Dec. 11, 1934. H. NICHOLS 1,983,634

HOSE NOZZLE

Filed Dec. 5, 1932

Fig.1.

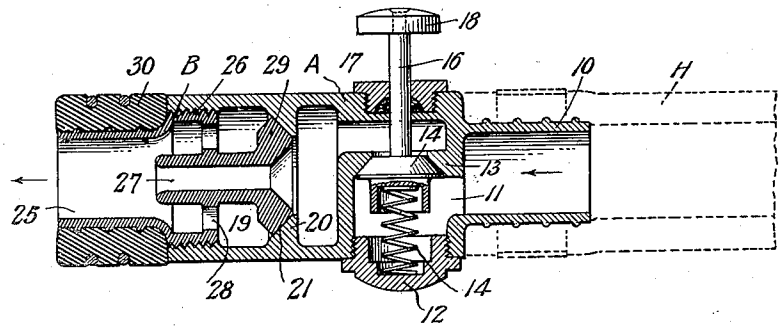
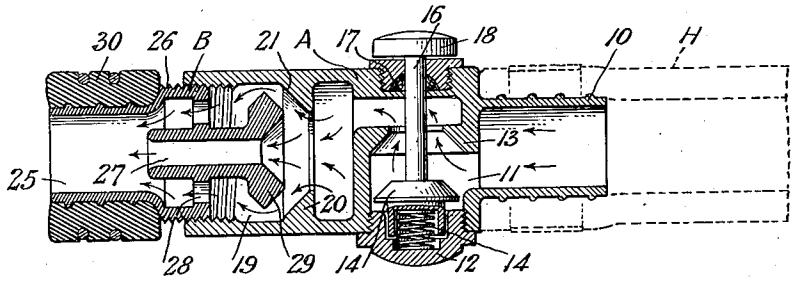


Fig.2.



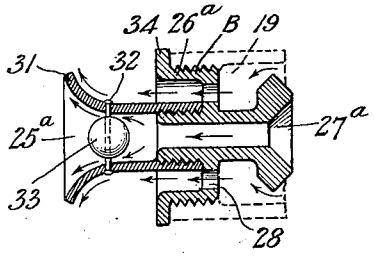


Fig.3.

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Patented Dec. 11, 1934 1,983,634

UNITED STATES PATENT OFFICE

1,983,634

HOSE NOZZLE

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Application December 5, 1932, Serial No. 645,869

5 Claims. (Cl. 299—136)

This invention is a hose nozzle of the type constructed to control the shape and character of the stream of liquid to be delivered thereby.

One of the objects of the invention is to provide a nozzle of the character described, having a shut-off valve positioned for convenient and effective control by the operator, while the nozzle is in use. A further object is to provide a nozzle of the character described having means so arranged that the operator, by a simple manipulation may cause the water to be delivered in the form of a powerful spray or in a solid stream, as may be desired. A further object is to provide a nozzle having means for substantially increasing the delivery pressure for a given volume of flow of water. A further object is to provide a nozzle of the character mentioned constructed of but few parts, so that it may be cheaply manufactured and will not readily get out of order. A further object is to provide a hose nozzle which is particularly valuable in connection with the washing of vehicles, but is not limited to such use.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawing:—

Figure 1 is a longitudinal sectional view illustrating a hose nozzle constructed in accordance with the invention, showing the parts adjusted to increase the delivery pressure of a stream of water to provide a powerful spray. Figure 2 is a similar view, showing the parts adjusted to deliver a solid stream. Figure 3 is a detail sectional view illustrating a slight modification.

Referring to the drawing, and particularly to Figure 1, the nozzle is shown as primarily constructed of a main casing A and a nozzle member B. The main casing A is provided with a nipple 10 which is shaped to be inserted into one end of a flexible hose H, said nipple communicating with the inlet portion of a valve chamber 11. Said inlet portion is provided with a threaded opening in its bottom, normally closed by an abutment plug 12. Located within said valve chamber is a transversely disposed valve seat 13, dividing the said chamber into an inlet and an outlet portion, communication between the last mentioned portions being controlled by a valve 14. Said valve is normally biased to said seat 13 by a spring 15, one end of which bears against the underside of said valve, its other end resting upon said cap 12. A stem 16 formed integrally with said valve is extended upwardly through a stuffing box 17 in the top of the casing A, and is provided with a head or button 18, against which a finger of the operator may be pressed, so as to readily move the valve to unseated position against the tension of the spring. In this connection it will be readily noted that pressure upon the valve stem against the tension of the spring 15 will unseat said valve, and that the spring, aided by the flow of the water will instantly seat the valve as soon as said unseating pressure is removed.

The outlet portion of the valve chamber 11 is separated from a delivery chamber 19, by a transverse wall 20 having a central opening, the outer side of said wall being shaped to provide a valve seat 21. The discharge end of said chamber 19 is provided with an internally threaded opening, as shown.

The nozzle member B comprises a nozzle tip 25, having a threaded bushing-like portion 26 adjustably engaging the threaded discharge end of the chamber 19, and carrying a concentrically positioned spray member 27. Said spray member is supported by a spider 28, preferably integral with the portion 26, and is provided with an enlarged coniform base 29, having beveled edges forming a valve complemental to the valve seat 21. If desired, the nozzle tip may be provided with a protective covering 30, such as a piece of hose, to prevent it from scratching or otherwise marring the finish of a vehicle, while the nozzle is in use for vehicle-washing purposes.

