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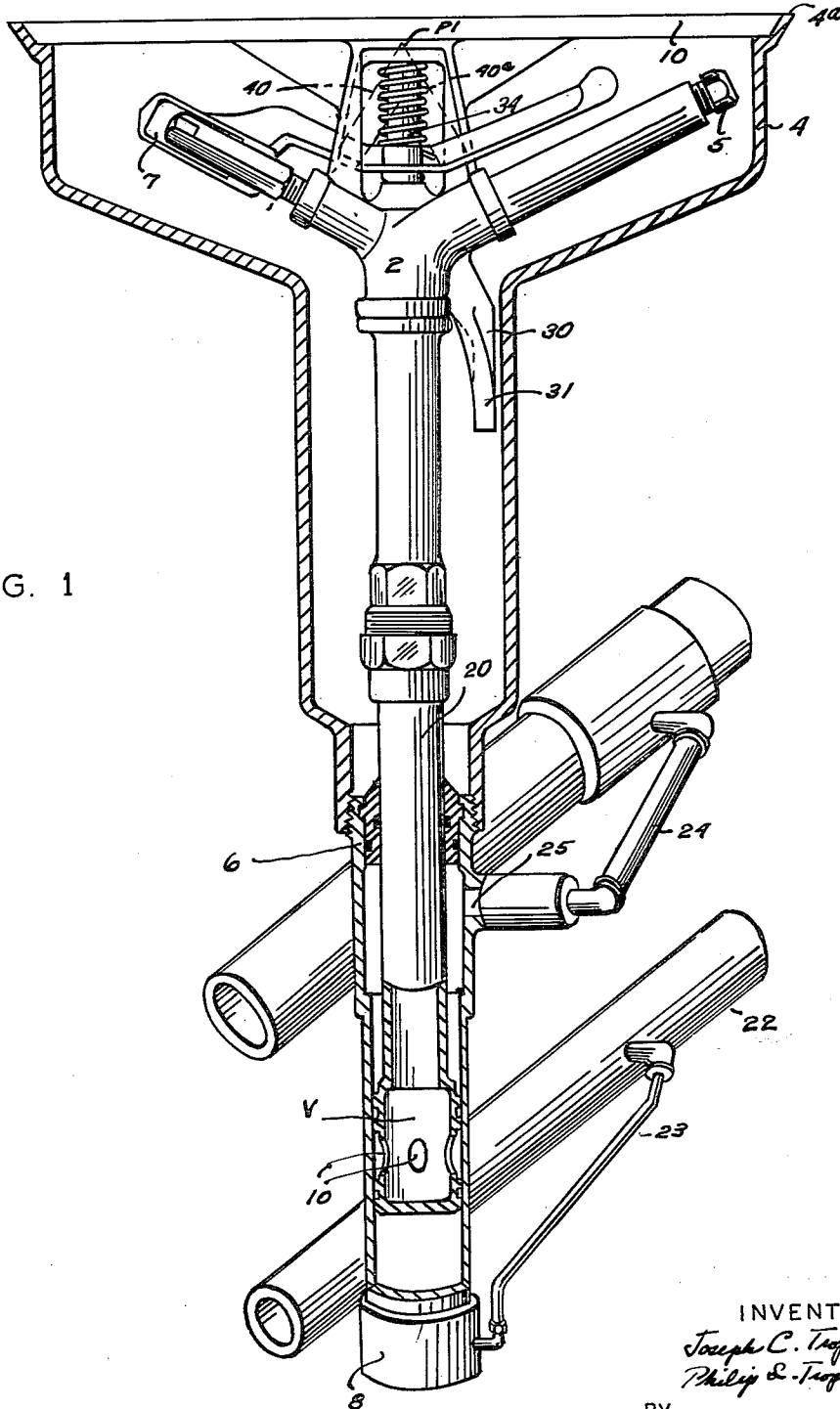
3,086,714

GUIDE CONSTRUCTION FOR SPRINKLER HEAD RECEPTACLE

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2 Sheets-Sheet 1

FIG. 1



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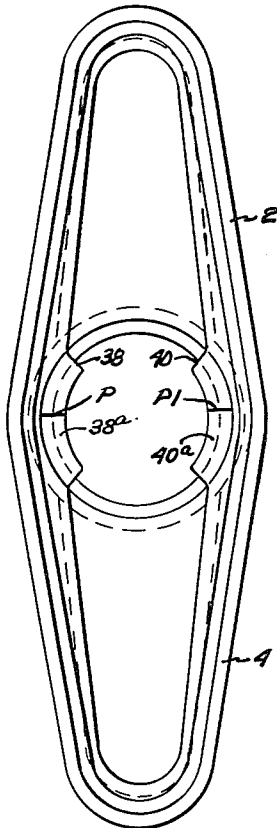


FIG. 2.

