

(No Model.)

P. J. HAAS.
SPRAY NOZZLE.

No. 555,573.

Patented Mar. 3, 1896.

Fig. 1.

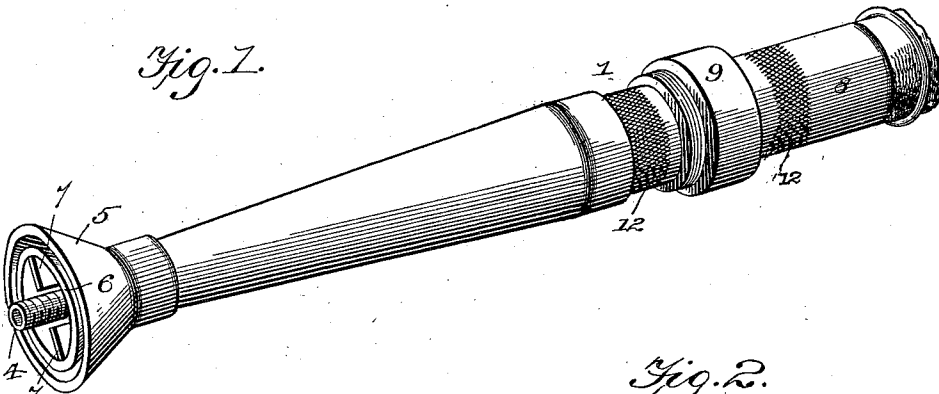


Fig. 2.

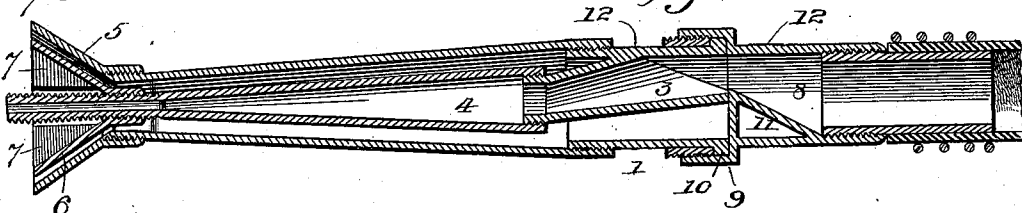


Fig. 3.

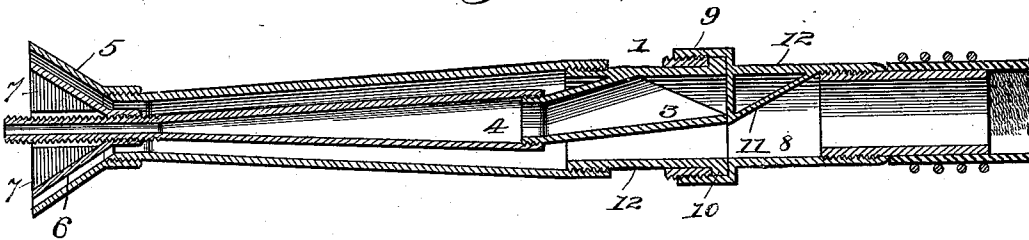


Fig. 4.

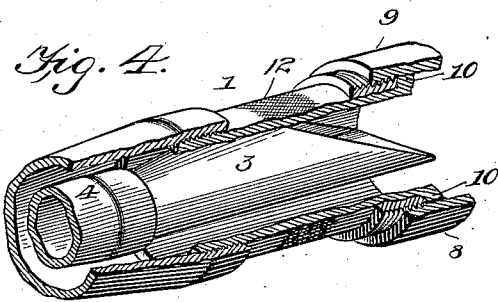
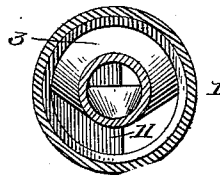


Fig. 5.



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Witnesses
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By *his* Attorneys.

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UNITED STATES PATENT OFFICE.

