

ELI REESE.

Improvement in Steam Water Elevators.

No. 125,408.

Patented April 9, 1872.

Fig. 1.

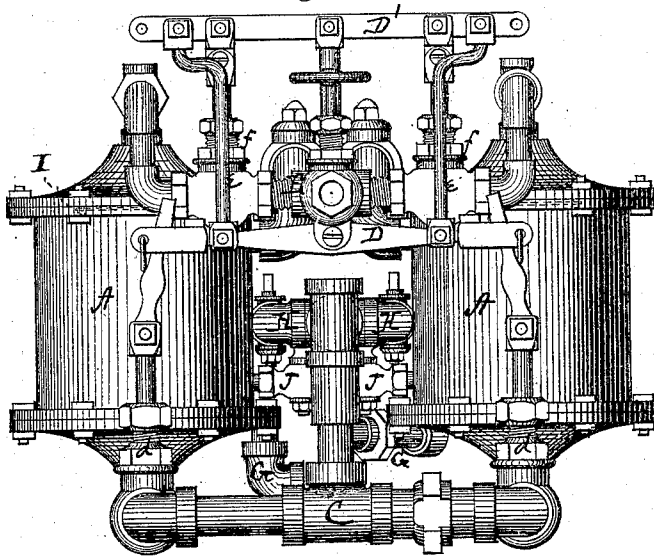
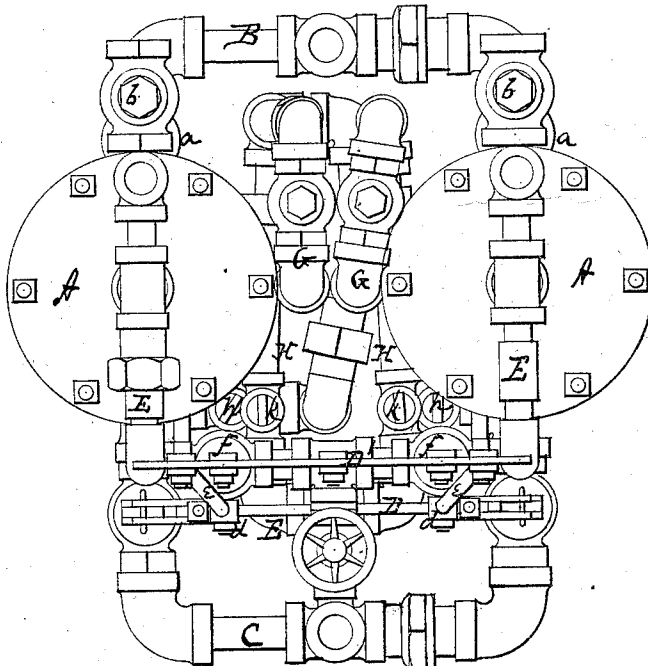


Fig. 2.



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2 Sheets--Sheet 2.

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Fig. 3.

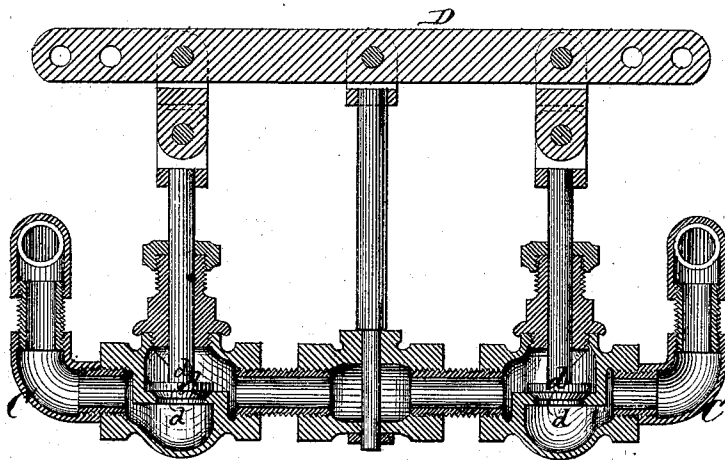
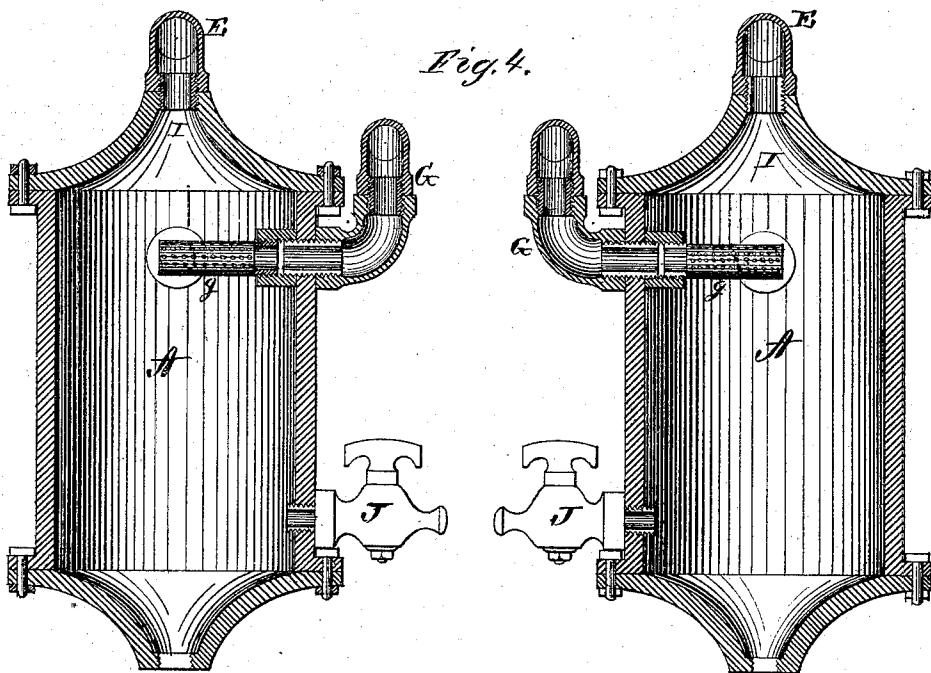