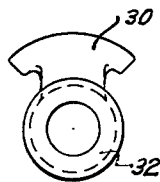


FIG. 4

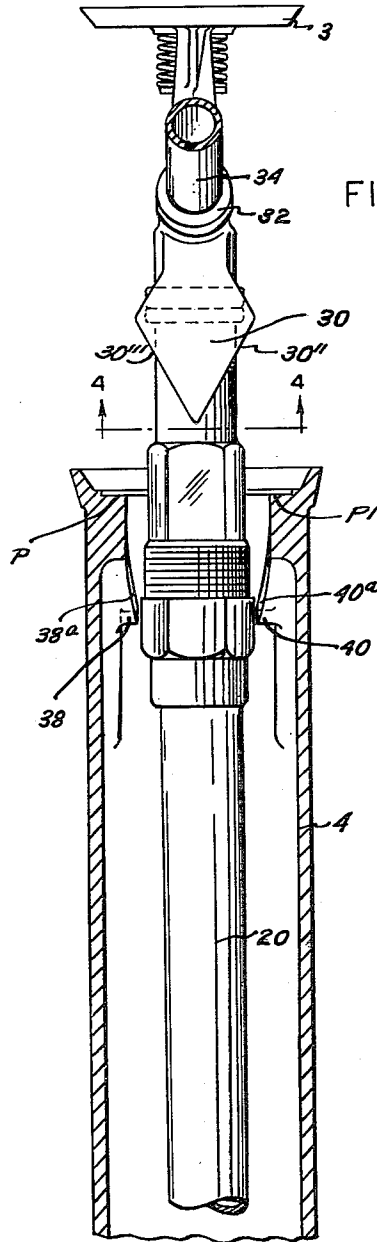


FIG. 3

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GUIDE CONSTRUCTION FOR SPRINKLER HEAD RECEPTACLE

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5 Claims. (Cl. 239-206)

This invention relates to fluid dispensing apparatus of the type commonly referred to as "pop-up" sprinklers as used in sprinkling lawns, golf fairways and similar areas. This application is a continuation-in-part of our co-pending application Serial No. 116,588, Patent No. 3,063,645, and is particularly concerned with an improved sprinkler head guide mechanism for a compressed fluid actuated sprinkler device normally supported in a recessed position below ground level. Guide mechanism for elongated sprinkler receptacles of the class referred to is further described and claimed in our earlier Patent No. 2,989,249.

It is a chief object of the invention to provide an improved guide mechanism for pop-up sprinkler heads and to devise an arrangement of cooperating guide parts which can be conveniently associated with a sprinkler head and which is adapted to engage with cooperating guide-way surfaces to positively locate the head in a correctly recessed position when not in use.

Another object of the invention is to devise a combination sprinkler head and guide arrangement in which the guide comprises an integral part of the sprinkler head structure whereby the guide is movable with the sprinkler head at all times.

These and other objects and novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention selected for purposes of illustration and shown in the accompanying drawings, in which:

FIGURE 1 is a cross sectional view of a pop-up type sprinkler apparatus in combination with a preferred embodiment of the guide mechanism of the invention;

FIGURE 2 is a plan view of a receptacle portion of the sprinkler head apparatus showing special guide means formed on the inner surface of the receptacle at two opposite sides thereof;

FIGURE 3 is a cross sectional view of a modified form of sprinkler head and guide means; and

FIGURE 4 is a cross section taken on the line 4-4 of FIGURE 3.

Considering the form of the invention shown in FIGURES 1 and 2, numeral 2 denotes a sprinkler head which is contained when not in use in an elongated receptacle 4 normally adapted to be recessed in the earth so that its upper edge 4a is approximately at ground level. A typical installation of the device may be in a golf fairway where it is desired to have the sprinkler head occurring in a relatively recessed position at ground level. A cover plate 10 is supported at the upper side of the sprinkler head and is adapted to fit inside the top edge 4a of the elongated housing and close the opening when the sprinkler is not in operation.

