Jan. 2, 1934. W. F. BARRINGTON 1,942,271

SPRINKLER

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Fig. 1.

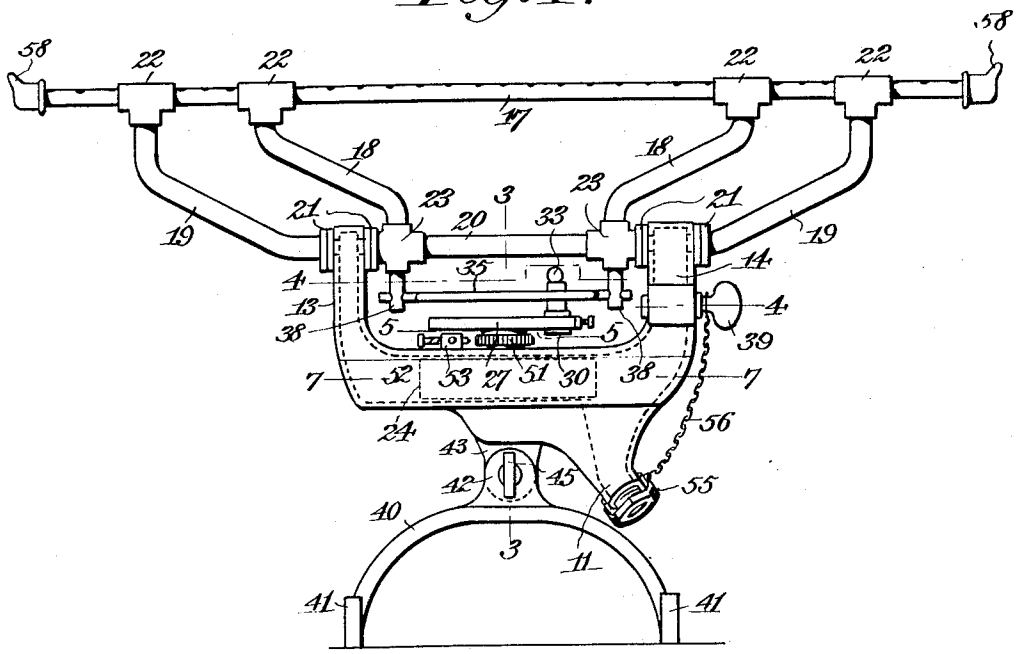


Fig. 2.

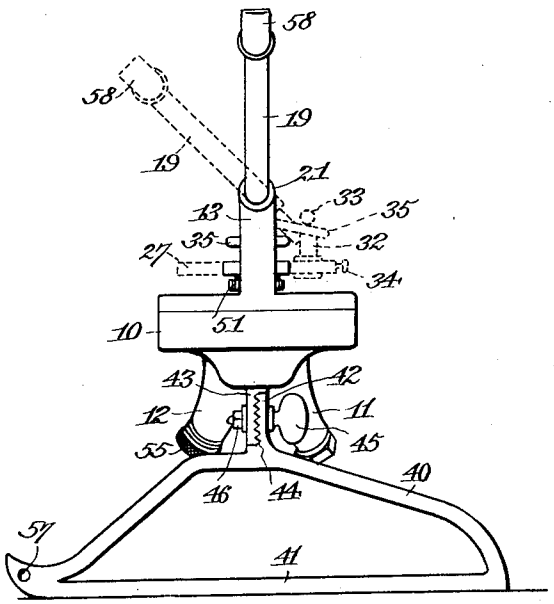
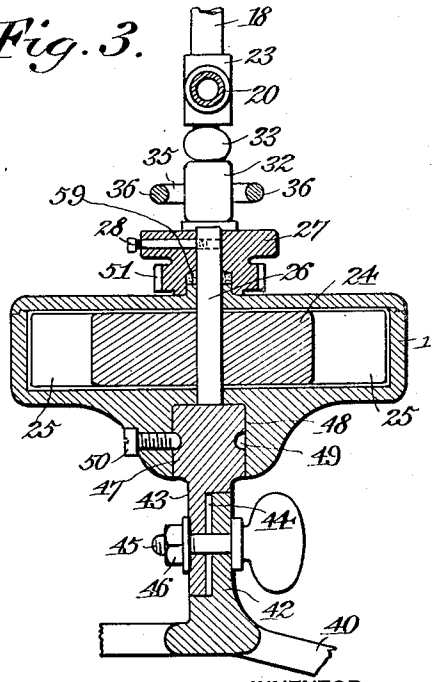


Fig. 3.



WITNESS

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Fig. 4.

