

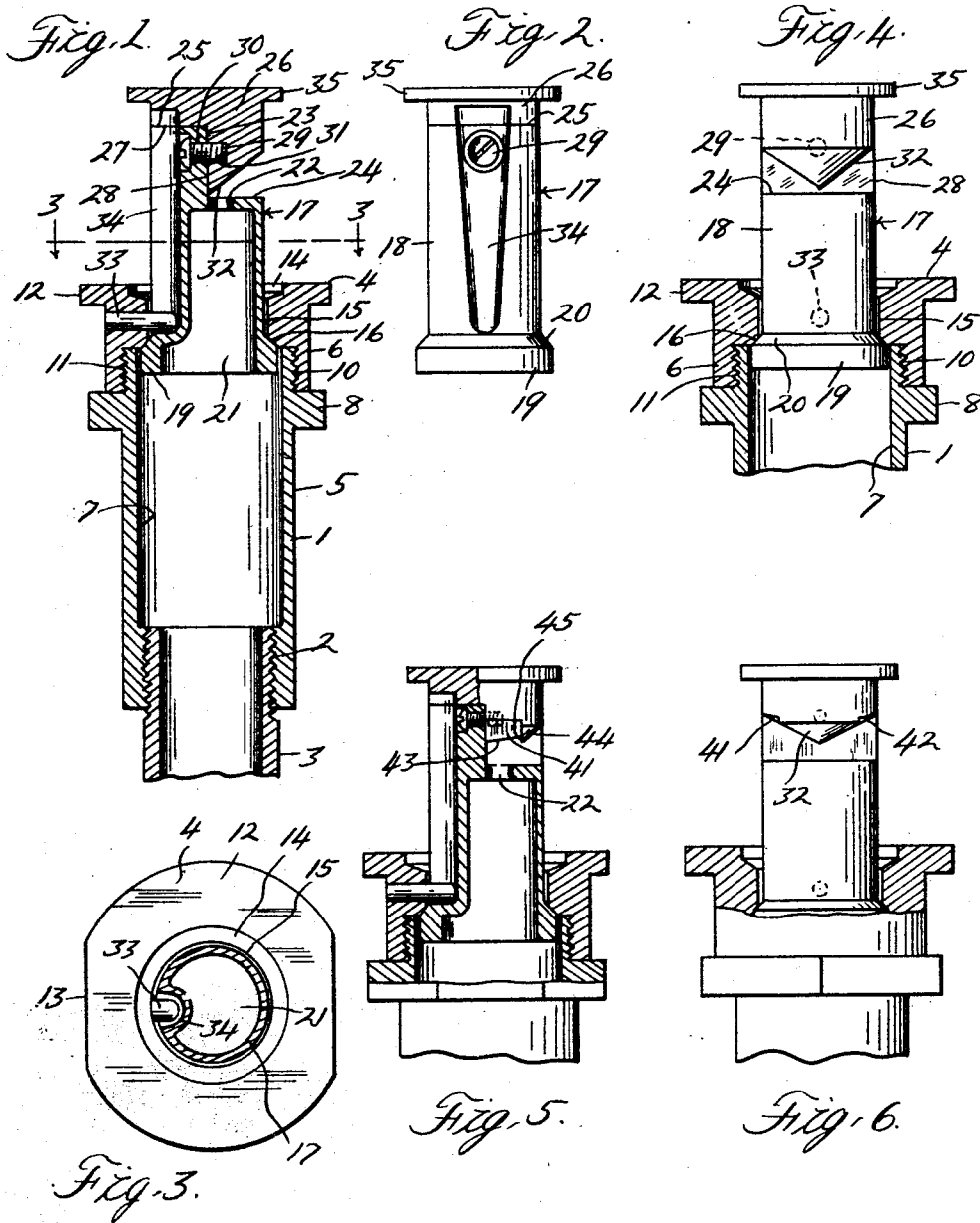
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SPRAY HEAD

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SPRAY HEAD

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The invention relates to spray nozzles adapted for use in sprinkling systems for lawns and the like, and is particularly applicable in systems where the spray heads are permanently installed in the ground to be normally flush with the surface thereof and the nozzle itself is slidable within the head so as to be projected above the ground whenever the water supply is turned on.

One of the objects of my invention is to provide an improved construction wherein the slidable nozzle is so arranged within the casing as to be freely slidable therein and means is also provided for insuring a water tight seal when the nozzle is in elevated position.

