

United States Patent

Matt et al.

[15] 3,701,477

[45] Oct. 31, 1972

[54] ELEVATED AND CONCEALED SPRINKLER SYSTEM

[72] Inventors: Alex Matt, 1595 North Calle LaCumbre; Derek Brand, 2132 North Lynhurst Avenue, both of Camarillo, Calif. 93010

[22] Filed: March 8, 1971

[21] Appl. No.: 121,703

[52] U.S. Cl. 239/276, 239/283

[51] Int. Cl. B05b 9/00

[58] Field of Search.....239/289, 273, 276, 282, 283, 239/200, 207, 266, 547, 268, 209, 269, 208, 176, 164; 248/87, 88, 83, 84, 85, 7 A, 75-82

[56] References Cited

UNITED STATES PATENTS

2,940,466 6/1960 Speights.....239/251 X

3,091,401	5/1963	Hruby, Jr.....	248/75 X
3,227,408	1/1966	Reed	248/87
2,196,456	4/1940	Charroin.....	239/276 X
1,123,900	1/1915	Leslie et al.	248/88
2,021,709	11/1935	Wilson.....	239/268

FOREIGN PATENTS OR APPLICATIONS

927,731 6/1963 Great Britain.....248/74 A

Primary Examiner—M. Henson Wood, Jr.

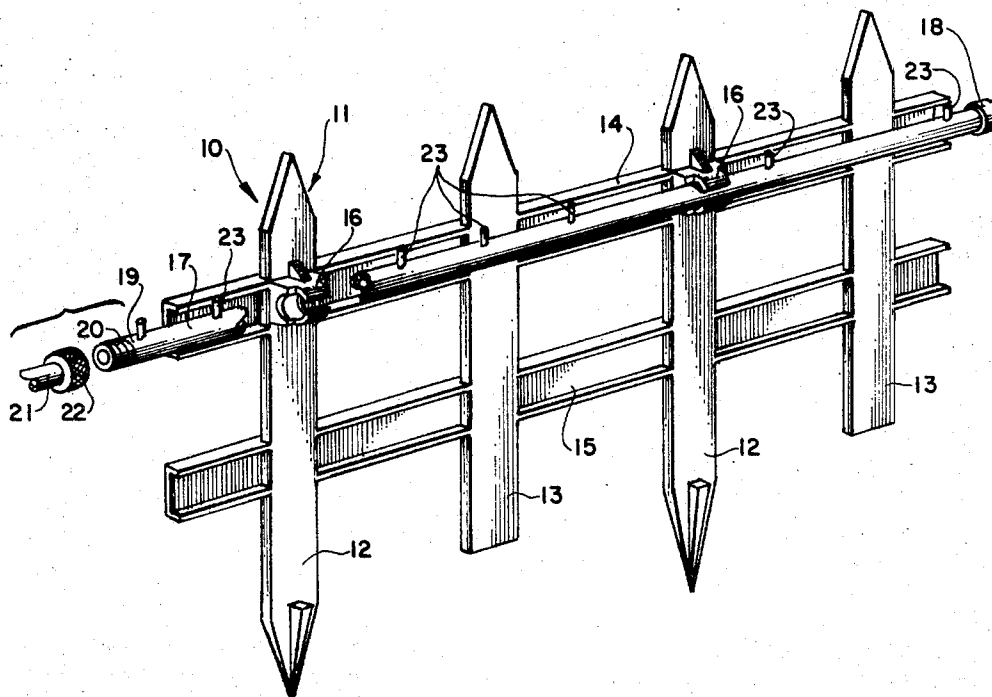
Assistant Examiner—John J. Love

Attorney—Pastoriza & Kelly

[57] ABSTRACT

A sprinkler system includes an upright support such as a fence and a flexible hose carrying multiple nozzles along its end-to-end length. The hose is removably held by the fence in an elevated position and is concealed from view against one side of the fence.

