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SPRINKLER CAGE

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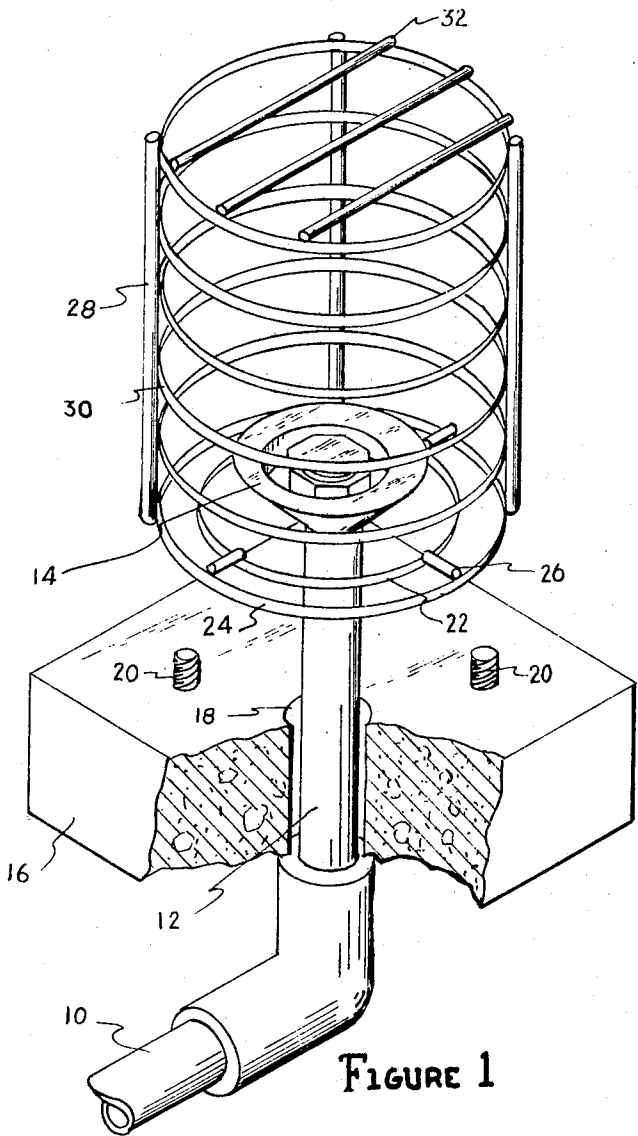


FIGURE 1

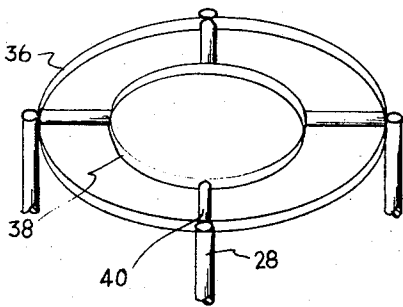


FIGURE 2

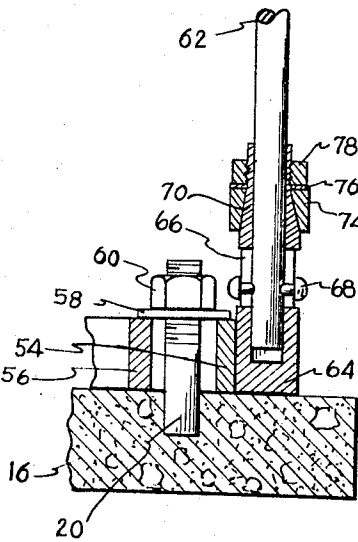


FIGURE 4

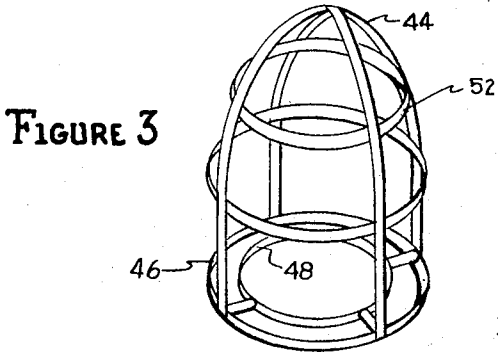


FIGURE 3

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SPRINKLER CAGE

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7 Claims

ABSTRACT OF THE DISCLOSURE

The invention comprises a protective cage and base assembly for positioning on a sprinkler in a fixed or permanent sprinkler system. The cage prevents theft or tampering with the sprinkler which is positioned on a conventional riser that extends through an opening in the base. The hole is of a smaller diameter than the radial dimensions of the sprinkler so that the base and cage can not be readily removed from the sprinkler. In preferred embodiments, the cage position on the base is adjustable, with rotational movement and, optionally, with vertical movement to permit setting of the cage to a spacial position that will provide the minimum interference with the spray pattern of the sprinkler.