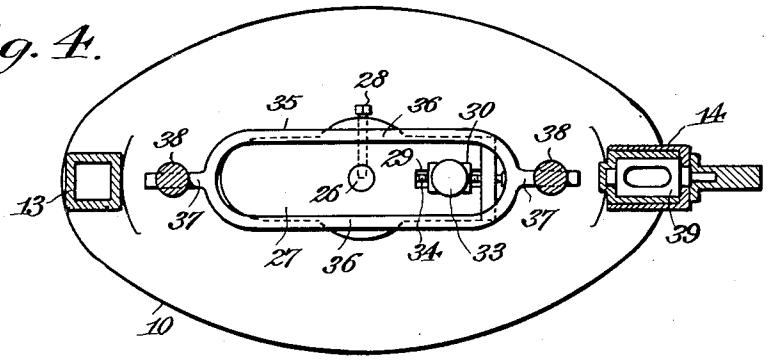


Fig. 6.

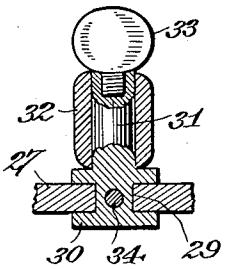


Fig. 5.

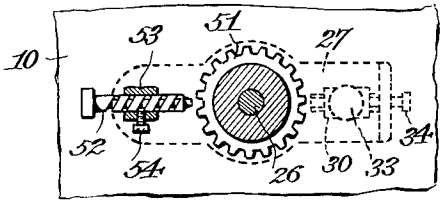
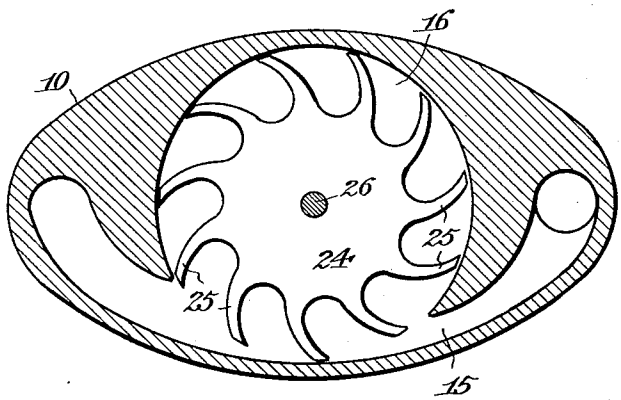


Fig. 7.



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UNITED STATES PATENT OFFICE

1,942,271

SPRINKLER

William Frederick Barrington, Quincy, Mass.

Application January 29, 1932. Serial No. 589,731

6 Claims. (Cl. 299—67)

This invention relates to a sprinkler designed and adapted for sprinkling lawns, gardens, golf courses, etc.

One of the objects of the invention is to provide a sprinkler of the indicated character having sprinkler means which oscillates so as to sprinkle a relatively large or small approximately square or long rectangular area of a lawn, garden, sloping lawn, side of a hill and an embankment.

Another object of the invention is to provide an oscillating sprinkler with means whereby the speed of oscillation of the sprinkler may be varied without variation of water pressure or volume at sprinkler head.

Another object of the invention is to provide a sprinkler of the indicated character with means whereby the sprinkling means may oscillate or be held stationary in different positions in relation to the base on which the sprinkler rests, to the end that, the sprinkler may be used advantageously for sprinkling narrow lawn areas and hedges.

A further object of the invention is to provide an oscillating sprinkler which will operate under low water pressure and which is economical and simple in character, and which is compact and light for convenience of handling and transportation.

With the foregoing and other objects in view, the invention resides in the provision, combinations and the operation of the parts hereinafter fully described and illustrated in the accompanying drawings, in which:

Figure 1 is a side view of a sprinkler embodying the features of the invention;

Figure 2 is an end view, the sprinkler head being shown oscillated in dotted lines;

Figure 3 is an enlarged vertical transverse section on the line 3—3 of Figure 1;

Figure 4 is an enlarged horizontal section on the line 4—4 of Figure 1;

Figure 5 is an enlarged section on the line 5—5 of Figure 1;

Figure 6 is a detailed section;

Figure 7 is an enlarged horizontal section on the line 7—7 of Figure 1.

Referring now more particularly to the drawings it will be apparent that the sprinkler includes a substantially U-shaped casing 10 of sectional construction having depending water inlets 11 and 12, and upstanding outlets 13 and 14. The inlets 11 and 12 merge and communicate with a passage 15 within a horizontal portion of the casing 10 extending between the outlets 13 and 14, and which passage 15 communicates with the outlets 13 and 14. The casing 10 also has a recess or chamber 16 which communicates at one side with the passage 15 intermediate thereof. A sprinkler assembly is mounted for oscillation in communication with the outlets 13 and 14. The assembly consists of a sprinkler head or sectional tube 17 and connections which connect the head 17 with the outlets 13 and 14. The said connections consist of branch tubes 18, 19 and 20 and bushings 21. The bushings 21 are connected with the outlets 13 and 14 in communication therewith. The tubes 19 are connected respectively to the bushings 21. The tubes 18 and 19 are connected with the tube 17 by T-fittings 22. The tubes 18 are connected with cross fittings 23, which fittings also connect with the bushings 21 respectively. The opposite ends of the tube 20 are respectively connected with the fittings 23. The provision and arrangement is such that the sprinkler head 17 may be oscillated, and also may have water delivered thereto from the outlets 13 and 14. It will be apparent that the outlets 13 and 14 serve as conduits for the water, and also a means to support the sprinkler assembly.

