No. 713,670. Patented Nov. 18, 1902.

C. H. OCUMPAUGH.

NOZZLE.

Application filed Aug. 31, 1901.

(No Model.)

Fig. 1.

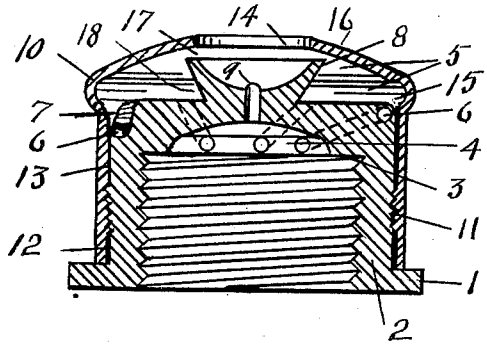


Fig. 2.

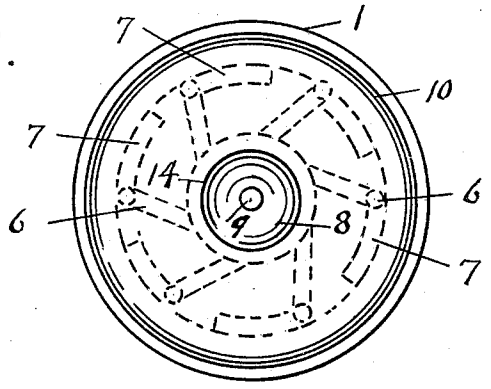
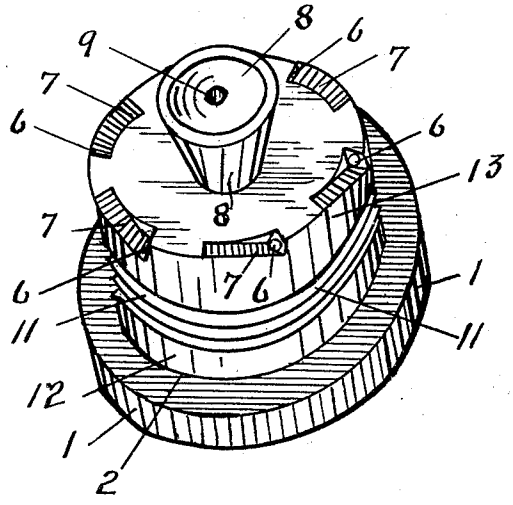


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES HERBERT OCUMPAUGH, OF ROCHESTER, NEW YORK.

NOZZLE.

SPECIFICATION forming part of Letters Patent No. 713,670, dated November 18, 1902.

Application filed August 31, 1901. Serial No. 73,976. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HERBERT OCUMPAUGH, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Nozzles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to nozzles for sprinkling lawns, watering plants, and like purposes, and has for its object to increase the efficiency and cheapen the construction of such nozzles.

It consists in the construction herein described and pointed out.

In the accompanying drawings, Figure 1 is a central longitudinal section of the nozzle. Fig. 2 is a plan. Fig. 3 is a perspective of the nozzle-base.

Numeral 1 denotes a milled flange of a nozzle-base 2, having interior screw-threads for attachment to a coupling or pipe.

3 denotes a shoulder within the barrel of the base to support an elastic gasket in usual manner. Above this shoulder is a liquid-supply space 4, which is practically a continuation of a supply-pipe (not shown) and communicates with a vortex-chamber 5 by means of obliquely-arranged passages 6, extending through the base, near its upper end, as illustrated.

7 indicates rudimentary grooves or channels formed in the upper edge of the base adjacent the passages 6 and in communication therewith.

8 denotes a tip or central extension of the base. Said extension is frusto-conical in form and has its small end fixed to the base. It is hollow, and its interior communicates with the supply-space 4 by a perforation or exit 9. Said perforation does not lead into the vortex-chamber, but communicates directly with the atmosphere.

The tip 8, independently of the fact that it is so styled and of its being an extension of the base, is a body occupying the interior of the chamber 5 below the exit 14 and below rim 16, that is in a different plane, whereby said chamber is contracted between its ends, and whereby a free transverse space is left between the rim and its exit-opening 14 and said body, with the effect that the discharge is more effectually spread and sprayed.

10 denotes a cap which may be screwed upon the base and against the flange 1 or against a gasket contiguous said flange. The exterior screw-thread 11 of the base preferably does not extend to the flange, but is separated therefrom by a plain surface 12.

13 denotes a plain surface between the screw-thread 11 and the end of the barrel of the base.

