(No Model.)

J. ASHWORTH.

VALVED HOSE NOZZLE.

No. 325,720. Patented Sept. 8, 1885.

Fig 1.

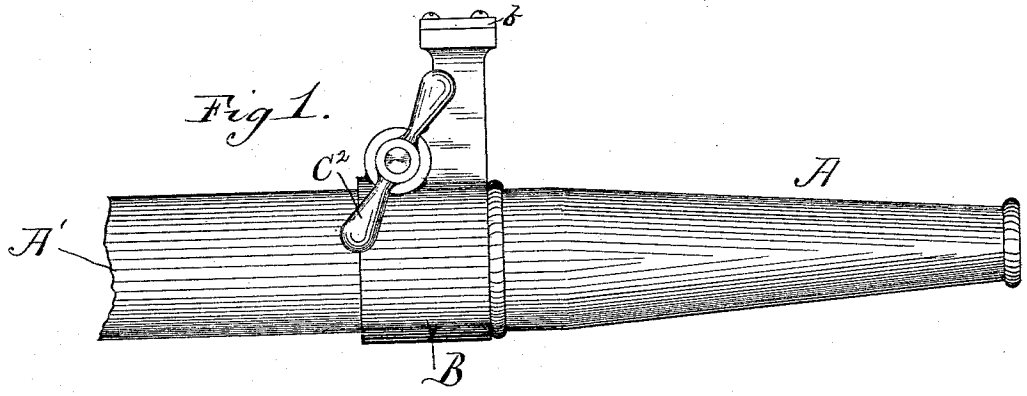


Fig 5.

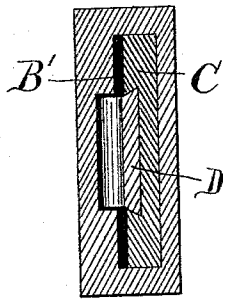


Fig 3.

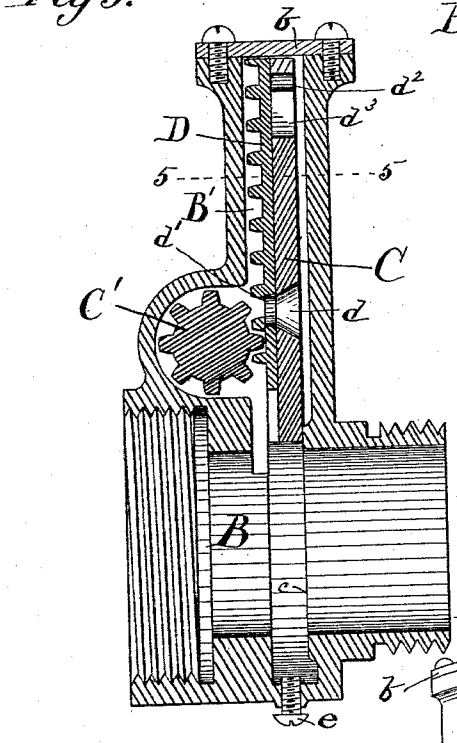


Fig 4.

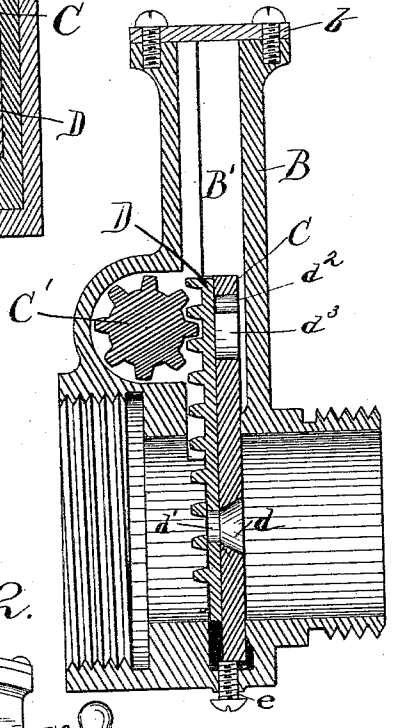
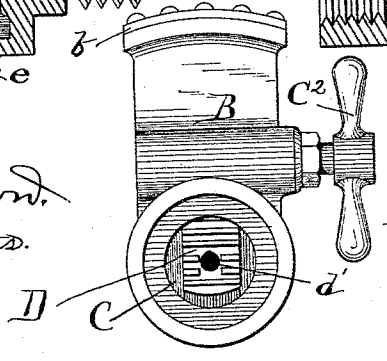


Fig 2.



Witnesses:
Taylor E. Brown.
Lew. E. Curtis.

Inventor:
John Ashworth
By Munday Evarts & Adcock
his Attorneys:

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN ASHWORTH, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF, CHARLES S. PETRIE, AND DENNIS J. SWEENIE, ALL OF SAME PLACE.

VALVED HOSE-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 325,720, dated September 8, 1885.

Application filed October 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN ASHWORTH, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Valved Hose-Nozzles, of which the following is a specification.

This invention relates to the valvular parts of hose-nozzles, more especially such as are used in fire-extinguishing apparatus. As heretofore constructed these nozzles have been provided usually with plug-valves, which afford no way of changing the size of the stream other than by contracting the water-way through the partial rotation of the plug. This, however, destroys the solid character of the stream and materially detracts from its carrying ability. Moreover, if the plug-valved nozzle freezes, as it is very apt to do in cold weather when the valve is closed, it often happens that the nozzle is ruined through the expansion of the plug-chamber caused by the solidifying of the contained water. The plug-valve requires also to be closely fitted in its chamber, and the wearing away through friction of the parts sooner or later destroys this fit and renders the valve leaky.

