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OSCILLATING WATER SPRINKLER

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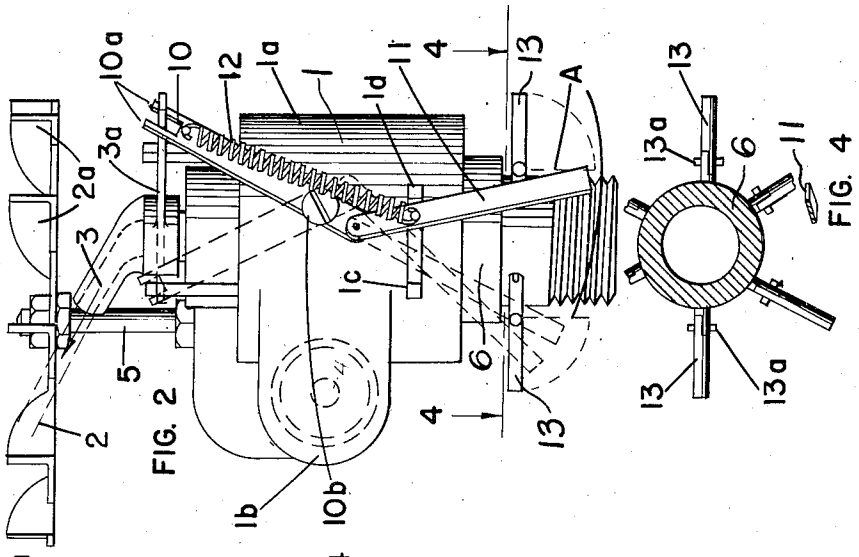


FIG. 2

FIG. 4

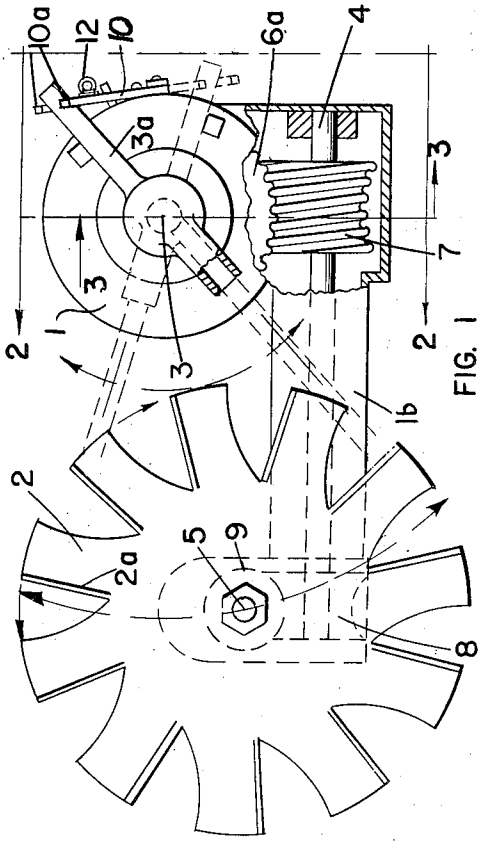


FIG. 1

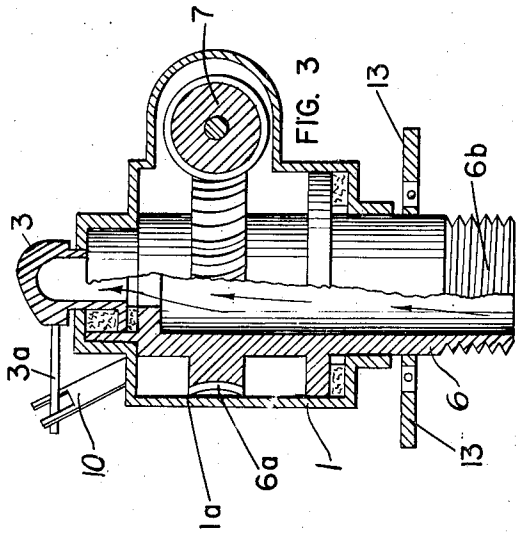


FIG. 3

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OSCILLATING WATER SPRINKLER

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4 Claims. (Cl. 299—68)

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My invention relates to an oscillating water sprinkler and the objects of my invention are:

First, to provide a water sprinkler in which an automatically shiftable nozzle is arranged to oscillate through a predetermined arc, automatically reversing the direction of rotation of the nozzle;

Second, to provide a sprinkler of this character in which the arc through which the nozzle oscillates is made easily variable;

Third, to provide a device of this character having a waterwheel operated by the water spray and indirectly providing positive trip action to reverse the direction of rotation of the nozzle;

Fourth, to provide a device of this character which may be used to water a delinated area other than circular in shape; and

Fifth, to provide an oscillating sprinkler which is simple and practicable to manufacture, convenient to use, and which is sturdy and designed to give efficient and durable service.

