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S. J. HOLLINGWORTH

1,968,396

SPRINKLING DEVICE

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Fig. 1.

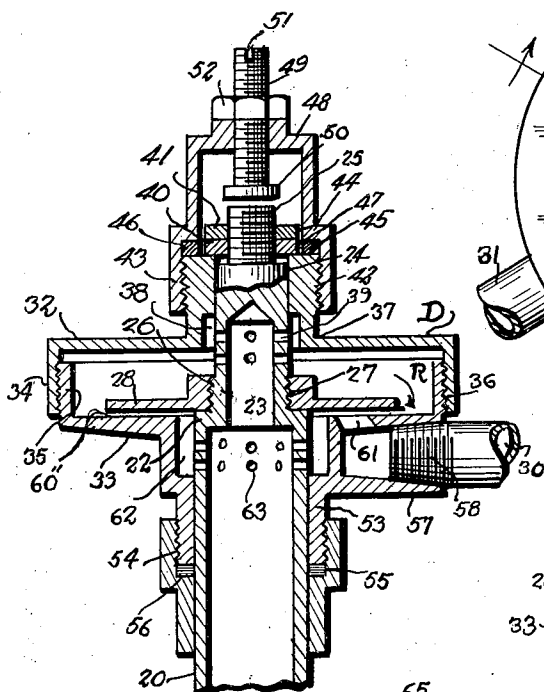


Fig. 2.

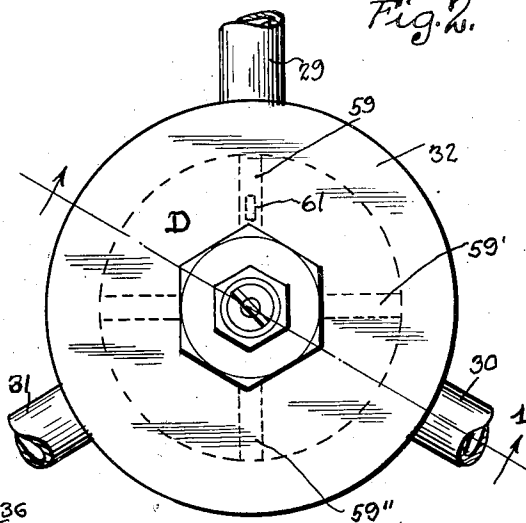


Fig. 4.

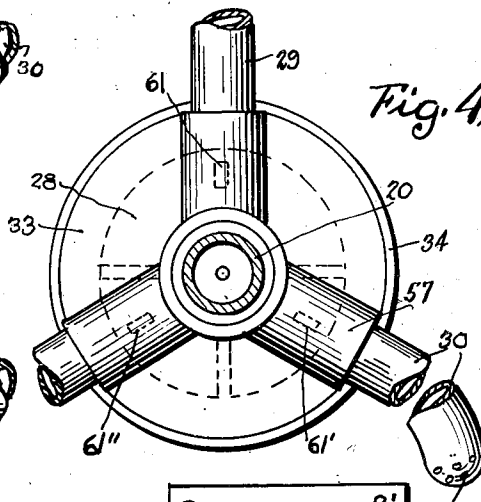


Fig. 3.

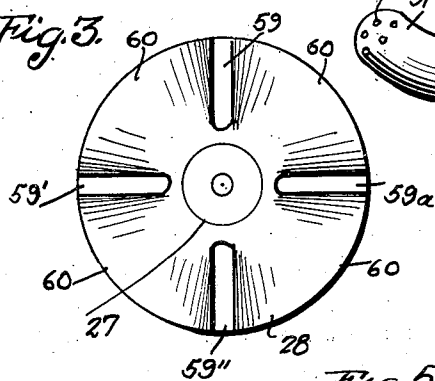


Fig. 5.

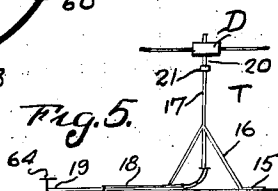


Fig. 7.

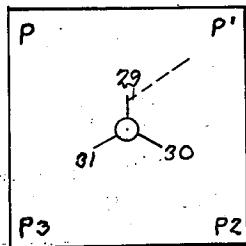
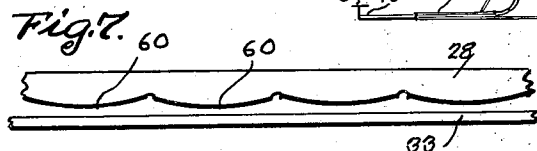


Fig. 6.

