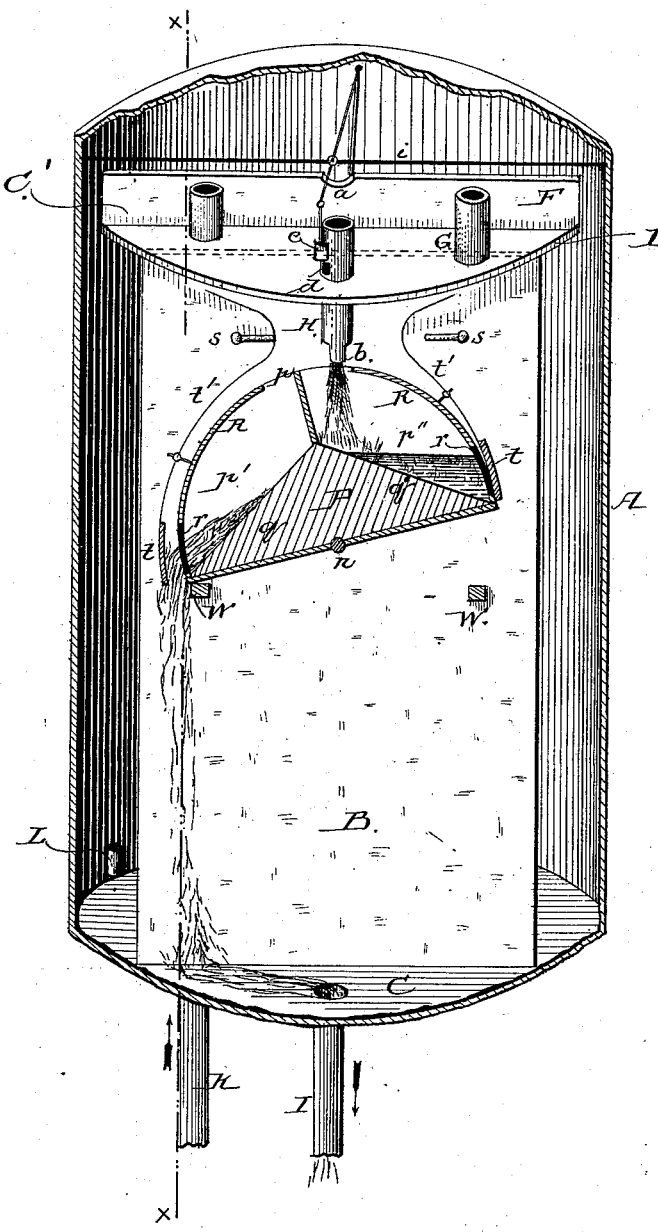
(No Model.) 2 Sheets—Sheet 1.

J. H. TAYLOR.

Automatic Water Elevator.

No. 239,572. Patented March 29, 1881.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

