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2,125,978

SPRAY HEAD

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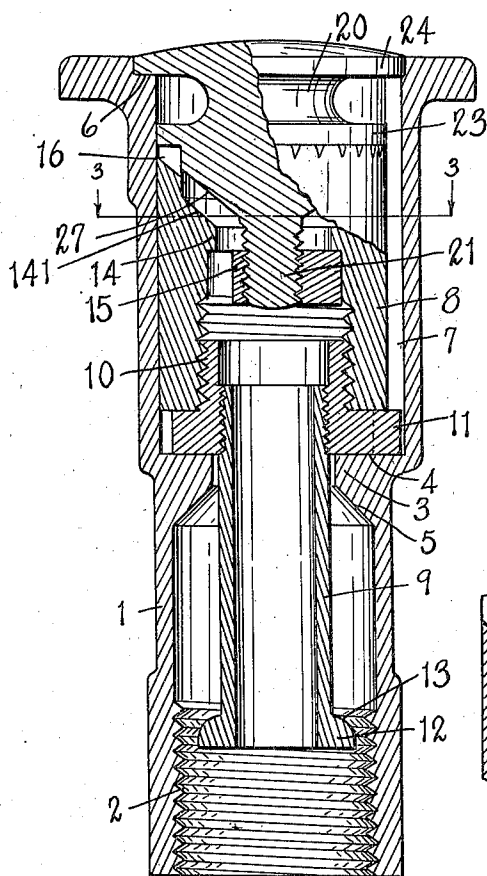


Fig. 1.

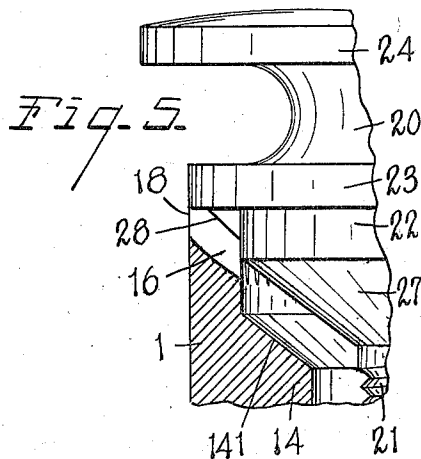


Fig. 5.

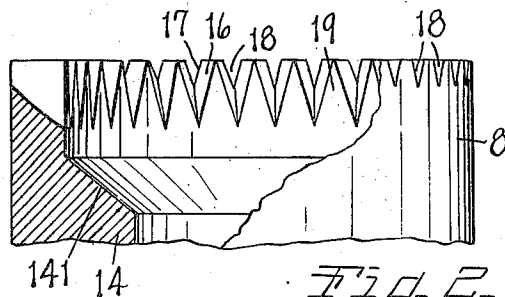


Fig. 2.

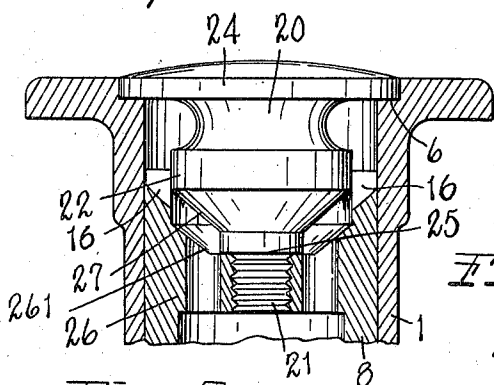


Fig. 6.

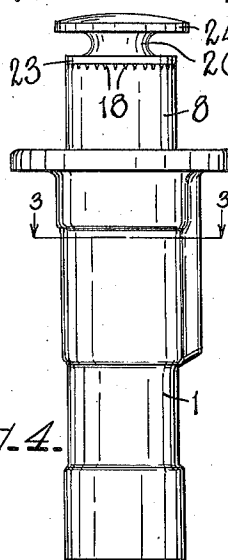


Fig. 4.

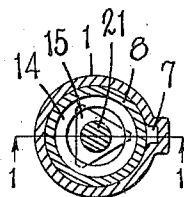


Fig. 3.

