O. F. LARSON.

SPRINKLER HEAD.

APPLICATION FILED OCT. 28, 1914.

1,181,145. Patented May 2, 1916.

Fig. 1.

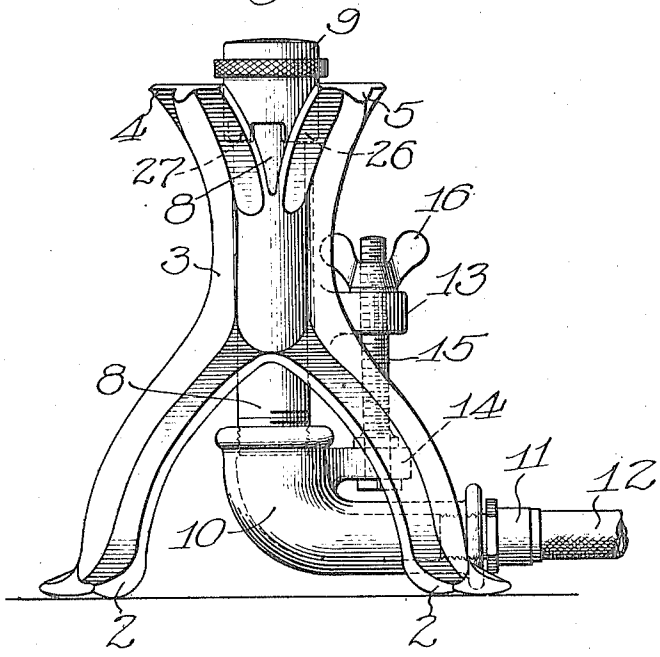


Fig. 3.

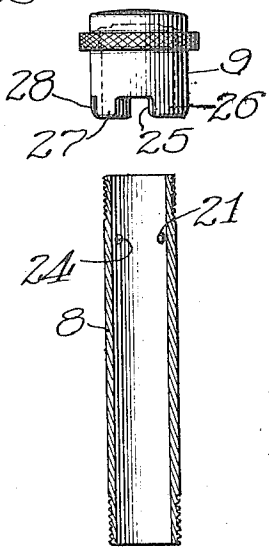


Fig. 4.

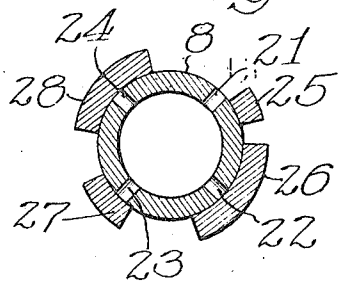


Fig. 2.

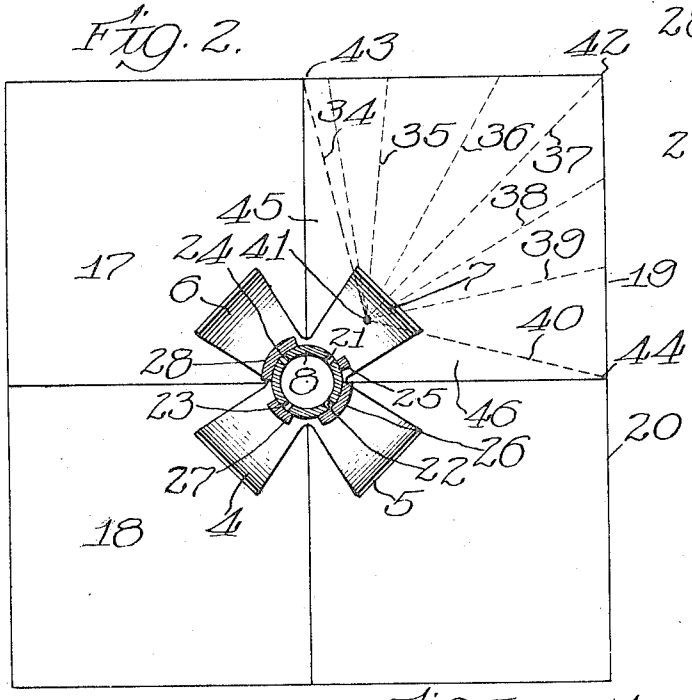
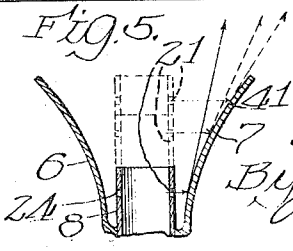


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SPRINKLER-HEAD.

1,181,145. Specification of Letters Patent. Patented May 2, 1916.

Application filed October 28, 1914. Serial No. 869,002.

To all whom it may concern:

Be it known that I, OSCAR F. LARSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sprinkler-Heads, of which the following is a specification.

My invention relates to lawn sprinklers and the like and has particular reference to the formation of the heads thereof.

The object of the invention is to provide a head which will sprinkle a rectangular instead of the usual circular area to the end of saving water to a large extent, avoiding uneven sprinkling incidental to overlapping circular sprinklings which makes some parts of the lawn more heavily sprinkled than others, and to make it possible to sprinkle along the edges of walks the full width of the sprinkler's area without sprinkling over the walks and incommoding pedestrians.

With these general objects in view the invention consists in the novel form of construction of sprinkler head, its combination with a stand and arrangement of parts, all as hereinafter described in detail, illustrated in the accompanying drawing and incorporated in the appended claims.

