Aug. 25, 1953

H. E. REINECKE

2,650,132

SPRINKLER TYPE IRRIGATING DEVICE

Filed Nov. 3, 1950

Fig. 1.

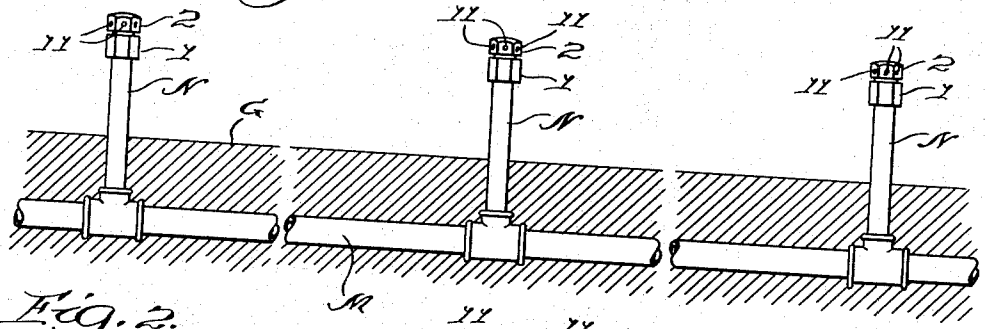


Fig. 2.

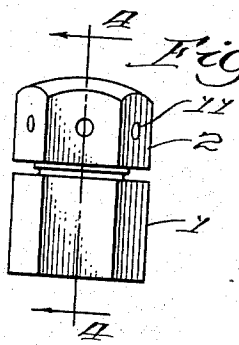


Fig. 3.

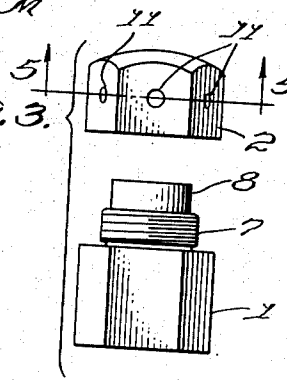


Fig. 4.

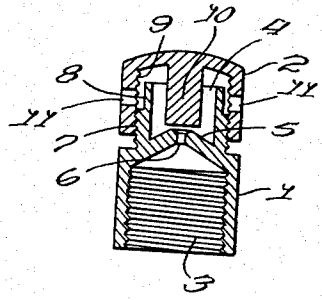


Fig. 5.

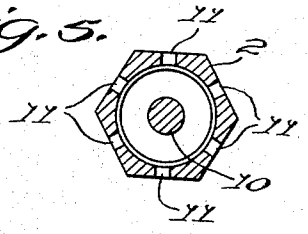


Fig. 6.

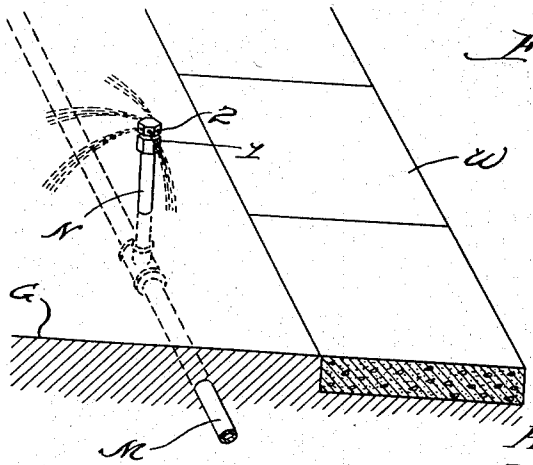
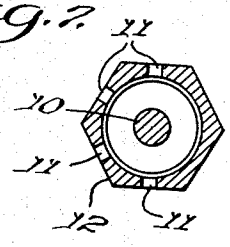


Fig. 7.



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SPRINKLER TYPE IRRIGATING DEVICE

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5 Claims. (Cl. 299—144)

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This invention relates to irrigating apparatus and particularly to a sprinkler head type thereof adapted for use beneath low growing plants for which ground irrigation only is desired. In landscaping installations in which varied types of plants are used some types are injured by the application of water to the leaves and must be watered only below the leaf growth. Ordinary sprinkler heads are sometimes employed, but in irrigating systems in which a large number of such heads are employed on a single main the pressure drop along the line results in less water being delivered at those heads farthest from the supply source. This condition is aggravated by the fact that in such installations the water is delivered at a very low pressure, generally only enough to throw the water, say, two or three feet at most from the head.

