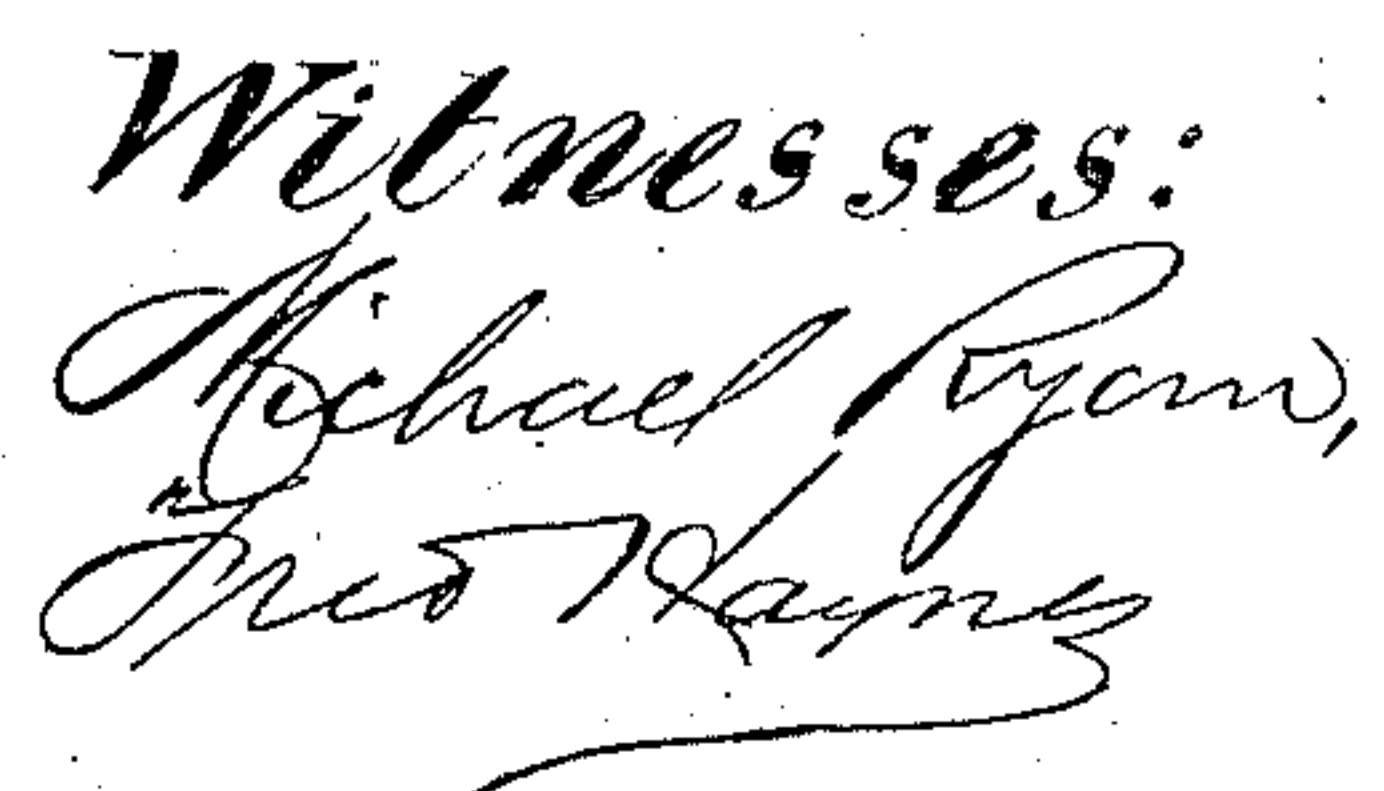


### Apparatus for Raising Water by Pneumatic Pressure.

Patented Jan. 12, 1875.



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Brown & Allen



# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN APPARATUS FOR RAISING WATER BY PNEUMATIC PRESSURE.

Specification forming part of Letters Patent No. **158,676**, dated January 12, 1875; application filed November 19, 1874.

*To all whom it may concern:*

Be it known that I, ROBERT A. CHESEBROUGH, of New York, in the county and State of New York, have invented a new and useful Improvement in Apparatus for Raising Water by Pneumatic Pressure; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

My invention relates to an improvement whereby water may be supplied from a well or other source to an upper story of a building, or other elevated position, by means of power derived from a wind-wheel and communicated to an air-compressing apparatus and an air-reservoir.

