

W. ARTHUR.

Steam-Pumps.

No. 135,061.

Patented Jan. 21, 1873.

Fig. 1.

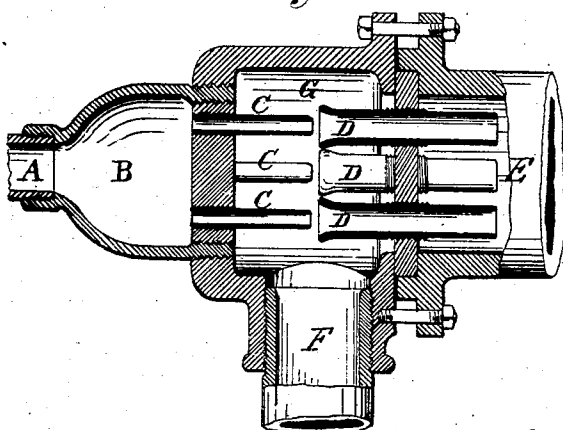


Fig. 2.

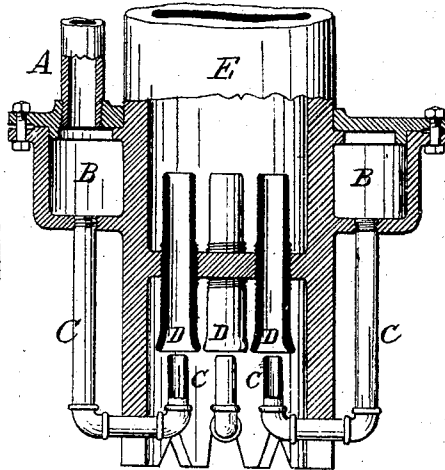
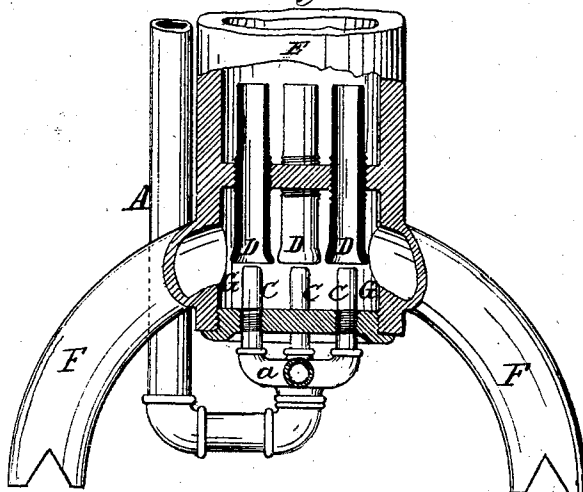


Fig. 3.



WITNESSES:

Geo. L. Swin
Walter Allen

INVENTOR:

William Arthur
By Knight, Bro. & Atty.

UNITED STATES PATENT OFFICE.

WILLIAM ARTHUR, OF NEWPORT, KENTUCKY.

IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. **135,061**, dated January 21, 1873.

To all whom it may concern:

Be it known that I, WILLIAM ARTHUR, of Newport, in the county of Campbell and State of Kentucky, have invented a certain Improvement in Steam-Jet Pumps, of which the following is a specification:

My invention relates to that class of pumps in which the steam is applied directly to the water in form of a continuous jet. My invention consists in providing a number of steam-nozzles standing side by side, and with a separate water-tube to each, the tubes discharging into a common pipe or reservoir. The object is to largely increase the capacity of the pump, which cannot be profitably done where a single steam-nozzle is used, as the steam does not operate to advantage in currents of large size.

The Figures 1, 2, and 3 show in section various arrangements for the application of my principle, all being substantially similar.

A is the steam-pump, ending in Fig. 1 in a head, B, from which extend a number of nozzles, C; the nozzles may be two or more in number, according to the size of the pump. The nozzles are in line with a number of tubes, D, leading into the water pipe or chamber E. F is the suction or water-supply pipe, extending from the supply water to the chamber G. In Fig. 2 the steam-nozzles C and tubes D are shown vertical; the former may be more or less immersed in the water. The steam-pipe A discharges into an annular chamber, B, from whence extend a number of curved nozzles, C, whose vertical ends are in line with the flare-mouthed tubes D. In Fig. 3 the

steam-pipe A branches at a into two or more nozzles, C, which are associated with flare-mouthed tubes similar to those shown in the other figures. In Fig. 3 the water-pipes F are branched from two or more sides of the chamber G, their notched ends being immersed in the supply-water.

My improvement is especially applicable to pumps of large capacity, and I was led to the conception of the same from demonstrating by experiment that a steam-nozzle of large size does not operate in this manner with as good effect as one of smaller dimensions—that is, of course, taking account of the amount of steam expended and of water raised.

I have illustrated my invention by three figures, which show various mechanical arrangements, but which all involve the same principle of action.

Any number of nozzles may be used, according to the capacity of the pump, and the form is immaterial. The nozzle C may enter the tubes D some distance, or may be wholly outside the same, but would always be in line each nozzle with its proper tube.

I claim as my invention—

The combination of two or more steam-nozzles, C, side by side, and a corresponding number of tubes, D, through which the water is forced into a common pipe or receiver, E, by the pressure of steam, in manner substantially as and for the purpose set forth.

WILLIAM ARTHUR.

Witnesses:

SAML. KNIGHT,
ROBERT BURNS.