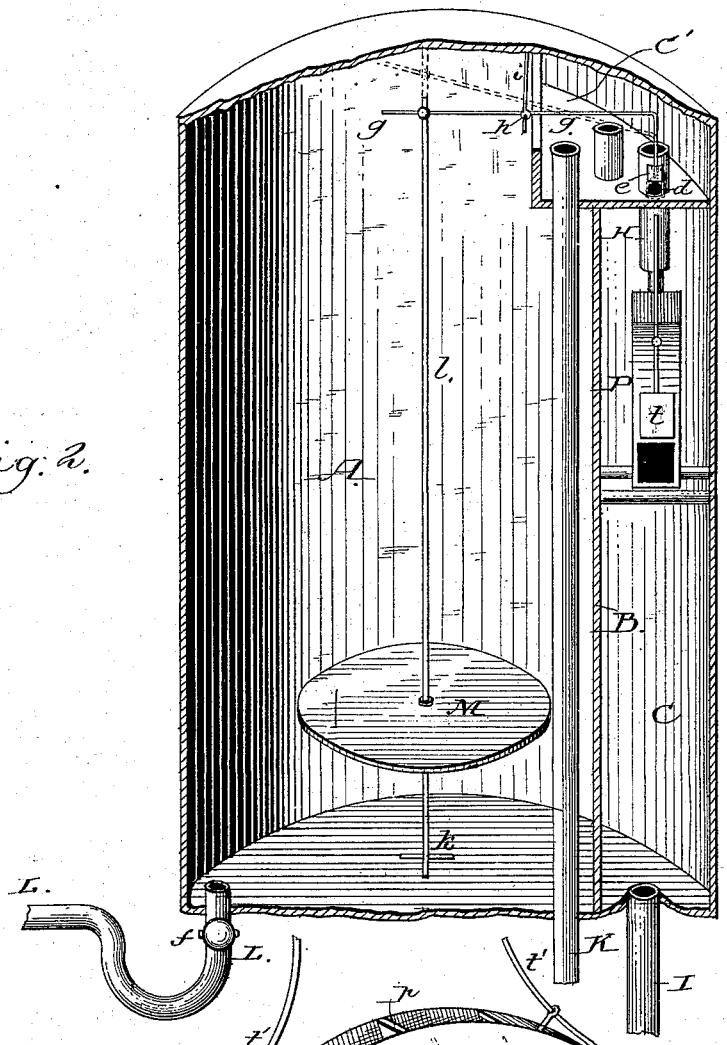
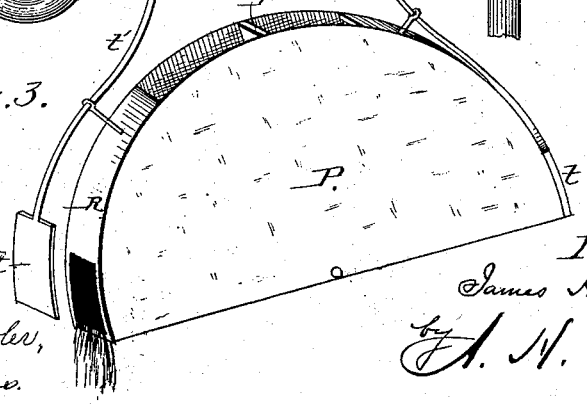


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES H. TAYLOR, OF GREENVILLE, SOUTH CAROLINA.

AUTOMATIC WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 239,572, dated March 29, 1881.

Application filed June 28, 1880. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. TAYLOR, of Greenville, in the county of Greenville and State of South Carolina, have invented a new and Improved Automatic Water-Elevator; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and in which—

Figure 1 is a perspective view of my machine having a portion of the casing cut away to show the interior construction. Fig. 2 is a vertical sectional view on the line *x x* of Fig. 1. Fig. 3 is a detail view of the oscillating bucket.

My invention relates to the automatic elevation of water, in which the principle of the siphon is utilized; and my invention consists in a certain combination and arrangement of devices, as hereinafter described and specifically claimed, whereby I produce a siphon in which more water is raised in the short arm than is necessary to be discharged from the long arm of the siphon, in order to make the operation of the siphon continuous, and the surplus water raised is passed into and retained in a reservoir to be subsequently utilized.

In order that those skilled in the art may make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the said drawings, A is a cylindrical casing, made air-tight at all its joints. At one side of the center, by means of a vertical diaphragm, B, a segmental chamber or compartment, C, is formed, covered by a horizontal diaphragm, D, of a greater arc than the cross-sectional dimension of compartment C. Another vertical diaphragm, F, rises from the edge of diaphragm D almost to a level with the top of the cylinder, and has at its center a lip or spout, *a*, to carry water from the compartment C′, formed by diaphragms D and E. A short pipe, G, passes from a point opposite the upper edge of diaphragm E down through diaphragm D into chamber C. Another pipe, H, of equal height with pipe G, passes through diaphragm D, near its center, and has its lower end, *b*, contracted and a hole, *d*, closed by a valve, *e*, near its junction with diaphragm D, for a purpose hereinafter described. From the bottom of compartment C descends a pipe, I, which is the discharging-arm of the siphon. Passing through the bottom of the cylinder, and back of diaphragm B, is a pipe, K, which terminates on a level with the upper edge of diaphragm E after passing through diaphragm D, and is the elevating-arm of the siphon. Through the bottom of the cylinder, at the opposite side from compartment C, passes a pipe, L, provided with an outwardly-opening check-valve, *f*.