With the parts positioned as shown in Figure 1, the water may be turned on at the source of supply, such as a hydrant (not shown), but flow through the valve chamber to the nozzle member will be prevented by a valve 14. The instant that the valve is unseated, however, in the manner already described, water will flow through the valve chamber and the delivery chamber, being discharged outwardly through the bore of the spray member 27. Owing to the reduced diameter of said bore the water is forced therethrough at high speed with considerable force, creating a reduced pressure in the space surrounding the base 29. As the stream leaves the discharge end of said spray member, it instantly expands radially, striking against the inner surface of the nozzle tip 25, so that it is finally discharged in the form of a powerful spray, which will quickly cleanse any surface with which it may come into contact; or it will be discharged over a considerable distance if the device is being used for irrigating purposes. If a solid stream is desired, the operator grasps the covering 30 and slightly unscrews the nozzle tip 25, thereby moving the valve-like base 29 of the spray member 27 away from the valve seat 21, as shown in Figure 2. The effect of this ad-

justment is that upon the unseating of the valve 14, the water will not only flow through the bore of the spray member 27, but will divide so that a portion thereof also passes around the base 29 of the member, breaking the vacuum around said base member, the divided stream being consolidated within the nozzle tip 25 from which it will be projected in a solid stream and much lower pressure.

If a more powerful spray is desired than is possible with the construction already described, the same may be obtained by means of the modified form of nozzle tip shown in Figure 3. Referring to said figure, the spray-member 27^a is carried by a bushing 26^a, shaped to engage the threaded discharge end of the chamber 19. Said spray-member is threaded to be engaged by a complemental threaded portion of a nozzle tip 25^a, which has a flared discharge end 31, in which is mounted a pin 32 which rotatably supports a ball 33. The bushing 26^a is provided with a flange 34 by means of which it may be readily manipulated, as desired. In practice the stream delivered by member 27^a impinges upon the ball, causing the ball to rotate and to also spread the stream in an obvious manner. If a solid stream is desired the bushing 26^a is unscrewed so as to unseat the spray member 27^a.

The advantages of the invention will be readily understood by those skilled in the art to which it belongs. In this connection it will be observed than an exceedingly simple form of valve is provided, which may be readily and conveniently manipulated to selectively provide a powerful spray or a solid stream, as may be desired. It will also be noted that although the nozzle may be used for any desired purpose within the limits of its construction, it is particularly adapted for use in washing automobiles and other similar vehicles, because of the ease with which it may be adjusted to increase the delivery pressure or to discharge a normal solid stream as circumstances may require.

Having thus explained the nature of the invention and described an operative manner of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the forms of its use, what is claimed is:—

1. In a hose nozzle, a casing having a delivery chamber provided with a valve seat, a bushing adjustably engaging said casing, a concentrically positioned tubular spray member carried by said bushing and extended axially into said delivery chamber but of less diameter than said chamber, said spray member having a member complemental to said valve seat, said spray member being so constructed and arranged as to selectively convert fluid passing through said opening to the form of a spray or of a solid stream in accordance with adjustments of the spray member with respect to said valve seat, and a flared nozzle tip mounted on the discharge end of said spray member and having a ball rotatably mounted in the discharge end thereof.

2. A nozzle of the character described comprising a casing provided with a valve chamber and a delivery chamber separated by an intervening wall having an opening therein, a valve in the valve chamber controlling flow of fluid to the said opening, and a tubular member of less diameter than the delivery chamber and axially disposed therein, said tubular member being so mounted that it is adjustable toward or from said opening and having means cooperating with said opening in such manner that fluid may be selectively caused to flow around and through the tubular member or through said tubular member only.

3. A nozzle of the character described comprising a casing provided with a valve chamber and a delivery chamber separated by an intervening wall having an opening therein, a valve in the valve chamber controlling flow of fluid to the said opening, a nozzle tip connected with said delivery chamber, and an axially disposed tubular member projecting from one end of said nozzle tip into said delivery chamber, said nozzle tip being so mounted that it is adjustable to move the tubular member toward or from said opening, said tubular member having means cooperating with said opening in such manner that fluid may be selectively caused to simultaneously flow around and through the tubular member or through the tubular member only.

4. A nozzle of the character described comprising a casing provided with a valve chamber and a delivery chamber separated by an intervening wall having an opening therein, a valve in the valve chamber controlling flow of fluid to the said opening, a nozzle tip connected with said delivery chamber, an axially disposed tubular member projecting from one end of said nozzle tip into the delivery chamber and having an annular enlargement so positioned as to cooperate with said opening in such manner that fluid may be selectively caused to simultaneously flow around and through the tubular member or through the tubular member only, said nozzle tip being adjustable within said delivery chamber so as to adjust said tubular member toward and from said opening.

5. A nozzle of the character described comprising a casing provided with a valve chamber and a delivery chamber separated by an intervening wall having an opening therein, a valve seat in said valve chamber, a spring pressed valve cooperating with said seat and having an operating stem projected through the casing in a plane at right angles to the axis of the delivery chamber, and a tubular member of less diameter than the delivery chamber and axially disposed therein, said tubular member being so mounted that it is adjustable toward or from said opening and having means cooperating with the opening in such manner that fluid may be selectively caused to simultaneously flow around and through the tubular member or through said tubular member only.

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