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UNITED STATES PATENT OFFICE

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SPRINKLING DEVICE

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1 Claim. (Cl. 299—18)

This invention relates to sprinkling devices, and more especially to sprinklers of the revoluble type adapted to use the water pressure to project the water radially of a vertical stand structure and to revolve the sprinkler device.

In such sprinklers the water is generally discharged in a circular path, the extreme limit of discharge being the circumference of a circle described about the axis of said structure, it being understood that the dispensing elements, or nozzles, are substantially parallel with the area to be sprinkled.

Obviously, when watering considerable areas with a device as above mentioned there will either be areas receiving overlapping waterings or else unwatered spaces will be left, both of which conditions are unsatisfactory.

An object of my invention therefore is to provide a sprinkler that will sprinkle square or other polysided areas which will match together without leaving interstitial spaces.

In practice I find that by arranging my sprinkler to cover a square area I get the most commonly desired results. In order to attain this object I prefer to employ three dispensing elements, or nozzles, carried by a revoluble water jacket, set 120 degrees apart, and so arranged with respect to a fixed internal horizontal member having four fluted grooves set at right angles to each other, that whenever any one of said nozzles is in full registry with any one of said grooves a strong jet of water will be carried out to a peak forming one corner of a square. Meanwhile, another nozzle, leaving a peak, is dispensing a uniformly diminishing jet, whereas, the third nozzle is approaching a peak and dispensing a uniformly increasing jet; the said arrangement of decrease and increase of distance thrown by the latter two nozzles being arranged to reduce the watered outline extending between peak and peak from an arc to a chord.

A further object is to provide a sprinkler having a water jacket freely revoluble about the upper end of a fixed stand pipe leading to a main water supply; said pipe carrying a tubular axle and a fixed member suitably grooved to register successively with ports formed in the lower structure of said jacket, each port being adapted to dispense water to a related nozzle.

A further object is to provide means for regulative adjustment between said grooved member and said ports provided in the base of said jacket and leading to said nozzles.

A further object is to provide regulably-adjustable means to support the weight of said revoluble elements of the device; together with further objects and advantages that may appear, to be particularly pointed out in the claim and illustrated in the drawing, attached hereto and made part hereof, in which:—

Figure 1 is a view of my invention taken on the line 1—1 of Figure 2.

Figure 2 is a top plan view.

Figure 3 is a bottom plan view of the grooved member.

Figure 4 is a bottom plan view of my device.

Figure 5 is a miniature diagrammatic elevational view.

Figure 6 is a miniature, top-diagrammatic view of my device indicating a square area covered by the sprinkling.

Figure 7 is a development of Figure 3.

Similar indicia of reference refer to similar parts throughout the several views.

In carrying out my invention I provide the portable stand T, which may well be a tripod comprising the feet (15), and the braces (16) adapted to support the stand pipe (17) which carries my sprinkler device D as a whole.

The lower end of the pipe (17) connects by means of the hose (18) with the water-supply main (19), all well shown relatively in the diagrammatic Figure 5. It will be observed that the member (20) is tubular, and forms the axle of the device. Said member is screw-threaded at the lower end for engagement with the coupling (21), is turned bright, and provided with the reducing shoulder (22) from which rises the smaller axle (23).

It will be noted that the axle (23) is centrally bored upwardly for a suitable distance for a purpose to be explained.

The top portion, however, is left solid at (24) and turned down and threaded suitably at (25) to engage lock nuts.

The lower portion of the axle (23) is provided with the male thread (26) of greater diameter than said axle and adapted to engage the complemental internal threads (27) formed in the grooved member (28), so that when said member is forcibly screwed home it will abut securely against the shoulder (22).

The revoluble elements of my device comprise the water jacket R and the dispensing arms or nozzles (29), (30) and (31). Said jacket comprises the upper and lower members (32) and (33) respectively, said upper member is flanged downwardly at (34) to engage the upwardly dis-

posed flange (35) by screw-threads as (36). Obviously, said members may be otherwise secured together, as by lugs and bolts.

The neck (37) rises concentrically from the member (32), is counterbored to provide the annular water-space (38) surrounding the adjacent portion of the reduced axle (23) which has perforations as (39) adapted to provide water ways establishing communication between the stem (20) and the jacket R. The upper portion of said neck is reenforced and bored to be a turnable fit on the portion (24) thus providing a seat for the nut (40) when screwed on to the threaded portion (25), and locked in adjustment by the nut (41). By varying the level of said nuts (40) and (41) the space (60'') can be increased or diminished to suit varying pressures and thereby attain straight line sprinkling between the peaks P, P1, P2, P3.