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2,125,978

SPRAY HEAD

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7 Claims. (Cl. 299—61)

The main objects of this invention are:

First, to provide a sprinkler head of the lawn sprinkler type which discharges a very uniform spray covering a relatively large area.

Second, to provide a lawn sprinkler of the pop-up type in which the parts are simple in structure and easily assembled and disassembled, and one which is not likely to become clogged, but should it become clogged is very quickly cleaned or freed from the obstruction.

Third, to provide a spray head or nozzle which may be readily adjusted or adapted for the discharge of a predetermined volume of water or for particular pressures.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which embodies the features of my invention is clearly illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary view mainly in central longitudinal section.

Fig. 2 is an enlarged fragmentary partially sectioned view of the nozzle member.

Fig. 3 is a transverse section on line 3—3 of Figs. 1 and 4.

Fig. 4 is a side elevation with the nozzle in its projected or spraying position.

Fig. 5 is an enlarged detail section of a slightly modified form or embodiment of my invention.

Fig. 6 is a fragmentary view mainly in vertical section of a slightly modified form or embodiment of my invention.

Referring to the drawing, the tubular body member 1 of my spray head is internally threaded at 2 so that it may be screwed or threaded upon a riser of a water distributing system. The body member 1 is provided with an internal annular flange 3 intermediate its ends conformed to provide an upwardly facing shoulder 4 and a downwardly facing conical seat 5. The body member in the embodiment illustrated is provided with an annular recess 6 in its upper end and with a longitudinal groove 7 above the flange 3. The relation of these features to the coating parts will appear as the description proceeds.

The tubular nozzle member 8 is provided with a tubular stem 9 connected to the nozzle through a coupling member 10 which is threaded into the coupling. This coupling member is provided with a lug 11 at one side slidably engaging the groove 7. The stem is provided with a flange 12 at its lower end having a curved face 13 on its upper side which coacts with the conical seat 5 to form

a valve when the nozzle is in projected position; further, this curved face 13 coacting with the conical seat 5 acts to center the nozzle when it is projected by the force of the water. The projected or operative position is shown in Fig. 4.

The nozzle member is provided with an internal flange 14 which serves as a support for the tip retaining member 15. The nozzle is provided with a series of V-shaped notches 16 in its upper or outer end, these notches being radially disposed and in the preferred embodiment illustrated having inwardly inclined bottoms 17. The notches form a series of jet orifices 18 and extend through the wall of the nozzle member so that they open into the inner surface 19 thereof, which in a nozzle designed to cover a complete circle is cylindrical.

The tip member 20 is provided with a stem 21 having threaded engagement with the retaining member 15. This tip member has a portion 22 fitting within the notched or serrated portion of the nozzle member and partially closing the jet orifices.

In the embodiments shown in Figs. 1-5, inclusive, the tip member is provided with a flange 23 which seats or rests upon the end of the nozzle member. However, in the embodiment shown in Fig. 6 this flange is omitted and it is not essential to effective spraying although it adds somewhat to the appearance of the structure and it serves as a stop for the tip. The tip is provided with a head portion 24 adapted to seat in the recess 6 and constituting a closure for the spray head. It is intended that in manufacture the under side of the flange 23 shall be machined or cut away to the desired extent to control or determine the capacity of the spray head, that is, it is not usually deemed desirable to permit a wide range of adjustment on the part of the user of the spray heads, although it is not necessary that the flange be completely seated in order to secure effective spraying.

When it is desired to clean the spray head or to free the jet orifices from obstructions, the tip may be completely removed and the obstructions brushed away, or the tip may be partially unscrewed and the obstructions removed by flushing.

In Fig. 5 the nozzle is beveled at 28 but this is largely a matter of manufacturing convenience and does not affect the result.

In the embodiment shown in Fig. 6 the tip is provided with a shoulder 25 which serves as a stop. In this embodiment the retaining member 26 is formed integrally with the nozzle member.

