

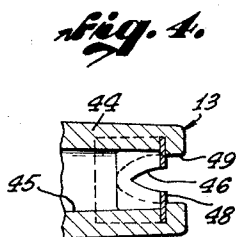
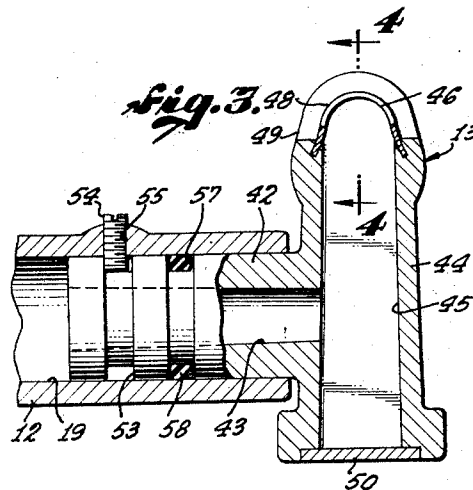
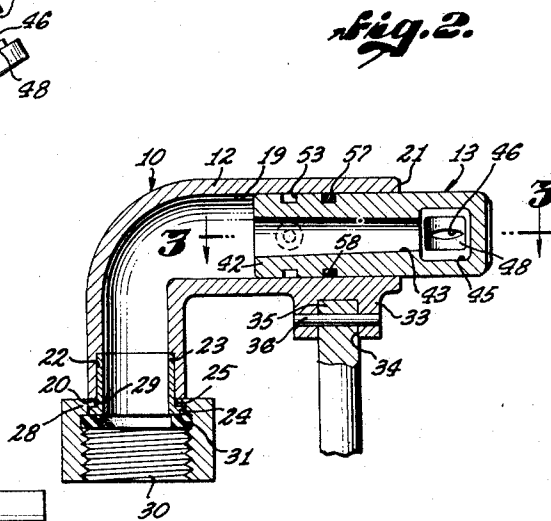
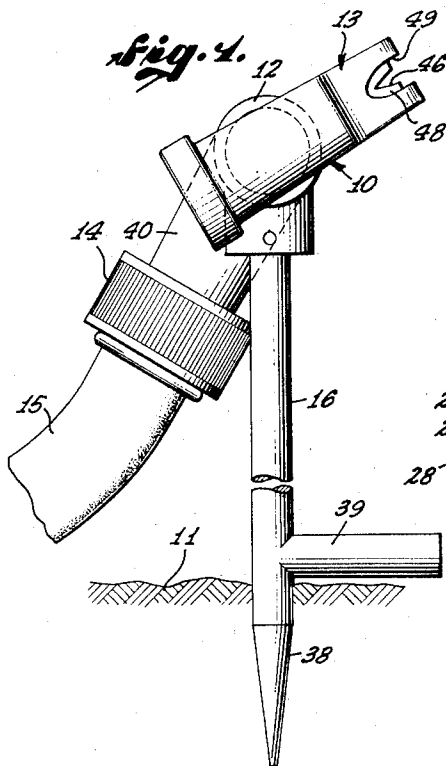
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ADJUSTABLE SPRINKLER WITH SUPPORT MEANS

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ADJUSTABLE SPRINKLER WITH SUPPORT MEANS

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This invention relates to improvements in sprinklers for gardens and lawns and more particularly to sprinklers that emit water in a fan shaped spray.

It is an object of the invention to provide a sprinkler having a nozzle which is adjustable for emitting a fan shaped spray at any desired angle with respect to ground level and which is adapted to be held firmly in its set position so that the direction of the spray will not change from that for which the sprinkler is set.

Another object of the invention is to provide a sprinkler of the above mentioned character which is simple and rugged in construction and because of its simplicity of construction may be produced inexpensively with a view to supplying the public with an improved sprinkler at small cost.

Further objects and advantages of the invention will become apparent during the following part of this specification, wherein the details of construction and mode of operation of an embodiment of the invention are described with reference to the accompanying drawing, in which:

Fig. 1 is a side elevation of a sprinkler embodying my invention;

Fig. 2 is a central longitudinal section of the sprinkler;

Fig. 3 is a transverse section through the sprinkler, taken on line 3—3 of Fig. 2; and

Fig. 4 is a transverse section through the nozzle portion of the sprinkler, taken on line 4—4 of Fig. 3.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of my invention, reference numeral 10 designates generally a sprinkler positioned in ground 11. The sprinkler 10 comprises a tubular body 12 having a nozzle 13 fitted in one end thereof and a swivel collar 14 rotatably mounted on its other end for attaching a garden hose 15 to the sprinkler. The body 12 is positioned above ground level by an upright support 16.

