No. 730,927. PATENTED JUNE 16, 1903.

A. J. KOEGLER.

SPRAY NOZZLE.

APPLICATION FILED NOV. 13, 1902.

NO MODEL.

Fig. 1.

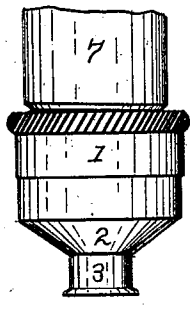


Fig. 4.

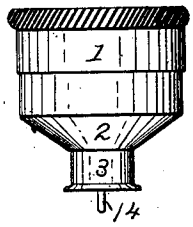


Fig. 2.

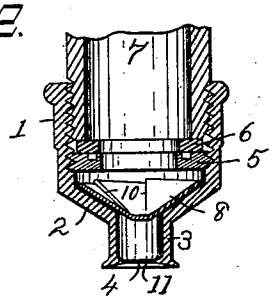


Fig. 5.

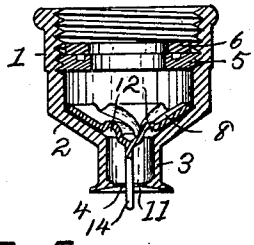


Fig. 3.

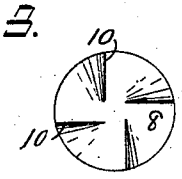
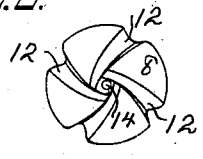


Fig. 6.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 730,927. Patented June 16, 1903.

UNITED STATES PATENT OFFICE.

AUGUST J. KOEGLER, OF MILWAUKEE, WISCONSIN.

SPRAY-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 730,927, dated June 16, 1903.

Application filed November 13, 1902. Serial No. 131,125. (No model.)

To all whom it may concern:

Be it known that I, AUGUST J. KOEGLER, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Spray-Nozzles, of which the following is a specification.

My invention relates to improvements in spray-nozzles.

The object of my invention is to provide a form of construction in which a simply-constructed rotary device loosely inserted in the interior of the nozzle may be utilized to subdivide the stream into a spray, the nozzle thus provided being of extreme simplicity and durability and of a maximum efficiency.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is an exterior view of the nozzle and a portion of a hose connected therewith. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a plan view of the rotary fluid-distributing cone which produces the spray. Figs. 4, 5, and 6 are views of a modified form of construction corresponding, respectively, with the views given in Figs. 1, 2, and 3.

Like parts are identified by the same reference characters throughout the several views.

1 is a cylindrical coupling-head, reduced at 2 and provided with a nozzle-tip 3, having an aperture 4, through which the fluid escapes. The coupling-head is interiorly screw-threaded. 5 is a ring screwed into the coupling-head, and 6 is an annular packing-collar, against which the end of the hose-coupling 7 abuts when screwed into the coupling-head 1. A rotary water-distributing cone 8 is located between the ring 5 and the tip 3. This cone is preferably formed by pressing a circular sheet-metal disk into conical shape, corresponding substantially with the tapered portion 2 of the nozzle. The cone 8 is provided with slits 10, and the edges of the plate composing the cone are offset along the slits to form apertures through which the water passes, the material between any two of the slits taking the form of a segmental blade with a spiral pitch.

When water or other fluid is discharged through the nozzle, the pressure upon the spirally-inclined surfaces of the cone 8 causes the latter to revolve, while the water passing through the slits in the cone holds the cone by back pressure away from the tapered portion 2 of the nozzle, the cone thus being caused to revolve freely in the water without friction on the inclosing walls of the nozzle.

The end or tip of the nozzle is preferably provided with a countersunk bore forming a comparatively sharp edge 11 around the aperture 4. The water in passing the cone 8 receives a whirling motion and on striking the edge is subdivided into a fine spray. It will be observed that the aperture 4 is of less diameter than the interior of the nozzle-tip 3. This also facilitates splitting up the stream into a spray.