In the drawing Figure 1 is a side elevation of a sprinkler head and low stand therefor embodying my invention. Fig. 2 is a plan view of the top of the sprinkler head together with a diagrammatic illustration of a rectangular area that this type of head is adapted to sprinkle either in whole or in one of the quarter sections indicated, or on two quarter sections. Fig. 3 is a vertical section of the sprinkler-head pipe. Fig. 4 is a horizontal section of the upper portion of the pipe containing the outlet holes. Fig. 5 is a vertical section of the upper end, the dotted lines indicating several adjustments and their effect.

In the several views 2 represents the feet in any suitable number of a stand 3 formed at its upper end with, or having mounted thereon, four deflectors, curved lips, wings, or guides 4, 5, 6 and 7, which are curved on, say, a three-inch radius. The stand is hollow and has loosely mounted therein a short pipe 8 with the upper end of which a cap 9 has threaded engagement. The lower end of the pipe is connected with an elbow 10 the free end of which is interiorly threaded to engage a threaded nipple 11 of a garden hose 12 connected with any suitable source of water under pressure. On the stand 3 is a lug 13 and on the elbow 10 a lug 14. These are connected by a screw 15 on which is a wing-nut 16 by means of which the pipe 8 may be raised or lowered to vary the distances of the jet openings from the wings and the points of impingements of the jets relative to the tips or straight outer edges of the wings. The form of area sprinkled when the sprinkler is operated to its full capacity is indicated by a square divided into sections 17, 18, 19 and 20, one section for each of a series of holes 21, 22, 23, 24 controlled, or opened and closed, by a series of lugs 25, 26, 27 and 28 formed in the rim of the cap 9 which may be turned to close all the holes or open only one, only two, only 3 or all four of the holes, one hole being arranged opposite each of the deflectors 4 to 7.

In Fig. 2 only one of the holes, namely hole 21, is shown open and only the wing 7 acting, but the operation in connection with this hole and wing is the same as that of the other holes and wings and the explanation of the operation over section 19 will suffice for all.

In Fig. 2 34, 35, 36, 37, 38, 39 and 40 are representative of sprays of water as they are deflected when a jet of water strikes the deflector 7 at the point 41, 34 and 40 of these sprays being substantially the shortest and 37 the longest, the distance that the drops of water are projected being gradually diminished from the point 42 to the points 43 and 44 when the hole 21 is adjusted to strike the point 41 in Figs. 2 and 5. 45 and 46 represent the places filled by finer sprays in the rear of 34 and 40 which gradually shorten from the points 43 and 44 toward the sprinkler head. The drops which are projected directly ahead in the vertical plane of the hole 21 have the most power while the laterally deflected drops have less power of projection the more they are directed toward a line at right angles to the hole. From the median line of the wing, or in the vertical plane of the jet from the hole the distance from the contact spot 41 increases toward the corners of the wing or deflector with corresponding increase of friction of the drops of water against the deflector. From the corners rearwardly the distances decrease, and, owing to the deflection laterally of the vertical, the project-

ing force also decreases gradually producing a sprinkled boundary line that is substantially straight. At the lowest position in Fig. 5 the drops strike a surface more inclined toward the perpendicular and the effect is to make the outer boundary line substantially circular. Hence through adjustment the present invention may be used for sprinkling circularly when this may be desired, as, for instance, on circular beds of flowers. Ordinarily the areas to be sprinkled are rectangular and by sprinkling within the confines of straight-sides spaces overlapping, waste of considerable water and uneven saturation of ground is obviated.

This invention is particularly desirable for the purpose of sprinkling up to the edges of sidewalks without, as usual, sprinkling over the walks to the annoyance of pedestrians who are compelled to leave the walks while passing a sprinkler.

When sprinkling elongated rectangular spaces only two sprays are required and the closing of the other two holes brings greater pressure to the jets in action which projects them farther, so that the space sprinkled may equal not merely two adjacent quarter squares but approximately three such squares alined. The spray produced is fine or misty causing even and gentle watering which does not injure delicate foliage or flowers. If a situation should require it the sprinkler head is also adapted to sprinkle an area in the form of wings, or all but one of the quarter sections of the large square. The method of connecting the cap 9 may be varied in numerous ways, likewise the method of adjusting the elevation of the holes relative to the deflectors.

I claim as my invention—

1. The combination in a sprinkler, of a pipe having a side water-jet outlet, a wing with an upwardly and outwardly curved surface facing said outlet and straight from side edge to side edge of the wing, and means for varying the level of said outlet relative to the outer edge of said surface.

2. The combination with a pipe having an opening in its side arranged to direct a jet of water in a horizontal direction, of an upwardly and outwardly curved wing having a straight-edge tip, said wing arranged in front of said outlet whereby a jet of water is dashed against said wing, and means for varying the level of said opening relative to said wing.

3. In a sprinkler, the combination with a pipe, of a series of horizontal jet openings, a convex wing with side edges in vertical planes and straight outer edge connecting said side edges, arranged opposite each of said openings, means for closing a portion of said openings, and means for changing the spray from one bounded by substantially straight edges to one bounded by curved edges.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OSCAR F. LARSON.

Witnesses:
JOHN ALBURG,
GEO. E. LUNDBERG.