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SPRINKLER

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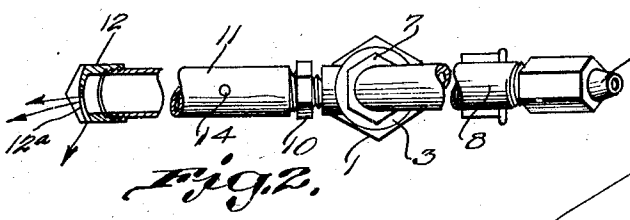


Fig. 2.

Fig. 1.

INVENTOR

Wm. A. Buckner

BY Benj. S. Webster

ATTORNEY

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UNITED STATES PATENT OFFICE

WILLIAM A. BUCKNER, OF FRESNO, CALIFORNIA

SPRINKLER

Application filed May 5, 1926. Serial No. 106,964.

This invention relates to improvements in sprinklers and particularly to one of a rotating type to be used for sprinkling large areas such as golf courses, park lawns, and the like.

The present invention also particularly relates to sprinklers of that type having a main discharge nozzle longitudinally alined with the turnable water-supply spindle, and a lateral auxiliary nozzle having a valve element therein to impart a vibratory movement to the sprinkler with the flow of water therethrough.

The principal object of this invention is to arrange a screen structure between the main nozzle, spindle and auxiliary nozzle in such a manner that the water is screened before passing to the auxiliary nozzle, so that the valve cannot be choked by any sediment in the water, without interfering with an unrestricted flow to the main nozzle.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

Fig. 1 on the drawing is a side elevation of my improved sprinkler partly in section.

Fig. 2 is a smaller plan view of the sprinkler with the secondary nozzle shown in section to disclose the position of the nozzle slit thereon.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 designates a coupling member adapted at its lower end for connection to a standpipe. Mounted on the coupling is a socket or sleeve member 2 into which projects the spindle 3 of the sprinkler head. This spindle is turnably mounted in the socket and coupling in any suitable manner, as for instance as shown in my previous application, Serial No. 88,550, filed February 16, 1926.

Removably mounted in the spindle is a tubular screen member 4. This member is provided with solid end rings 5, the lower end of which snugly seats on a shoulder 6 provided in the spindle, while the upper ring seats in the lower end of a removable nipple 7 screwed onto the top of the spindle. Between the rings the bore of the spindle is enlarged so as to leave ample clearance between the screen and the sides of the spindle. A main discharge nozzle pipe 8 is connected to the nipple 7 and projects upwardly therefrom a certain distance. This pipe is then bent upwardly at an angle of approximately thirty degrees to the horizon, and on its upper end carries a suitable nozzle 9.

Connected to and communicating with the spindle 3 intermediate the ends of the screen is a nipple 10, formed as a Venturi nozzle. In other words the bore of this nipple is large at its inner end, where it communicates with the spindle, and is restricted at its outer end. A lateral pipe 11, having a head 12 on its outer end and provided with a radial slit 12^a to form a nozzle is connected to the outer end of the nipple 10. This member forms a secondary discharge pipe and nozzle as in the previous application, the area of the slit being restricted relative to the area of the Venturi-nozzle outlet. The pipe 11 projects substantially opposite to the plane of the outer laterally extending portion of the pipe 8; the overhanging length of the two pipes, relative to the axis of the spindle, being such that their weight is substantially counterbalanced.

A ball 13, smaller than the bore of the pipe 11, is mounted therein adjacent the nipple 10. This ball is allowed limited longitudinal movement in the pipe by a stop member such as a transverse pin 14 projecting through said pipe beyond the ball.

It will therefore be seen that the main flow of water can pass unrestricted from the coupling 1, through the tubular screen to the nozzle 9, the latter being of such size as not to be choked by any sediment or the like in the water. The water passing through the pipe 11 and by the ball however must first pass through the screen, since both ends of the screen have a tight fit in the main bore of the head structure. The result is that no sediment can reach the ball, such as might cause

it to stick. The particular arrangement of the screen, which provides an opening all around the spindle, prevents any tendency for dirt and the like to be sucked against the screen to clog the same, such as would be the case if said screen only covered the intake to the nipple 10. Instead such foreign matter passes direct through the screen to the main nozzle. The nipple 7 being removable however the screen may be easily taken out for cleaning whenever necessary.

The action of the water passing through the Venturi nozzle 10 from the main stream in the head, coupled with the relatively restricted discharge slot 12^a, causes the water in the pipe 11 to have a surging action which tosses the ball 13 back and forth so that it alternately strikes the walls of the pipe 11 and the pin 14. This sets up a decided vibration laterally of the spindle 3. This prevents the said spindle 3 from sticking in its bearings under the pressure of the water and which facilitates the easy and continuous positive rotation of the head in one direction, as will now be explained. This positive rotation is imparted to the head by the reactance of the water issuing through the slit 12^a of the nozzle 12. This slit, as clearly appears in Fig. 2 of the drawings, is cut into one half of the diameter of the curved end of the nozzle 12. This causes the water to discharge from the nozzle 12 in the direction of the arrows shown in Fig. 2. This direction is at a substantial angle to radial lines from the vertical axis of the sprinkler head, consequently the rotary motion is imparted to the head in a clockwise direction.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

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

A sprinkler including a vertical spindle, means rotatably supporting the spindle, a nozzle-pipe projecting upwardly from the spindle, an additional nozzle pipe projecting laterally from the spindle, and a tubular screen, open at both ends, disposed vertically in the spindle in alinement with the first named nozzle and extending across the entrance to the additional pipe, the spindle intermediate the ends of the screen having an internal diameter sufficient to provide a space all about the screen but engaging the screen at its lower end.

In testimony whereof I affix my signature.

WILLIAM A. BUCKNER.