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N. HERTEL

2,434,767

SPRINKLER NOZZLE

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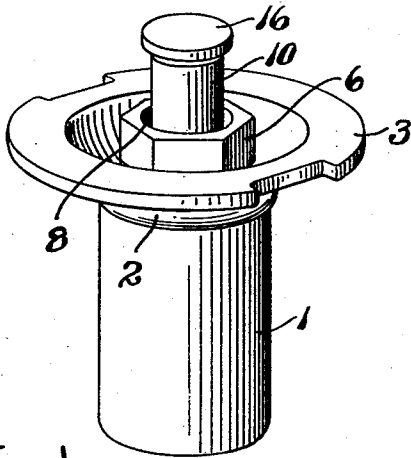


Fig. 1.

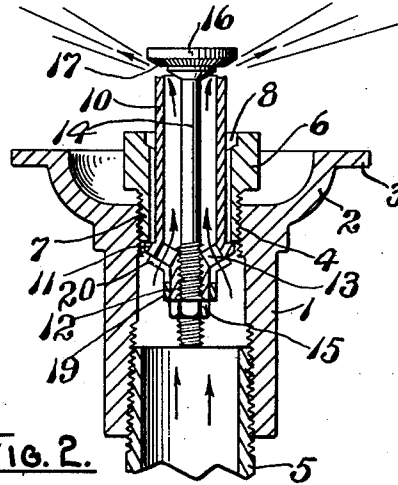


Fig. 2.

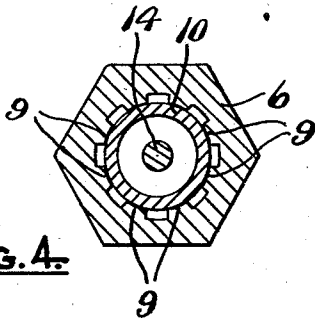


Fig. 4.

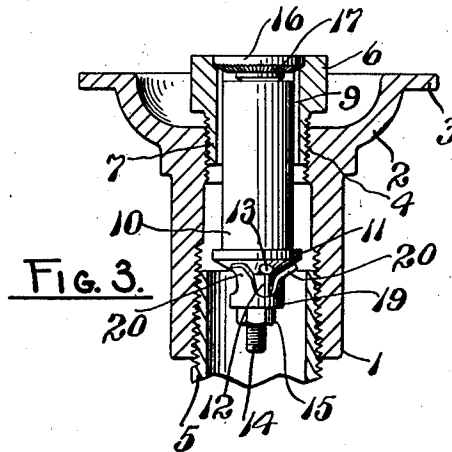


Fig. 3.

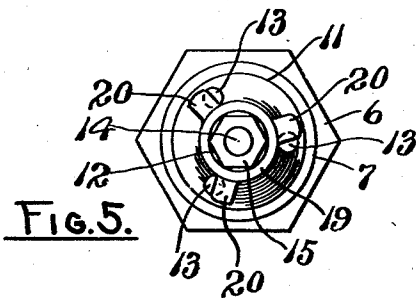


Fig. 5.

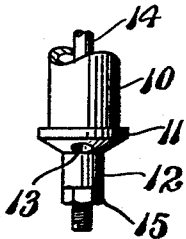


Fig. 7.

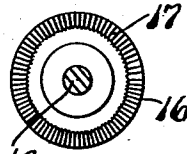


Fig. 6.

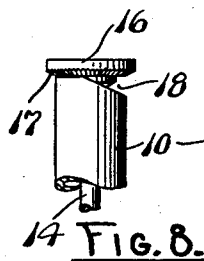


Fig. 8.

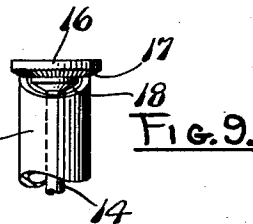


Fig. 9.

