March 12, 1929. A. F. KELLY 1,705,188

NOZZLE

Filed Jan. 28, 1924

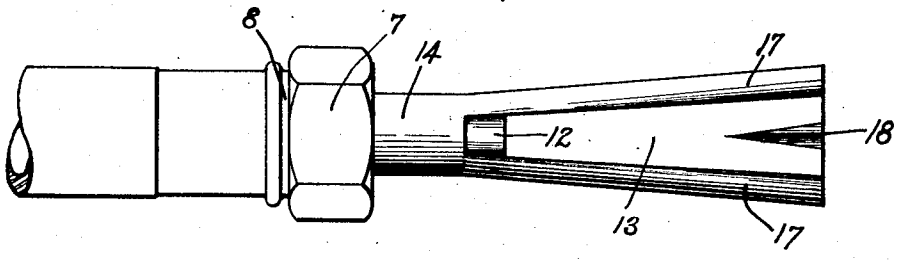


FIG. 1

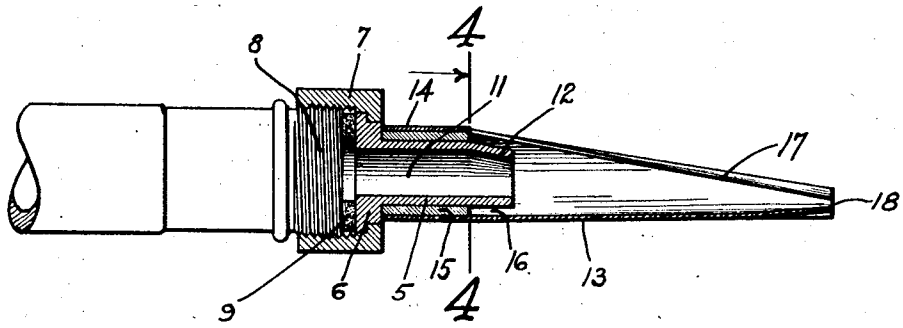


FIG. 2

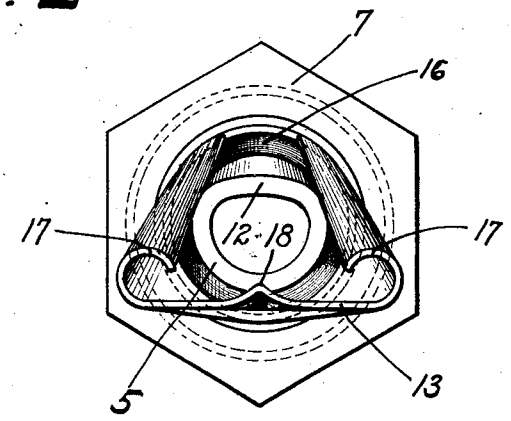


FIG. 3

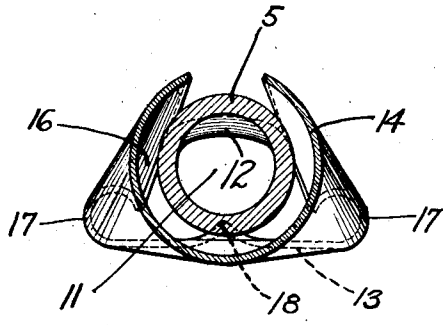


FIG. 4

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UNITED STATES PATENT OFFICE.

ADELBERT F. KELLY, OF SPOKANE, WASHINGTON.

NOZZLE.

Application filed January 28, 1924. Serial No. 689,016.

This invention relates to, and has for its object the provision of new and useful improvements in nozzles and, more specifically, such nozzles adapted for use in spraying or sprinkling water.

A more particular object of the invention is to provide an improved nozzle having means whereby the water discharged therefrom will be in the form of a substantially flat, condensed stream thereby providing a nozzle capable of projecting, a convenient distance, water under normal pressure and at the same time distributing it substantially uniformly.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claims.

In the drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is a plan view of my improved nozzle;

Figure 2 is a longitudinal sectional view showing the general construction thereof;

Figure 3 is an enlarged view looking at the nozzle from the discharge end thereof; and

Figure 4 is a cross-sectional view on the line 4—4 of Figure 2.