PHILIP J. HAAS, OF MARENGO, IOWA, ASSIGNOR OF ONE-HALF TO H. H. BRIMMER, OF SAME PLACE.

SPRAY-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 555,573, dated March 3, 1896.

Application filed July 31, 1895. Serial No. 557,702. (No model.)

To all whom it may concern:

Be it known that I, PHILIP J. HAAS, a citizen of the United States, residing at Marengo, in the county of Iowa and State of Iowa, have invented a new and useful Spray-Nozzle, of which the following is a specification.

This invention relates to an improvement in spray-nozzles, and has for its object to provide a simple and efficient device of the character referred to in which provision is made for projecting the water from the nozzle either in a single compact stream or jet, or in a widely-diverging spray, or simultaneously in both a single jet and widely-diverging spray combined.

The principal object of the invention is to afford a diverging or radiating spray in connection with a central compact stream or jet for protecting firemen from the heat of a burning building while directing a stream of water thereon, such diverging spray serving as a non-conductor and to a very considerable extent warding off the heat from the firemen, thus enabling them to direct the stream of water upon the fire to better advantage.

Other objects and advantages of the invention will appear in the course of the subjoined description.

The invention consists in an improved spray-nozzle embodying certain novel features and details of construction and arrangements of parts, as hereinafter fully described, illustrated in the drawings and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of an improved spray-nozzle constructed in accordance with this invention. Fig. 2 is a longitudinal section through the nozzle, showing the same adjusted to throw a single central stream of water. Fig. 3 is a similar view with the parts adjusted for affording a widely-diverging spray. Fig. 4 is a sectional perspective view taken adjacent to the central portion of the nozzle. Fig. 5 is a view looking toward the rear end of the nozzle and showing the parts adjusted for affording both a central stream and a diverging spray.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the accompanying drawings, 1 designates the main body of the improved

nozzle, the rear portion of which is in the form of a cylinder and the forward portion in the form of a tapering tube or barrel. At the rear end of the member 1 and arranged within the same is a funnel-shaped deflector 3, the rear end of which extends diametrically across the rear end of the member 1, the front end of said funnel terminating concentrically with the nozzle or barrel and being round or substantially so in cross-section. The forward end of this funnel 3 is screw-threaded to receive the rear end of a tapering tube 4, arranged within the forward tapering portion of the nozzle 1. Said inner tube, 4, is enough smaller in diameter than the outer tube or barrel to leave an annular space between the two tubes, which, under a certain adjustment, hereinafter described, forms a passage for the water.

Secured to the forward end of the outer barrel or tube, 1, is a conical or flaring mouth-piece or deflector 5, and a similar conical deflector 6 is secured to the forward end of the inner tube, 4, which is projected beyond the forward end of the outer tube or barrel for the purpose of receiving said deflector 6. The smaller deflector 6 is braced relatively to the inner tube by means of suitable transverse webs 7 radially disposed between the inner wall of said deflector and the exterior surface of the projecting end of the inner tube, and this inner deflector is capable of being adjusted relatively to the deflector 5 by turning it upon the threaded end of the tube 4. This adjustment has the effect of reducing the tapering annular space between the cones 5 and 6 for the purpose of regulating the size and density of the diverging spray. The intermediate threaded portion of the outer tube or barrel also admits of the nozzle being readily removed, so that access may be had to the interior parts, and also for providing for the attachment of any other device desired.

8 designates a combined coupling and valve or deflector, which is interposed between the hose and the main body of the nozzle and connected with and carried by the latter. This valved coupling is screw-threaded at its rear end to provide for the attachment of the nozzle as a whole to a section of hose, and is provided at its forward end with an expanded collar 9, which fits snugly over an annular rib surrounding the rear edge of the main bar-

