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SELF-CLEANING SPRAY DEFLECTOR WEDGE FOR SPRINKLERS

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Fic. 1

Fic. 2

Fic. 3

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This invention relates to sprinklers which are caused to rotate by periodic impact of an oscillating arm. The arm, in turn, is oscillated by an oscillating spray deflector wedge mounted at an extremity of the arm. It is essential that the deflector wedge be free on its shaft. If it is not, the sprinkler will fail to rotate.

Sprinklers, by the nature of their use, are exposed to dirt particularly when they are idle, so that the most critical time occurs when the body is in frame 4. Should the deflector wedge of one of a group of sprinklers fail to function, the entire group must be shut off and the wedge manually manipulated to free it for use, otherwise, its sprinkler will direct a stream at a single spot and cause erosion or plugging damage.

Also, irrigation water is often dirty or silt laden, while it would seem difficult to occur, nevertheless, dirt or silt will sometimes collect in the deflector wedge bearing during operation of the sprinkler.

In practice, the deflector wedge is made of light weight plastic material selected to have good bearing qualities; nevertheless, when the bearing is dry and the sprinkler has been idle, the starting friction is sometimes sufficient to prevent operation. Still further, it is not uncommon for minute insects or algae to accumulate between uses of the sprinkler.

It is an object of the present invention to provide a deflecting wedge for sprinklers which is self-lubricating and self-cleaning, this being accomplished by apertures which deflect a portion of the irrigation water into and through the bearing.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawings, in which:

FIGURE 1 is a side view of the sprinkler embodying the invention.
FIGURE 2 is an enlarged fragmentary frame view taken from 2—2 of FIGURE 1.
FIGURE 3 is an enlarged fragmentary sectional view taken through 3—3 of FIGURE 1.
FIGURE 4 is a further enlarged substantially diagrammatic sectional view taken through 4—4 of FIGURE 3.

The deflector wedge provided at one side of the body is provided at opposite sides with deflector surfaces 15 which converge to a sharp edge toward the jet nozzle 3. The upper and lower margins of the deflector wedge are provided with parallel flanges 16 defining the upper and lower boundaries of the deflector surfaces 15.

The upper flange is provided with a pair of spaced stops 17 which engage the sides of the drive member 6.
The above described structure is conventional.

Operation of the sprinkler is as follows:

The stream of water issuing from the jet nozzle 3 strikes on one or the other of the deflector surfaces 15. The reaction produces a torsional force on the drive member 16 in opposition to the spring 7. The drive member rotates until the force of the spring overcomes the reaction force of the water stream whereupon the deflector wedge moves across the water stream and is deflected to its opposite extreme position. Simultaneously, the spring rotates the drive arm to its original position causing the sides of the drive member to strike the sides of the frame 4 and turn the body 21 a slight amount. Continued oscillation of the drive member causes the body 2 to rotate in increments and causes the spray to traverse a full circle.

It is essential to operation of the sprinkler that the deflector wedge 11 journal on the pin 10 as freely as possible. It has been found desirable that the deflector wedge be formed of plastic or other lightweight material having low inertia.

It is conventional practice to provide a loose fit between the journal bore 12 and pin 10 to insure free movement; however, it should be noted that sprinklers, by the nature of their use, are exposed and that between uses, they may be sprayed with mud and dirt. Even in use, the water supply may not be filtered and therefore contain sand and silt. Still further, algae or minute insects may enter the bore 12 or accumulate at the axial extremities of the bore.

The situation is particularly acute when the sprinkler is first turned on. If the deflector wedge fails to function, the sprinkler will fail to rotate.

In the exercise of the present invention, the deflector wedge 11 is provided with a pair of apertures 18 which diverge from the bore 12 toward the apex formed by the deflector surfaces 15; that is, in opposition to the direction of flow of water of the deflector surfaces 15. The apertures 18 permit a portion of the water to flow into the annular space defined by the walls of the bore 12 and the pin 10, to wash out any deleterious material which may have accumulated therein or which might otherwise accumulate during the operation of the sprinkler.

The portion of the water entering the bore 12 flows axially so as to wash any accumulated at the axial extremities of the bore. Once the water has washed the space between the deflector wedge and the journal pin, the water continues to flow and functions as a lubricant to insure free movement of the deflector wedge during operation of the sprinkler.

While a particular embodiment of this invention has been shown and described, it is not intended to limit the same to the details of the construction set forth, but instead, the invention embraces such changes, modifications and equivalents of the various parts and their relationships as come within the purview of the appended claims.

I claim:

1. In a rotatable sprinkler including a sprinkler jet and an oscillating arm projecting beyond and at one side of the jet, the arm having at its extremity, a journal shaft movable into the path of water issuing from said jet, the combination of a water deflector, comprising:

(a) a wedge-shaped body having a transverse bearing bore loosely received on said journal shaft, the wedge sides of said body converging toward said jet and,
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alternatively, adapted to be impinged by water issuing therefrom;

(b) means for limiting said member to oscillatory movement;

(c) said body defining at least one opening intersecting one of said wedge sides in the path of water flowing thereon and intersecting said bore;

(d) said opening forming a duct for the flow of a portion of the water into said bore to lubricate said body and to wash deleterious matter from the space defined between the walls of said bore and the surface of said journal pin.

2. In a rotatable sprinkler including a sprinkler jet and an oscillatable arm projecting beyond and at one side of the jet, the arm having at its extremity, a journal shaft movable into the path of water issuing from said jet, the combination of a water deflector, comprising:

(a) a wedge-shaped body having a transverse bearing bore loosely received on said journal shaft, the wedge sides of said body converging toward said jet and, alternatively, adapted to be impinged by water issuing therefrom;

(b) said body defining a pair of ducts converging in the opposite direction to said wedge sides, said ducts intersecting said wedge sides at points within the paths of water streams flowing thereon and also intersecting said bore, thereby to conduct water to said bore to lubricate said body and wash the annular space defined by the surface of said journal pin and the walls of said bore.

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