Aug. 17, 1937. C. W. CARLSON 2,090,284

SPRINKLER HEAD

Filed May 18, 1936

Fig. 1.

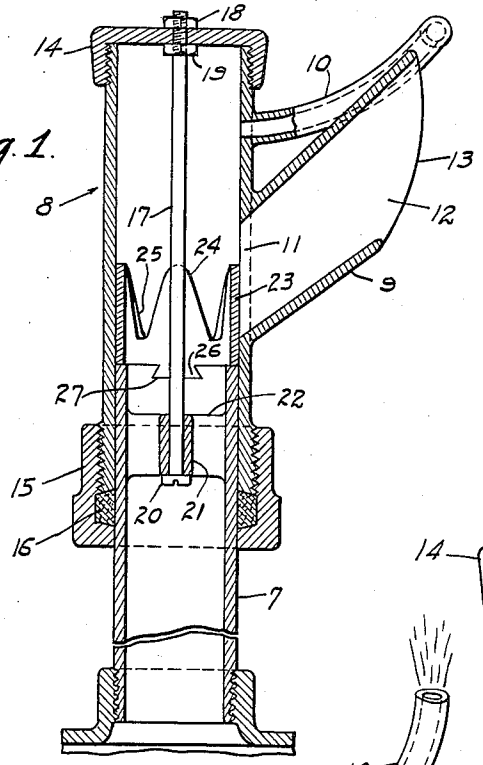


Fig. 3.

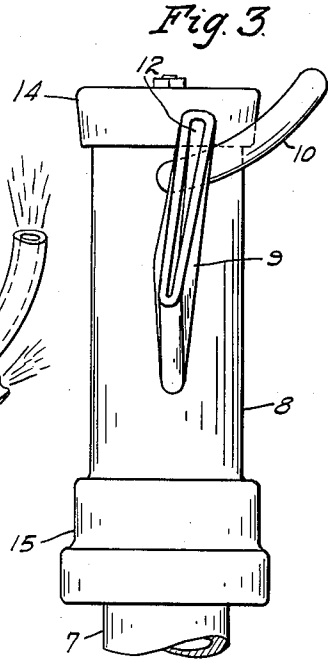


Fig. 5.

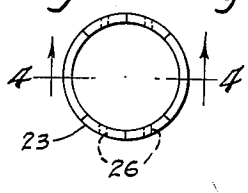


Fig. 2.

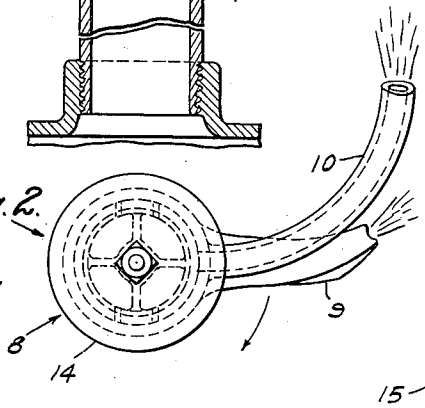


Fig. 4.

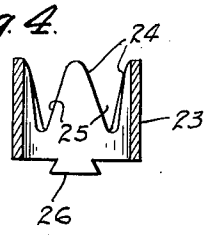
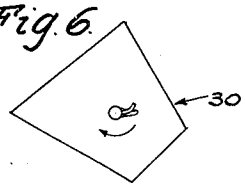


Fig. 6.



INVENTOR.
Clarence W. Carlson
BY
Robt. D. Pearson
ATTORNEY.

Patented Aug. 17, 1937 2,090,284

UNITED STATES PATENT OFFICE

2,090,284

SPRINKLER HEAD

Clarence W. Carlson, Los Angeles, Calif.

Application May 18, 1936, Serial No. 80,316

4 Claims. (Cl. 299—18)

This invention relates to a rotary sprinkler of the type which is constructed to water predetermined specific shapes of lawn, shrub or other vegetation areas.