In this embodiment the shoulder 25 is suitably machined to secure the nozzle adjustment for the tip, that is, the adjustment designed by the manufacturer, but again the tip may be backed off partially to increase the capacity of the jet orifices if that is desired. The inner surface 27 of the tip is preferably conical in form while the opposed surface 141 of the nozzle member is also preferably conical. These surfaces 27 and 141 are preferably substantially parallel as illustrated. This results in avoiding angles and pockets that might produce unnecessary turbulence and effectively directs the water to the jet orifices.

In the embodiment shown in Fig. 6, the surface 261 of the nozzle member is conical and the delivery passages of the nozzle member cut into it. The same general result is present of directing the water and minimizing turbulence.

Spray nozzles embodying my invention are highly efficient and are found to produce a very uniform spray. The structure readily lends itself to making full spray heads, or quarter, half or three-quarter spray heads, as desired, that is, spray heads designed to cover the 360 degrees of surrounding surface or only a fraction of that surface, this being determined by the portion of the nozzle embraced by the serrations or jet orifices. While the heads without adjustment are effective through a very wide range of water pressures, they are easily adapted to particular water pressures as I have pointed out.

I have illustrated and described my invention in an embodiment which is very practical. I have not attempted to illustrate or describe other embodiments or adaptations as it is believed this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

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

1. In a sprinkler head, the combination of a tubular nozzle member having a plurality of V-shaped radially disposed notches in its outer end extending through the wall thereof, and a tip member adjustably associated with said nozzle member and having a body portion fitting within the said nozzle member to partially close the inner ends of said notches.

2. In a sprinkler head, the combination with a nozzle member having a series of serrations in its outer end opening through the wall thereof and providing jet orifices, and a tip member adjustably associated with said nozzle member and having a body portion internally fitting the said nozzle member to partially close the jet orifices.

3. In a sprinkler head, the combination with a nozzle member having a series of serrations in its outer end opening therethrough and providing jet orifices, and a tip member adjustably associated with said nozzle member and having a cylindrical body portion fitting within the nozzle member to partially close the inner ends of said notches, said tip member being provided with an

inverted conical portion extending downwardly from its said cylindrical body portion and said nozzle member having an opposed conical portion and being provided with a water inlet connection at the base of said conical portion.

4. In a sprinkler, the combination of a tubular nozzle member having an internally cylindrical portion at its upper end, the wall surrounding said cylindrical portion having a plurality of V-shaped radially disposed notches extending entirely through the wall, the bottoms of the notches being inwardly inclined, a tip member having a cylindrical body portion internally fitting the cylindrical portion of said nozzle member to partially close the inner ends of said notches, said tip member having an annular flange overhanging the notched end of said nozzle member and being provided with a central threaded stem, and a retaining member in said nozzle member into which said nozzle member is threaded.

5. In a sprinkler, the combination of a tubular nozzle member having an internally cylindrical portion at its upper end, the wall surrounding said cylindrical portion having a plurality of radially disposed notches extending entirely through the wall, the bottoms of the notches being inwardly inclined, said nozzle member having an inclined conical surface below and joining its said internally cylindrical portion, and a tip member having a cylindrical body portion internally fitting the cylindrical portion of said nozzle member to partially close the inner ends of said notches, said tip member having an inverted conical portion below and joining with its said cylindrical portion, the said conical surfaces of said nozzle and tip members being substantially parallel.

6. In a sprinkler head, the combination with a tubular nozzle member having an internally cylindrical end portion with a surrounding wall of substantial thickness provided with a plurality of V-shaped radially disposed notches in its outer end, the notches extending entirely through the wall and their bottoms being inclined inwardly, and a tip member having an externally cylindrical body portion rotatably fitting within said internally cylindrical portion of said nozzle member and partially closing the inner ends of said notches, said tip member having a central threaded stem at its inner end engaging said nozzle member and being provided with a flange overlying the notched end of said nozzle member.

7. The combination of a tubular nozzle having an internally cylindrical end portion provided with a plurality of radially disposed serrations in its outer end extending entirely through the wall, and a tip member having a cylindrical body portion fitting within said internally cylindrical portion of said nozzle member and partially closing the inner ends of said notches, said tip member having a central threaded stem at its inner end engaging said nozzle member and being provided with a flange overlapping the serrated end of said nozzle member.

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