

(No Model.)

G. W. McKENZIE.  
AUTOMATIC WATER ELEVATOR.

No. 263,713.

Patented Sept. 5, 1882.

Fig. 2.

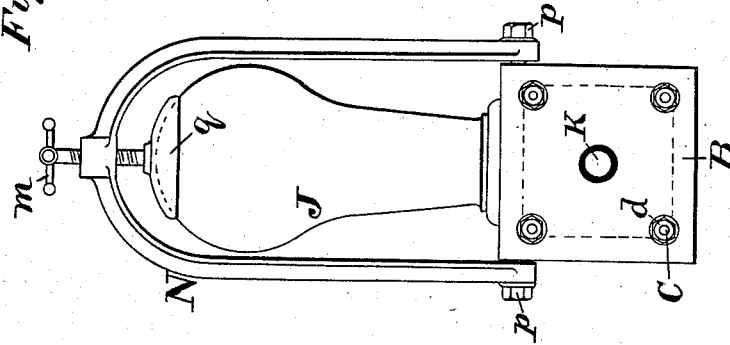
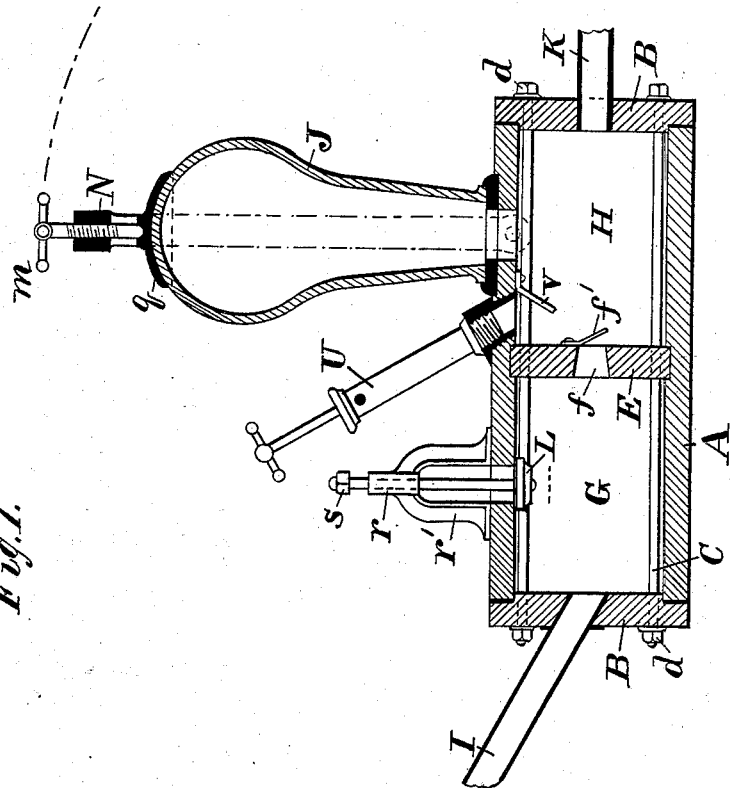


Fig. 1.



Witnesses:  
A. C. Eader  
John E. Morris.

Inventor:  
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By his Atty  
Chas B. Mann

# UNITED STATES PATENT OFFICE.

GEORGE W. MCKENZIE, OF HARRINGTON, MAINE.

## AUTOMATIC WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 263,713, dated September 5, 1882.

Application filed April 29, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. MCKENZIE, a citizen of the United States, residing at Harrington, in the county of Washington and State of Maine, have invented certain new and useful Improvements in Automatic Water-Elevators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain improvements in automatic water-elevators, and will first be described, and then designated in the claim.

In the drawings hereto annexed, Figure 1 is a longitudinal vertical section. Fig. 2 is an end elevation.

The rectangular body, which I prefer to make of a close-grained hard wood, consists of top, bottom, and sides A, firmly bolted together. The ends B, which are packed with rubber to insure a water-tight joint, are held securely in place against the body by the four screw-rods C passing lengthwise through the body, with nuts d on each end. The body is divided in the middle by the partition E, through which is the port f, closed by the valve f'. The partition thus forms two compartments or chambers, G and H. The supply or drive pipe I enters at one end into the chamber G, and the delivery-pipe K is attached to the opposite end and receives the water from the chamber H.

