A. F. Allen.

Hose Pipe Nozzle.

No. 89,456. Patented Apr. 27, 1869.

Fig: 1.

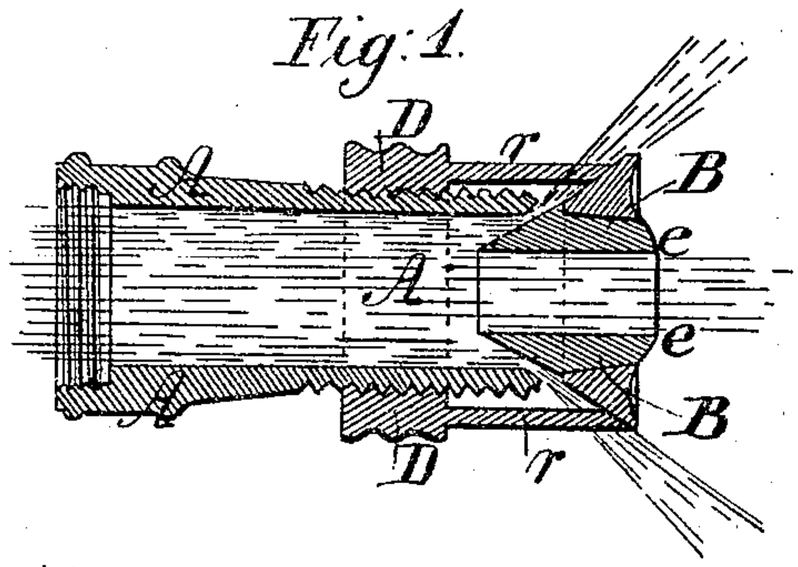


Fig: 3.

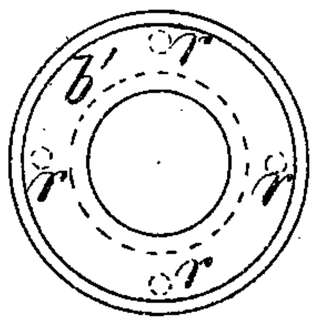


Fig: 2.

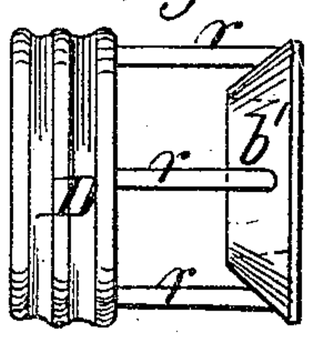
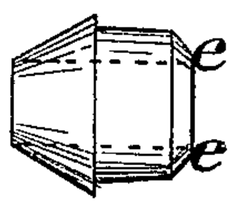


Fig: 4.



Witnesses;

Geo. H. Baeley

Isaac A. Bonnell.

Inventor;

Albert F. Allen.

UNITED STATES PATENT OFFICE.

ALBERT F. ALLEN, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN NOZZLES FOR HOSE-PIPES.

Specification forming part of Letters Patent No. **89,456**, dated April 27, 1869.

To all whom it may concern:

Be it known that I, ALBERT F. ALLEN, of the city and county of Providence, and State of Rhode Island, have invented a new and Improved Nozzle for Hose-Pipes, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a transverse section of my improved hose-pipe nozzle. Fig. 2 is the conical ring *b'*, forming part of the adjustable plug or valve B, hereinafter mentioned, for forming a "spray stream." Fig. 3 is an end view of the same. Fig. 4 is the removable tip or nozzle piece, from which the body stream issues.

Similar letters indicate corresponding parts in all the figures.

The object in view in my invention is the construction of a hose-pipe nozzle, which will issue, beside the usual body stream, a widely-spreading spray stream of greater or less volume, or the body stream alone, at the will of the person having charge of the hose-pipe, for the purposes hereinafter mentioned in connection with fire-extinguishing apparatus; and my said invention consists in constructing the nozzle with an inverted conical plug or valve fitting closely in the end of the hose-pipe, and made adjustable therewith by means of a screw collar and thread, or other suitable device, which will lift the said plug or valve from its seat at the end of the hose-pipe, and permit the escape of the water in an annular sheet, which is so deflected by the conical sides of the plug as to form an unbroken conical sheet of spray, which may be used with advantage to distribute water over a large surface, and for expelling smoke from a room or apartment on fire.

