Aug. 19, 1958 J. F. CLEARMAN 2,848,276

LIQUID DISTRIBUTOR

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Fig. 1.

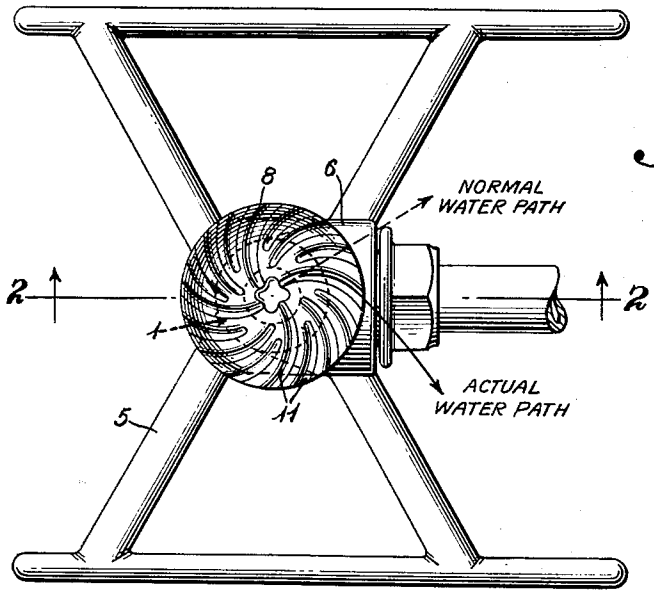


Fig. 3.

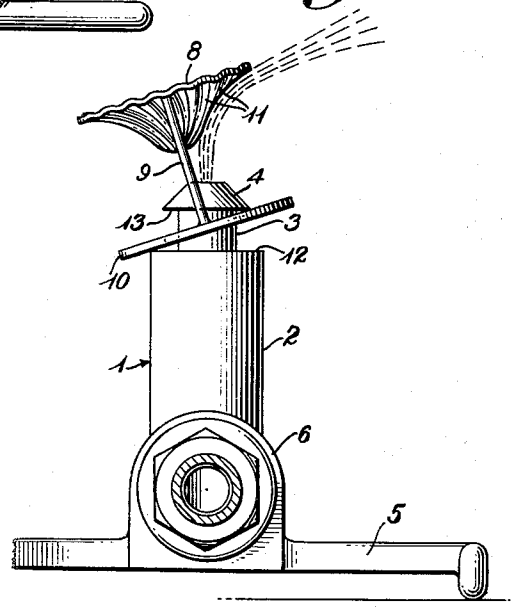
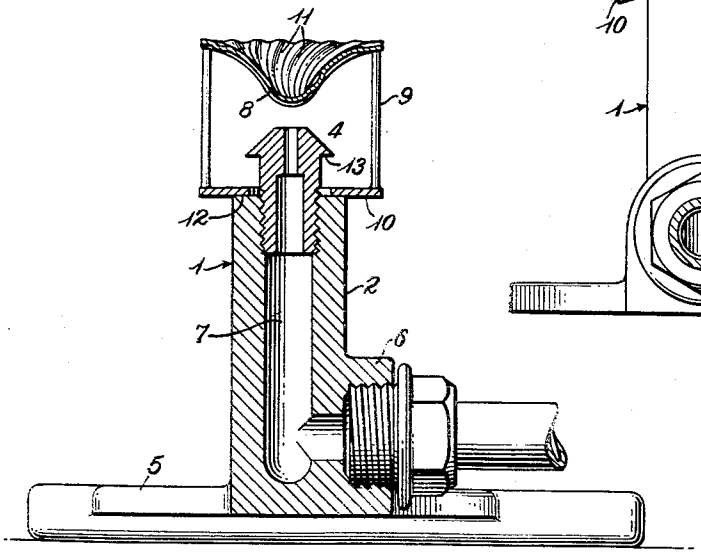


Fig. 2.



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LIQUID DISTRIBUTOR

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6 Claims. (Cl. 299—68)

This invention relates to a water or liquid distributor for directing a stream of water over a large area and more specifically to a lawn sprinkler for scattering water in a circular pattern.

Lawn sprinklers and other liquid distributors which "rotate" a stream of water have long been in use. Some such sprinklers employ a conically shaped diverter supported for rotation in the stream of the water discharge. The effect of the water stream upon the diverter causes it to spin, scattering the water in a circular pattern.

Sprinklers of this type are reasonably effective in accomplishing the even distribution of water. However, the functioning of such sprinklers is at best erratic. Rotating as they do, on an axial bearing and at a high rate of speed, they can withstand relatively little use before the bearing begins to bind or in some other common way, show the inevitable results of wear and corrosion. Yet it is impractical in such a device, to use a type of expensive bearing which might hold up under heavy use.

It is, therefore, the principal object of this invention to provide a lawn sprinkler or similar liquid distributor which efficiently accomplishes the desired, even scattering of water in a circular pattern, but which will be simple and inexpensive to manufacture, yet capable of heavy use.

It is the further object of this invention to provide a lawn sprinkler employing a conical, grooved, diverter plate supported to divert a stream of water in an even, circular pattern, but at the same time minimizing wear on the supporting means.

It is another object of this invention to provide a lawn sprinkler which has no moving parts adjacent to the water path, thereby minimizing corrosion and resistance created by sealing pressures.

Further objects and advantages will become apparent from the following specification of a preferred embodiment of the present invention, reference being had to the accompanying drawings forming part hereof, in which like numerals refer to like parts.

In the drawings:

Figure 1 is a top plan view of a preferred embodiment of the present invention.

Figure 2 is a sectional view along line 2—2 of Figure 1.

Figure 3 is a side elevational view of the lawn sprinkler in operation.