With these and other objects in view as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon which form a part of this application in which:

Figure 1 is a fragmentary top or plan view of the water sprinkler showing portions broken away and in section to facilitate the illustration and showing by dash lines and arrows varying positions of parts of the water sprinkler and showing by arrows the passage of water therethrough; Fig. 2 is a side elevational view of my sprinkler showing by dash lines varying positions of parts thereof; Fig. 3 is a sectional view taken from the line 3—3 of Fig. 1 showing portions in elevation to facilitate the illustration and showing by arrows the passage of water through the water sprinkler; Fig. 4 is a transverse sectional view taken from the line 4—4 of Fig. 2 showing portions broken away to facilitate the illustration.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings:

The casing member 1, waterwheel 2, nozzle 3, shafts 4 and 5, gear, water conductor member 6, worms 7 and 8, worm gear 9, nozzle trip levers 10 and 11, spring 12 and the lever engaging fingers 13 constitute the principal parts and portions of my oscillating water sprinkler.

The casing member 1 is provided with two substantially hollow cylindrical portions 1a and 1b. These hollow cylindrical portions 1a and 1b are arranged with the axis of the cylindrical portion 1b at right angles to the axis of the hollow cylindrical casing portion 1a, as shown best in Figs. 1 and 3 of the drawings. Revolubly mounted

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in the hollow cylindrical portion 1b and extending longitudinally therein is the shaft 4, on the opposite ends of which are mounted the worms 7 and 8, the worm 8 being shown by dash line in Fig. 1 of the drawings. In mesh with the worm 8 is the worm gear 9, shown by dash lines in Fig. 1 of the drawings. This worm gear 9 is mounted on the lower end of the shaft 5, to the upper end of which is fixed the waterwheel 2, as shown best in Figs. 1 and 2 of the drawings. This waterwheel 2 is provided with radially disposed angular blade portions 2a which extend in substantially vertical relation, as shown in Fig. 2 of the drawings. The worm 7 is arranged in mesh with the worm gear portion 6a of the gear and water conductor 6, as shown best in Fig. 3 and Fig. 1 of the drawings. On the gear and water conductor member 6 is revolubly mounted the casing portion 1a and the lower end of said member 6 is provided with a screw threaded portion 6b arranged to be connected to a stationary tubular water conductor member such as a solid vertically extending water pipe arranged to hold said gear and water conductor member 6 in stationary fixed position and in the upright relation, as shown in Figs. 2 and 3 of the drawings. In revoluble communicative relation with the upper end of the hollow water conductor member 6 is the water nozzle 3. This water nozzle 3 is freely revoluble with the casing portion 1a and it is also revoluble in the said casing portion 1a. Rigidly connected to the nozzle 3 is a lever arm 3a which is engaged by the bifurcated portion 10a of the nozzle trip lever 10 as shown best in Fig. 2 of the drawings. This nozzle trip lever 10 is pivotally mounted on a bolt 10b rigidly connected with the casing portion 1a, as shown best in Fig. 2 of the drawings. Pivotally connected at the lower end of the nozzle trip lever 10 below the bolt 10b is the nozzle trip lever 11 which is connected with the casing portion 1a below the pivotal connection of the trip levers 10 and 11. Spaced outwardly extending stop members 1c and 1d are arranged to engage the opposite side edges of the nozzle trip lever 11 when shifted to various positions, as indicated by dash lines in Fig. 2 of the drawings.

Secured to the nozzle trip levers 10 and 11 in intermediate relation therewith is the tension spring 12, as shown best in Fig. 2 of the drawings. This tension spring 12 is connected with the nozzle trip lever 11 below the pivotal connection therewith of the nozzle trip lever 10 and this tension spring 12 is secured to the nozzle trip lever 10 near its upper end, as shown best in Fig. 2 of the drawings. The lever engaging fingers 13 are arranged to engage opposite side edges of the nozzle trip lever 11, as shown best in Figs. 2 and 4 of the drawings. These lever engaging fingers 13 are securely connected with the outer side of the gear and water conductor 6, as shown best in

Figs. 3 and 4 of the drawings. Each of these lever engaging fingers 13 is provided with a pin 13a therein which forms a pivotal joint in each of said lever engaging fingers 13, as shown best in Fig. 4 of the drawings, and the shifted position of which is indicated by dash lines A in Fig. 2 of the drawings. It will therefore be noted that these lever engaging fingers 13 are pivotally mounted on the pins 13a and may be shifted outwardly into interference with the trip lever 11 or may be shifted downwardly to substantially the dash line position A out of interference therewith as shown best in Fig. 2 of the drawings.

