

H. F. COLVIN.
Steam Water-Elevator.

No. 215,324.

Patented May 13, 1879.

Fig. 1.

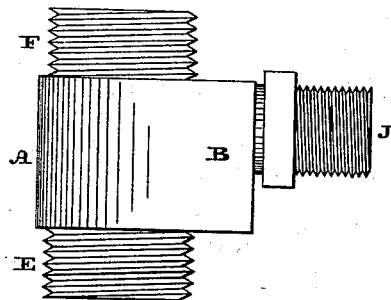


Fig. 2.

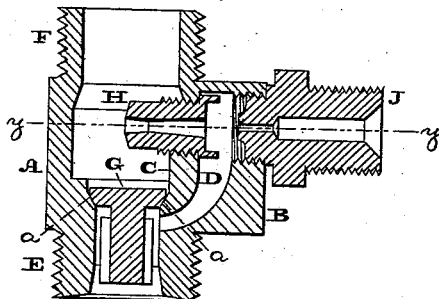


Fig. 3.

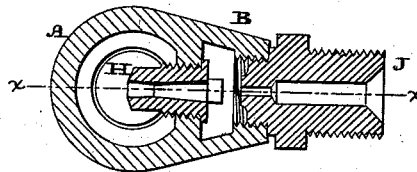


Fig. 4.

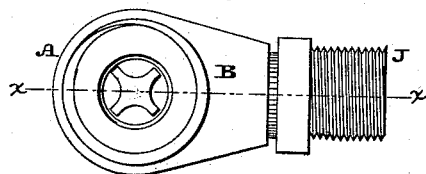
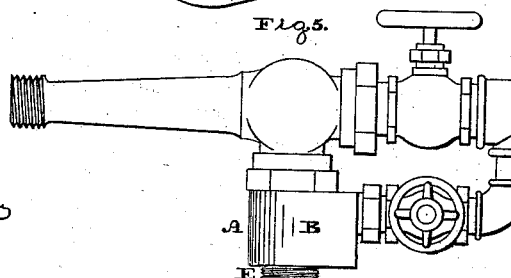


Fig. 5.



Witnesses:

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HENRY F. COLVIN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO RUE MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STEAM WATER-ELEVATORS.

Specification forming part of Letters Patent No. **215,324**, dated May 13, 1879; application filed March 10, 1879.

To all whom it may concern:

Be it known that I, HENRY F. COLVIN, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Steam Water-Elevators, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the elevator embodying my invention. Fig. 2 is a vertical section thereof on line *x x* of Figs. 3 and 4. Fig. 3 is a horizontal section on line *y y*, Fig. 2. Fig. 4 is a bottom view thereof. Fig. 5 is a side elevation, showing the device attached to an ejector.

Similar letters of reference indicate corresponding parts in the several figures.

My invention is adapted for raising water to prime a pipe from which water may be used by another instrument; and it consists of the construction of the elevator whereby a small jet of steam by its action across a channel smaller in diameter than the main pipe draws the air contained in the channel, making a vacuum which extends to the main pipe, and lifts the water until it reaches the channel, the check-valve being still held by the jet of steam, thus giving the advantage of the pressure of the atmosphere, instead of being compelled to hold the weight of the water by the action of the steam in the larger pipe, as in other instruments. Then the water is drawn through the channel and thrown through a chamber until it primes the instrument attached thereto, and when the instrument begins to work it takes up the suction, lifts the valve, and the jet has done its work. This action of the jet on the smaller pipe or channel is more powerful, though slower in action, than if it were placed in the larger pipe, and will lift from a greater depth, and being in the side attachment is out of the way of obstructing the full supply of water in the larger pipe.

The lifting auxiliary device is in action alone until the instrument is started; then the latter lifts for itself, and the auxiliary is of no use except in re-establishing the priming when the steam force in the main instrument may

fall too low to maintain the suction by keeping the water up to the check.

Referring to the drawings, A represents a pipe or shell, which is formed with an offset, B, within which is a wall, C, forming a channel, D.

E represents the water-inlet branch, and F the outlet-branch, which are at opposite sides or top and bottom of the pipe or shell A, and both are screw-threaded for coupling purposes.

At the base of the chamber of the pipe or shell is a valve-seat, *a*, on which is seated a check-valve, G, having guides which play in the inlet-branch, E.

The channel D extends in a somewhat curved direction from near the upper side of the offset B to the inlet E, so as to open thereinto below the check-valve G.

An opening is formed in the wall C, and into the same is fitted a screw-plug, H, which projects into the chamber or space of the pipe or shell A, and has a bore which may be tapering in both directions. The outer end of the plug opens into the channel D.

Into the side of the offset B there is screwed a steam-pipe, J, which opens into the channel D, and is coincident with the screw-plug H, a small right-angular space being left in the channel between the adjacent ends of the pipe and plug, and rendered adjustable by moving said pipe and plug in order to increase or decrease said space, thus raising water a greater or less distance.

The operation is as follows: Steam is admitted to the pipe J, and, crossing the channel D, enters plug H, and from thence reaches the pipe or shell A, thus causing a partial vacuum in channel D and under the check-valve G, the tendency of which is to keep the valve to its seat, and cause the water to rise through the channel D and fill the chamber of the shell A, and then pass to the instrument, which is now to be started, and lifts a full body of water, the check-valve G rising. The plug H acts after the manner of the combining-tube of an injector.

When the apparatus is used on a siphon, the inlet E is applied to an aperture in the top part of the bend, and the outlet F is left open.

A check-valve, opening outward, is placed on the longer leg of the siphon, and the water is drawn up the shorter leg until the siphon is started.

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

1. In a water-elevator, the pipe J and plug H and valve G, in combination with the intermediate channel D, extending to the inlet E below the valve G, whereby the latter is held in place by a vacuum formed in said channel and the inlet by the passage of the steam across the channel, substantially as and for the purpose set forth.

2. The shell A and the offset B, with the channel D, in combination with the pipe J and plug H, adjustable relatively to the rectangular space between them in said channel D, whereby water may be lifted a greater or less distance.

3. The shell A, having a suitable inlet and outlet connection, and the offset B, provided with the channel D, in combination with the pipe J, plug H, and check-valve G, substantially as and for the purpose set forth.

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Witnesses:

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