

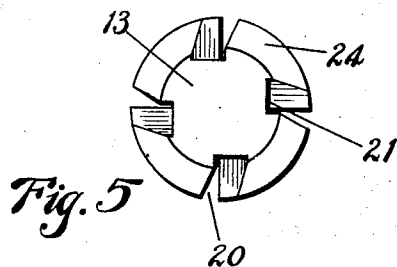
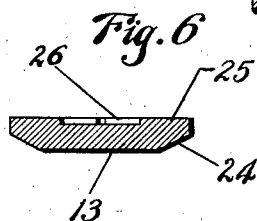
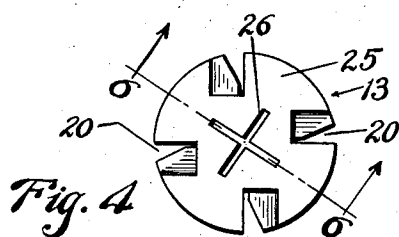
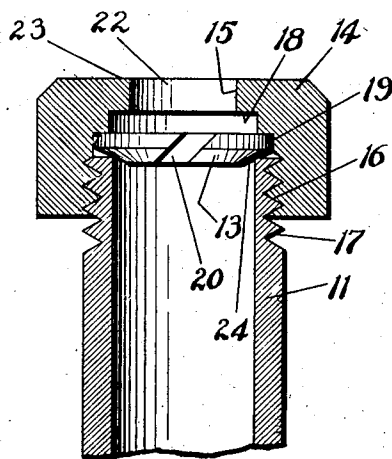
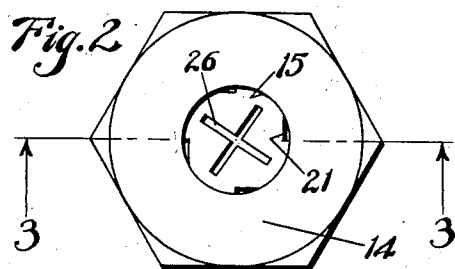
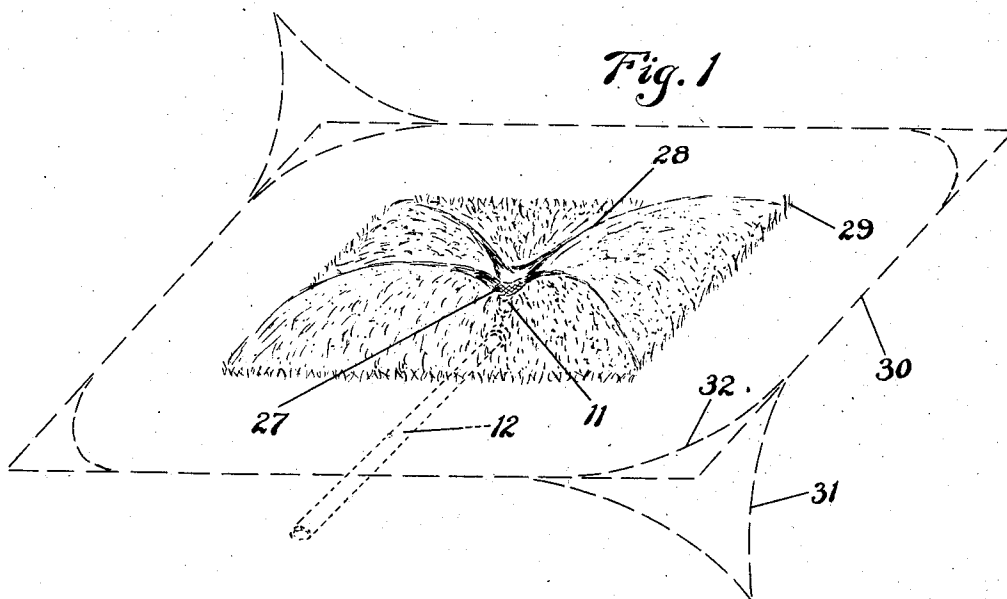
April 29, 1930.

M. E. ESTEP

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LAWN SPRINKLER

Filed June 23, 1925



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UNITED STATES PATENT OFFICE

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LAWN SPRINKLER

Application filed June 23, 1925. Serial No. 39,013.