The operation of the water sprinkler is substantially as follows: Assuming that the screw threaded portion 6b of the gear and water conductor member 6 is secured to a stationary pressure water conductor, water passing upwardly through this gear and water conductor member 6, as indicated by arrows in Fig. 3 of the drawings, passes upwardly and outwardly through the nozzle 3 and strikes the blades 2a of the waterwheel 2 revolving the same and with it the shaft 5 to which the water wheel is connected. This shaft 5 operates the worm gear 9 in mesh with the worm 8 which revolves the shaft 4 on which is mounted the worm 7 in mesh with the gear portion 6a of the gear and water conductor 6. The gear and water conductor member 6 being maintained in rigid stationary position causes the casing portions 1a and 1b to revolve around said gear and water conductor 6 carrying with the same the water wheel 2 and the nozzle 3 together with the nozzle trip levers 10 and 11. When the casing portion 1a, carrying the nozzle trip levers 10 and 11, revolves a certain distance, the nozzle trip lever 11 engages one of the radially extending lever engaging fingers 13 and this trip lever 11 engages one of the stop portions 1d or 1c pivoting the trip lever 10 upon the bolt 10b and causing the nozzle 3 to shift in the opposite direction starting the operation of the water wheel 2 in the opposite direction.

It will be here noted that when the nozzle trip lever 11 is engaged by one of the fingers 13, one of the stop portions 1c or 1d in connection with the casing portion 1a forces the trip lever 10 in its pivotal relation with the bolt 10b causing the spring 12 to pass over the central portion of the bolt 10b and to snap the nozzle trip levers 10 and 11 together with the nozzle 3 in opposite direction, as indicated by dash lines in Fig. 2 of the drawings. Particular attention is called to the over center relation of the spring 12 and the pivotal connection of the trip lever 11 below the stationary pivotal mounting bolt 10b of the trip lever 10 which provides a compound over-center trip mechanism when the trip lever 11 engages one of the stop portions 1d or 1c and provides a positive shifting force upon the lever 10 until the same is passed over the center point in relation with the spring 12. The lever engaging fingers 13 in their pivotal relation may be set up to limit the revolving action of the casing members 1a and 1b around the gear and water conductor 6, as desired. When the finger members 13 are arranged in the desired positions, the water sprinkler will alternately shift back and forth by means of the shiftable nozzle 3 controlled by the trip members 10 and 11, as hereinbefore described. This provides means by the use of which a person may sprinkle water on a particular area so that the water is distributed evenly in alternately changing directions of spraying operation it will be here noted that all of the fingers 13 may be pivoted downwardly out of interference with the lever 11 whereby continuous rotation of the casing 1 is permitted.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

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

1. A water sprinkler having a water conductor, a revoluble housing, a revolubly mounted nozzle on said housing, an arm on said nozzle, a pair of spring connected nozzle trip levers hinged together on said housing associated with said arm, a waterwheel adapted to be rotated alternately in two directions by water flowing from said nozzle, a gear train between said waterwheel and said housing, and stops adapted to trip said trip levers and said arm when said housing is rotated in either direction.

2. A water sprinkler having a water conductor, a revoluble housing, a revolubly mounted nozzle on said housing, an arm on said nozzle, a pair of spring connected nozzle trip levers hinged together on said housing associated with said arm, a waterwheel adapted to be rotated alternately in two directions by water flowing from said nozzle, a gear train between said waterwheel and said housing, and stops adapted to trip said trip levers and said arm when said housing is rotated in either direction, said stops being adjustable and arranged peripherally of said housing on said water conductor.

3. A water sprinkler having a revoluble housing and a revolubly mounted nozzle on said housing, an arm on said nozzle, a pair of nozzle trip levers on said housing associated with said arm, a waterwheel adapted to be rotated alternately in two directions by water flowing from said nozzle, a gear train between said waterwheel and said housing, and stops adapted to trip said trip levers and said arm when said housing is rotated in either direction, said pair of trip levers being pivotally connected together and secured on a single pivot on said housing and having a spring stretched in intermediate relation between the levers of said pair to provide over-center snap lever action.

4. An oscillating water sprinkler having a waterwheel, a nozzle shiftable to change the direction of rotation of said waterwheel, a gear train in connection with said waterwheel and a pair of spring connected levers connected to said nozzle whereby continued rotation of said waterwheel in either direction shifts said nozzle, said waterwheel, nozzle, gear train and levers being mounted on a hollow housing revolubly mounted on a fixed hollow member having a fixed gear positioned at one end of said gear train, and stops on said fixed member peripherally arranged around said housing to trip said levers.

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REFERENCES CITED

The following references are of record in the file of this patent:

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