The improved nozzle featured in this invention and disclosed in the accompanying drawing, preferably comprises a hollow tube 5 having an annular flange 6 formed at one end thereof to provide a seat for a coupling nut 7 by means of which the nozzle may be connected to an ordinary hose connection 8, as particularly shown in Figure 2. The usual gasket 9 is shown positioned between the flange 6 and the terminal end of the hose coupling 8 in order that a water-tight joint may be provided therebetween.

The major portion of the opening 11 through the tube 5 is preferably cylindrical in form, as shown in Figure 4. The opening at the discharge end of the tube 5 is preferably irregular in form, as shown in Figures 3 and 4, the upper portion 12 of the wall thereof being arranged on an incline as shown so as to afford a downwardly inclined obstruction in the path of the water at the discharge end of the tube so as to flatten and spread the stream side-ways towards the sides of the nozzle, and to further facilitate such flattening the top edge of the wall is substantially flat or straight as illustrated.

Means are provided for shaping the stream of water discharged from the irregularly formed opening of the tube 5. Such means preferably consists in the provision of a plate 13 which has a cylindrical end-portion 14 forming a socket adapted to receive a hollow sleeve 15 suitably secured thereto. This sleeve is bored to receive the tube 5 which is secured thereto with the flange 6 preferably abutting the end of the sleeve 15 and the end of the cylindrical end portion 14 of the plate 13, as shown in Figure 2. The sleeve 15 is preferably shorter than the tube 5 so that the end of the tube will overhang the end of the sleeve, thereby providing an annular space 16 around the discharge end of the tube. The sleeve 15 functions as a spacing member between the wall of the cylindrical end-portion 14 of the plate and the discharge end of the tube 5.

The bottom portion of the plate 13 is preferably arranged on a slight outward and upward incline with reference to the axis of the tube 5. The two sides of the plate 13 are outwardly tapered or flared and are upwardly and inwardly rolled or turned to form the rolled sides 17 of the nozzle, as shown in Figure 3, thereby providing an open nozzle capable of discharging or projecting water a considerable distance and at the same time spreading it sufficiently to cover a relatively wide area. The upper portion of the nozzle is preferably open as shown. The rolled sides 17 impart a slight rotative or whirling motion to the side portions of the stream resulting in a more uniform stream at the sides instead of permitting the sides of the stream to dribble from the plate or to be projected only a short distance with relation to the major portion of the stream. Another result follows from the employment of the rolled sides, that is, the stratum of water next to the rolled sides of the nozzle will to some extent be lifted or follow the upward and inward curve of the rolled sides and directed towards the longitudinal axis of the stream, as will be obvious, and to split and spread this stream at the discharge end of the nozzle it has been found desirable to provide means for lessening the density or volume of the stream axis in order to assure a

more uniform distribution. Such means preferably consists in upwardly bending the center portion of the discharge end of the nozzle to form a substantially V-shaped portion 18. This portion 18 flares outwardly to its widest point at the outer end. It also is upwardly tapered and reaches its greatest height at the outer end.

In using the nozzle the water will be directed against the inclined bottom of the plate 13. As the water contacts with the plate 13 it will tend to spread thereby being brought into contact with the rolled sides 17 of the nozzle which turn the edges of the stream toward the axis and impart a substantially whirling action to the edges as they leave the end of the nozzle. The raised divider or V-shaped portion 18 at the end of the nozzle reduces the density of the center and secures a more uniform distribution of water in the stream projected from the tip of the nozzle.

Thus, by the employment of the rolled sides 17 and raised portion 18 in conjunction with the inclined plate 13, there is provided a nozzle capable of discharging or projecting water a considerable distance in a uniform stream.

Having thus described my invention what I claim as new and desire to secure by Letters-Patent, is:

1. A nozzle comprising a discharge tube, and a spreader-plate extending forwardly of the discharge tube, the plate inclining upwardly and flaring towards its outer end and formed with upwardly and inwardly rolled sides terminating in edges diverging with respect to each other from their inner to their outer ends.

2. A nozzle comprising a discharge tube, and a spreader-plate extending forwardly of the discharge tube, the plate inclining upwardly and flaring forwardly and formed on its inner face adjacent to its outer end with an inwardly extending substantially V-shaped portion increasing in height and width towards the outer end of the plate, the sides of the plate curved upwardly and inwardly and terminating in edges diverging with respect to each other from their inner to their outer ends.

In witness whereof, I have hereunto set my hand this 14th day of January, 1924.

ADELBERT F. KELLY.