With these considerations in mind it is an object of the present invention to provide a sprinkler head for irrigating systems which is particularly adapted for use for under plants and in locations where irrigation is desired over limited areas.

Another object of the invention is to provide a sprinkler of the above character which is adjustable to vary the rate of flow therethrough.

A further object of the invention is to provide a sprinkler head for the above purpose which is simple and sturdy in construction and economical to manufacture and which is readily cleaned in the event that it becomes clogged.

A still further object of the invention is to provide a sprinkler head for the above purpose comprising a base portion with which different cap portions may interchangeably be used to distribute the water in a full circle or in a selected portion of a circle as required for installation at specific points in an irrigating system.

With the above objects in view, together with such other objects and advantages as may subsequently appear, the invention resides in the parts, and in the construction, combination, and arrangement of parts, described in the following specification of certain modes of execution of the invention, reference being had to the accompanying drawings which form a part of said specification and in which drawings:

Fig. 1 is a side elevation of a portion of a typical installation of a series of sprinkler heads embodying the present invention,

Fig. 2 is an enlarged side elevation of a sprinkler head embodying the invention,

Fig. 3 is an exploded view in side elevation of the component parts of the sprinkler head shown in Fig. 2,

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Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2,

Fig. 5 is a transverse sectional view of the cap component of the sprinkler head taken on the line 5—5 of Fig. 3,

Fig. 6 is a perspective view of a portion of a sprinkler system embodying a sprinkler head adapted to distribute water over an area which is less than a full circle, and

Fig. 7 is a view similar to Fig. 5, but showing the construction of a cap component for use in locations such as illustrated in Fig. 6.

Referring first to Fig. 1, there is shown a typical irrigating system including a main M extending beneath the ground G and having a series of nipples N extending therefrom and terminating above the ground. Each of the nipples N at the upper threaded end thereof carries a sprinkler head comprising a body element 1 and a cap element 2. The body element is formed from hexagon bar stock and at one end is provided with an internally threaded inlet bore 3 adapted to engage the upper ends of the nipples N. The opposite end of the body member is provided with an axially disposed outlet bore 4 which is axially aligned with the inlet bore and terminates in a conical end wall portion 5 which separates the outlet bore 4 from the inlet bore 3; said wall being provided with a small port 6 disposed axially of the body member and providing communication between the outlet bore 4 and the inlet bore 3 of the body member.

The body member 1 externally of the outlet bore 4 is provided with a reduced diameter, externally threaded portion 7 which terminates in an annular wall portion 8 having an external diameter slightly less than the root diameter of the threaded portion 7.

The cap element 2 is formed from the same size of bar stock as the body 1 and is provided with internal threads 9 which engage the threaded portion 7 and with an axially disposed valve element 10 the distal end of which is moved toward and away from the port 6 as the cap is screwed on or off of the body member and which thus regulates the amount of water allowed to flow through the port. When desired, the cap can be screwed on the body sufficiently to enable the valve element to completely shut off the flow. The side walls of the cap are provided with a plurality of radially extending ports 11 which are so disposed that when the cap is screwed to closed or shut off position, the holes are still above the outer end of the threads 7 on the body members (see Fig. 4). It is particularly to be noted in Figs. 4, 5 and 7 that each of the outlet ports 11 is of greater

cross sectional area than the inlet port 6 and that therefore the velocity of projection of water through the ports 11 will be materially less than the velocity through the port 6 even though the cap 2 be so adjusted as to permit full flow through the inlet port 6. In this respect, the present invention differs from the usual sprinkler head in that maximum velocity and consequent distance of projection of the discharged water is intentionally inhibited.

Assuming that a system has been installed, the various cap elements are then adjusted to give the desired amount or rates of flow and the system is ready for service. In some instances as along a walk W or alongside a building or wall the full circle of water distribution is not needed or is to be avoided. For such locations (see Fig. 6) a cap 12 which is identical with the cap element 2 except for having fewer outlet ports and having a portion of the periphery without ports is employed. In making the adjustment of such sprinkler caps to regulate the flow, the cap is adjusted until the desired rate of flow is achieved without regard for the direction of the ports incident to such adjustment. The body element is then turned on the nipple N or the nipple itself is screwed into or out of the T by which it is connected to the main until the ports are in the desired radial position. While the illustrated modification shows four ports, it will be understood that the number of ports and the angle between them or other angular position may be varied to suit each special situation.

While in the foregoing specification I have described and illustrated certain embodiments of my invention, I do not intend thereby to limit myself to the exact forms thus disclosed, and the invention is intended to embrace all such modifications in the parts, and in the construction, combination, and arrangement of parts as shall come within the purview of the appended claims.