My present invention is a lawn sprinkler providing simple and practical means for throwing what I may term a "square" spray.

Sprinklers in common use, whether or not they comprise moving parts, commonly wet circular or semicircular areas with the result that, in order to wet all parts of a lawn, there is usually a considerable overlapping of circles,—with a consequent uneven distribution and waste of water; and it is an object of my invention to provide sprinklers adapted, when disposed at equal distances in parallel rows, to distribute substantially the same quantity of water, in a given time, to all parts of a lawn,—without appreciable overlapping or omissions.

It is an object of my invention to provide an inexpensive and reliable sprinkler, adapted to be made and sold at moderate cost, capable of being easily and quickly installed at the end of an upright pipe nipple, or the like, such as may be connected with a hidden distribution pipe or an ordinary hose base; and a preferred embodiment of my invention may comprise a circular disc diagonally slotted at four points equally distributed on its circumference, this disc being held in place by means such as a threaded cap provided with a central aperture and with intermediate shoulders, as hereinafter described. Embodiments of my present invention may be adapted to distribute water over various regular or irregular polygonal figures, such as triangles or pentagons or stars of various types; and it is an object of the hereinafter described form of my invention not only to provide a sprayer adapted to wet a predetermined geometrical figure but to provide incidental means enabling the user to so orient his sprinkler that the corners of the spray may extend in desired directions.

Other objects of my invention will appear from the following description of an advantageous embodiment thereof, taken in connection with the appended claims and the accompanying drawings, in which—

Fig. 1 is a perspective view, showing how one of my sprinklers may appear when water is partially turned on,—dotted and dash lines

being employed in this figure for purposes hereinafter described.

Fig. 2 is a top plan view of one of my sprinklers.

Fig. 3 is a vertical sectional view, taken substantially as indicated by the line 3—3 of Fig. 2.

Figs. 4 and 5 are respectively a top plan view and a bottom plan view of a slotted disc which is shown in elevation in Fig. 3.

Fig. 6 is a sectional view of said disc, taken substantially as indicated by the line 6—6 of Fig. 4.

Referring to the details of that specific embodiment of my invention chosen for purposes of illustration, 11 may be an ordinary threaded nipple, extending upright from a so-called hose base or from an underground distributing pipe 12; and on the upper end of this element, which may be an ordinary half inch nipple, a slotted disc 13, of special configuration, may be retained by means such as an apertured cap 14, shown as provided not only with an outlet opening 15 and with interior threads 16 to engage cooperating threads 17 on said nipple, but with intermediate shoulders 18 and 19, the latter being adapted directly to engage the practically flat upper surface of the disc 13.

In the disc 13, as at four points separated circumferentially at a quadrant's distance from one another, I cut inclined slots 20, substantially as shown, these slots being cut deep enough to permit the inner corner 21 to extend within the projection of the opening 15 upon the disc 13 so that these corners are visible through the opening 15 when viewed vertically from above the cap 14. The depth and form of these slots is important for the reason that, although I am unable to explain all of my results, I find that the cutting of deep slots tends to produce a star shaped figure whereas the cutting of unduly shallow slots results in a rounding of the corners of the sprayed area; and it is important that the shoulder 18 be spaced from the disc 13 in substantially the manner shown, and it is also important that the cylindrical surface 22 of the aperture 15 meet the top surface 23 of the cap 14 substantially at right angles,—

any beveling or tapering at the point last referred to being effective to produce a substantially circular distribution of water, even though the plate 13 be slotted, and other described parts be related substantially as described.

When water at an ordinary pressure, such as a pressure of fifty pounds per square inch is delivered to a $\frac{3}{4}$ inch pipe 12, or its equivalent, 7 to 9 sprayers of the general type described may be uniformly distributed therealong, each being relied upon to project a practically "square" spray, perhaps sixteen feet in diameter, a lesser number of sprayers, placed closer together, being preferably used when the local water pressure is lower. When the water pressure amounts to seventy-five pounds, or thereabouts, ten or more sprayers may be installed on a single run of $\frac{3}{4}$ inch pipe; and it will be obvious that, as the number of sprayers is reduced, they may be relied upon to water larger areas such as areas exceeding twenty-five feet in diameter.

