April 13, 1937. W. VAN E. THOMPSON 2,076,753

ADJUSTABLE FULL CIRCLE SPRINKLER

Filed April 20, 1936

Fig. 1.

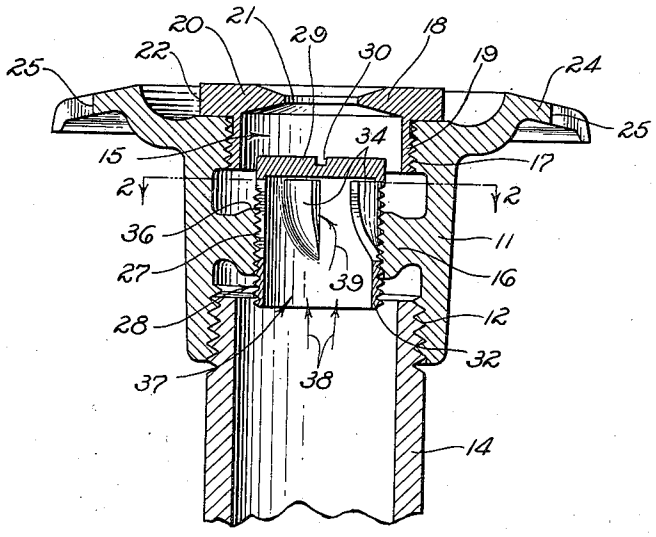
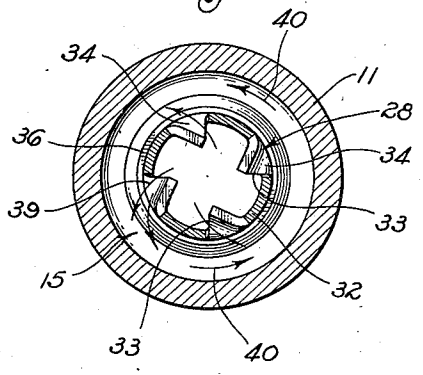


Fig. 2.



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ADJUSTABLE FULL CIRCLE SPRINKLER

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8 Claims. (Cl. 299—119)

My invention relates to irrigation devices and relates particularly to an irrigation sprinkler.

In the irrigation art it is common practice to irrigate areas by means of sprinklers or sprinkler heads connected to header pipes, and spaced predetermined distances apart, each sprinkler being adapted to irrigate a predetermined area. The type of sprinkler to which my invention relates is commonly known as a full circle sprinkler and the water passing into the sprinkler is swirled or rotated so that when it passes from the sprinkler it is thrown outwardly so as to irrigate a circular area.

In view of the fact that there is a difference in water pressure in the header pipes at different positions along the header pipes, it is desirable to provide the sprinkler with an adjustment means for controlling the amount of water which passes through the sprinkler, and by use of this adjustment means it is possible to compensate for the difference in pressure heads at different parts of the header pipes.

It is an object of my invention to provide a sprinkler having an adjustment means whereby the amount of water flowing through the sprinkler may be controlled.

It is a further object of my invention to provide an adjustable means for performing the function pointed out in the preceding paragraph which may be adjusted without removing the sprinkler or any parts thereof from place.

It is an object of my invention to provide a sprinkler having an adjustable inlet member which may be adjusted in position for controlling the amount of water passing through the sprinkler.

It is commonly known that the water flowing through irrigation systems contain foreign bodies, such as snail shells, gravel particles, moss, etc., which enter the sprinkler and clog, or partly clog, the various passages after a period of time. When this occurs the efficiency of the sprinkler is impaired and it becomes necessary to clean the sprinkler.

It is one of the objects of my invention to provide a sprinkler which may be readily cleaned.

It is another object of my invention to provide a sprinkler in which the parts where the foreign matter ordinarily clogs may be entirely removed from the sprinkler into a position where it may be very easily and conveniently cleaned by the use of a pick or other cleaning implement.

It is another object of my invention to provide a sprinkler having an inlet member into which the water first flows and having swirling openings which are preferably tangentially disposed, and through which the water passes in reaching a swirl chamber of the invention. It is at these swirling openings where the foreign matter usually accumulates. In my invention the inlet member is removable so that the cavity thereof is readily accessible for cleaning, and in this manner this object of my invention is accomplished.

Other objects and advantages of my invention will be pointed out in the course of the following detailed description of the form of my invention which I have chosen to illustrate the principle thereof.

Referring to the drawing which accompanies the application:

Fig. 1 is a vertical sectional view through a sprinkler embodying the features of my invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Referring to the drawing in detail, the sprinkler of my invention has a body 11, the lower end of which is provided with internal threads 12 whereby it may be secured to a water supply pipe 14, which is in turn connected to a header pipe (not shown), the header pipe forming a part of the irrigation system. Formed in the upper part of the body 11 is a chamber 15 which I denominate a "swirl chamber", this chamber being formed directly above a lower wall 16 of the body 11 which defines the lower limit of the chamber. The side wall of the body 11 which cooperates in forming the chamber 15 is threaded at 17 to receive a cap 18. This cap 18 has a depending cylindrical wall 19 which is provided with threads as shown and has an upper wall 20 having an outlet port or spray port 21 through which water may pass from the swirl chamber 15. The cap 18 is provided with a nut portion 22 of polygonal shape for the application of a wrench for installing or removing the cap. The body 11 is provided with an outwardly extending flange 24 having openings 25 for the application of a wrench whereby the body may be installed on or removed from the pipe 14.