To obviate the damage through freezing, lessen the evil caused by friction, and provide for the throwing of a small unbroken stream are the objects had in view in the present invention. I substitute for the plug and other valves heretofore used a gate or transversely-sliding valve, affixing to the nozzle a lateral chamber into which such valve is moved when the water-way is opened, and operate it by means of a pinion meshing with a rack upon the valve. The pressure of the water keeps this valve tightly to its seat at all times when closed, and as both it and its seat are straight parallel surfaces whatever wear may occur is at once taken up by the pressure, so that no leakage is likely to occur from that cause. If this valve freezes when closed, there is no plug-chamber to be expanded. While, of course, this form of valve admits of the throwing of a partial stream by being partially opened, as does the plug-valve, yet such partial opening does not always produce the desired kind of stream, and I therefore provide the valve with a central opening, which is itself closed by an independent valve borne upon the main valve. This supplemental valve I make in the form of a slide upon the main valve, and it is operated by the same pinion by which the main valve is opened and closed, the rack before mentioned being formed upon it. The opening in the valve being thus centrally located, permits a small stream of water to issue into the center of the bore of the nozzle-tip and to pass through the latter without contact with it.

All these features of the invention are more fully set forth below, and will be understood by reference to the accompanying drawings, in which—

Figure 1 is a side view of the nozzle embodying my present invention. Fig. 2 is a transverse or rear end view. Fig. 3 is a central longitudinal section showing the valve open. Fig. 4 is a similar view, showing the valve closed, and Fig. 5 is a horizontal section upon line 5 5 of Fig. 3.

In said drawings, A represents the tip of the nozzle, and A′ the butt, a portion of the latter only being shown. Between these parts I insert the valve-holding part B. Within this part B is the transversely-sliding gate-valve C, the walls of the water-way being slotted to receive the valve and to furnish it with a seat, *c*.

B′ is a lateral chamber upon the part B, into which the valve is moved when opened, and within this same chamber is located a pinion, C′, for operating the valve. One end of the journal of this pinion projects to the outside, and is there provided with a handle, C^2. The top of the chamber B′ is closed by a removable cap, *b*. The valve is provided with a rack, with which the pinion meshes, so that by turning the handle the valve may be moved in or out, as required. It will be noticed that the pressure of the water upon the butt side of the valve will keep it firmly against the seat *c*, thereby preventing leakage; also, that any wear upon the valve or its seat is at once taken up by the pressing action of the water, and that expansion through freezing is not likely to affect in any way the tightness of the contact between those parts.

For the purpose of throwing a small but solid stream, an opening, *d*, is made in the valve, and is so located therein as to occupy a central position in the water-way when the valve is closed. This is to enable the stream to pass out through the tip without contact with it, which might affect its solidity or direction. This opening is controlled by a sliding piece, D, held to the valve by dovetailing, as shown in Fig. 5, or in some other equivalent manner, and provided with an opening, *d'*, which may be made to register with the opening *d* in the valve when the small stream is to be thrown. The rack before mentioned I prefer to form upon this sliding piece, as it enables the operating of both the main valve and the slide by a single pinion, the slide being provided with a pin, d^2, which engages with the ends of the slot d^3 in the main valve, as clearly illustrated. With this construction, when it is desired to use the small stream the parts are first moved into the closed position and then the movement of the pinion is reversed until the slide is raised sufficiently to bring the opening *d'* in register with the opening *d*. It is manifest that this supplemental valve may be otherwise secured and otherwise operated, and hence I do not wish to be limited to the exact construction shown; but I have illustrated the best and simplest construction known to me. In the bottom of the section B a set-screw, *e*, may be employed, as shown in Figs. 3 and 4, to regulate the position of the main valve when closed. The section B, I prefer to make separate from the tip and butt, to which it may be connected by the usual screw-joints, as more convenient in manufacturing and as admitting changes of this part when damaged without the necessity of replacing the other parts. It may, however, be cast in one piece with the tip or butt, or both, or it may itself form the butt and so receive the hose directly at its rear.

I claim—

1. The hose-nozzle provided with and closed by a gate-valve, which is itself provided with a small stream-opening located, when the valve is closed, in the main bore, and a valve for closing such opening, substantially as specified.

2. The hose-nozzle provided with and closed by a gate-valve provided with a small stream-opening and carrying a rack-faced pierced valve adapted to register with said opening, and a single pinion for operating both valves, substantially as specified.

3. As a new manufacture, the hose-nozzle having the two sliding valves, one for shutting off the full stream and the other the small stream, and both operating in the bore of the nozzle, substantially as specified.

4. The combination, in a hose-nozzle, of the main valve, the rack-carrying slide-valve secured substantially as described to the main valve, and the operating pinion meshing with said rack, essentially as set forth.

5. The hose-nozzle having two slide or gate valves, one adapted to shut off the full stream and the other to shut off the small stream, the latter valve being mounted upon the former, substantially as specified.

6. The combination, in a hose-nozzle, of the gate-valve having a small stream-opening, the rack and pinion for moving said valve, and the screw *e* for positioning the valve when closed, whereby the small stream-opening is caused to occupy the center of the water-way, substantially as specified.

JOHN ASHWORTH.

Witnesses:
H. M. MUNDAY,
EDW. S. EVARTS.