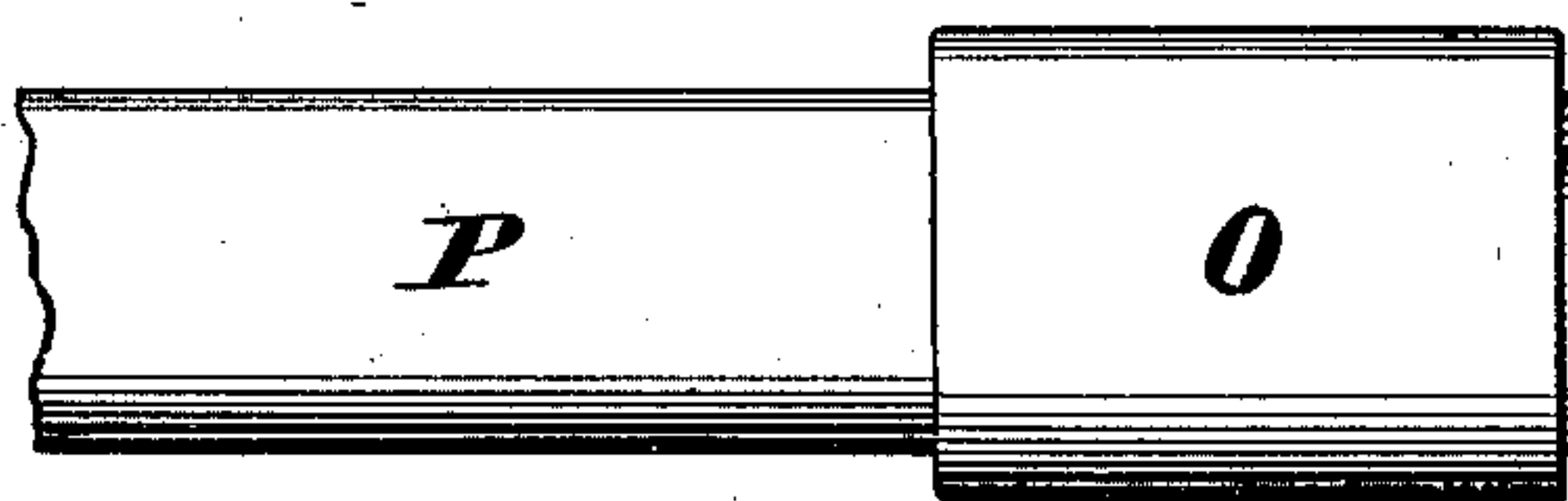
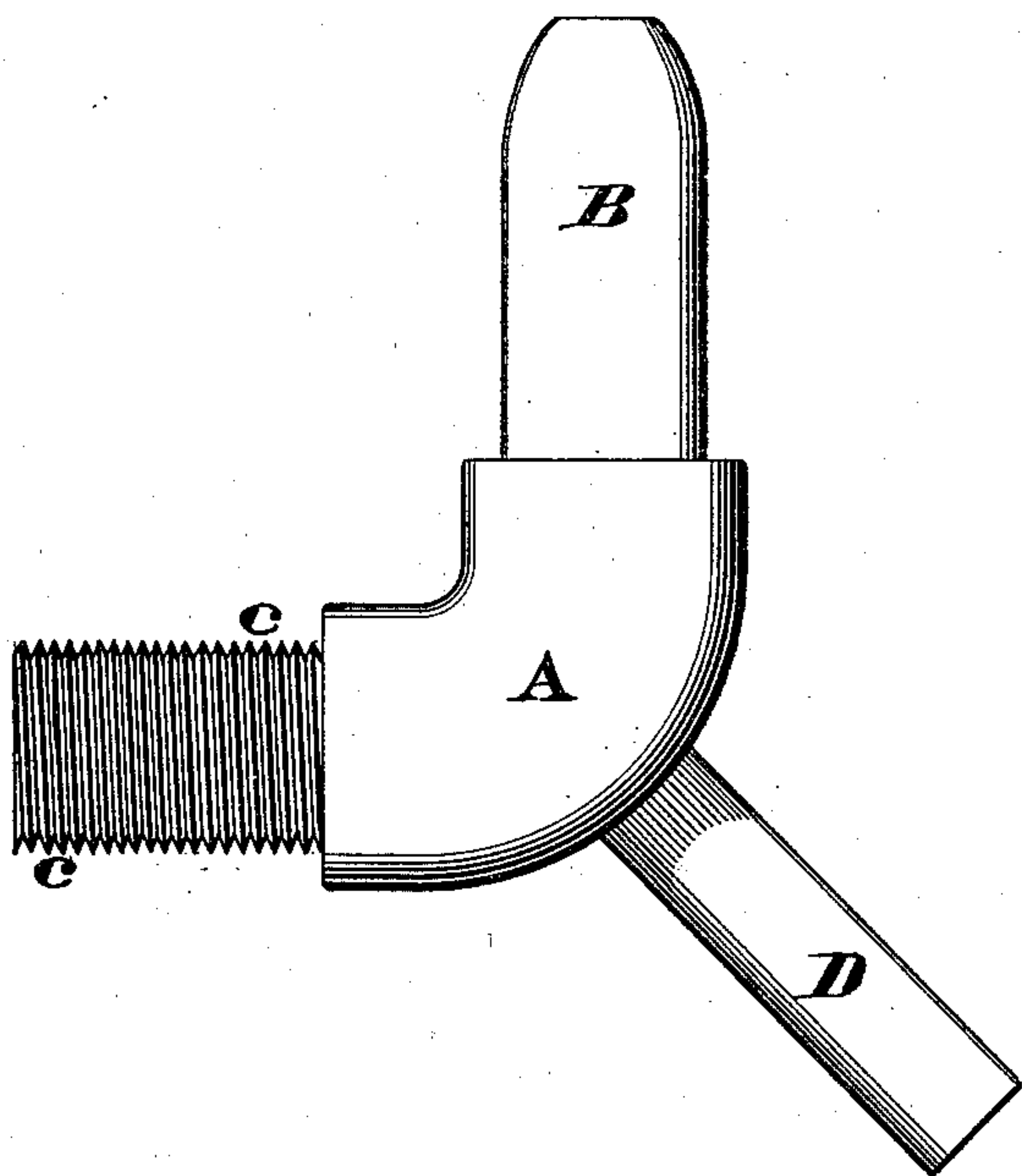