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2,434,767

SPRINKLER NOZZLE

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Application February 16, 1946, Serial No. 648,114

1 Claim. (Cl. 299—61)

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This invention relates to a sprinkler nozzle and is primarily concerned with improving, simplifying and reducing the cost of manufacture of the sprinkler nozzle shown in my Patent No. 1,931,761, which was granted October 24, 1933.

The novel construction of sprinkler nozzle which I have produced is made of parts, the major portion of which are readily produced on an automatic screw machine, are very quickly and readily assembled, are easily installed in their place of use and may be readily adjusted for control of the spray as to its direction, distance and character and having a novel means for controlling the quantity of the water passed.

An understanding of the invention may be had from the following description taken in connection with the accompanying drawing, in which,

Fig. 1 is a perspective view of the sprinkler nozzle construction of my invention.

Fig. 2 is a central vertical section therethrough, the sprinkler nozzle in both Figs. 1 and 2 being in the position occupied when in use.

Fig. 3 is a view similar to Fig. 2, with the interior parts in elevation and not in section, and with the parts occupying the position occupied when not in use.

Fig. 4 is a somewhat enlarged horizontal section through the removable unit of said nozzle.

Fig. 5 is an under plan view of the lower end of said unit.

Fig. 6 is a somewhat enlarged under plan view of the head against the lower side of which the water impinges and by which the water is directed outwardly.

Fig. 7 is a fragmentary elevation of the lower end of the inner element of said removable unit having the adjustable water control removed, and

Figs. 8 and 9 are fragmentary elevations, the two elevations being in planes at right angles to each other, of a modified form of construction.

Like reference characters refer to like parts in the several figures of the drawing.

In the construction shown, an outer mounting member of metal is provided having a depending sleeve 1 interiorly threaded at its lower end, from which, at its upper end, a somewhat shallow cup like portion 2 extends upwardly and outwardly which at its upper edges is provided with a horizontal flange 3. Interiorly of the sleeve at its upper end it is somewhat reduced in diameter and interiorly threaded as indicated at 4. A water conveying pipe 5 exteriorly threaded at its end, in service is screwed into the lower end of the sleeve 1 as shown in Figs. 2 and 3.

The sprinkler unit used with this first described

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member and upon which it is mounted includes a sleeve having a somewhat enlarged upper head portion 6, preferably of hexagonal form for the connection of a wrench, though it may be of any other form to which a wrench may be applied, and from which an exteriorly threaded sleeve 7 depends, adapted to be screwed into the upper end of the sleeve 1 as shown in Figs. 2 and 3. The vertical opening through the member described at its upper end is enlarged to provide an annular recess 8 and vertical grooves with vertical ribs 9 between the grooves are cut lengthwise of and within the member, the grooves providing vertical passages as shown.

A cylindrical sleeve 10 of a length greater than the overall length of the head 6 and sleeve 7 depending therefrom passes slidably through said sleeve 7 and head 6, at its lower end being closed and having an outwardly extending annular rib or ledge 11 the exterior diameter of which is greater than the interior diameter of the sleeve 7. In the lower closed end of the sleeve 10 a plurality of openings 13 are made for water passage. A short sleeve 12 extends downwardly from the closed end of the sleeve 10 as shown.

The short sleeve 12 has a central axial opening therethrough through which a rod 14 passes. The rod is threaded at its lower end portion and is threaded through the sleeve 12 and receives a nut 15 which may be adjusted to different positions in the threaded portion of said rod 14. At the upper end of the rod 14, which extends through and to or above the upper end of the sleeve 10, a disk-like head 16 is permanently secured or made integral with the rod 14, at its lower side having an upwardly and outwardly inclined annular surface 17 which is radially ribbed as shown, the ribs and depressions between being large in number.

With the construction as described and with the parts occupying the position shown in Fig. 3, the disk-like head 16 is in a lower position being received within the recess 8 of the hexagonal head 6, and the upper end of sprinkler nozzle is completely closed and is at a plane such that if the sprinkler head is mounted substantially flush with the surface of the ground a lawn mower or other means used to cut the grass will pass thereover.