Another object is to provide means for accurately positioning the nozzle with respect to the casing when the nozzle is in spraying position, which means is adapted to permit relative movement between the nozzle and casing at other times in order to insure freedom of movement to and from spraying position.

A further object of my invention is to construct the apparatus in such a manner as to permit access for the grinding of the valve seat for the sliding nozzle member.

With these and other objects in view I have provided the improved construction herein-after set forth and illustrated in the accompanying drawings, wherein

Figure 1 is a longitudinal section through the spray head;

Figure 2 is a side elevation of the stem of the device;

Figure 3 is a cross section on the line 3—3 of Figure 1;

Figure 4 is a sectional elevation of the nozzle at right angles to the view illustrated in Figure 1;

Figure 5 is a sectional view of the nozzle provided with a modified form of spray directing device;

Figure 6 is a view at right angles thereto.

Referring now to the construction as illustrated in the drawings, 1 represents generally the fixed casing of the device provided with a threaded connection 2 for receiving the water supply pipe 3. Where the casing

is used for a lawn sprinkling system it is usual to bury the same in the ground so that the upper surface 4 is substantially flush with the ground. The casing is preferably made of two parts, the lower body portion 5 and the detachable upper portion or collar 6. The body portion 5 has a smoothly finished cylindrical inner surface 7 of slightly larger diameter than the threaded portion 2. At the upper end of the body 5 there is preferably provided an outer flange 8 formed with a suitable wrench hold, as for example by providing a hexagonal contour. Above the flange 8 the body is exteriorly threaded at 10 for receiving the correspondingly threaded portion 11 of the upper collar 6. This collar is preferably formed with a top flange 12 provided with the wrench hold edges 13 and has an annular recess 14 in the top surface 4 thereof for the purpose hereinafter described. The collar is also provided with the inwardly extending annular flange 15 of smaller diameter than the cylindrical surface 7 and this flange has on the underside thereof a conical seat 16.

17 is a slidable nozzle member arranged within the casing 1 and adapted to normally be entirely contained within the same with its upper surface flush with the upper surface of the casing. The nozzle member comprises a cylindrical stem portion 18 of a diameter such as to freely slide within the annular flange 15 and at the lower end of the stem there is an enlarged portion 19 provided with a conical shoulder 20 which is adapted to engage the conical seat 16 when the nozzle member is raised by the water pressure. The nozzle member has a hollow interior 21 through which the water is delivered to a discharge aperture 22. The upper portion of the nozzle member is constructed in such a manner as to permit a series of spray directing members to be detachably engaged therewith, and the preferred construction is as follows:

The upper portion of the cylindrical stem is notched to form a flat surface 23 passing through the axis of the stem and the flat surface 24 arranged transversely of the surface 23 and preferably at right angles thereto.

The surface 24 is thus semi-circular and is parallel to the semi-circular surface 25 at the upper end of the stem. The spray directing members may be formed in various sizes depending upon the area which the nozzle is adapted to spray, but one construction is as illustrated in Figure 1 wherein it is desired to provide a so-called half spray. Thus as illustrated in this figure the spray directing member is formed of a cylindrical body 26 notched out to form the transverse surfaces 27 and 28 for cooperating respectively with the surfaces 25 and 23 of the stem. For securing the parts together a machine screw 29 is preferably employed passing laterally through the aperture 30 in the surface 23 and engaging the threaded hole 31 in the member 26. The lower portion of the member 26 has formed thereon a half conical surface 32, the apex of which is spaced slightly above the surface 24 and preferably arranged co-axial of the stem 18. The discharge aperture 22 has its axis slightly off-set from the axis of the stem so that the water emerging therefrom strikes the conical surface and is deflected upwardly and outwardly. The flat surface 24 cooperates with the conical surface to spray the water in such a manner as to cover a semi-circular area of ground.

In order to direct the spray in the correct angular direction with respect to the fixed casing, means is provided for preventing rotational adjustment of the nozzle member relative to its casing when the nozzle is in spraying position. This means is so formed as to permit free longitudinal sliding movement of the stem with respect to the casing. As specifically illustrated the means comprises a pin 33 projecting inwardly from the collar 6 and operating in a longitudinal slot 34 in the stem. This slot is tapered from the upper end where it is widest to the lower end where the width of the slot is substantially the same as the width of the pin. The arrangement is such that when the stem is in its lower position the pin 33 is loosely engaged in the wide portion of the slot 34, while when the stem is in its upper position the pin has a fairly close fit with the smaller end of the slot, thus accurately determining the angular relation of the spray directing member with respect to the fixed casing. The upper end of the member 26 is preferably provided with an annular flange 35 adapted to fit within the recess 14 so that the upper surfaces of the nozzle and casing are substantially flush when the nozzle is in its lower position.