H. P. TENANT.
STEAM-JET PUMP.

No. 174,390.

Patented March 7, 1876.

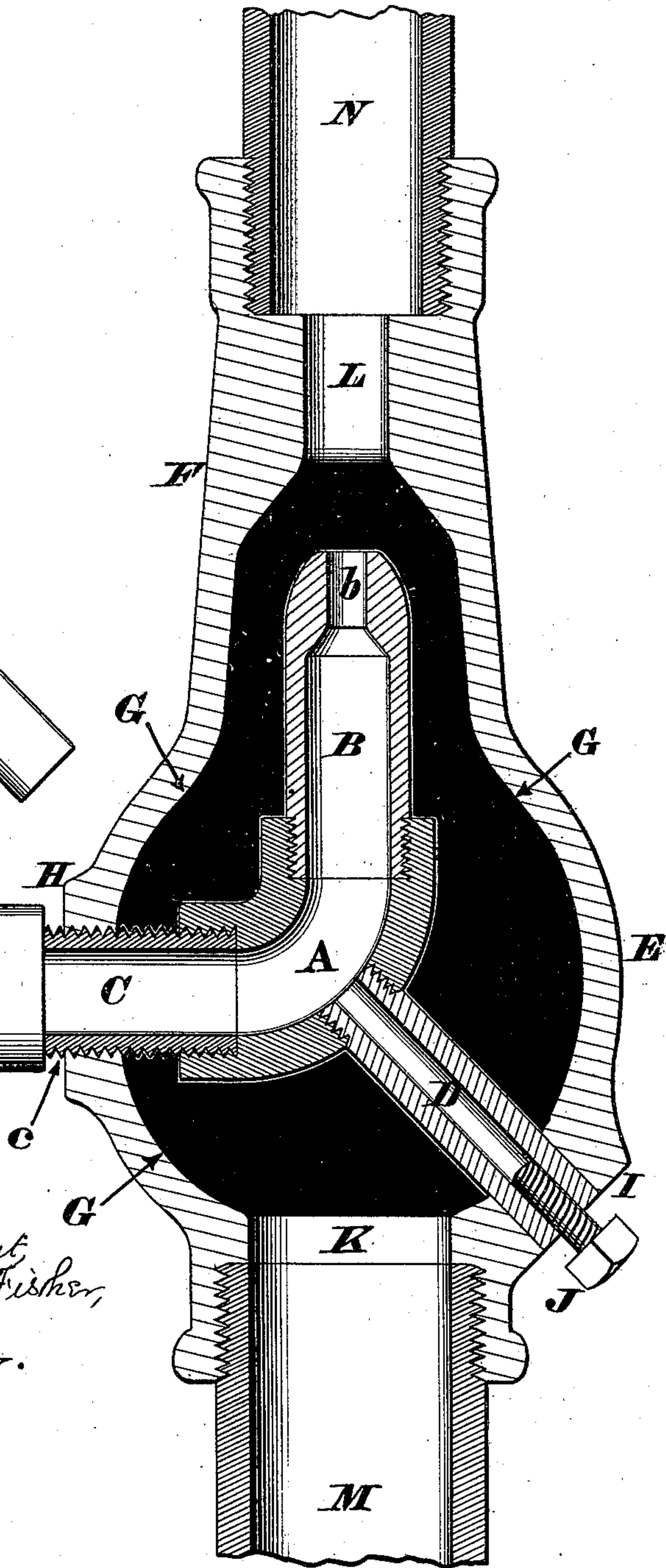
FIG. 1.



Inventor:
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per Wm. Hubbell Fisher,
his Att'y.