11 Claims, 4 Drawing Figures



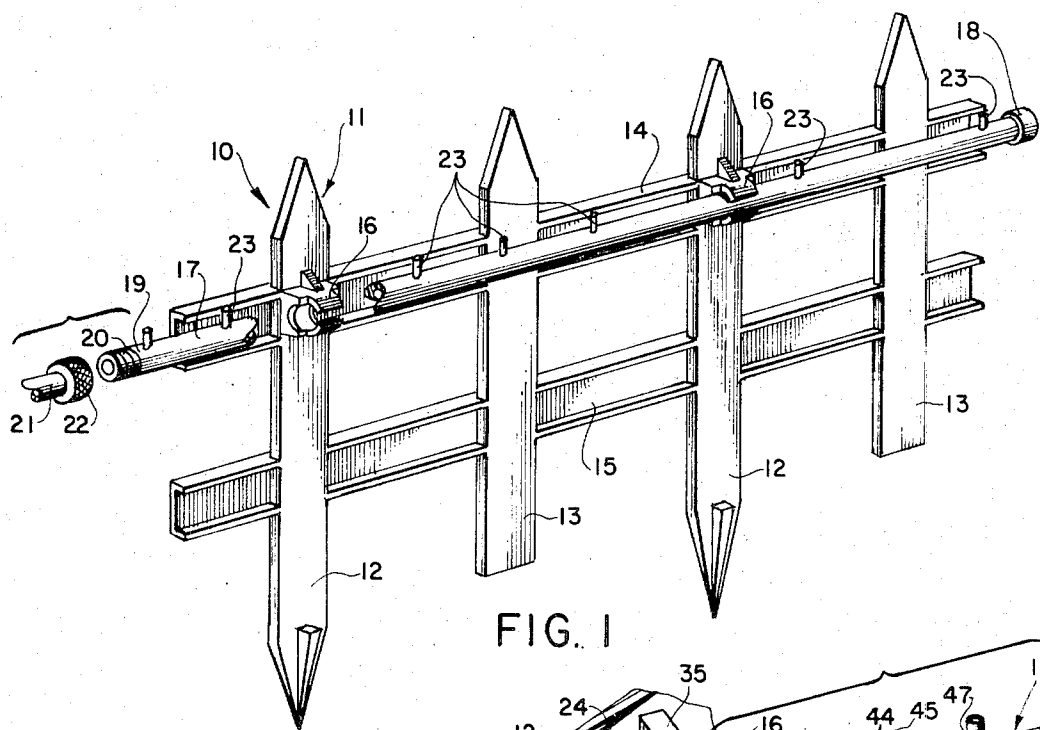


FIG. 1

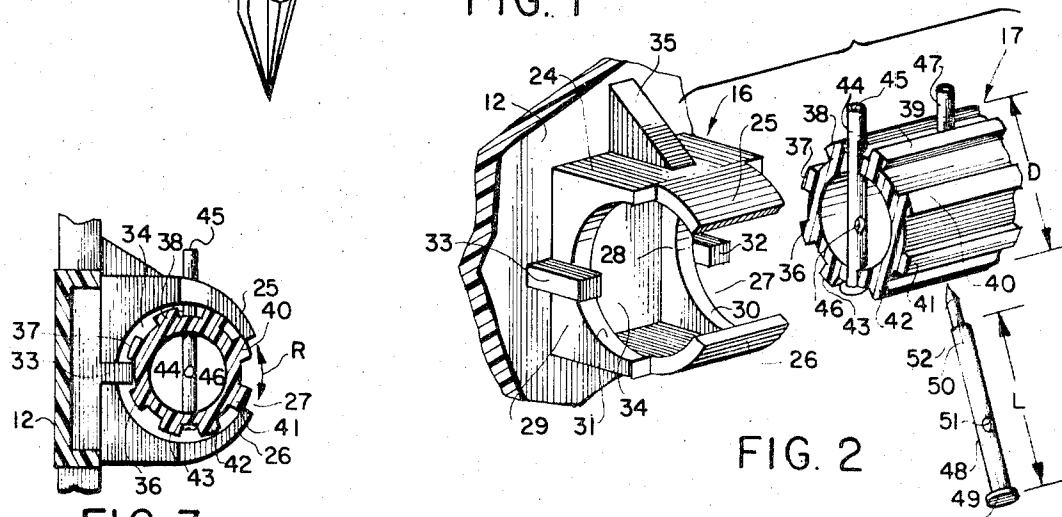


FIG. 2

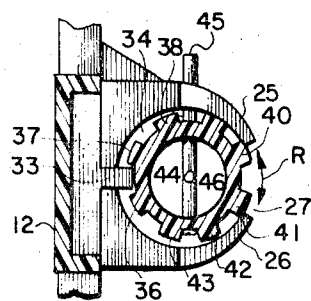


FIG. 3

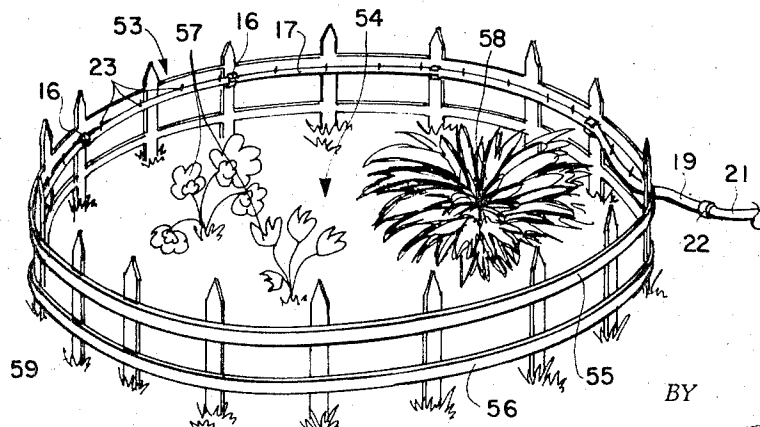


FIG. 4

INVENTORS:
ALEX IMATT
DEREK BRAND

BY
Pastoriza & Kelly
ATTORNEYS

ELEVATED AND CONCEALED SPRINKLER SYSTEM

BACKGROUND OF THE INVENTION

Numerous different types of garden and lawn sprinkler systems have been suggested that incorporate flexible hoses modified to mount multiple sprinkler heads.

Flat hoses formed from end-to-end with small spray perforations are rather common. It is known to position a series of sprinkler heads at given intervals along a flexible hose with inner sections of the sprinkler heads being penetrated through and held by the hose side wall as shown in U.S. Pat. No. 2,563,300 to Aker. Similar sprinkler systems are disclosed in U.S. Pat. No. 3,091,401 to Hruby, Jr. and U.S. Pat. No. 3,292,378 to Rosenthal et al.

Sprinkler fences constituted by chain link fences with some of their tubular supports modified to carry elevated sprinkler heads are disclosed in U.S. Pat. No. 2,940,466 to Speights and U.S. Pat. No. 3,425,630 to Fessler Sr.

By way of distinction, the sprinkler system of this invention includes two basic parts; i.e., an upright support which may be in the form of a fence and a flexible hose with sprinkler nozzles arranged at spaced locations along its length, the upright support and hose being specially structured and arranged to coact in a manner so that the hose is both concealed and held at a desired height from the ground by the upright support.

SUMMARY OF THE INVENTION

Briefly stated this invention comprehends a combined garden or lawn sprinkling hose and an upright support such as a fence which may be detachably coupled together in such a manner that the hose is held at an elevated position and concealed from view from one side of the upright support.

In its broader aspects the invention includes a horizontally elongated and continuous upright that mounts a row of multiple retainers on one side at relatively elevated positions. A flexible hose having a plurality of sprinkler units positioned at predetermined intervals along its end-to-end length may be removably secured within the retainers so that it is maintained at an elevated position and hidden from view from one side of the continuous upright.