DESCRIPTION OF THE INVENTION

The invention relates to protective means for sprinklers of automatic irrigation equipment and is particularly useful in the protection against vandalism of sprinklers for public grounds or apartment or condominium grounds.

The landscaping of the aforementioned grounds commonly includes the installation of irrigation equipment such as underground sprinkler systems. These systems have, at appropriate locations, vertical risers from the underground conduits, which support sprinkling means to direct water to the desired location. Although the sprinklers often are the most costly component of the system, they are universally left unprotected and become the subject of vandalism in the public areas. The high replacement cost of the sprinklers is compounded by the high maintenance requirements for replacement of stolen sprinklers and the readjustment of tampered sprinklers.

From the preceding discussion, it is apparent that a need exists for means that will provide protection for sprinklers against vandalism and it is an object of this invention to provide such means.

It is also an object of this invention to provide such protective means with adjustment to permit orientation of the means to a position that will provide its minimum interference with the sprinkler spray pattern.

It is a further object of this invention to provide such means that are adaptable for a wide variety of sprinklers.

Other and related objects will be apparent from the following discussion.

The aforementioned objects are secured with the protective cage and base assembly of my invention which comprises a base that surrounds the sprinkler riser and that supports a cage of an open grid construction which encompasses the sprinkler. The base has an opening of sufficient diameter to permit extension of a riser of the sprinkler system but of insufficient diameter to permit passage of the sprinkler therethrough. The cage which is affixed to the base has a plate member and a plurality of cage defining members spaced about the periphery of the plate and at least one reinforcing rib member. Preferably, the cage is secured to the base with attachment means which permit spacial adjustment of the cage so that an open or unobstructive portion of the cage

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can be moved into the spray pattern of the sprinkler to insure that the sprinkler operation will not be interfered with by the cage assembly.

The invention will now be described with reference to the figures, of which:

FIG. 1 illustrates the cage and base assembly of my invention as applied to one type of sprinkler means;

FIG. 2 illustrates an alternative top for the cage construction;

FIG. 3 illustrates an alternative cage construction; and

FIG. 4 illustrates a construction that permits varied vertical positioning of the cage in the assembly.

Referring now to FIG. 1, the sprinkler system comprises a supply conduit 10 which is commonly beneath the ground level and which has vertical risers 12 that project to or above the ground level and which support sprinkler means such as 14. As illustrated, the sprinkler means is a stationary head; however, any of the conventional types such as the "pop-up" spray heads, the rotating flapper type heads, etc., can also be protected with the cage and base assembly of my invention.

The base 16 is shown as a cast concrete block with a centrally positioned hole 18 through which the riser 12 projects. The base can be positioned flush with the ground level or can rest entirely above ground as desired, and can obviously be circular, elliptical, etc. Projecting from the upper face of the base are one or more studs 20 that provide for attachment of the cage to the base.

The cage comprises a plate, shown in FIG. 1 as two concentric rings 22 and 24 which radial links 26. The cage is defined by two or more vertical members 28 which are spaced about the periphery of the plate in equal or varied spacings. At least one reinforcing rib 30 is provided along the length of members 28. The number and spacing of these ribs depends somewhat on the number and spacing of the members 28, it being desired to provide a cage assembly that is rigid and that resists deformation and that provides sufficiently small openings that fingers or tools cannot readily be inserted to tamper with sprinkler means 14. As illustrated, five reinforcing ribs 30 are shown with three members 28.

The top of the cage is similarly provided with limited access by members 32 which extend across the top rib 30. The spacing between the cross members and the ribs is chosen so that the maximum open space is preferably smaller than that which would permit removal of the sprinkler means such as 14 from the interior of the cage.

The cages can be provided with open and unobstructive wall or top grids that will provide the minimum interference with the sprinkler spray pattern. This is accomplished simply by use of members of minimum thicknesses to meet the strength requirements and, optionally, by provision of windows of unobstructed areas. In FIG. 1, both techniques are shown, members 28 and 30 are of a minimum thickness, e.g., $\frac{1}{16}$ to about $\frac{1}{4}$ inch, and only three members 28 are used to provide the front of the cage with 180 degrees of unobstruction. This cage is shown with a sprinkler having a half circle spray pattern and the attachment means to secure the cage to the base are designed to permit rotation of the cage to orient the unobstructed portion in the spray pattern. This means of attachment with adjustable orientation of the cage is useful even with cages of symmetrical construction since it permits orientation of the cage to provide minimum interference with the spray pattern. Thus the adjustable orientation of a cage similar in construction but with a fourth vertical member in the front of the cage would permit orientation of the cage with only one, not two of the members 28 in the spray pattern.