I claim:

1. In a sprinkler type irrigating device, a body member having an internally threaded bore at one end affording means of attachment to a source of water supply, an outlet bore disposed in axial alignment with said inlet bore at the opposite end of said body member, an inlet port in said body member disposed in axial alignment with said bores and affording communication between said bores, a cap mounted on said body member and closing the outer end of said outlet bore and movable to infinitely variable fixed positions axially of said port; said cap having a plurality of discharge ports extending from the interior to the exterior thereof; and means formed integrally with said cap operable in response to axial movement of said cap relative to said body member to prevent the flow of water through said first-named port or to vary the flow therethrough from said outlet bore supply to said outlet bore and said discharge ports; the combined cross section-areas of said discharge ports being more than twice the cross sectional area of said inlet port.

2. In a sprinkler type irrigating device, a body member having axially aligned inlet and outlet bores formed in opposite ends thereof; said inlet end being adapted for attachment to a source of water supply, an inlet port in said body member disposed in axial alignment with said bores and affording communication between said bores, a cap mounted on said body member and closing the outer end of said outlet bore; said cap having internal threads engaging corresponding threads on the exterior of said body member, means carried by said cap and movable therewith axially of said body member toward and away from said port effective to vary the flow of water through said port into said outlet bore, and a plurality of radially disposed discharge ports in said cap extending from the exterior to the interior thereof effective to distribute water delivered thereto from said outlet bore over an area adjacent to said device; the combined cross section-areas of said discharge ports being more than twice the cross sectional area of said inlet port.

3. In a sprinkler type irrigator device, a body member having axially aligned inlet and outlet bores extending toward each other from opposite ends of said body member with the bottoms of said bores forming a wall therebetween and with the inlet bore being internally threaded for connection to a source of water supply, a port of lesser diameter than said bores extending through said wall and disposed in axial alignment with said bores, an external thread on said body member disposed coaxially with said outlet bore, an internally threaded cap member engaging said external thread and having a valve member movable therewith to infinitely variable fixed extents toward and away from said port as said cap is turned on said threaded engagement and effective thereby to vary the rate of flow of water through said port, and a plurality of radially disposed discharge ports of greater capacity than said inlet port extending through said cap member effective to distribute water entering said outlet bore through said first-named port to an area surrounding and disposed beneath said device at a reduced pressure and velocity.

4. In an irrigating device, a body member having axially aligned inlet and outlet bores formed in the opposite ends thereof; said inlet bore being internally threaded for connection with a source of water supply and the inner ends of said bores forming a conical wall between the bores disposed with the apex thereof extending into the outlet bore, an inlet port disposed in axial alignment with said bores extending through said wall and having an outlet orifice at the apex of said wall, a thread on the exterior of said body member disposed coaxially with respect to said outlet bore, a cap member closing the outer end of said outlet bore and comprising an end wall portion and an internally threaded side wall portion threadedly engaging the threads on said body member, and a valve element carried by and extending into said outlet bore and movable to infinitely variable fixed extents toward and away from said outlet orifice incident to movement of said cap member on said threads to vary the flow of water through said port, and a discharge port of greater cross sectional area than the cross sectional area of said inlet port extending through said side wall portion of said cap member.

5. In an irrigator, a body member having an internally threaded inlet bore at one end affording means for attachment to a source of water supply, an axially aligned outlet bore at the opposite end of said body member terminating in a conical bottom surface with the apex thereof directed toward the outer end of said bore, an inlet port disposed in axial alignment with said outlet bore extending through the apex of said bottom surface affording communication between said inlet bore and combining with said conical bottom surface to form an annular ridge about said port, an externally threaded portion on said body member disposed coaxially with respect to said

outlet bore, an annular wall of lesser external diameter than said externally threaded portion extending therefrom to the outer end of said outlet bore, a cap member having an end wall disposed beyond the outer end of said outlet bore and having an internally threaded side wall portion threadedly engaging the exteriorly threaded portion of said body member, a plurality of radially disposed discharge ports extending through the side wall of said cap member; each of said discharge ports having a cross sectional area greater than the cross sectional area of said inlet port, and a flat ended member formed integrally with the end portion of said cap member and disposed coaxially in said outlet bore adapted to engage or to be adjustably moved away from said annular ridge incident to relative rotation between

said cap member and said body member to prevent or to variably permit the flow of water from said inlet bore through said first named port into said outlet bore and thence out of said discharge ports.

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