The object of the invention is to obtain a continuous action of the apparatus by simple automatic means without manipulation or attention. To this end one or more stationary water-receivers are placed in the well, and connected, by a pipe or pipes, with a compressed air-reservoir, which is kept filled with compressed air by means of the air-compression pump or pumps driven by the wind-wheel, and an air cock or valve is used for alternately admitting and shutting off the compressed air to and from the said receiver or receivers for the alternate discharge and replenishment of their water; and the improvement consists in the combination of the said cock or valve with the shaft of the wind-wheel, whereby the said cock or valve is operated by the said shaft.

In the accompanying drawing, Figure 1 is a side view of my improved apparatus. Fig. 2 is an end elevation. Fig. 3 is a detail sectional view.

A represents a reservoir for compressed air, which may be located at any suitable height above the well or source of supply, and in any convenient position. Communicating with the reservoir is an air-pump, B, for supplying it with air and compressing the same. The piston-rod *b* of the pump is connected with a crank on a shaft C, to one end of which is attached a wind-wheel, D, of any suitable construction. The shaft C has its bearings in a frame-work, *d*, arranged above the reservoir in any suitable manner. On the shaft C is

a pinion, E, by which motion is communicated, through a wheel, F<sup>1</sup>, and pinion F<sup>2</sup>, on a shaft, *f*, to a gear-wheel, G, on a shaft, *g*, all of said shafts having their bearings in the frame-work *d*. On one side of the wheel G is a pin or wiper, *h*, which engages with the two branches J<sup>1</sup> J<sup>2</sup> of a forked lever, which has its fulcrum on, and is attached to, the plug of a four-way cock, L, or other cock or valve of suitable construction, having its seat at the point of junction of three pipes, K<sup>1</sup> K<sup>2</sup> K<sup>3</sup>. (See enlarged view, Fig. 3.) The pipe K<sup>1</sup> leads outward from the air-reservoir A and communicates with the pipes K<sup>2</sup> K<sup>3</sup>, which lead downward, and connect with two receivers, which are placed in the well or source of water-supply. These receivers are not shown in the drawing, as they may be of the same construction as those which have been used heretofore for a similar purpose. They are provided with valves opening upward, so that the water may enter when not prevented by the presence of compressed air therein, and with pipes leading to a water-tank located at the desired point, through which pipes the water may be forced and conveyed to said tank.

If desired, a single receiver, one air-pipe, and a two-way cock may be used, instead of the two receivers and pipes above described, so that the water may be supplied intermittently from one receiver.

The air-pump is operated by the crank on the shaft C, which is turned by means of the wind-wheel D. The revolution of the shaft C also gives motion to the gearing, as before described. As the wheel G revolves the wiper *h* engages alternately with the branches J<sup>1</sup> J<sup>2</sup> of the forked lever attached to the air-cock L, and thus alternately opens and cuts off communication between the pipe K<sup>1</sup> and the pipes K<sup>2</sup> K<sup>3</sup>, so that while one of the receivers is being charged with compressed air from the air-reservoir A through the pipe K<sup>1</sup>, the other receiver is discharging water through its discharge-pipe to the water-tank by the operation of the compressed air in said receiver. The gearing is so calculated, with reference to the relation between the operation of the air-pump and the receivers, as to regulate the quantity of air supplied to said receivers, and the wiper,

which operates the air-cock through the forked lever, is so arranged that when the air in one of the receivers becomes expanded to such a degree as to fail to force the water from such receiver, the forked lever is reversed, so as to change the position of the air-cock, and recharge such receiver, and allow the other receiver to discharge its water.

Thus, the water-tank may be kept constantly supplied by the automatic and continuous operation of the mechanism.

The confined air in the receiver is emptied by being allowed to discharge into the atmosphere through the exhaust-port of the valve L, which acts doubly for both receivers.

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

In an apparatus for raising water by pneumatic pressure obtained by an air pump or compressor worked by a windmill, the combination of the valve for supplying and shutting off the air to and from the water receiver or receivers with the shaft of the windmill by connecting mechanism, the whole constructed to operate substantially as herein described.

ROBT. A. CHESEBROUGH.

Witnesses:

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