The attachment means shown in FIG. 1 comprises at

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least one stud 20 which is embedded in the base and which is positioned to project between the concentric rings 22 and 24 when the cage is placed upon the base. The rings and radial members 26 define a plurality of annular slots and thereby permit rotational alignment of the cage on the base to insure that the minimum interference with the spray pattern is provided by the assembly.

An alternative construction for the top of the cage is shown in FIG. 2. This construction uses two concentric rings 36 and 38 which are connected with radial members 40. The central open space within the ring 38 provides a top surface with an unobstructed window through which a full circle pattern could project. The remainder of the cage construction would be the same as shown in FIG. 1 except four members 28 could be used as shown.

FIG. 3 illustrates an alternative cage construction wherein the cage is defined by a plurality of inverted U-shaped members 44 that are secured to the bottom plate formed with two concentric rings 48 and 46 linked together with radial members 50. At least one and preferably several ribs 52 are provided to reinforce the construction and to limit access to the cage. The spacing of the members and the size of the open grid areas of the cage should be less than that which would permit removal of the sprinkler means from the interior of the cage and, preferably less than that which would permit access of fingers into the cage to thereby avoid theft and, preferably, tampering with the sprinkler means.

Rotational adjustability of the cage on the base is generally the only adjustment that need be provided in the assembly. Vertical adjustment, if necessary, can be accomplished by variation in the depth that base 16 is buried in the ground. In some instances, however, vertical adjustability is desirable and FIG. 4 illustrates a construction which permits such adjustment. As shown base 16 supports studs 20 which project between concentric rings 54 and 56 similar to rings 24 and 26. The cage is locked to the base with washer 58 that extends over rings 54 and 56 and held in place by nut 60. The vertical members 62 of the cage are slidably mounted in sleeves 64 which are slotted at 66 to receive a pin 68 which prevents removal of members 62 from sleeve 64. The sleeves 64 are attached to ring 54 and are thus affixed to the base 16. The vertical position of members 62 in sleeves 63 is locked by the nut 78 which bears against washer 76 and tapered sleeve 74. The upper end of sleeve 64 is slotted and tapered at 70 and provided with a threaded shank for nut 78. Tightening of nut 78 will force sleeve 74 to compress the slotted taper 70 against member 62 and thereby lock this member in sleeve 64 at any desired vertical spacing along slot 66.

The materials and shapes of the members used in the cage construction can be widely varied. The cage can be constructed from metal stock in the shape of flat strips or bars or from metal rods. Riveted or welded joints can be used and the entire cage assembly can be protected from corrosion by dipping in a protective coating, e.g., rubber, paint, etc., or can be galvanized. It is apparent that the size and shape of the cage or the base anchor can be widely varied without departing from the scope of the invention. It is therefore intended that the invention be defined by the elements and components of the assembly and their obvious equivalents as set forth in this specification.

I claim:

1. The combination of a fixed position irrigation system comprising:

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- (1) an immobile conduit for the supply of water positioned adjacent the ground;
- (2) at least one vertical riser attached to said conduit to receive water therefrom;
- (3) sprinkler means positioned on said riser at an elevation above said conduit to receive water from said riser;
- (4) an assembly surrounding said sprinkler to protect said sprinkler against removal and tampering comprising:

- (a) a base anchor loosely surrounding said riser with an opening of greater diameter than said riser to permit extension of said riser therethrough, but of lesser diameter than said sprinkler means to prevent passage of said sprinkler means therethrough;
- (b) a cage of an open protective grid consisting of a plate member, a plurality of cage defining members spaced about the periphery of and supported by said plate member and at least one reinforcing rib member;
- (c) said plate member resting on and attached to said base anchor with attachment means to secure said plate member to said base above and about said opening to define an enclosed space above said base anchor of sufficient size to receive said sprinkler means.

2. The combined device of claim 1 wherein said conduit is beneath the ground level, said riser projects therefrom to the surface of the ground, and said base anchor is supported on the ground.

3. The device of claim 2 wherein said cage has an open and unobstructed area for alignment about the spray pattern of the sprinkler means.

4. The device of claim 3 wherein said attachment means permits adjustment of the position of said cage on said base.

5. The device of claim 3 wherein said attachment means permits rotational movement of said cage to permit alignment of an open and unobstructed wall portion of said cage into the spray pattern of said sprinkler means.

6. The combined device of claim 4 wherein said attachment means permits vertical movement of said cage to permit alignment of an open and unobstructed wall portion of said cage into the spray pattern of said sprinkler means.

7. The device of claim 2 wherein said cage comprises a plurality of spaced apart circular ribs supported by a plurality of upright and spaced apart rods.

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