rel 1. Within the coupling 8 is constructed a valve or deflector 11, which is stationary relatively to said coupling and substantially triangular in longitudinal section, the front end of said deflector being disposed transversely within the bore of said coupling and occupying and closing an area slightly greater than one-half of said bore. This front wall of the valve or deflector 11 forms a transverse shoulder against which the rear end of the main barrel 1 abuts. By reason of the rear end of the interiorly-arranged funnel 3 occupying just one-half of the rear end of the barrel 1 it will be seen that when the nozzle is turned to a certain point the rear end of said funnel will be closed by the valve or deflector 11 for directing the water between the inner and outer tubes and affording a widely-diverging spray, while by turning the nozzle a half-revolution the water will be directed into the funnel 3 and out through the end of the inner tube, 4, in the form of a single condensed stream or jet. By turning the nozzle to an intermediate position a portion of the water will be directed through the inner tube and the remainder outside of the inner tube and within the outer tube, thereby affording both a central stream and a surrounding widely-diverging spray. A suitable packing-ring or washer is inserted within the collar 9 of the coupling, and the same disposed around the rear end of the main barrel, adjacent to the annular rib 10 thereon, for affording a watertight connection between the parts, at the same time permitting the nozzle to be turned relatively to the valved coupling. The main barrel 1 and the coupling 8 are both formed with milled peripheries, as indicated at 12, to facilitate the adjustments hereinabove described, by affording a better grasping-surface for the hands, and in the larger nozzles, such as are used by the fire departments, the nozzle or the coupling, or both, may have nut-like formations, adapting them to receive a suitable wrench for effecting the adjustments named.

The construction above described provides a very simple and efficient spray-nozzle in which, by means of the adjustments described, provision is made for obtaining either a central condensed stream or jet of water or a widely-diverging spray of any size or density or both of said forms at one and the same time. Under the latter condition a film or wall of moisture may be interposed between the firemen and the burning structure, thereby enabling them to approach the fire more closely, and as a result to accomplish their work with greater efficiency and comfort.

While the inner and outer tubes are shown tapering it is obvious that they may be straight and of uniform bore throughout their length, as may be desired, but it is preferred to have the tubes made tapering, as by this construction provision is had for locating the funnel 3 at their inner ends. The webs 7 in addition to bracing the deflector 6 also provide

for the application of a wrench or other tool thereto when it is required to rotate the deflector 6 to effect an adjustment thereof upon the tube 4 to vary the annular space between it and the outer deflector 5 to increase or diminish the thickness of the outwardly-diverging spray.

It is to be understood that the angle or flare of the deflectors 5 and 6 can be varied according to the divergence of the spray and that the greater the angle the greater the spray, and the less the inclination or flare of the deflectors the more compact will be the spray.

A feature of vital importance is the capability of throwing a spray and a solid stream at one and the same time, which results in the delivery of a larger volume of water and enables a larger space of ground to be watered in the same length of time.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The herein-described spray-nozzle comprising an outer tube or barrel, an inner tube arranged therein in such manner as to leave an annular space between the two tubes, a conical deflector carried by the forward end of the inner tube, and a transversely-disposed substantially semicircular partition constituting a valve, arranged within the nozzle and adapted to be moved into position to close or open the entrance to either one of the said tubes, substantially as and for the purpose specified.

2. The herein-described spray-nozzle comprising an outer tube, an inner tube arranged therein and terminating at its rear end in a substantially semicircular entrance-aperture in transverse alignment with a correspondingly-formed entrance-aperture to the outer tube, a substantially semicircular partition arranged in proximal relation to the semicircular entrance-apertures of said inner and outer tubes, the parts being capable of being revolved in such manner as to cause said valve to close one or the other of said entrance-apertures, substantially in the manner and for the purpose described.

3. The herein-described spray-nozzle, comprising an outer tube or barrel, an inner tube arranged therein and terminating at its rear end in a semicircular entrance-aperture in transverse alignment with a correspondingly-shaped entrance-aperture to the outer tube, and an inclined internally-arranged deflector disposed in close proximity to said semicircular entrance-apertures, the parts being capable of being revolved, substantially as described for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PHILIP J. HAAS.

Witnesses:

HENRY H. BIMMER,
J. W. FULLER.