The upper end of said neck is externally threaded at (42) to match the internal thread (43) of the packing nut (44) suitably bored out to clear the nuts (40), and (41). The packing washer (45) is inserted between the upper surface (46) of said reenforcement and the annular surface (47), thereby providing a water-tight joint to prevent leakage upwardly from said jacket.

The nut (44) is diminished diametrally above the area of said washer and rises cylindrically to the closure (48) which is centrally bored and tapped to accommodate the adjustment screw (49) having the head (50) adapted to contact against the upper end of the threaded portion (25), said screw being provided with the slot (51) and the lock nut (52).

Said screw provides means for vertical adjustment of the head (50) against the upper end of the portion (25) to support the weight of the revoluble elements D and to provide regulable adjustment between the member (33) and the grooved member (28).

The lower jacket member (33) is adapted to slip upwardly on to the axle (20) and is journaled thereon by the neck (53) which is suitably threaded to engage threads (54) in the follower packing-gland (55); the packing washer (56) intervenes between said neck and said gland. When so disposed said members are then screwed tightly together as illustrated in Figure 1.

It will be noted in Figures 2, 4 and 6, that the present sprinkler is shown as having three nozzles, but the number could be varied, without departing from the spirit of the invention.

Figures 1 and 4 show threaded sockets as (57) adapted to receive threaded ends as (58) of said respective dispensing arms, or nozzles. Said sockets are cast integrally with member (33) and project downwardly below the plane thereof, and are set 120 degrees apart.

As the present embodiment of my sprinkler is designed to water a square area, I provide four radial grooves, (59), (59'), (59'') and (59a), set 90 degrees apart on the under side of the member (28).

Reference being had especially to Figures 3 and 7; it will be apparent that each quadrant of said grooved member has a radial ridge (60) at its center, and that each such ridge lies in the same plane as the inner surface of the member (33).

Ports (61), (61') and (61'') are provided transversely of the member (33) being arranged for passage of water from said jacket to the respective nozzles.

Having reference to Figure 2, it will be noted that the dispensing nozzle (29) registers fully with the port (61) which is assumed to be throwing a peak jet (P1) while the device D revolves counter-clockwise; in this position the nozzle (31) is throwing a gradually diminished jet while departing from the groove (59a), whereas the nozzle (30) is throwing a gradually increasing jet as it approaches full registry with the groove (59'): said respective grooves and ridges being so adapted and arranged that the augmented and diminished jets cover a straight line between peak and peak, thereby watering a square area.

It will be noted that as an equalizing means to get the same pressure in the jacket above and below the member (28), the member (33) is counter-bored at (62) and the adjacent portion of the axle (20) has the perforations (63) communicating therewith.

In the operation of my device, when water is turned on at the valve (64), Figure 5, water will be dispensed through the perforations (65) of said nozzles; this will cause the sprinkler to rotate counter-clockwise, causing water to be distributed with varying force from the respective nozzles according to their proximity to any one of said grooves in the member (28).

It is believed that my invention and the advantages to be gained by the use thereof are fully explained. In reducing the invention to practice, certain minor features in construction, combination and arrangement of parts may necessitate alteration, to which the patentee is entitled, providing such alteration is comprehended in the scope of what is claimed.

What I claim is:—

In a device of the kind described, a tubular axle, a disc-like member secured substantially mid-length of and at right angles to the axle, a plurality of radial grooves formed on the under side of the disc, said grooves separated by ridges; a water jacket comprising a lower and an upper member forming a chamber enclosing said disc-like member, a concentric neck extending downwardly from said lower member and journaled on the axle, a packing gland and packing engaging said neck and axle; a counterbore in said neck adjacently below said disc-like member and communicating with said grooves, perforations in said axle communicating with said counterbore; a concentric neck rising from said upper jacket-member and journaled on the axle, a counterbore in said upper neck open to the chamber, perforations in said axle leading to said upper counterbore and chamber; said axle comprising a solid upper end of reduced diameter protruding upwardly beyond the upper end of said upper neck, said solid portion screwthreaded, a nut engaging said threads and arranged to react against the upper end of said neck, a lock-nut carried by said threaded portion above the former nut; a packing gland and packing engaging said upper neck and axle, a concentric, vertically-disposed adjustment screw mounted in said gland and arranged to react against said axle end, and means to lock said screw; a plurality of reaction nozzles carried by the lower water jacket member, a port leading from the base of said lower jacket member to each said nozzle, the said ports successively cooperative with said grooves and ridges when under impellance.