Fig. 4.



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UNITED STATES PATENT OFFICE.

ELI REESE, OF MAHANAY CITY, PENNSYLVANIA.

IMPROVEMENT IN STEAM WATER-ELEVATORS.

Specification forming part of Letters Patent No. 125,408, dated April 9, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ELI REESE, of Mahanoy City, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Steam Vacuum-Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon which form a part of this specification.

The nature of my invention consists in the construction and arrangement of a "steam vacuum-pump," as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 represents a front view, and Fig. 2 is a plan view of my pump. Fig. 3 is a section through the discharge-pipes. Fig. 4 is a section through the cylinders.

A A represent two cylinders, into which the water is received from the suction-pipe B, and from which it is discharged by the steam pressing on the water up into the column-pipe C. The upper end of each cylinder, or the top cap, is made conical, so that the steam upon entering in the center of the same will not have to expand over the whole diameter of the cylinder before it begins to start the water; but it starts the water slowly as soon as the steam enters the cylinder and gradually gets the water in motion. The bottom or lower cap of each cylinder is funnel-shaped, as shown, so as to offer the least resistance in discharging the water from the cylinder. B B are the suction or tail pipes, provided each with a valve, *a*, and connected by a pipe with the cylinders. These connecting-pipes are not shown in the drawing, but their points of attachment with the cylinders at the valves *b b*. Through these connecting-pipes the water is taken from the tail-pipes to assist in forming the vacuum in the water-cylinders, so that too much water need not be taken from the discharge water to condense the steam in the cylinders, the object being to condense all the water in the cylinders and form a vacuum to suck the water up into the same, from whence it is discharged

into column. The discharge-pipes C C are each provided with a valve, *d*, connected by valve-stems with the ends of a lever, D, which is by rods *e e* connected with a similar lever, D', above. E is the steam-pipe, branching into each cylinder, and each branch provided with a steam-valve, *f*, connected by its stem with the lever D'. G G are two pipes, each provided with an injection-cock, *h*, and arranged as shown to take the water from one cylinder to the other, if so desired, instead of from the column, thereby relieving the pressure on the check-valves of the weight of water in the column. *g g* are perforated distributors at the ends of the pipes G G in the interior of each cylinder, for distributing the injection water. H H are the injection-pipes connecting the cylinders or the pipes G G to the water column, each of said pipes being provided with a cock, *k*, for regulating the supply of injection water. In the top of each cylinder A is a plate, I, for spreading the steam, so as not to force down into the water. J J are cocks for blowing off from the two cylinders. Steam-gauges are to be attached to each steam-pipe close to the point where they enter the cylinders. An air-cock is to be placed in the tail or suction pipe B for the purpose of allowing a portion of air to be taken into the cylinders, so as to prevent the cylinders from becoming too full of water, and also for having a film of air between the steam and water when the steam comes in contact with the water. This cock can be regulated so as to admit more or less air, as the distance of the water to be pumped is more or less from the pump, as more air is admitted when the water is close than when further off.

The operation of the pump is as follows: Steam being admitted through the pipe to the steam-valves *f f* the lever D' is raised, admitting steam into one of the cylinders. The cylinder being full of steam, as indicated by the steam-gauge, the steam-valve is closed and injection opened, which condenses the steam in the cylinder, forming a vacuum, causing the water to flow up the suction-pipe into the cylinder. The lever D' then being raised at the other end acts in the same manner in the other cylinder, and so worked by hand alternately until the cylinders become full of water from the suction-pipe. Then, on the water being

discharged at each stroke through the valves *d d* (the levers *D* and *D'* being connected) into the column-pipe, as soon as the water is all discharged as far as the valve *d* the pressure on the same causes it to close, thereby also closing the steam-valve and opening the valves on the other side, and so continues.

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

1. The cylinders *A A*, constructed as described, the top cap being conical and the bottom cap funnel-shaped, and provided with plates *I I*, in combination with valves *f f d d*, all arranged to operate as set forth.

2. The combination, with the cylinders *A A*, of the steam-valves *f f* and discharge-valves

d d, constructed and arranged as described, and operating substantially as and for the purposes herein set forth.

3. I claim the arrangement of cylinders *A A* with conical top and bottom pipes *G G H H*, provided with suitable cocks connected with the column-pipe, substantially as described.

4. The perforated distributors *g g* at the end of the pipes *G G*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in the presence of two witnesses.

ELI REESE.

Witnesses:

RALPH R. LEE,

EDWARD HUMPHREYS.