14 denotes a central discharge-opening in the concavo-convex top of the cap, and 15 is a shallow groove or channel situated within the projecting rim of the cap-top. This channel is in approximately the same plane as the wide end of the tip or base extension 8. The base extension 8 flares outwardly and extends to the vicinity of the opening 14 and near the wall of the cap. The diameter of its larger or free end is greater than that of the opening, whereby an annular space or exit transverse to the axis of opening 14 is provided. The capacity of the vortex-chamber is increased by the contraction of base extension 8 toward its fixed end and by the groove 15, situated oppositely to said contracted end of the base extension.

The discharge-opening 14 of the cap has a diameter smaller than that of the large end of the tip, which end is situated near the opening when the parts are assembled for use, and thereby provides a circumferential discharge or exit 17. The dimension of this exit can in practice be varied by adjusting the cap on the base.

In operation a liquid forced into the space 4 from a pipe or hose escapes mainly through the oblique passages 6 into the vortex-chamber in a direction approximately tangential to the wall of said chamber, with the effect to impart a gyratory motion about the extension 8 and in the channel 15 and in the exit 17 between the extension and cap. Water escapes through this exit all around in directions approximately tangential to the convex face of the cap and transversely of the length of the nozzle. The pressure will also force water through the central exit 9, which may be made to rise to a height of ten or more feet, while the transverse spray can

be made to cover a space forty or more feet in diameter. The whirling or gyratory movement of the liquid in the vortex-chamber is aided by the channels 7 and also by the extension 8, whereby a channel 18 is produced. The channel 15 extends the vortex-chamber laterally adjacent the large end of said tip 8 and provides for a freer movement of the liquid. The tip by its central situation and apart from the special form shown coöperates with the oblique passages 6 to produce a vortex. In the particular form preferred its larger end separates the vortex into two parts, one of which communicates directly with the inlets and the other with the outlet, and thereby obviates cross-currents.

If in use the nozzle be pointed directly upwardly, the central jet of liquid discharged from the exit 9 will fall about the nozzle itself. When the nozzle is directed horizontally, or approximately so, the central jet can be utilized to sprinkle an excess of liquid on a particular spot, as on a plant situated in a lawn.

The extension and cap, combined with other parts, as set forth, produce a flaring discharge of great uniformity and with an ornamental effect, and particularly in connection with the discharge from the central tip 8. This discharge or jet does not communicate with the vortex-chamber, and is therefore not hindered nor checked by the water in said chamber. The extension or tip 8, which occupies the vortex center contributes both to the perfection of the vortex and protects the central jet. By means of its flaring mouth, situated just within the cap adjacent the opening 14, the extension-tip 8 also insures that the central jet shall not be interfered with by cross-currents from the main vertical discharge.

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

1. In a nozzle, the combination of a base having an internal thread, holes extending in approximately tangential direction through the base above the internal thread, and a frusto-conical base extension, said extension flaring outwardly from the upper surface of the base.

2. In a nozzle, a base having an extension, and a cap with a perforated top attached to the base, the perforation in the cap being of less diameter than the greatest width of the extension, said extension flaring outwardly from the base to near the perforation and within the cap.

3. In a nozzle, a cap having a chamber 5 and a body situated in said chamber between its ends whereby the space in the chamber is contracted laterally, said chamber having a single unobstructed central outlet 14 at one end of the cap and a laterally free space between said body and the edge of the cap about the outlet, and having two or more inlets 6 at the other end, said body having its periphery immediately adjacent the outlet larger than the same thereby projecting laterally beyond the inner edge of the cap-outlet to provide an annular and approximately horizontal exit 17.

4. In a nozzle, a cap having a chamber 5 contracted between its ends, and a single central exit 14 at one end, and two or more inlets at the other end, said contracted part surrounding a frusto-conical piece having its longest transverse diameter close to said opening.

5. In a nozzle, a chambered cap having a central unobstructed discharge-opening at one end, and containing a body extending from the other end of the cap-chamber to a plane in close proximity to the opening and in a different plane entirely within the cap-rim, said body having a transverse diameter greater than the opening, whereby a free transverse space is provided next the rim and opening, and an exit 9 opening into said transverse space.

6. In a nozzle, a chambered cap having a central unobstructed discharge-opening at one end, and containing a piece extending from the other end of the cap-chamber to a plane in close proximity to and below the opening and within the cap, said piece having a transverse diameter greater than the opening at the outer end of said piece and at its inner fixed end a transverse diameter less than that of the said opening.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES HERBERT OCUMPAUGH.

Witnesses:

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