Referring to the drawings, the sprinkler body 1 is formed of a metallic tube, the inner surface of which is threaded near the top. A smaller tube 2 threaded on its outer surface, is screwed into the top of the sprinkler body 1. The smaller tube 2 is composed of a neck section 3, and a nozzle section 4.

The body 1 is fixed to a support base 5 of sufficient diameter to support the body 1 in a sturdy, upright position. A threaded hose attachment 6, formed in the side of body 1 provides a pasage for water into the hollow passage 7.

The neck section 3 is concentric with but of lesser diameter than the body 1. The nozzle section 4 is frusto-

conical in shape. It is concentric with, but of larger diameter at its base, than the neck 3. A lower annular surface 13 is formed underneath the nozzle 4, where the neck section 3 and nozzle section 4 join.

The passage 7 extends from the hose attachment 6 through the body 1, the neck 3, and nozzle 4. As shown in Fig. 2, the diameter of passage 7, may be decreased in the smaller tube 2, so as to increase the force with which the water is expelled from the nozzle section 4.

The diverter unit comprises a diverter plate 8, which is extended on rigid struts 9 from the outer periphery of annular wobble plate 10.

Wobble plate 10 is shaped like a large washer. The aperture formed in its center has a diameter somewhat larger than that of the neck section 3, but less than the stand 2 or the base of nozzle 4.

The diverter plate 8 is conical with a flared top rim and spiral grooves 11, formed in its underneath surface, extend from its center or apex to its periphery.

Variations in the form of the diverter plate could be made in accordance with manufacturing expedience without materially affecting the operation of this invention. For instance, fins could be used instead of grooves or the grooves could be straight with impact fins at the periphery.

The wobble plate 10 surrounds the neck 3 and is free to move up and down between the upper annular surface 12 formed by the top end of stand 2 and the lower annular surface 13. The struts 9 extend upwardly supporting the diverter plate 8 with its center or apex in registry with the nozzle 4.

As shown in Figure 3 in operation, the water enters the lawn sprinkler through hose attachment 6, passes upwardly through hollow passage 7, and is expelled out of nozzle 4. The stream of the expelled water hits the underneath side of diverter plate 8. The force of the stream since it would play unequally upon the underneath side of diverter plate 8, would cause the diverter plate to be rocked, practically instantaneously, as far to one side as the wobble plate 10 allows thereby putting the spiral grooves 11 in line with the water stream. In this respect the annular surfaces 12 and 13 limit movement of wobble plate 10. The force of the water on the spiral grooves causes the center or apex of diverter plate 8 to move around the center of the expelled water stream. Hence rotation of the diverter plate is not essential to the successful operation of the device.

The spacing between surfaces 12 and 13 determines the degree to which the diverter plate can rock. This spacing can be changed in any convenient fashion and thereby the degree of rock can be selectively adjusted.

When no water is being expelled from the nozzle, the wobble plate 10 sets squarely on the upper annular surface 12 of the body 1, as shown in Figure 2.

It will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A lawn sprinkler or similar device for distributing a quantity of water comprising tubular means defining spaced limiting means, an annular wobble plate freely mounted on said tubular means between said limiting means, a diverter element rigidly supported by said wobble plate in a position spaced from one end of said tubular means and in registry therewith, said wobble plate and said diverter element adapted to effect said distribution of said water in a plurality of directions responsive to the impact thereof.

2. A lawn sprinkler or similar device for distributing a quantity of water comprising tubular means defining

spaced enlarged annular surfaces, an annular wobble plate freely mounted on said tubular means between said enlarged annular surfaces, a diverter element rigidly supported by said wobble plate in a position spaced from one end of said tubular means and in registry therewith, said wobble plate and said diverter element adapted to effect said distribution of said water in a plurality of directions responsive to the impact thereof.

3. A lawn sprinkler or similar device for distributing a quantity of water comprising tubular means defining spaced limiting means, an annular wobble plate freely mounted on said tubular means between said limiting means, a diverter plate having a spirally grooved underneath surface, rigidly supported by said wobble plate in a position spaced from one end of said tubular body and in registry therewith, said wobble plate and said diverter plate adapted to effect said distribution of said water in a plurality of directions responsive to the impact of said water on said spirally grooved underneath surface.

4. A lawn sprinkler or similar device for distributing a quantity of water comprising tubular means defining spaced limiting means, an annular wobble plate freely mounted on said tubular means between said limiting means, a diverter plate having a spirally grooved underneath surface, a plurality of struts extending from said wobble plate, said diverter plate being supported on said struts in a position spaced from one end of said tubular body and in registry therewith, said wobble plate and said diverter plate adapted to effect said distribution of said water in a plurality of directions responsive to the impact of said water on said spirally grooved underneath surface.

5. A lawn sprinkler or similar device for distributing a quantity of water comprising tubular means defining spaced enlarged annular surfaces, an annular wobble plate freely mounted on said tubular means between said enlarged annular surfaces, a diverter plate having a spirally grooved underneath surface, rigidly supported by said wobble plate in a position spaced from one end of said tubular body and in registry therewith, said wobble plate and said diverter plate adapted to effect said distribution of said water in a plurality of directions responsive to the impact of said water on said spirally grooved underneath surface.

6. A lawn sprinkler or similar device comprising a tubular body, a second tubular member of reduced diameter affixed to the top of said tubular body and in registry therewith, an upper annular surface formed on the top of said tubular body, a nozzle section formed on the top of said second tubular member, a lower annular surface formed on the underneath side of said nozzle section, an annular wobble plate freely mounted on said second tubular member between said annular surfaces, a diverter plate having a spirally grooved, conical underneath surface, a plurality of struts connected to said wobble plate and to said diverter plate, to maintain said diverter plate in a position spaced from one end of said tubular body and in registry therewith.

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