Preferably the retainers are a row of C-shaped clips. Locking elements in the form of a plurality of longitudinally extending ribs are formed on an exterior surface of the hose. Plural detents are connected at intervals and near corresponding clips to the upright. The ribs and detents coact to permit a person to rotatably position segments of the hose for selectively aiming the sprinkler units.

Each sprinkler unit includes a hollow stem extending diametrically across and entirely through the hose. It has an intermediate inlet for distributing water through the sprinkler unit for sprinkling purposes. The stem of each sprinkler unit has a closed end located against the outside of the hose and an open end formed by a section of the stem projecting outside of the hose. This projecting stem section may be partially closed to regulate the rate of spray.

The continuous upright may be a series of interconnected fence sections arranged together to form an enclosure around a garden or lawn for example.

BRIEF DESCRIPTION OF THE DRAWINGS

The numerous benefits and unique aspects of the present invention will be fully understood when the following detailed description is studied in conjunction in which:

FIG. 1 is a perspective, fragmentary and partially exploded view of a fence section in combination with a flexible hose constructed in accordance with this invention;

FIG. 2 is a perspective, fragmentary partially exploded view, showing the important details of a retaining clip connected to the fence, a segment of hose and sprinkler units;

FIG. 3 is a side view of a retaining clip and a cross sectional view of the hose, showing how ribs formed on the hose and the detents mounted near the retaining clip coact to selectively orient a hose segment; and

FIG. 4 is a perspective view showing a plurality of fence sections arranged to constitute an enclosure, the hose being positioned on the inner side of the fence assembly in order to conceal the hose from view outside of the enclosed area.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1 an elevated and concealed sprinkler system 10 is shown that includes a horizontally elongated and continuous upright shown in the form of a fence section 11. The fence section 11 has a plurality of posts 12 formed at their bases with stakes for penetration into the ground and a plurality of alternating posts 13 with stub bases above the ground for appearance purposes.

Firmly secured to and across the posts is an upper horizontally extending rail 14 and a lower rail 15. The posts and rails of the fence section may, for example, be formed together as an integral unit and fabricated from suitable plastic material.

A plurality of retainers 16 arranged in a horizontal row are integrally formed with or otherwise rigidly connected to the upper rail 14, on a common side of the fence section 11 intended to serve as the back or concealed face. An elongated flexible hose 17 fabricated from conventional plastic or rubber and which may be of variable length to accommodate different needs, has a closed end 18 and an open end 19 which terminates in a coupling 20. A supply line 21 which may extend from a domestic or agricultural water source, for example, has a collar 22 shaped to be coupled in leak proof relationship with hose coupling 20. A series of sprinkler units 23 are connected to hose 17 and may be separated from one another by equal or variable distances along the end-to-end length of hose 17.

Referring now to FIG. 2 a retainer 16 is shown as a generally C-shaped clip 24 that includes an upper resilient arm 25 which is secured to post 12 in cantilevered relationship and curves downwardly, and, a lower resilient arm 26 which is cantilevered to post 12 and curves generally upwardly. The outermost tips of arm 25 and arm 26 are spaced from one another to define an entrance slot 27 through which hose 17 may be admitted and withdrawn by a person when squeezed or partially flattened. Clip 24 has a pair of side abutments 28 and formed with curved outer edges 30 and 31 respectively.

Mounted on opposite sides of the clip 24 adjacent corresponding side abutments 28 and 29 is a pair of detents 32 and 33 respectively. These detents are shown in the form of projecting lugs that extend forwardly beyond the curved edges 30 and 31. A space defined by arms 25 and 26 and side abutments 28 and 29 serves as a retaining opening 34 which, as shall be fully explained, is partially occupied by a segment of hose 17. A stiffener 35 more securely connects clip 24 to post 12 to resist breakage of clip 24 as the hose 17 is being arranged in its use position or selectively withdrawn from time to time.