In the illustrated embodiment, the tubular body 12 is formed as a right angle elbow with a bore 19 extending from annular end face 20 thereof to annular end face 21. That end of the body which includes end face 20 has a counterbore 22 formed therein to receive a tubular nipple 23, the inside diameter of which is substantially equal to the diameter of bore 19. The length of the nipple is greater than the depth of the counterbore, whereby the nipple projects outwardly beyond the end face. It has annular flange 24 around its outer end and such flange is spaced outwardly from the end face 20 to provide an annular groove 25 around the projecting end of the nipple, with the inside face of the flange and the end face 20 defining the side walls of the groove. The nipple serves to rotatably mount the swivel collar 14 on the water inlet end of the sprinkler body.

Swivel collar 14 has an inwardly extending annular flange 28, a portion 29 of which has an inside diameter less than the outside diameter of flange 24, whereby the portion 29 projects into groove 25. Thus, to mount the collar on the body, the nipple 23 is inserted in the collar and into the water inlet end of the body where it is

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received in the counterbore 22 and press fitted in the body, or the body may be cast around the nipple. The collar is provided with internal screw threads 30 for coupling the sprinkler to an end of a garden hose and it contains a flat annular washer 31 of rubber or like material, which becomes seated against the end of the hose and against the inside face of flange 28 and the outside end face of the nipple to prevent leaks in the hose to sprinkler coupling.

For supporting the sprinkler above ground level, the body of the sprinkler is securely fixed to an end of support rod 16. In the form of the invention shown in the drawing, this has been done by forming on the body 12 a circular flange 33 defining a socket 34 in which head end 35 of the rod is received and secured by means of a pin 36 extending through aligned holes in the rod and in the flange. The other end 38 of the rod is pointed so that it may more easily penetrate the ground. There is a step bar 39 made integral at one end thereof, as by welding, with the rod 16 proximate the pointed end of the rod, and it extends at right angles to the rod 16. When installing the sprinkler, an operator will find it convenient to press down on the step bar with his foot to force the pointed end of the support rod into the ground. Also, the step bar 39 serves to hold the rod 16 firmly fixed against being turned in the ground, i. e. the step bar may be embedded or partly embedded in the surface of the ground as by stepping on it so that it will hold the support rod in upright position or at any angle in which it may be set. With the body 12 of the sprinkler thus held by the support rod 16 in fixed position above ground level, a garden hose may then be connected to the sprinkler, and since the coupling device, as constituted by swivel collar 14 for connecting the hose to the sprinkler, is rotatably mounted on the sprinkler itself rather than on the hose, the coupling of hose to sprinkler may be effected without turning or twisting the hose. Thus the hose will hang in a slack condition from the sprinkler without exerting any torsional or other strain on the sprinkler tending to swing the sprinkler from the position in which it is set. Also, it is important to note that the socket defining flange 33 for receiving the support rod is formed with the axis thereof extending radially from the sprinkler body 12, and as shown best in Fig. 1 of the drawing, the axis of the socket extends at an acute angle with respect to the axis of that leg 40 of the body 12 carrying the swivel collar. Thus when the support rod is positioned vertically in the ground, the leg 40 of the body will be disposed in an angular position with respect to the support rod so that the hose may be connected to the sprinkler without being sharply bent or kinked.

Referring now to the water outlet end of the sprinkler body 12 and to the nozzle 13, it will be noted that the structure which forms the nozzle comprises a tubular barrel portion 42 of circular cross section which is rotatably received in the bore 19 of the body. The barrel portion has a tapered bore 43 extending axially through it. Formed integral with the barrel portion at its outer end is a hollow arm portion 44 defining a passageway 45 which provides for flow of liquid from the bore of the barrel portion to an orifice 46 in one end of the arm 44. In a preferred form of my sprinkler, as shown in the drawing, the arm 44 extends at right angles to the axis of the barrel portion.