At the bottom of the receptacle 4 is attached a cylindrical part 6 in which is sealably received a reciprocable plunger V. The plunger V is located at the lower end of a tubular portion 20 and is raised and lowered by means of fluid pressure in the manner well known in the art. A compressed air conduit 22 is connected by a pipe 23 to a bottom section 8 of the cylindrical part 6. When compressed air is admitted it raises the plunger V into a position to register side apertures 10 with a water inlet 25 of a conduit 24. Flow of water thus induced raises the sprinkler head 2 and causes it to rotate throwing out a stream of water from the nozzles 5 and 7 in a conventional manner.

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In accordance with a preferred form of the invention, we combine with the sprinkler head 2, and the receptacle 4, novel guide means for causing the sprinkler head to descend into a properly registered position within the elongated receptacle when the supply of water is shut off.

Our novel guide means is made up of two stationary parts P and P1 and a movable part 30. The two stationary parts consist of V-shaped projections which are formed on the inner surface of the elongated receptacle at two opposite sides thereof. These V-shaped projections P and P1 are shown in FIGURE 2. One of the V-shaped projections P1 is also shown in FIGURE 1 and it will be observed that each projection presents inclined guide surfaces as 38, 38a, 40, 40a, best shown in FIGURE 2.

The movable guide 30 is arranged in cooperating relationship to the guide surfaces on the sprinkler head 2 in a descending position and normally occurs in substantial alignment with the longitudinal access of the cover 10 as illustrated in FIGURE 1. The guide 30 consists of a complementary V-shaped member having side edges as 31 (FIGURE 1). These side edges 31 of the member 30 are adapted to engage against one or more of the surfaces 38, 38a, 40, 40a when the sprinkler moves from a fully raised operative position into a stored position in the receptacle.

When such an engagement of the surfaces occurs, it will be apparent that a camming action takes place by means of which the sprinkler head is turned about its vertical axis and the elongated sprinkler head and its covers are then brought into register with the edges 4a so that a correct seating of the cover necessarily takes place. The movable guide portion 30 then comes to rest in the fully lowered position shown in FIGURE 1 somewhat below the projecting parts P and P1 and directly between these parts so that no interference can take place when the sprinkler head is again forced upwardly.

An important feature of this arrangement is that the movable guide 30 may be conveniently formed as an integral part of the tubular body comprised by the sprinkler head 2. We have found that by means of suitable metal casting procedures of conventional nature utilizing aluminum, for example, we may construct a combination guide and head which is characterized by strength and long wearing life and the need for a separate guide attachment is obviated.

For some purposes we may, however, desire to provide a separately attached movable guide and this has been illustrated in a modified form of the invention shown in FIGURES 3 and 4.

As noted in FIGURES 3 and 4, the modified movable guide component is denoted by numeral 30' and is of a V-shaped or chevron form. This movable guide 30' includes a supporting ring part 32, also shown in FIGURE 4, which ring part is designed to fit snugly over an inner tubular section 34 of the sprinkler head structure shown in FIGURE 3. This guide cooperates with the same stationary guide projections P and P1, and edges 30'' and 30''' cooperate with guide surfaces 38, 38a, 40, 40a when the sprinkler head is lowered as described above.

While we have shown preferred embodiments of the invention, other changes and modifications may be resorted to within the scope of the appended claims.

We claim:

1. In an automatic sprinkler apparatus of the class having a vertically reciprocating sprinkler head, an elongated receptacle for receiving the sprinkler head in a recessed position below ground level, and pressure responsive means for raising and lowering the sprinkler head, the combination of a V-shaped guide part movable with the reciprocating sprinkler head and a pair of separated stationary guide elements fixed in the receptacle at opposite

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sides thereof to define a passageway through which the movable guide part may be guided when the head is lowered.

2. A structure according to claim 1 in which the movable guide part is constructed as an integral part of the sprinkler head.

3. A structure according to claim 1 in which the movable guide part is constructed separately of the sprinkler head and is formed with a retainer ring portion.

4. In an automatic sprinkler apparatus of the class having a vertically reciprocating sprinkler head including a pair of diverging nozzles, an elongated sprinkler receptacle for receiving the sprinkler head in a recessed position below ground level and pressure responsive means for raising and lowering the sprinkler head, the combination of a V-shaped guide member forming a part of the

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sprinkler head and extending downwardly from a point immediately below the said diverging nozzles, and a pair of cooperating V-shaped projections located at two opposite sides of the receptacle in a position to engage with and turn the V-shaped guide member when the sprinkler head moves downwardly from an operative position whereby the diverging nozzles are guided into substantial alignment with the elongated receptacle.

5. A structure according to claim 4 in which the V-shaped projections are formed as an integral part of the receptacle.

References Cited in the file of this patent

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