The distance that the under side of the head 16 is to extend above the upper end of the sleeve 10 may be adjusted by screwing the rod 14 through the sleeve in either an upward or downward direction as desired, and then turning the nut 15 to bear against the lower end of the collar 12, the

nut serving as a lock nut to retain the parts securely in position. Water under pressure passing through the inlet pipe 5 will pass upwardly through the openings 13 and through the passages between the ribs 9 and also coming against the lower end of the sleeve 10, closed except for the passages 13, will force said sleeve 10 and the parts carried thereby to an upper position, as in Figs. 1 and 2, or until stopped by the rib 11 coming against the sleeve 7. The water is then directed outwardly through the annular passage between the upper end of sleeve 10 and the lower side of the head 16 and will disperse in relatively finely divided spray radially in all directions by reason of its engagement against the ribbed upwardly and outwardly inclined annular surface 17. On the water being closed off and the pressure relieved the parts will drop by gravity to the position shown in Fig. 3.

The structure as described may be used without the water control element which, as shown in Fig. 5, may be used to partially cover the openings 13. Such water control element comprises a collar 19 which fits over the lower end of the sleeve 12 and has upwardly and outwardly diverging radially spaced fingers 20, one for each of the openings 13. It is evident that the collar may be turned about a vertical axis and the fingers 20 be positioned to overlap, so far as may be wanted, the passage openings at 13 and thus control the water passing through said openings to any degree between full open passage and a position in which the openings 13 are completely closed.

The upper end of the sleeve 10 instead of lying in a horizontal plane may, as shown in Figs. 8 and 9, have a side cut away to provide a lateral opening as indicated at 18. Then by adjusting the head 16 so as to bear against the remaining horizontal portion of the sleeve 10 only the opening at 18 will be left for outward water passage in which case water will be projected from the head to one side only, this being desirable for example adjacent a sidewalk or other boundary of an area to be sprinkled, to conserve water which might be wasted by projections upon the sidewalk or other areas not wanted.

The construction described is particularly economical to produce, the major portion of all parts and of all operations thereon being performed upon an automatic screw machine so that large quantity production is attained in a very economical manner. The lifting of the upper end of the vertically movable unit to an upper position facilitates the outward projection of the water leaving the nozzle without any interference from lateral obstructions. The outward spray may also be regulated as to its distance of projection by flattening out the path of the spray by adjusting the head 16 closer to the upper end of the sleeve 10 and of course the head may also be adjusted to a distance farther away therefrom.

For the change in adjustment a wrench applied to the head 6 provides a very easy removal of the entire unit for effecting any adjustment desired, either of the distance of the head 16 from the upper end of the sleeve 10 or of the fingers 20 as to the amount of their coverage of the water passing openings 13.

The invention is very practical, readily and economically produced and has proved very successful in practice. The claim appended hereto is to be considered comprehensive of all forms of structure coming within its scope.

I claim:

In a construction as described, a support having a vertical passage therethrough adapted to have water under pressure delivered into the lower portion of said passage, a head having a vertical passage therethrough detachably connected to said support at the upper end of its vertical passage, a sleeve longer than said head extending through the vertical passage in said head and movable vertically therein, said sleeve being open at its upper end and having a closed lower end with openings therethrough and provided with an outwardly extending ledge adapted to come against the lower end of said head to limit the upward movement of said sleeve, a rod extending centrally of said sleeve and threaded at its lower portion, said sleeve having a short sleeve portion of reduced diameter extending downwardly from its lower end interiorly threaded for engagement with the threaded portion of said rod, a head at the upper end of said rod above the upper end of the sleeve having outwardly extending annular surfaces against which water under pressure may be forced to radially disseminate the water, a nut threaded onto the lower end of said rod to come against the lower end of said short sleeve, and a collar around said short sleeve above the nut having spaced fingers extending from said collar, one for each of the openings in the lower end of the sleeve, said collar and fingers being movable about a vertical axis to open or partially close said openings, as specified.

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The following references are of record in the file of this patent:

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1,931,761	Hertel	Oct. 24, 1933
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