It is an object of the invention greatly to simplify the means for automatically varying the distance that the spray is thrown from the rotating sprinkler head at different positions thereof during each rotation.

Another object of the invention is to provide, in combination with other improved features, a very compact sprinkler head which can be manufactured at a lower cost than the majority of other devices of the same type.

Still another object of the invention is to furnish for the sprinkler a set of simplified spray control members which can be manufactured in different patterns at a lowered cost, each of these spray control members being readily insertible and removable, and when inserted serving to control as desired the shape of the sprinkled area.

Other objects relate to dependable operation and lessened liability of getting out of order, and ease of installing.

Owing to the low price at which the sprinkler can be sold it is well adapted for installing as a part of permanent lawn sprinkling systems which require a large number of sprinkling heads to furnish water to extensive areas.

Other objects, advantages and features of the invention will hereinafter appear.

Referring to the accompanying drawing, which illustrates what is at present deemed to be a preferred embodiment of the invention,

Fig. 1 is a vertical mid-section of the complete device, the sprinkling cap or head being shown in the extended, operative position.

Fig. 2 is a top plan view of the device.

Fig. 3 is a side elevation of the upper portion of the sprinkler head or cap looking at the same from right to left of the showing in Fig. 2.

Fig. 4 is a transverse section of the regulating sleeve taken on line 4—4 of Fig. 5.

Fig. 5 is a plan view of Fig. 4.

Fig. 6 is an outline showing, by way of example, the shape of a plot which can be uniformly sprinkled by the device.

Referring in detail to the drawing, the upstanding water delivery pipe 7 has rotatably and slidably mounted upon its discharge end portion an elongated cylindrical head or cap 8 having a cylindrical body portion and furnished with a main discharge nozzle or extension 9 and with an auxiliary discharge 10, the latter being shown as a tube which is tangentially deflected to cause the reactive force of the stream passing through it to rotate the sprinkler head 8. The main nozzle 9 is shown as a laterally compressed or flattened tube which extends radially and upwardly in relation to the cap body 8, there being a water delivery port 11 leading from said cap into the lower part of the nozzle 9. Said nozzle 9 has a discharge opening 12 between its convex lips 13, said opening being a rather narrow slit which diminishes in width towards its lower end. The extremity of said nozzle 9, as viewed in Fig. 2, is deflected somewhat in an anticlockwise direction in order to give this nozzle the ability to rotate the sprinkler head by the reaction of the water issuing therefrom as it performs its sprinkling function.

The closed end portion of the cap 8 may be integral therewith or it may consist of a shallow cap 14 screwed on to it. The lower end of the head 8 may have screwed on to it an annular nut 15, thereby providing a packing gland 16 around the pipe 7.

In order to stabilize the head 8, as well as to limit its upward sliding movement an axial guide and stop rod 17 is secured therewithin by means of the nuts 18 and 19, said rod having at its lower end a head 20 which engages a part 21 to limit the outward movement of the head under hydraulic pressure. Said part 21 is shown as a hub of a bridge or internal cross bar or spider 22 located near the mouth of the pipe 7 and in a fixed relation thereto.

In order to vary the amount of water passing through the port 11 at different rotational positions of the head 8 a control sleeve 23 is provided which is secured to the upper end portion of the pipe 7 and which has extensions 24 with intervening recesses or cut-away portions 25, said recesses and extensions coming alternately into alinement with, and affecting the size of the port 11 as the head 8 rotates.

To sprinkle, for example a square area, the head and sleeve will be so arranged that a recess 25 will come opposite to the port whenever the nozzle extension 9 is directed towards a corner of the area being sprinkled, because at such a time a greater and more forcible delivery of water is required.

The sleeve 23 is separately shown in Fig. 4 which illustrates clearly one of the dovetail extensions 26. Said extension cooperates with a correspondingly shaped recess 27 in the end of pipe 7. Desirably the pipe will at least have two diametrically opposite recesses 27 and the sleeve 23 will have two similarly shaped exten-

sions 26 to cooperate with them. This construction permits the sleeve to be fitted laterally into place on the end of the pipe before the head 8 is put in place.

