

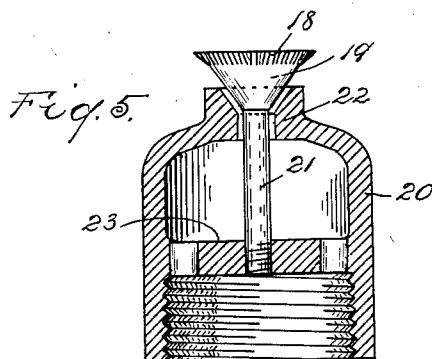
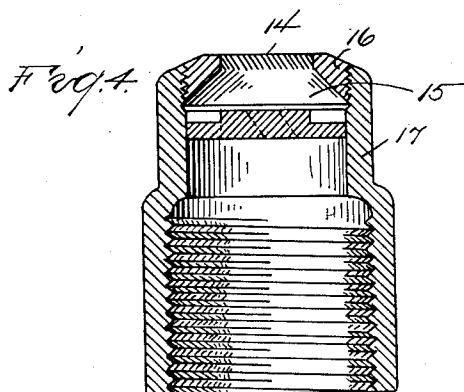
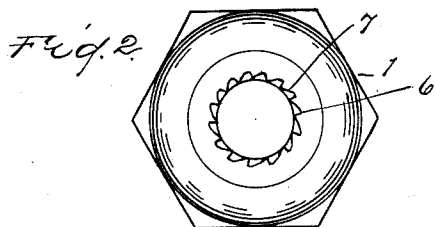
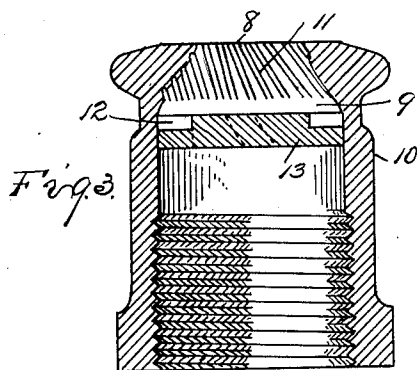
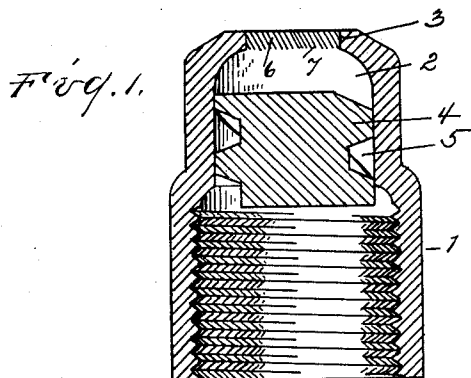
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E. G. MUNZ

NOZZLE

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NOZZLE.

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The invention relates to nozzles and is particularly applicable to discharge or spraying nozzles for use in sprinkling systems for lawns or the like. The invention has for its object the provision of a nozzle constructed to produce a greater spread of spray, and more particularly the provision of a nozzle having an annular series of teeth in the wall of its discharge orifice, the faces of these teeth being inclined to the axis of the nozzle whereby a greater spread is secured owing to the dividing of the thin film of water into a number of adjacent streams, and as a result of this greater spread of spray, fewer nozzles for spraying a given area are required. Another object is to provide a discharge orifice in the nozzle of much greater diameter than that of the streams, all of which are formed at the periphery of the orifice, to thereby eliminate the possibility of clogging. Further objects of the invention reside in the novel features of construction as more fully hereinafter set forth.

In the drawings:

Figure 1 is a central section through a nozzle embodying my invention;

Figure 2 is a top plan view thereof;

Figure 3 is a longitudinal central section of a modified construction of nozzle;

Figure 4 is a similar view of another modified construction of nozzle;

Figure 5 is a similar view of still another modified construction of nozzle.

1 is the nozzle head having the interior chamber 2 and the water discharge orifice 3 located in axial alignment with the interior chamber. 4 is a core having the spiral grooves 5 in its face, this core being secured within the nozzle head and the arrangement being such that water passing through the spiral grooves of the core is set into a whirling motion within the interior chamber 2, and consequently emerges through the discharge orifice 3 in a conical spray form.