My invention also consists in forming the said valve with a hole or orifice through its center for the escape of an ordinary body stream, to be used for general purposes separately, and, if required, with the addition of the spray stream described, at will.

My invention also consists in constructing the said plug or valve with a removable center-piece, which may be either solid, to stop the central orifice from which the body stream issues, or that may be formed with the said central orifice, so that plugs with different-sized orifices may be employed and readily interchanged to obtain a larger or smaller body stream.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same.

In the drawings, A A is the nozzle-piece, which is usually screwed on the end of the hose-pipe. B is the conical plug or valve, the sides of which fit with a water-tight ground-joint into the end of the said nozzle-piece, which has a corresponding angular valve-seat, at the point indicated by the red lines in Fig. 1, to fit it. This valve or plug is connected by rods *r r*, &c., to a collar, D, which screws upon the screw-threads *m* on the outside of said nozzle-piece A, and said threads *m*, I prefer to be double threads to obtain greater pitch of thread, whereby the valve is opened or shut more readily and quickly by only a slight turn of the collar. The plug extends a short distance within the end of the nozzle-piece A, and checks the flow of water around the inside of the nozzle-piece, so that the smaller stream or body which issues from the central orifice in the said plug or valve passes through a surrounding body of water, and is thus relieved of the friction against the pipe, which has the effect to project the stream to a greater distance from the nozzle. I prefer, also, to make the orifice of the central stream tapering—say about one-sixteenth ($\frac{1}{16}$) of an inch from the rear to the outlet—which has the effect to slightly condense the body of water and render it more dense and unbroken, although if said orifice is made straight, as shown in Figs. 1 and 4 of the drawings, it will work well. I also make the edge *e* of the outlet a projecting edge or lip, whereby the stream or jet of water is delivered freely and without interruption, the surrounding surface of the said valve or plug B serving to protect this sharp edge from injury by contact with any surrounding object. The said valve or plug I propose to make in two pieces, an outside conical ring, *b'*, Fig. 2, and an inside plug, Fig. 4, fitting nicely into it, which plug has a surface which unites with the outer surface of the conical ring and forms one unbroken conical surface, and making the center of the said plug, Fig. 4, either solid, to stop the flow of water through it, so it may only issue at the rear and around the plug B in the form of spray, or to form said plug, Fig. 4, with a central orifice, and have a num-

ber of such plugs with different sizes of orifices, which plugs may be carried by the person having charge of the pipe, and by him inserted in place to furnish readily the size of stream required for the particular occasion or exegency as it may arise.

By means of the peculiar spray steam which projects from the annular opening around the valve, as shown in blue lines in Fig. 1, a current of air is formed of sufficient force to expel the smoke almost entirely from the room when there is a smouldering fire, sufficiently so, it has been ascertained, for firemen to enter without being incommoded by the presence of smoke, and by it the water is more generally distributed and in better form and greater volume than by any means hitherto employed to my knowledge. By means of the said valve I am also enabled to relieve the pressure upon the hose, when only the water is escaping from the central orifice, by opening the valve, and in that way I am enabled to make a signal through the column of water in the line of hose leading to the fire-engine, which will be understood by the engineer as an order to stop or reduce the speed of his apparatus, as may be required, in accordance with the method suggested in my Letters Patent for an escape-valve coupling granted to me, said ALLEN, on the 3d day of September, A. D. 1867.

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

1. The combination of the nozzle of a hose-pipe and an adjustable valve, B, constructed and arranged to operate in connection, substantially as described.

2. The said valve, as arranged, with a central orifice for a body stream to be operated, substantially as specified.

3. The said valve, as arranged, constructed in two parts, so that the orifice in its center may be stopped or readily fitted for delivering a smaller or larger diameter of stream, substantially as described.

ALBERT F. ALLEN.

Witnesses:
GEO. W. CADY,
ISAAC A. BROWNELL.