The sleeve 23, when in place upon the discharge end of the water supply pipe, constitutes a cylindrical extension of said pipe which occupies a space that is circumscribed within the external diameter of the adjacent end portion of said pipe. This construction affords a smooth bearing surface for the cylindrical portion of the head to rotate about.

A plurality of the controlling sleeves 23 may be provided all of which are shaped the same except as to their extensions 24, thereby providing means to control the discharge in such a manner as to water not only square plots, but also, for example, the trapezoidal area 30 shown in Fig. 6. This discharge control, being free from gears, cranks, etc., operates in a more uniform, dependable manner and is practically free from friction.

The installment and operation of the device will be readily understood from the foregoing description, but it may be well to point out that when the water supply is shut off the sprinkler head 8 will either gravitate or else may be easily pushed down to a retracted position wherein it will be out of the way of lawn mowers, etc.

To remove the rod 17, first unscrew the upper cap 14 without disturbing nut 18, then while the head 8 is in a retracted position the cap 14 may be sufficiently separated therefrom to permit pliers or the operator's fingers to grasp said rod to prevent it from dropping out of reach.

What is claimed is:

1. In a device of the kind described, a water supply pipe, an elongated cylindrical cap the open end portion of which is fitted externally around the delivery end of said pipe in both a slidable and a rotatable manner, an axial guide rod within said cap secured to the closed end portion thereof, and a bridge across said pipe, said bridge having a central bore through which said guide rod slidably and turnably extends, said cap having an outlet port to deliver water for sprinkling, means attached to the end portion of said pipe within said cap to vary the quantity of discharge through said port in different rotational positions of said cap when said cap is positioned in its extended position, and discharge means extending upwardly from said outlet port and terminating at approximately the level of the upper end of the cap, said discharge means being deflected to produce a force tending to rotate said cap.

2. In a device of the kind described, a water supply pipe, an elongated cylindrical cap the open end portion of which is fitted externally around the delivery end of said pipe in both a slidable and a rotatable manner, an axial guide rod within said cap secured to the closed end portion thereof, a bridge across said pipe, said bridge having a central bore through which said guide rod slidably and turnably extends, said cap having an outlet port to deliver water for sprinkling and to impart a rotational movement thereto, and a non-rotatable cylindrical member within said cap and secured to the end portion of said pipe, said member being shaped to vary the quantity of discharge through said outlet port of the cap in different rotational positions of said cap when said cap is positioned in its extended position, there being a discharge means extending upwardly and outwardly from said outlet port.

3. In a device of the kind described, a water supply pipe, an elongated cylindrical cap the open end portion of which is fitted externally around the delivery end of said pipe in both a slidable and a rotatable manner, an axial guide rod within said cap secured to the closed end portion thereof, a bridge across said pipe, said bridge having a central bore through which said guide rod slidably and turnably extends, said cap having an outlet port to deliver water for sprinkling, said port being opened by the movement of said cap to its extended position, means attached to the end portion of said pipe within said cap to vary the quantity of discharge through said port in different rotational positions of said cap, said cap being provided with means to cause its rotation, and discharge means communicating with said port and extending upwardly a substantial distance above the means to vary the quantity of the discharge.

4. In a device of the kind described, the combination with a water supply pipe; of a cylindrical extension provided with means for detachable connection with the discharge end of said pipe, said extension having spray controlling portions and being confined to the area circumscribed by the external circumference of said pipe, and a cylindrical sprinkler head slidable over abutting end portions of said extension and pipe to and from a sprinkling position, said head being rotatable and being provided with a means to produce rotation, there being a discharge means for said head which cooperates with said spray controlling portions of the extension to vary the volume of the water delivered.

CLARENCE W. CARLSON.