Means is provided which operates in response to the force of the water as it flows through the casing 10 to the sprinkler head 17 to cause the oscillation of the sprinkler assembly. The said means includes a water wheel 24 of any practical type which is arranged in the recess 16. The blades 25 of the wheel 24 project into the passage 15 to be acted on by the water. The wheel 24 is fast on a shaft 26 which is supported for rotation by the parts of the casing 10. An arm 27 is secured to the upper end of the shaft 26 by a set screw 28 so that the arm will rotate with the wheel 24. One end of the arm 27 has a slot or guideway 29 which slidably receives therein a grooved block 30, the grooves in the block being at opposite sides to respectively receive the sides of the guideway 29. A pin 31 projects upwardly from the block 30. An antifriction sleeve 32 is arranged on the pin 31 and is freely rotatable thereon. The sleeve 32 is held in place by a head 33 detachably connected with the pin 31. An adjusting screw 34 is in threading engagement with the arm and the block 30 for the purpose of chanaging the position of the pin 31 in relation to the axis of the water wheel for a purpose to appear hereinafter. A rocker 35 in the form of a slotted element consists of side members 36 and trunnions 37 which are connected with the side members 36. The trunnions 37 are in axial alinement with each other and are respectively received in holes in bearings 38 which are respectively connected with the fittings 23. The pin 31 is disposed to operate in conjunction with the side members 36 of the rocker 35 in the rotation of the water wheel 24.

The outlet 14 which is larger than the outlet 13 has connected therein a regulating valve 39 of any suitable type for a purpose to appear.

The sprinkler includes a base 40 which is in the form of a sled because it has runners 41 which

makes it possible to draw the sprinkler along the surface of the ground. The base 40 is connected with the casing 10 so that the casing 10 and the sprinkler assembly carried thereby will be adjustable in relation to the base 40. The said means consists of two parts, a part 42 integral with the base 40 and a part 43. The parts 42 and 43 have their inner faces serrated radially as at 44 and are held clamped together by a clamping bolt 45 and nut 46. The part 43 has an arbor 47 which is received in a bore 48 in an enlargement on the under side of the casing 10. The arbor 47 has a circular groove 49. A set screw 50 is threaded in said enlargement and the inner end thereof projects into the groove 49. It will be apparent that the casing 10 is adjustable on a horizontal axis, which is the bolt 45, and also on a vertical axis which is the arbor 47. By loosening the nut 46 on the bolt 45, the casing 10 may be moved to different positions in a vertical plane. By loosening the set screw 50 the casing may be adjusted in a horizontal plane to any desired position in relation to the base.

From the foregoing it will be understood that one or both of the inlets 11 and 12 may be connected with a suitable supply of water under pressure which may be conveyed thereto from said source by a hose or pipe connection or connections with suitable coupling means on the inlets. The water flows to the passage 15 impinging itself against the blades 25, thereby operating the wheel 24. The water flows to the outlet 13, through openings in the bushings 21, thence to the tubes 18 and 19 at the left, thence to the tube 17 to the tubes 18 and 19 at the right to the oulet 14 and is stopped by the valve 39 which will be closed. Pressure will force the water out through the multiplicity of holes in the head or tube 17. As the wheel 24 rotates by the force of the water, the arm 27 will rotate with the wheel, and as a consequence the pin 31 will act on the side members 36 of the rocker 35 causing the sprinkler assembly including the head or tube 17 to oscillate. In this manner a relatively large area may be sprinkled. By manipulating the valve 39 the volume and pressure of water operating on the wheel 24 may be altered, to reduce or increase the speed of oscillation of the sprinkler head without changing the volume or pressure of water at the sprinkler head. By manipulating the screw 34, the position of the pin 31 in relation to the axis of the wheel 24 may be changed in order to vary the degree of oscillation of the sprinkler head so that a relatively large or small area may be sprinkled at will.

The sprinkler may be used advantageously for sprinkling sloping lawns, the sides of hills and embankments, by adjusting the casing 10 in relation to the base 40. This as stated hereinbefore is accomplished by loosening the nut 46 and adjusting the part 43 with respect to the part 42. By so adjusting the casing 10 in relation to the base the latter may rest on the sloping lawn, etc. as the case may be and the sprinkler and head 17 will be disposed substantially parallel to the surface of the area to be sprinkled.