J designates an air-chamber, which may be made of glass, and which is held firmly in place above the delivery-chamber by the thumb-screw m in the yoke N above the air-chamber, and the arms of the yoke on each of the two sides are pivoted to the body at p. The wooden block q between the yoke and air-chamber serves to distribute the pressure of the thumb-screw around the edges of the air-chamber.

The letter L designates the impetus-valve in the top of the supply-chamber G. The spindle of the valve works up and down in a sleeve, r, in the yoke r'. A nut, s, is screwed on the top end of the valve-spindle, by which the valve may be adjusted to a long or short stroke. The seat against which the valve closes may be the under side of the top, as seen in the drawings, or may be otherwise constructed as convenience or judgment suggests. The legs

of the yoke r' are made fast to the top of the body.

U is an air-pump, by which air may be forced into the delivery-chamber, from whence it rises into the air-chamber. The valve V in the delivery-chamber prevents the return of air back through the pump, and also the escape of water. The air-chamber may thus be filled with air more or less compressed, according to the height to which the water is to be raised through the discharge-pipe K.

The operation of the apparatus is as follows: Through the drive-pipe I, which must be of suitable length, water is admitted to the supply-chamber G from a spring or brook situated several feet above the level of the position occupied by the apparatus. The valve L, which is then down or open, as indicated by broken lines, allows the water to escape freely through the opening x; but as the velocity of water passing through the drive-pipe increases the pressure on the under side of the valve increases until the valve is raised and suddenly cuts off the escape of water. The movement of the water in the drive-pipe being thus suddenly arrested causes a great pressure in the chamber G, forcing a portion of the water through the port f into the chamber H and compressing the air in the chamber J, which by reaction or expansion, forces the water up the delivery-pipe K to a height, and simultaneously closes the valve f'. In a moment thereafter action has released all pressure from the impetus-valve L, which will drop of its own weight, and the operation just described is repeated in quick succession.

I am aware that the principle on which this apparatus works is not new—that it is the well-known hydraulic ram. Therefore I confine my claim to the particular manner of construction and arrangement of the parts.

If by accident the pump should be stopped, or in cold weather, in consequence of freezing, the glass air-chamber should burst, another can be replaced readily by the simple pivoted yoke N.

When by the usage of the apparatus the air-chamber has become so exhausted of air as to be inefficient it is the work of but half a minute to refill it by the air-pump, and thus avoid what is necessary to be done in other

apparatus—namely, the trouble of removing the air-chamber and allowing the delivery-pipe to be emptied of water. Again, not only is the above-named trouble saved, but by the  
5 air-pump the chamber J may be filled with air notwithstanding the back-pressure of the water in the delivery-pipe, whereas in other apparatus, as the air in the chamber, when filled by removal, is at normal atmospheric pressure,  
10 the said chamber will not be full when the back-pressure of water in the delivery-pipe has compressed the air. Thereby other apparatus of the same capacity for elevating water are required to have an air-chamber considerably  
15 larger than mine, which is a disadvantage as compared with mine. By releasing the pressure of the thumb-screw *m* the yoke N may be tilted to one side on its pivots and the air-chamber removed for repairs.  
20 I do not herein lay claim to the yoke having its arms pivoted to the body of the ram, nor

to the thumb-screw in the yoke. This means for attaching the air-chamber on the body will be the subject of another application for a patent.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—<sup>25</sup>

In an automatic water-elevator, the combination of the body, divided by the vertical partition E into two compartments, with the port *f* and valve *f'* in the partition, the air-chamber J, over that compartment into which the said valve opens, and an air-pump connected with the same compartment, as set forth.<sup>30</sup>

In testimony whereof I affix my signature in presence of two witnesses.<sup>35</sup>

GEORGE W. McKENZIE.

Witnesses:

FRED. C. NASH,  
LUKE HAPGOOD.