Attest.
D. P. Remedy,
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FIG. 2.



UNITED STATES PATENT OFFICE

HANSON P. TENANT, OF NEW CASTLE, IND., ASSIGNOR OF ONE-HALF HIS RIGHT TO MARTIN L. POWELL AND ICHABOD M. HARRIS, OF SAME PLACE.

IMPROVEMENT IN STEAM-JET PUMPS.

Specification forming part of Letters Patent No. 174,390, dated March 7, 1876; application filed December 3, 1875.

To all whom it may concern:

Be it known that I, HANSON P. TENANT, of New Castle, Indiana, have invented certain new and useful Improvements in Steam-Jet Pumps, of which the following is a specification:

My invention relates to that class of devices commonly known as steam-jet or siphon pumps; and the first part of my improvement consists in a novel method of applying the jet pipe or nozzle to the inclosing shell.

It has been customary, heretofore, to cast the nozzle in one piece with the shell or body of the pump; but, owing to the peculiar shape and internal position of the nozzle, it has been found to be a difficult matter to impart a smooth finish to said internal member. As a natural consequence of the roughness both of the exterior and interior of the nozzle, an undue amount of friction is opposed to the passage of steam and water through the pump, which friction impairs the efficiency of the device and detracts from its economical working. I overcame this difficulty by using a comparatively smooth wrought-iron pipe for the nozzle, said pipe being first properly shaped and then placed in the core, after which the shell is cast around the nozzle. By this means the wrought-iron nozzle is at once secured in its proper position within the cast shell, and without any tedious or expensive fitting.

The second part of my improvement consists in applying a drain-pipe to the nozzle, so as to permit the pumps being emptied of its contents, and thereby prevent any danger of freezing in the winter season. This drain-pipe is arranged within the pump in such a manner as to act as a stay for maintaining the nozzle in its proper axial position in the shell.

In the accompanying drawing, forming part of this specification, Fig. 1 is an elevation of the nozzle and its accessories detached from the shell, and Fig. 2 is an axial section through the pump in condition for use.

A represents an ordinary elbow, such as used with gas and steam fittings, and said elbow has the nozzle or jet-pipe B screwed into it, as shown in Fig. 2. This nozzle may be made of any suitable metal, and its upper end is furnished with an ajutage, *b*, of a bore adapted

to the capacity of the pump. Projecting horizontally from this elbow, or at right angles to the nozzle B, is a short pipe, C, that is screw-threaded exteriorly at *c*, throughout its entire length. Radiating from said elbow is tube D, whose office will presently appear. The above-described devices A, B, *b*, C, *c*, and D, after being fitted together in the manner shown in Fig. 1, are then placed in a suitable mold, and the shell cast around them, after which the core is removed and the body of the pump is complete.

By referring to Fig. 2, it will be seen that the shell is composed, essentially, of an enlargement, E, and a neck, F, the enlargement or swell being chambered out at G, so as to afford ample space around the elbow and nozzle for the passage of water. One side of the swell E is furnished with a boss, H, to allow the cast metal to anchor itself more securely around the inlet-pipe C *c*. Another boss, I, is formed on the opposite side of the shell to receive the outer end of tube D, which latter is tapped for the engagement of a screw-threaded plug, J, that can be readily removed whenever it is desired to drain the pump, so as to prevent freezing. K and L represent, respectively, the inlet and discharge orifices of the shell. M and N are, respectively, the suction and discharge pipes, which communicate with the previously-described orifices. These pipes may be ordinary wrought-iron tubing of any suitable bore. O is an ordinary coupling that unites the projecting end of pipe C with the steam-pipe P, which latter may be furnished with any suitable throttle valve or cock to control the operation of the pump. The body E F, with its inclosed nozzle A B C, is ready for use almost as soon as it is taken from the mold, the only thing necessary to be done before setting up the pump being to tap the shell for the reception of the suction and discharge pipes M and N. The coupling O and steam-pipe P are now applied, after which steam is turned on, and the apparatus then operates in essentially the same manner as ordinary jet-pumps, but with greater economy. This economy results from the free and unimpeded flow of steam within the nozzle A B, and of water around the same, which advantage cannot be

obtained when said members A B are rough castings.

It will be noticed that the pipe C and tube D coact to maintain the nozzle B in its proper axial position within the shell E F, and said nozzle can never be displaced.

This pump is entirely free of bolts, and it is so simple that an ordinary gas-fitter can set it up in a very short time, and without the possibility of misapplying any of its parts.

What I claim as new, and desire to secure by Letters Patent, is—

1. The elbow A, wrought-iron inlet C c, and

nozzle B b, of a steam-jet pump, having the shell E F G K L cast around said devices A B C, substantially as herein described, and for the purpose set forth.

2. The tube D, communicating with the elbow A, and united to the body of the pump by casting the shell around the devices A B C D, as herein explained.

HANSON P. TENANT.

Attest:

J. M. BROWN,
JOHN S. BYER,
GEO. E. MAHIN.