The orifice 46 is double-convex in shape and is formed in a curved metal strip 48 of brass or the like, which is fixed in the outlet end of the arm 44 as by casting the nozzle with the strip 48 in it, whereby the strip will be firmly anchored in the nozzle. The principal axis of the double-convex orifice extends in a plane passing through the axis of the bore 19 of the sprinkler so that

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the plane of the fan-shaped spray to be emitted by the sprinkler will be parallel in its transverse dimension to ground level, thereby to effectively utilize the full width of the fan spray. The outside surface of the metal strip 48 is exposed by a notch 49 formed in the end of the arm 44.

Passageway 45 may be formed in the arm portion of the nozzle when the nozzle is cast and thus it is shown in the drawing as being slightly tapered toward the orifice end of the nozzle, i. e. the passageway is frusto-conical in form with the orifice end thereof being of a diameter substantially equal to the transverse dimension of the orifice 46 taken in the plane of the principal axis of the orifice. At the end of the passageway remote from the orifice, the passageway is closed by a plate 50, which is mounted fluid tight in the metal of the nozzle and secured in place as by soldering or welding or staking.

The barrel portion of the nozzle is rotatably mounted in the bore 19 of the body of the sprinkler so that the angle of elevation of the plane of the water spray with respect to ground level may be set as desired. To secure the nozzle in the sprinkler body, an annular groove 53 is formed in the outside cylindrical surface of the barrel portion in a plane normal to the axis of the barrel, for receiving the inside end of a set screw 54 which is operable in a tapped opening 55 formed in the body 12. Thus the set screw engages the barrel portion in the groove 53 to hold the nozzle in its set position and to retain the nozzle in the sprinkler body against being pushed out from the end of the body by pressure of water in the sprinkler. It is to be noted, too, that the nozzle may be easily removed from the sprinkler as for purposes of cleaning and the like, by merely unscrewing the set screw 54 from its engagement with the nozzle in its groove 53. Another annular groove 57 is formed in the outer surface of the barrel portion of the nozzle intermediate the ends thereof for accommodating a sealing ring such as O-ring 58 of rubber or the like, which prevents leakage of water around the outside of the barrel portion.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent structures.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A water sprinkler comprising a tubular body in the form of an elbow to provide two legs angularly disposed with respect to each other, a swivel collar rotatably mounted on one of said legs for connecting the body to a garden hose, a nozzle rotatably secured in the other of said legs and including an elongate orifice for emitting water from the sprinkler in a fan shaped spray, the principal axis of the orifice being disposed in a plane common to the axis of said other leg, and a support rod integral at one end thereof with the body, and a step bar integral at one end thereof to the rod proximate the other end of the rod, said step bar providing a means

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for conveniently forcing said other end of the rod into the ground and for maintaining the sprinkler in its set position when at least partly imbedded in the ground.

2. A water sprinkler comprising an elongate body in the form of an elbow and having an axial bore extending therethrough, whereby each end of the body is open, said body having a counter bore in one end thereof, a sleeve press fitted in said counter bore and projecting beyond said one end of the body, an annular flange integral with and extending radially outwardly from the projecting end of the sleeve to provide an annular groove around the sleeve defined by said flange and an end face of the body, a tubular coupling collar rotatable on the sleeve and having an annular flange extending radially inwardly thereof and engageable in said groove, a nozzle rotatable in the other end of the body, said nozzle having an elongate orifice formed therein for emitting water from the sprinkler in a fan shaped spray, with the principal axis of the orifice being disposed in a plane common to the axis of said other end of the body, and a support rod integral at one end thereof to the body and normal to said axial bore.

3. A water sprinkler comprising a tubular body having a water inlet end and a water outlet end, means on the inlet end for connecting the body to a garden hose, the outlet end portion of the body having an axial bore of circular cross section formed therein, a rod integral at one end thereof to the body for supporting the body with the axis of said bore lying in a plane normal to the rod, a nozzle releasably secured in the outlet end of the body, said nozzle comprising a hollow cylindrical barrel of circular cross section rotatable in said axial bore, means around the barrel for sealing the barrel water tight in the body, barrel engaging means in the body for retaining the barrel in the body, a hollow outlet arm integral with and open to the barrel and being exterior of the body, said arm extending at substantially a right angle from the barrel and having an elongate arcuate orifice formed therein and disposed substantially in a plane common to the axis of the barrel for emitting a fan shaped spray from the sprinkler, the intermediate portion of the orifice being disposed downstream of the end portions of the orifice for evenly distributing flow of water transversely of said fan shaped spray.

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