The nozzle member 17 is normally arranged within the casing 1 with the flange 35 engaging the recess 14, the parts being maintained in this relative position by gravity. When the water supply is turned on the force of the water will elevate the nozzle member 17 until the shoulder 20 engages the seat 16 forming a seal, the water then passing

through the interior of the stem and the discharge orifice 22 is deflected by the spray directing member 32 in the desired direction. The smooth interior of the casing 1 is adapted to permit free sliding movement of the stem member and to prevent any possibility of the stem not being firmly seated. The tapering sides of the slot 34 serve to rotatively adjust the stem with respect to the casing until it is accurately positioned in a predetermined relationship. By having the collar 6 movable from the lower body portion 5 the grinding of the valve seat 16 can be easily accomplished and also the stem may easily be removed from the device. The pin 33 is preferably removably engaged with the collar 6 so that upon removal of the collar and stem the shoulder and the seat may be ground together to insure accurate seating.

As heretofore stated one of the features of the construction is the provision of means for interchangeably mounting different spray directing devices upon the same nozzle stem. In Figures 5 and 6 is illustrated another type of spray directing member useful for the distribution of water in sprinkling a strip of ground, the water being projected in two streams issuing from the nozzle in diametrically opposite directions. The construction is similar to that illustrated in Figure 1 except that the semi-conical portion 32 is cut away to form the two inclined surfaces 41 and 42 extending outwardly and upwardly from a lower ridge 43 in vertical alignment with the orifice 22. 44 is a depending portion extending below the surfaces 41 and 42 and having an inner surface 45 arranged substantially parallel to the deflecting surface 32 and spaced therefrom by distance slightly greater than the diameter of the discharge orifice 22.

Each of the spray directing members described above is provided with perpendicular surfaces adapted to cooperate with the corresponding surfaces of the stem member to which they are secured. The advantage of this construction is that the spray directing member can be accurately positioned with respect to the discharge orifice for the member may be accurately seated upon the stem, while the threaded aperture 31 is being machined in alignment with the aperture 30.

As heretofore stated, it is usual to place the casing 1 in the ground so that its upper surface is flush with the ground level and to permanently connect the lower portion of the casing with the underground pipe system. If it is desired to change the ground level it is not necessary to remove the entire casing from the ground but only to remove the upper collar 6 from the casing and exchange the same for one of a suitable size to have its upper surface come flush with the new ground level.

What I claim as my invention is:

1. In a sprinkling system, a fixed hollow casing member, a nozzle member longitudinally slidable within said casing, a shoulder carried by the lower end of said nozzle member, an abutment on said casing member forming a shoulder engaging seat, a guide on one of said members and a guideway extending longitudinally of the other of said members and receiving the guide, said guideway being constructed to prevent rotation of said guide when said shoulder is engaged with said seat and to permit said guide to be turned within said casing when said shoulder is unseated.

2. In a sprinkling system, a fixed hollow casing, a nozzle longitudinally slidable within said casing, said nozzle having a groove extending longitudinally therein tapering from the upper end to the lower end thereof, and a pin projecting from said casing and engaging said groove, said pin being of a size to fill the width of said groove when the nozzle is in spraying position.

3. In a sprinkling system, a casing having a fluid passage therein, a nozzle having a portion slidable within said casing, and means for regulating the angular relation of the nozzle with respect to the casing, including a pin projecting from the casing, and a guideway for the pin in the portion aforesaid of the casing having an inclined side wall for frictionally engaging the pin when the nozzle is in a spraying position for holding the nozzle against turning movement relative to the casing.

4. In a sprinkling system, a casing, a nozzle having a portion slidable within the casing and having a groove extending longitudinally thereof, and tapering from the upper end to the lower end thereof, and means associated with the casing engaging the groove and being of a size to frictionally engage opposite sides of the groove when the nozzle is in a spraying position.

In testimony whereof I affix my signature.

ELMER G. MUNZ.