

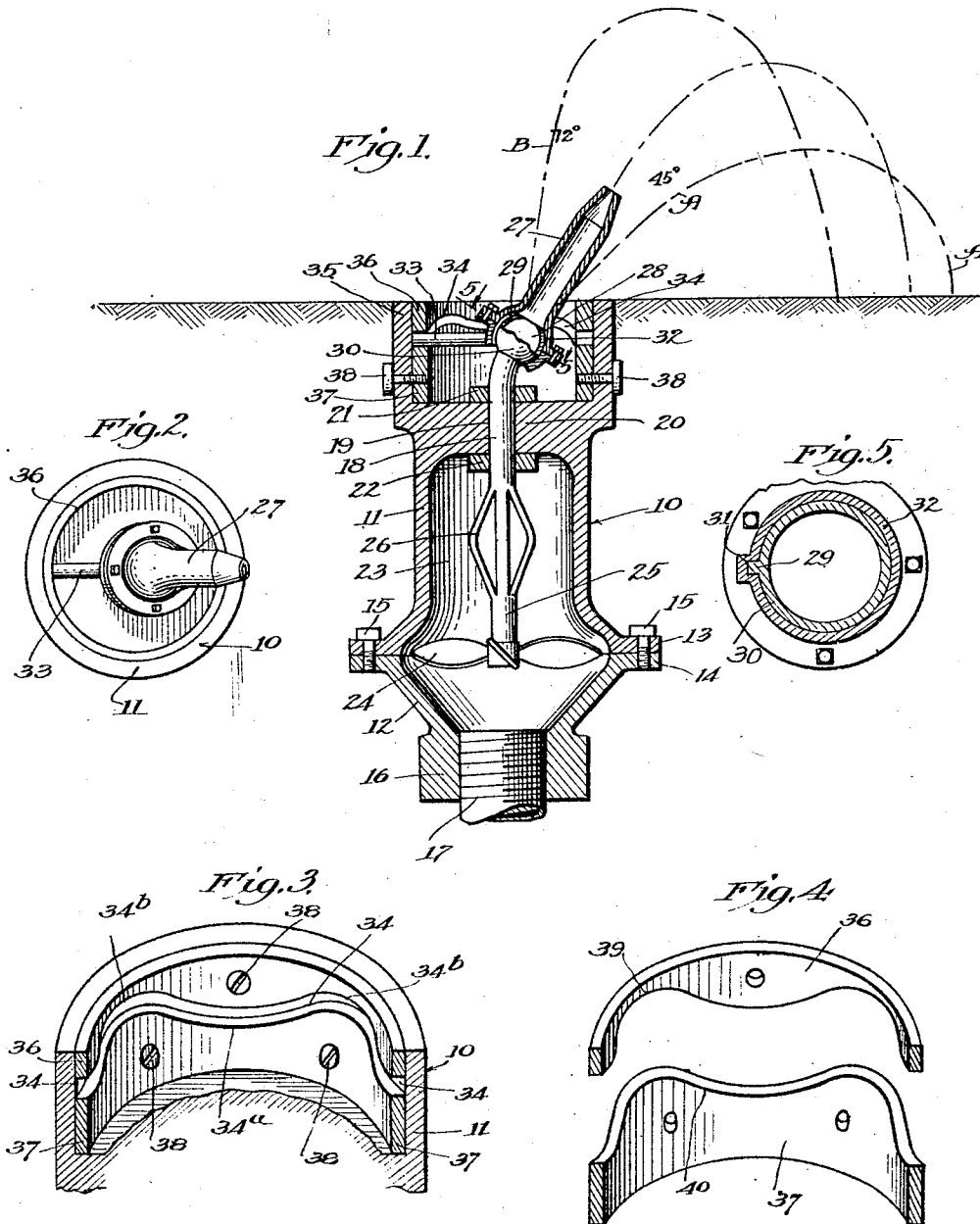
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SPRINKLER

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SPRINKLER

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This invention relates to sprinklers, for sprinkling lawns or other vegetation; although, of course, it need not necessarily be restricted to this use.

5 The primary object of this invention is the provision of a sprinkler of this character adapted to sprinkle areas of definite sizes and shapes and which may be easily and quickly altered, at slight expense, to sprinkle areas
10 of different sizes and shapes. In this connection I have devised a construction in which the major portion may be produced in standard or stock form and in which certain minor elements are made interchangeable for
15 adapting it to sprinkle areas of different sizes and shapes.

Another object is the provision of a mechanism to accomplish this purpose which is operated by the velocity of the water supplied to the sprinkler head.

20 The principles of construction and operation of this invention are fully set forth in the following specification, reference being made to the accompanying drawings, where
25 I have illustrated my preferred specific embodiment.

In these drawings:

Fig. 1 is a transverse vertical section taken through the center of the sprinkler;

30 Fig. 2 is a top plan view thereof;

Fig. 3 is a fragmentary sectional perspective view of the cam block and cam plates;

Fig. 4 is a similar view of the cam plates removed from the block, and

35 Fig. 5 is a sectional view taken as indicated by the line 5—5 of Fig. 1.

In this invention I have devised a construction which is primarily adapted for use in connection with sprinkling systems where
40 the sprinkler heads are mounted upon underground piping in fixed positions within the areas to be sprinkled. However, it is to be understood that the heads may be arranged to be moved about from place to place without departing from the spirit of my invention,
45 as embraced within the appended claims.

Referring now to the drawings the numeral
10 designates generally the sprinkler head,
50 which, for convenience of manufacture and

assembly, I have made in two parts 11 and 12. These parts are provided with complementary flanges 13 and 14 adapted to be brought together and secured by screws 15. A neck
55 16 is provided on the lower end of the bottom portion 12 and adapted for a screw threaded connection with the water supply pipe 17.