In order to make a good contact with the end of a nipple or other delivery pipe, the discs 13 may be beveled on their under surfaces, substantially as suggested at 24; and, in order to aid the user in orienting the respective sprayers, so that the corners of the resultant squares shall extend in predetermined directions, the top surfaces 25 thereof may optionally be provided with means such as an X 26, the respective lines thereof indicating the corners of the mentioned square.

When water is turned on at partial pressure, the result may be substantially as indicated in Fig. 1, a "bowl" 27 of water, perhaps 8 inches in diameter, being formed at 27, immediately above the outlet opening 15, and "horns" 28 being projected toward the corners 29 of a rectangular area.

Upon turning on full pressure, the sprinkled area may increase to dimensions such as are suggested by the dash line 30. When, however, the diagonal slots 20 have been cut to an insufficient depth, the corners of the sprinkled area may be rounded, somewhat as indicated by the line 32; whereas, if all or some of the corners have been cut to an excessive depth, the result may be the formation of a star or other figure, such as a figure including relatively sharp projecting points as indicated by the line 31; and in this connection it should be noted that a great variety of regular or irregular spray figures may be produced by suitably varying the distribution and form of the described slots or their equivalents cut in the beveled periphery of a disc 13. There may be little call for triangular or pentagonal or other non-circular sprays of unusual form; but my invention permits of the production of such sprays, when desired, for the watering of unusual plots,—between walks or at the edges of plantings, or at the boundaries of

irregular estates, or elsewhere. An identical cap may be used with various discs interchangeably used; and if desired, the X stamped in the top of the disc 13 may be sufficiently deep to permit the use of a screw-driver in adjusting the orientation of the same; but the disc 13 is not intended to rotate in use. The inclination of the slots therein may be about 45° .

I have herein described in detail one complete embodiment of my invention; but it should be understood that various features of this invention might be independently used, and also that numerous modifications might be made, by those skilled in the art to which this case relates, without the slightest departure from the spirit and scope of my invention, as the same is indicated above and in the following claims. For example, even though it be true that spacing means could be provided on the disc 13 rather than on the cap 14, or that these elements might be cast or otherwise formed integral with one another or with a nipple or other tubular element, or that they might be secured to such tubular element otherwise than by a threaded connection, there would appear to be no special advantage and no additional act of invention, involved in the production of such alternative forms.

I claim as my invention:

1. A lawn sprinkler for throwing a non-circular spray comprising: a cap provided with a perpendicular aperture and adapted to be secured to an upright tubular outlet element; and a disc retained by said cap and provided with inclined slots having inner edges extending within the projection of the aperture in said cap upon said disc, said slots being inclined relative to vertical radial planes spaced about the periphery of said disc, said cap being provided with a shoulder adapted to contact with said disc and with a second shoulder spaced therefrom.

2. A lawn sprinkler for throwing a non-circular spray comprising: a cap having a cylindrical outlet opening provided therein; and a stationary disc positioned below and in spaced relation with the opening in said cap, the periphery of said disc being provided with radial slots inclined relative to the surface plane of said disc, the inner corners of which extend within the projection of said cylindrical opening upon said disc, and the upper edge of said cylindrical opening being disposed at right angles with the upper surface of said cap.

3. A lawn sprinkler for throwing a non-circular spray comprising: a cap having a cylindrical outlet opening provided therein; a stationary disc positioned below and in spaced relation with the opening in said cap, and means for varying the orientation of said disc relative to said cap; the periphery of said disc being provided with radial slots

inclined relative to the surface plane of said disk, the inner corners of which extend within the projection of said cylindrical opening upon said disc, and the upper edge of said cylindrical opening being disposed at right angles with the upper surface of said cap.

4. A lawn sprinkler comprising: a nipple; a centrally apertured cap and a disk adapted to be adjustably retained between said cap and said nipple, said cap being internally provided with a disk engaging shoulder and an upper shoulder spaced thereabove and inwardly terminating in said central aperture, said disk being provided with radial slots in the periphery thereof, said slots having side faces inclined relative to the surface plane of said disk; and an inner face perpendicular to said plane and said side faces, the inner faces of said slots extending within the projection of said central aperture onto said disk.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 17th day of June, 1925.

MILES E. ESTEP.

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