Referring to Figs. 4, 5, and 6, it will be observed that the construction is the same as that of Figs. 1, 2, and 3, with the exception that the distributing-cone is provided with spirally-extending channels 12 on its outer face. The cone is also provided with a forwardly-projecting stem 14, which extends through the tip of the nozzle and projects centrally through the aperture 4 therein. Where the stem 14 is used, a finer spray is produced with a given volume and pressure of water. The spiral channels 12 in the cone shown in Figs. 5 and 6 do not extend through the cone, except at the outer edges. In this construction the water escapes past the base of the cone through the notches formed by the spiral channels 12 and is directed by the channels toward the apex of the cone. In practice sufficient water passes into these channels to press the cone backwardly away from the tapered portion 2 of the nozzle in the same manner as above described with reference to the cone shown in Figs. 2 and 3.

In the constructions shown in Figs. 4, 5, and 6 the cones are preferably formed of cast metal, while in the construction shown in Figs. 1, 2, and 3 they are preferably stamped from sheet metal. In either case passages are formed on the outer surface of the cone at an angle to the radii thereof, whereby the stream of water is given a whirling motion, and it is not material whether such passages consist of the broad shallow depressions formed by offsetting the metal of the cone between the slits 10, as shown in Fig. 3, or of the channels 12. (Shown in Fig. 6.)

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

1. In a device of the described class, the combination with a nozzle-casing, of a water-distributing device loose in the casing, and provided with a spirally-formed outer surface, said nozzle being contracted in advance of said device, and provided with an apertured tip.

2. In a device of the described class, the combination with a nozzle-casing, of a water-distributing device loose in the casing, and provided with a spirally-formed outer surface, said nozzle being contracted in advance of said device, and provided with an apertured tip formed with an inwardly-projecting edge around the aperture.

3. In a device of the described class, the combination with a nozzle-casing, provided with a tapering portion, and an apertured tip; and a water-distributing device tapered in correspondence with the casing, and provided, on its tapered surface with depressions extending at an angle to the radii of the device.

4. In a device of the described class, the combination with a nozzle-casing, provided with a tapering portion, and an apertured tip; and a water-distributing device tapered in correspondence with the casing, and provided on its tapered surface with depressions extending at an angle to the radii of the device, said device being also provided with apertures for the passage of fluid to the tip.

5. In a device of the described class, the combination with a nozzle-casing, provided with a tapering portion, and an apertured tip; and a water-distributing device tapered in correspondence with the casing, and provided on its tapered surface with depressions extending at an angle to the radii of the device; together with means for permitting fluid to pass through the casing in the direction of the tip, and directing the same along said projections.

6. In a device of the described class, the combination with a nozzle-casing, provided with a tapering portion, and an apertured tip; and a water-distributing device tapered in correspondence with the casing, and provided on its tapered surface with depressions extending at an angle to the radii of the device; together with means for holding said device from turning over.

7. In a device of the described class, the combination with a nozzle-casing having a tapering portion terminating in an apertured tip, and provided with a comparatively sharp edge projecting inwardly around said aperture; and a water-distributing device located in the casing, said device comprising a conical plate having slits, and having its outer surface formed to receive pressure of fluid passing through the slits at an angle to the axis of the cone, whereby the latter is rotated.

8. In a device of the described class, the combination with a nozzle-casing, provided with a tapering portion, and an apertured tip; and a water-distributing device tapered in correspondence with the casing, and provided on its tapered surface with depressions extending at an angle to the radii of the device; together with a stem extending from said device through the aperture in the tip.

9. In a device of the described class, the combination with a nozzle-casing, provided with a tapering portion, and an apertured tip; and a water-distributing device tapered in correspondence with the casing, and provided on its tapered surface with depressions extending at an angle to the radii of the device; together with a forwardly-projecting stem connected with said device.

In testimony whereof I affix my signature in the presence of two witnesses.

AUGUST J. KOEGLER.

Witnesses:
JAS. B. ERWIN,
LEVERETT C. WHEELER.