In accordance with another feature of the invention the water wheel 24 may be prevented from rotating and the sprinkler head held stationary for sprinkling narrow areas of lawn or the like and hedges. The said means consists of a toothed wheel 51 integral with the arm 27, and a screw stop 52 adjustable in a block 53 on the casing 10. The stop 52 may be engaged between any pair of the teeth of the wheel 51 to hold the sprinkler head 17 at any angle within the range of movement thereof. The stop is held against movement by a set screw 54 carried by the block 53.

The inlet 12 may be closed by a cap 55 when said inlet is not used, the said cap being threaded on the inlet 12. This cap 55 is held captive by the employment of a ring and chain connection 56, the said chain being connected with the handle of the valve 39. The runners 41 of the base have holes 57 in the front ends to receive a rope or the like for drawing the sprinkler over the ground. The ends of the head or tube 17 may be provided with nozzles 58.

A suitable bushing and packing 60 around the shaft 26 between the casing 10 and gear 51 prevents leakage at this point.

By means of one or the other of the inlets 11 or 12 two or more sprinklers may be connected in series by the use of hose or rigid pipe line.

I claim:

1. In a sprinkler, the combination of a casing having a water inlet, an oscillatory sprinkler head mounted on said casing in communication with the interior thereof, a water wheel within said casing which is rotated by the flow of water from said inlet to said head, said wheel having a shaft rotated thereby, said shaft having a crank for rotation therewith and said crank having a pin, bearing members depending from said head, a horizontally disposed slotted member supported at its ends by said bearing members for rocking movement on a horizontal axis with respect to said head, said pin being disposed in the slot provided by said slotted member, causing the sprinkler head to oscillate in response to the rotation of said water wheel.

2. In a sprinkler, the combination of a casing having a water inlet, an oscillatory sprinkler assembly mounted on said casing in communication with the interior thereof, a water wheel within said casing which is rotated by water flowing through said casing from the inlet to said sprinkler assembly, a slotted member connected with said assembly and having rocking movement with respect thereto, and a crank mounted on and driven by the shaft of said wheel thereby cooperating with said slotted member to cause the oscillation of said assembly in response to the rotation of said wheel.

3. In a portable sprinkler, the combination of a casing providing upstanding portions joined by an intermediate horizontal portion, said upstanding portions forming water outlets, and said horizontal portion forming a chamber in communication with said outlets by a passage at one side of said chamber within said horizontal portion, said casing having a water inlet communicating with said passage, a sprinkler head assembly mounted on said upstanding portions for oscillatory movement and in communication with said outlets, a water wheel arranged in said chamber which is rotated by the flow of water through said passage from the inlet, a rocker connected with said assembly, and a crank mounted on and driven by the shaft of said wheel thereby cooperating with said rocker to cause the assembly to oscillate in response to the rotation of the wheel.

4. In a portable sprinkler, the combination of a casing providing upstanding portions joined by an intermediate horizontal portion, said upstanding portions forming water outlets, and said horizontal portion forming a chamber in communication with said outlets by a passage at

one side of said chamber within said horizontal portion, said casing having a water inlet communicating with said passage, a sprinkler head assembly mounted on said upstanding portions for oscillatory movement and in communication with said outlets, a water wheel arranged in said chamber which is rotated by the flow of water through said passage from the inlet, a rocker connected with said assembly, a crank mounted on and driven by the shaft of said wheel thereby cooperating with said rocker to cause the assembly to oscillate in response to the rotation of the wheel, and a valve connected with one of said upstanding portions to regulate the outflow of water through the outlet formed by said upstanding portion, and also the pressure of the water on said wheel, to vary the speed of oscillation of said assembly.

5. In a sprinkler, the combination of a casing providing upstanding portions joined by an intermediate portion, said upstanding portions forming water outlets, and said intermediate portion forming a chamber in communication with said outlets by a passage at one side of said chamber within said intermediate portion, said casing having a water inlet communicating with said passage, a sprinkler head assembly mounted on said upstanding portions for oscillatory movement, the opposite ends of said assembly being in communication with said outlets respectively, and means including a water wheel arranged in said chamber operated by the water flowing through said passage to cause oscillation of said assembly.

6. In a sprinkler, the combination of a casing having a water inlet at the bottom and upwardly extending spaced portions forming water outlets, a water tube having the opposite ends thereof turnably connected with said portions respectively and in communication with the outlets formed thereby, a sprinkler tube, branch tubes having their opposite ends connected with said first tube and the sprinkler tube and establishing communication therebetween, and also supporting the sprinkler tube for movement with said first tube, and means connected with said first tube and operated by the flow of water in said casing on its way from said inlet to said outlets and tubes, to cause the turning of said first tube and the oscillation of the sprinkler tube.

WILLIAM FREDERICK BARRINGTON.