To divide the thin conical film of water passing through the discharge orifice into a number of adjacent streams, the wall of the orifice is provided with the annular series of teeth 6, the sides 7 of which are inclined to the axis of the aperture and substantially parallel to the direction of the normal discharge. These teeth are preferably of V shape forming semi-circular grooves in the wall of the aperture and their inclination relative to the axis of the nozzle is in the same direction as that of the spiral grooves

in the core, whereby the film of water discharged through the orifice is divided or collected into adjacent streams, thereby securing greater lateral spread of the spray without danger of clogging.

In the modification shown in Figure 3, the walls of the discharge orifice 8 and the interior chamber 9 of the sprinkler head 10 are provided with the annular series of teeth 11 preferably of V shape and having their sides inclined relative to the axis of the sprinkler head in the same direction as the spiral grooves 12 in the core 13 secured within the head. With this construction, the same advantageous operation is secured in effecting small streams of water and greater spread of spray without danger of clogging.

As shown in Figure 4, the orifice 14 having the annular series of teeth in its wall and the outer end of the chamber 15 are formed by a separate piece 16 detachably threadedly engaging in the nozzle head 17 to facilitate replacing the threads or grooves when worn to too great an extent as by dirty water.

In the modified construction of nozzle of Figure 5, the annular series of teeth or grooves 18 is formed in the periphery of the baffle 19 preferably near its upper edge, these teeth or grooves dividing or collecting the thin film of water into a number of adjacent streams, thereby increasing the spray spread. This baffle is secured to the nozzle head 20 by means of the stem 21 extending axially of the discharge orifice 22 and threaded in the apertured cross partition 23 within the head.

What I claim as my invention is:

1. In a liquid spraying nozzle, the combination with a head having a discharge orifice and an interior chamber leading thereto, and a core within said head having one or more inclined passageways leading to said chamber, of an annular series of teeth upon the wall of said discharge orifice having their sides helically inclined relative to the longitudinal axis of said head in the direction of said inclined passageways, said teeth extending substantially to the point where the liquid is projected from said wall.

2. In a liquid spraying nozzle, the combination with a head having a discharge orifice and an interior chamber leading thereto and a core within said head having one or more inclined passageways leading to said chamber, of an annular series of helically inclined teeth upon the walls of said cham-

ber and orifice, said teeth being inclined in the direction of said inclined passageways and extending substantially to the point where the liquid is projected from said wall.

- 5 3. In a liquid spraying nozzle, the combination of a nozzle head having a discharge orifice therein, and means within said nozzle head for imparting a whirling motion to the liquid and forming the same into a film, said
10 discharge orifice having its sides formed with a series of grooves inclined outwardly in the direction of whirl imparted to the liquid and extending substantially to the point where the liquid is projected from said
15 sides.

4. In a liquid spraying nozzle, the combination of a nozzle head having a discharge orifice therein, and a core within said nozzle head having a curved passage therethrough
20 for imparting a whirling movement to the liquid, said discharge orifice having its sides formed with a series of grooves inclined outwardly in the direction of whirl imparted by said core and extending substantially to
25 the point where the liquid is projected from said sides.

5. In a liquid spraying nozzle, the combination of a nozzle head, having a discharge orifice therein, means for forming
30 the liquid issuing from said discharge orifice into a whirling annular film, and an annular surface arranged in the path of said annular film provided with a series of grooves inclined outwardly in the direction of whirl

and extending to the point of projection of the liquid from the nozzle whereby the film is subdivided into a series of finely divided streams.

6. In a liquid spray nozzle, the combination of means for forming the liquid into an annular film, and an annular surface arranged in the path of said annular film and provided with a series of unconfined grooves extending in the direction of flow substantially to the point where the liquid leaves
45 the nozzle, said grooves serving to convert the water film into a series of finely divided streams.

7. In a liquid spray nozzle, the combination of a nozzle head having an annular surface forming a discharge orifice, means for forming the liquid into an annular film at said discharge orifice, said surface having a plurality of unconfined grooves formed therein extending in the direction of liquid
55 flow substantially to the point where the liquid leaves the nozzle.

8. In a liquid spray nozzle, the combination of a nozzle head having a discharge orifice therein, means for forming the liquid
60 into an annular film at said discharge orifice, said discharge orifice having its sides formed with a series of unconfined grooves therein extending in the direction of flow substantially to the point where the liquid leaves the
65 nozzle.

In testimony whereof I affix my signature.
ELMER G. MUNZ.