A discharge tube 18 is revolvably mounted within a bore 19 in the top 20 of the portion
60 11; and this may be held against axial movement therein by collars 21 and 22, rigidly secured thereon by any suitable means, and engaging the top and bottom faces of the top 20.

The discharge tube 18 extends into the water chamber 23, and a water wheel 24 is rigidly secured upon its lower end 25. The water wheel 24 is positioned directly over the supply pipe 17 and in comparatively close
70 proximity thereto in order that it may be rotated by the velocity of the water discharging into chamber 23. Any suitable means for mounting the wheel 24 on tube 18 may be utilized. In this case I have shown the
75 tube 18 to be longitudinally split, and the segments bent outwardly to form inlet apertures 26 so the water may enter the tube above the wheel 24. With this construction the lower end 25 of the tube will be plugged so
80 that water may not enter it except above the wheel 24.

A nozzle 27 is mounted upon the upper end of tube 18 and flexibly connected thereto by a suitable ball and socket joint 28. This
85 type of connection is utilized in order that the nozzle 27 may be oscillated in a vertical plane to extend at different angles, relative to the horizontal, as indicated by the dot dash lines A and B in Fig. 1. For all practical purposes the minimum angle—designated by the line A—will be about 45°, while the maximum angle—designated by the line B—will be about 72°. In operation the nozzle 27 will be oscillated between these two extremes, but it is to be understood that these extremes may be varied to suit different conditions of usage.

As tube 18 is revolved by wheel 24 the nozzle 27 is oscillated between the angles A and B
100

so the trajectories of the streams discharged therefrom will be altered (substantially as illustrated diagrammatically in Fig. 1) and will fall at points different distances from the head.

In order that the nozzle will be carried around by the revolving tube 18, yet permit it to oscillate in a vertical plane, I provide a longitudinally disposed rib 29 (Fig. 5) on the ball 30 and a complementary slot 31 in the nozzle socket 32.

To minimize the extent to which the socket 32 must move, relative to the ball 30, in oscillating the nozzle 27, the discharge end of tube 18 is bent, just below the ball 30, as shown, so that its axis will extend at an angle medial of the two extreme angles of its oscillation, as indicated by the lines A and B.

The vertical oscillation of the nozzle 27 is effected, during rotation of the tube 18, by means of a finger 33, rigidly connected thereto, extending into a cam slot 34. The slot 34 is cut in a circular extension 35, which may or may not be formed integral with the head portion 11. For clarity of description I will hereafter refer to the extension 35 as the cam block.

The cam slot 34 (clearly illustrated in Fig. 3) is formed to effect the tilting of the nozzle 27 and is therefore continuous, so the finger 33 will ride therein during rotation of the tube 18. When the finger 33 is riding through the lower portions 34a the nozzle 27 will be tilted to its greatest angle, as shown by the line B, and when in the upper portions 34b it will be tilted to its minimum angle, as shown by the line A. With this construction the oscillation of the nozzle may be altered, merely by altering the points and extent of different curvatures of the slot 34, to adapt it to sprinkle areas of different sizes and practically any shape. That is, with a given head of water pressure the stream will be thrown, with the nozzle 27 at its minimum angle, to points farthest from the head and when at its maximum angle to points nearer the head, as shown diagrammatically in Fig. 1. In this connection I may here note that nozzle 27 may be perforated throughout its length to throw a number of streams of water, if desired.

In order that the curvature of the cam slot 34 may be easily and quickly altered, to adapt the sprinkler to areas of different sizes and shapes, this slot may be formed by a pair of complementary circular cam plates 36 and 37, removably secured to the inner face of the cam block 35, as by means of screws 38. In mounting the plates 36 and 37 are spaced apart so their adjacent cam faces 39 and 40 form the slot 34. To adapt the sprinkler to areas of different sizes and shapes merely the cam faces 39 and 40 are cut to the necessary curvatures.

From the foregoing description the opera-

tion of the device is obvious. It can also be seen that I have provided a very simple construction, which may be easily and quickly altered to adapt it to each particular use; and by providing this means of effecting a rotatable and at the same time oscillatory movement of the nozzle 27, areas of different sizes and shapes may be sprinkled.

While I have herein shown and described the preferred specific embodiment of my invention, it is nevertheless to be understood that I reserve the right to make changes or modifications in structures and arrangement as are permitted within the scope of the appended claims.

Having described a preferred form of my invention, I claim:

1. A sprinkler comprising: a water chamber having a water inlet; a discharge tube leading from the chamber; water power actuated means within the chamber, directly connected to said tube to rotate it; a nozzle mounted on said tube to rotate therewith and to oscillate relative thereto during rotation; and cam means to effect oscillation of said nozzle during rotation.

2. A sprinkler comprising: a water chamber having a water inlet; a discharge tube leading from the chamber; water power actuated means within the chamber, directly connected to said tube to rotate it; an inlet passage in said tube situated above the water power means in said chamber; a nozzle mounted on said tube to rotate therewith and to oscillate relative thereto during rotation; and cam means to effect oscillation of said nozzle during rotation.

3. A sprinkler comprising: a water chamber having a water inlet; a discharge tube leading from the chamber; water power actuated means, within said chamber, directly connected to said tube to rotate it; an inlet passage in said tube above the water power means in said chamber; a nozzle mounted on said tube to rotate therewith, and having a ball and socket joint to permit its oscillation relative to the tube during rotation; a cam surface of irregular form surrounding said nozzle; and a member connected with the nozzle and engaging said surface, to effect oscillation of the nozzle during its rotation.

In witness that I claim the foregoing I have hereunto subscribed my name this 13th day of October, 1924.

FRANCIS M. POTTENGER, JR.