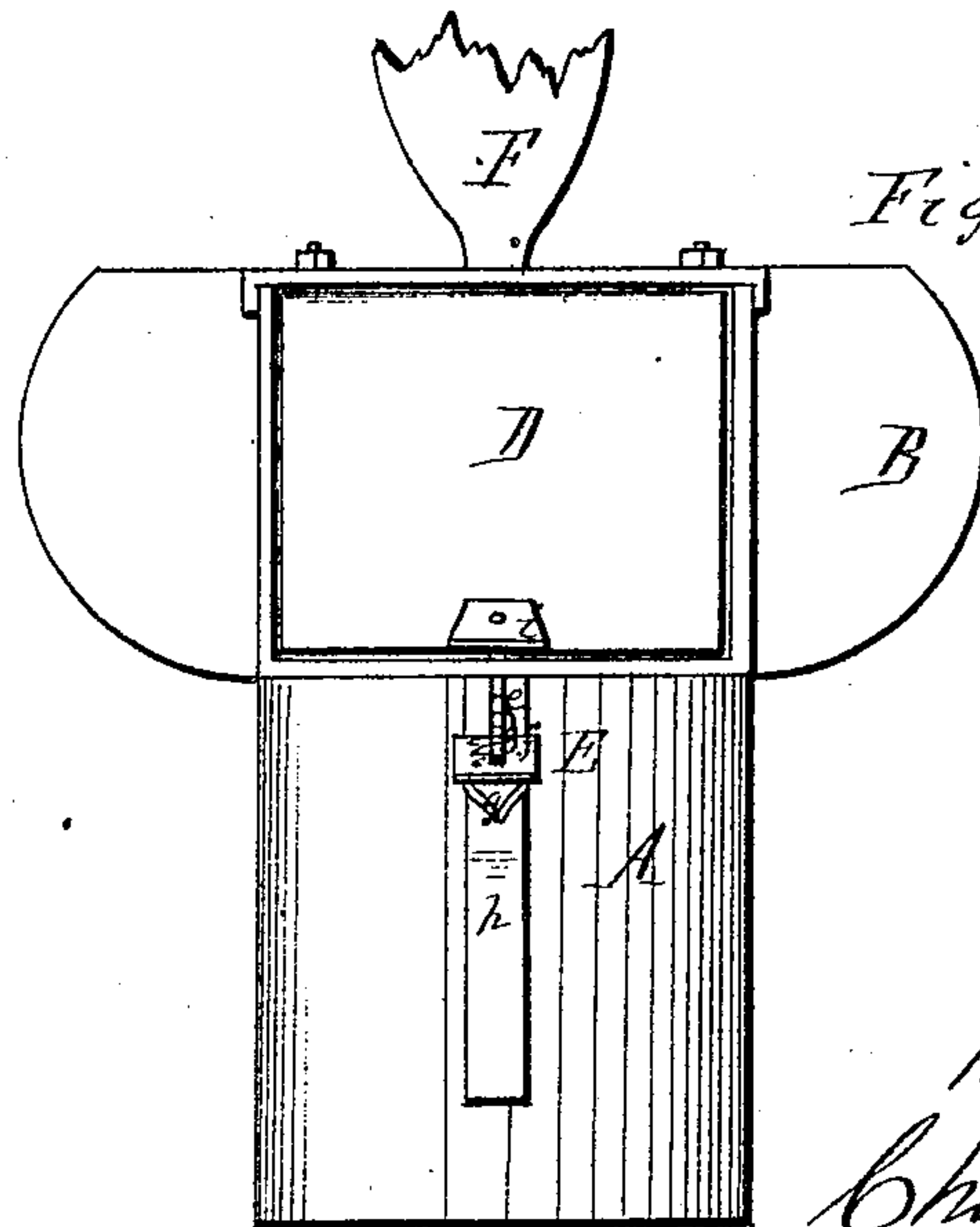
*Air Pump.*

*No. 109639.*

*Patented Nov. 29. 1870.*



*Fig. 1.*



*Fig. 2.*

*Witnesses*

*Moses Smith  
C. E. Wilson*

*Inventor  
Chas. Markley  
by his Atty  
Thos. A. Conally*

# United States Patent Office.

CHARLES MARKLEY, OF NEW YORK, N. Y.

Letters Patent No. 109,639, dated November 29, 1870.

## IMPROVEMENT IN PUMPS.

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

I, CHARLES MARKLEY, of New York, in the county and State of New York, have invented certain Improvements in Air-Pump for Steam-Engines, of which the following is a specification.

The object of these improvements is to economize power in the condensing-engine, which, in connection with the condenser, necessarily requires an air-pump to convey the water to the "hot well" after leaving the condenser.

Air-pumps for such purposes are constructed with foot and delivery-valves. In general the latter is fixed to the mouth of the pump-cylinder, the seat consisting of a grating, through the openings of which the water must be forced, so that where the pump works quickly and draws a large amount of water the difficulty resulting in the effort to force it through the grating or through any delivery-opening of less dimension than the cylinder greatly increases the labor of the engine, and, on account of the strain, is liable to break and otherwise damage the parts with which the piston-rod of the pump is connected. Instance has come to applicant's knowledge of the breaking of nine rock-shafts within the comparatively short period of three years, each shaft being six and a half inches in diameter, wrought-iron, caused by the strain from the air-pump.

To obviate these difficulties is the purpose of applicant's improvements.

In the accompanying drawing representing an air-pump embodying applicant's improvements—

Figure 1 is a vertical section, and

Figure 2 is an elevation.

A is the pump-cylinder, around the top of which is a reservoir, B, which should properly be of sufficient capacity to contain the contents of the pump.

The cylinder A, it will be seen, extends somewhat above the lower part of said reservoir, thereby preventing the return of the water. It is also open at

the upper end, so that no unnecessary exertion is required to discharge its contents.

C represents a delivery-slucce, designed to be of equal diameter with, or even greater than, the cylinder A.

D is a gate-valve, hung at the inner mouth of the slucce and opening outwardly by the pressure of the water.

E is a cushioning-spring, to receive the stroke of the valve at its descent.

This device consists of the +-shaped piece *e*, encircled by the spiral spring *f*, which rests on a supporting-brace or arm, *g*, attached to a suitable bracket, *h*, the parts being severally constructed and arranged relatively in the manner clearly represented in the drawing.

The gate-valve is provided with a projecting flange, *i*, which, when the valve falls, strikes the upper end of the cushioning device, which extends through an opening in the delivery-slucce.

F represents the air-vessel, located above the delivery-slucce and outside the delivery-valve. It is, however, only necessary, as may be readily comprehended, in the event of a small delivery-slucce.

Having fully described my improvements,

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

1. The combination of the reservoir B, delivery-slucce C, valve D, and cushion E, with the cylinder A, as and for the purpose set forth.

2. The arrangement of the air-vessel F, in combination with the slucce C, valve D, reservoir B, and cylinder A, as and for the purpose set forth.

CHARLES MARKLEY.

Witnesses:

BENJ. POND,  
WILLIAM D. MERRILL.