The lower wall 16 is provided with a threaded opening 27, and supported by this lower wall is an inlet member 28. The inlet member 28 has a top wall 29 provided with a screw driver slot 30 for adjustment purposes and has a cylindrical depending wall 32 which is externally threaded so that the inlet member 28 may be screwed into the opening 27. The cylindrical wall or the side wall 32 is provided with swirling means in the form of tangentially disposed openings or slots 33 which are formed by bending portions 34 of the side

wall 32 inwardly, as shown in the drawing. The upper face of the lower wall 16 provides a valve face or control face 36 and, as shown in Fig. 1, is operative to control the effective size of the tangential openings 33.

In view of the fact that the inlet member is adjustable in the opening 27, it is possible by extending a screw driver through the spray port 21 to engage the screw driver in the slot 30 and upon rotation of the screw driver to advance the inlet member either upward or downward as desired. When this occurs the tangential openings 33 are either raised or lowered relative to the valve face 36, with the result that the effective size of the tangential openings 33 is either increased or decreased depending upon the direction of motion.

In using the sprinkler of my invention the water or other liquid, as the case may be, flows through the pipe 14 into the lower end of the body 11. The water then enters the downwardly disposed cavity 37 of the inlet member 28 which is formed by the top and side walls 29 and 32. This water flows upwardly, as indicated by arrows 38, and then flows through the tangential openings 33, as illustrated by arrows 39. It will be seen that in passing through these tangential openings the water is caused to swirl or rotate, and therefore the water upon entering the swirl chamber 15 follows a course as indicated by the arrows 40. After entering this swirl chamber 15 the water passes upwardly and is then forced inwardly and then upwardly through the spray port 21. When the water passes through the spray port 21 it is released from confinement and centrifugal force throws it outwardly so that this water irrigates a circular area.

Any foreign matter which passes through the pipe 14 and into the sprinkler, and which is too large to pass entirely through the sprinkler, will tend to clog on the inwardly bent portions 34 and to clog, or partially clog, the tangential openings 33. When this foreign matter has accumulated to such an extent that it impairs the efficiency of the sprinkler, the operator will remove the inlet member 28 for cleaning purposes. This is readily done by first removing the cap 18 and thereafter rotating the inlet member 28 to advance it upwardly so that it may be freed from the threaded opening 27. When the inlet member has been removed it will be seen that the cavity 37 in which the foreign matter has accumulated is readily accessible and may therefore be very easily and quickly cleaned. It will be seen that the only part of the sprinkler which requires cleaning is the interior of the inlet member 28, and since this member may be removed to be conveniently worked with it will be seen that it may be very conveniently cleaned.

An important consideration of the present invention is the inlet member 28 which is designed, first, for controlling the amount of water which may flow through the sprinkler and, second, for an easy cleaning. It is possible to secure the inlet member in other ways than by threading, and it is further possible to utilize the cleaning feature without utilizing the adjustable feature, and under such circumstances the inlet member could be installed against a shoulder in the body 11.

My invention may be incorporated in various physical shapes without departing from the spirit and scope thereof, and I therefore do not wish my invention to be limited to the details of construction illustrated herein, but wish it to be construed in accordance with the appended claims.

I claim as my invention:

1. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber, and providing an outlet port; and an inlet member removably supported by said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, and liquid swirling means for delivering said liquid from said cavity into said chamber.

2. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber, and providing an outlet port; and an inlet member removably supported by said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, and liquid swirling means in the form of tangentially disposed openings in the side wall of said inlet member for delivering said liquid from said cavity into said chamber.

3. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber, and providing an outlet port; and an inlet member supported in an opening formed in said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, and liquid swirling means for delivering said liquid from said cavity into said chamber.

4. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber, and providing an outlet port; and an inlet member supported in an opening formed in said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, and liquid swirling means in the form of tangentially disposed openings in the side wall of said inlet member for delivering said liquid from said cavity into said chamber.

5. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber, and providing an outlet port; and an inlet member supported in an opening formed in said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, liquid swirling means for delivering said liquid from said cavity into said chamber, and said inlet member being adjustably supported in said opening so that it may be positioned with said shell covering a part of said swirling means, thus regulating the amount of liquid flowing through said sprinkler.

6. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber, and providing an outlet port; and an inlet member supported in an opening formed in said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, liquid swirling means in the form of tangentially disposed openings in the side wall of said inlet member for delivering said liquid from said cavity into said chamber, and said inlet member being adjustably supported in said opening so that it may be positioned with said shell covering a part of said swirling means, thus regulating the amount of liquid flowing through said sprinkler.

7. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber and providing an outlet port; and an inlet member supported by said shell

through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, and port means for delivering said liquid from said cavity into said chamber, said inlet member being adjustably supported so that it may be positioned with said shell covering a part of said port means, thus regulating the amount of liquid flowing through said sprinkler.

8. In a sprinkler of the class described, the combination of: a shell having side and end walls defining a chamber and providing an outlet port; and an inlet member supported by said shell through which liquid enters said chamber, said inlet member having a downwardly opening cavity into which said liquid flows, and port means for delivering said liquid from said cavity into said chamber, said inlet member being threadedly supported in an opening formed in said shell so that it may be positioned with said shell covering a part of said port means, thus regulating the amount of liquid flowing through said sprinkler.

WALTER VAN E. THOMPSON.