A valve-operating rod, *g*, pivoted at *h* to rod *i* across the cylinder, is connected at one end to valve *e*, and at the other end supports the depending vertical rod *l*, carrying a float, M, which moves freely on it within the limits between a stop, *k*, and the valve-rod *g*. A proper tension, by spring or otherwise, is placed on valve *e*, so that it will remain stationary in its normal condition—*i. e.*, when not acted on by float M through means of rods *g*, *i*, and *l*.

In compartment C, directly beneath the lower end of pipe H, is a semi-cylindrical oscillating bucket, P, pivoted at *n*. This bucket is made, as seen in Fig. 1, with a central partition, *p*, dividing it into two water-receptacles, *p′ p″*, with diagonal bottoms *q q′* falling from the center toward the circumference. The covering R of the oscillating bucket has an opening, *r*, on each side and next to the bottom, alternately opened and closed by swinging valves *t*, provided with curved arms *t′*, which come in contact with stops *s s*, to operate the valves as the bucket oscillates. The bucket is pivoted, so that in its extreme oscillation, controlled by stops W W, the upper edge of the dividing-partition is thrown from side to side, and the water from pipe H falls alternately in receptacles *p′* and *p″*. When one receptacle is full the weight of the water depresses that end of the bucket, and as the end comes down the valve *t* opens and allows the water to escape into the compartment C, whence it rushes down pipe I.

In making the machines the holding capacity of compartment C′ should be about equal to the amount required to fill pipe I.

The operation of the apparatus is as follows: The short arm of the siphon-pipe K being immersed in the water-supply, air is exhausted, after the manner of ordinary siphons, through

the discharging-arm I from the air-tight vessel formed by casing A, through the long-arm pipe I, until the water flows up pipe K and into compartment C; thence it flows through the small orifice *d* and pipe H into one receptacle of the oscillating bucket until the receptacle is sufficiently full to tilt the bucket and throw the charge of water to the bottom of compartment C, whence it rushes out through pipe I, thereby further exhausting the air in the vessel, and causing the water to continue to flow up pipe K into compartment C′, and out of the orifice into the other receptacle of bucket P, which tilts, in turn, when filled, and throws another charge down pipe I. In the intermission between the oscillations of bucket P air is being drawn down pipe I by the preceding charge of water, and this air is caught by the succeeding charge of water, and passes down before it. The discharging-arm of the siphon is therefore filled with alternating bodies of water and air, and at its lower end discharges alternately water and air. The capacity of the inflow through the short arm of the siphon being much greater than the capacity of flow through orifice *d* in pipe H, the water soon fills up compartment C′ and overflows through spout or lip *a* into the main cylinder, and continues to flow as the pan oscillates until the main cylinder fills up sufficiently for float M to strike rod *g* and force down valve *e* and stop the flow through orifice *d*. Immediately pipe I empties itself and air passes up through it and into compartment C, and thence through pipe G to the main cylinder, which, being filled with air, allows the pressure of the water in the main cylinder to force open check-valve *f* and flow out to any desired reservoir through pipe L. As soon as all the water has passed from the main cylinder, float M, descending, strikes stop *k* on the vertical rod, forces it down, and opens valve *e*. The water remaining in compartment C immediately commences to flow through pipe H again, and the operation is repeated.

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

1. In an automatic water-elevator, a tank, A, in combination with a siphon having a water-elevating arm lifting a greater quantity of water than is discharged through the long arm, for the purpose set forth.

2. The cylinder or tank A, provided with compartments C C′, and oscillating bucket P, in combination with elevating-pipe K, pipes G, H, and I, valves *e*, with rods *g*, *h*, and *l*, and float M, and the discharge-pipe L, all constructed, arranged, and operated as set forth.

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