A. BREAR.

Water-Elevator.

No. 162,613. Patented April 27, 1875.

fig. 1.

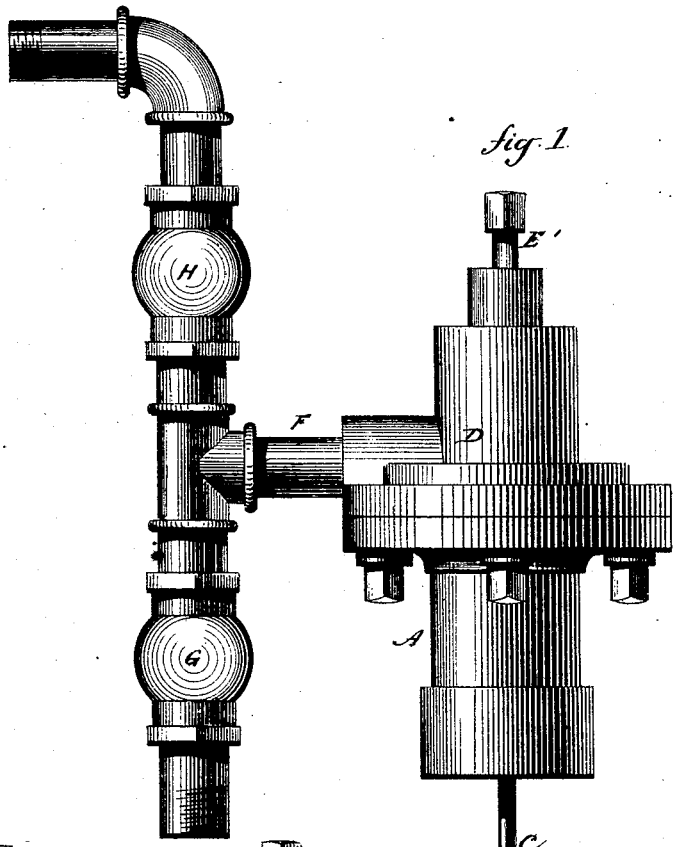
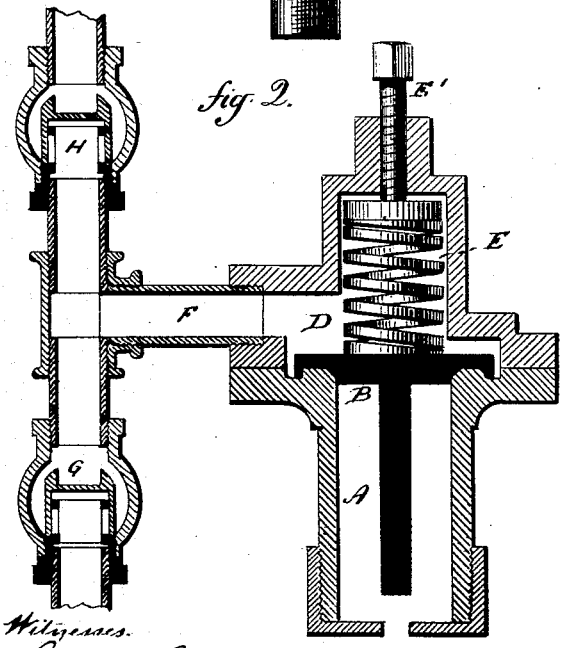


fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

ABEL BREAR, OF SAUGATUCK, ASSIGNOR OF ONE-HALF HIS RIGHT TO FRANK L. SMITH, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN WATER-ELEVATORS.

Specification forming part of Letters Patent No. **162,613**, dated April 27, 1875; application filed March 9, 1875.

To all whom it may concern:

Be it known that I, ABEL BREAR, of Saugatuck, in the county of Fairfield and State of Connecticut, have invented a new Water-Elevator; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, side view; Fig. 2, vertical central section.

This invention relates to a device for elevating water or other fluid; and the invention consists in the employment of a piston, one surface of which closes a steam-chamber, the other counterbalanced by a spring or other suitable device, combined with an outlet and inlet passage above the said piston, to allow the inflow and outflow of water to and from the space above the piston, such outflow and inflow being caused by the pulsations of the piston produced by the pressure of steam upon one side of the piston greater than the pressure of the spring upon the other side, so that the piston will rise by such steam-pressure, and be instantly relieved by the escape of steam, and closed by the pressure of the spring until the pressure of the steam again overbalances the spring, and a second pulsation thereby occasioned, and so on.

A is the steam-chamber, the capacity of which is proportioned to the apparatus, or may be of any convenient or desirable size, its upper end closed by a valve-piston, B, guided so that in its rise and fall it will maintain the same axial position or return upon its seat, so as to perfectly close the steam-chamber A. Into this chamber A steam is admitted in a small jet through a tube, C, the quantity regulated by a cock, C′. This jet must be so small compared to the capacity of the chamber A that a considerable time will be required to fill the chamber or raise it to the full pressure of the steam. Above the piston B is a second chamber, D. The capacity of this, as of the first, is immaterial. In this chamber is a spiral or other suitable spring, E, the pressure of which is regulated by a set-screw, E′. The regulation of this pressure relative to the pressure of steam is made as more fully hereinafter set forth. Into the chamber D a passage, F, opens from an inlet-valve, G, and to an outlet-valve, H, the space between the said valves and the passage F practically forming part of the chamber D. This completes the construction.

The operation is as follows: The tube leading from the valve G connects with the reservoir; that from the valve H to where the supply is wanted. Suppose, now, the elevation requires a pressure of twenty-five pounds to support the column, and that the steam-pressure be forty pounds, the spring is then adjusted to make its pressure upon the valve a little less than the difference between the pressure of the column and the pressure of the steam—say, ten pounds. Steam is admitted into the chamber A in a small jet, and so soon as the pressure of the steam upon the under side of the piston overbalances the pressure above, the piston will rise, opening an area much greater than that of the steam-inlet, thereby instantly relieving the pressure from below, so that the piston will be as instantly closed until the pressure of steam is again raised to overbalance the pressure above; then the same movement of the piston will occur as before. The piston in rising forces from the chamber above whatever may be therein up through the valve H to the extent of such rise of the piston. When the piston returns it will therefore leave a vacuum in the chamber above to the extent of the displacement occasioned by its rise. This will be filled by an inflow through the valve G, and each pulsation or movement of the piston will continue this displacement and inflow, drawing water through the valve G, and forcing it out through the valve H.

The steam which escapes from the chamber below the piston when the piston opens

will be quickly condensed, and thereby facilitate the formation of the vacuum necessary for the draft of the water.

I claim—

The steam-chamber A, provided with the inlet C, and combined with the piston B, chamber D above, the inlet and outlet valves to and from said chamber D, and the counter-balance upon the said piston, substantially as described.

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Witnesses:

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