The embodiment of the flexible hose 17 shown in FIG. 2 has a plurality of locking elements in the form of ribs 36, 37, 38, 39, 40, 41, 42 and 43 which are equally spaced and extend longitudinally along the exterior surface of hose 17. The ribs are shaped so that any selected consecutive pair of them will straddle the detents 31 and 32 with one of the ribs ordinarily being caught upon and held by the detents 31 and 32. The purpose for this coaction between the ribs and detents is to permit a person to selectively orient an associated segment of the hose 17 for a reason that will be fully described.

Three sprinkler units are shown mounted by or arranged next to hose 17. As represented by sprinkler unit 44, each fully mounted sprinkler unit extends diametrically across and entirely through the hose 17. Sprinkler unit 44 has an open end projecting from hose 17 with a tip 45 constricted to serve as a spray nozzle. An intermediate inlet port 46, formed between the ends of sprinkler unit 44, serves to admit water into sprinkler unit 44 for distribution ultimately through tip 45. Sprinkler unit 47 is shown projecting from the exterior of hose 17 whose outer diameter is indicated by letter D.

Sprinkler unit 48 illustrates a manner in which each sprinkler unit may be prepared for installation within a selected portion of hose 17. Prior to being imbedded in place, sprinkler unit 48 is essentially a hollow stem with a slightly enlarged closed end 49, an open end 50, and an inlet port 51. The overall length L of sprinkler unit 48 is greater than hose outer diameter D. To install sprinkler unit 48 in place a nail 52 of greater length than sprinkler unit 48 is dropped into sprinkler unit 48 and then urged, at some desired point, to penetrate through the diametrically opposed side walls of hose 17. Nail 52, in addition to quickly and economically puncturing the hose side walls also serves to maintain the relatively thin walled hollow stem rigid so the force will not cause buckling or bending. Nail 52 may be removed for reuse when closed end 49 is driven flush against the exterior of hose 17. The tight fit between the sprinkler unit 48 and its puncture hole result in a good seal against excessive leakage. Minor seepage through the seal is not harmful because the object is to sprinkle the nearby grass, flowers, vegetables, bushes, etc.

Referring primarily to FIG. 3 a segment of hose 17 is shown oriented in place with consecutive ribs 36 and 37 positioned on the lower and upper sides of detent 33. The hose segment is shown separated from detent 33 for purposes of illustration. If it were desirable to tilt sprinkler unit 44 slightly downwardly to spray a partially different area then the hose segment would be

twisted counter-clockwise, as indicated by directional arrow R, until the detents were positioned between ribs 36 and 43. Alternatively, if it became desirable to cock the sprinkler unit 44 slightly backwardly from the position shown then the hose segment would be torqued clock-wise, as indicated by directional arrow R, until the detents were inserted between ribs 37 and 38. The tip or nozzle 45 of sprinkler unit 44 may be squeezed to form a cross sectional configuration necessary to produce a desired spray pattern.

Referring to FIG. 4 a fence assembly 53, constructed from a plurality of individual fence sections, defines an enclosure 54 of oval configuration. The fence assembly 53 has an upper continuous band 55 constituted by co-aligned upper rails of the fence sections, and, a lower continuous band 56 constituted by co-aligned lower rails of the individual fence sections. The enclosure 54 may coincide with the outer limits of a garden of flowers 57 and bushes 58 and with grass 59 growing outside of fence assembly 53. The flexible hose 17 is shown held in place by the retainers 16 and aligned generally against and concealed by upper band 55.

When water is routed from supply line 21 through the flexible hose open end 19, it eventually is distributed through sprinkler units 23 to spray the flowers 57 and bushes 58 within enclosure 54.

OPERATION

Keeping the above construction in mind it can be understood how the disadvantages of conventional sprinkler systems are overcome or substantially eliminated by the present invention.

Initially the person erects a series of fence sections in end-to-end relationship to constitute a fence assembly 53 outlining a lawn, garden, or, by way of example, an area constituted by flowers 57 and bushes 58. A section of flexible hose 17 is cut to a length generally equivalent to the distance around the inner or concealed side of the fence assembly 53. Hose 17 is slightly compressed and shoved through the entrance slots 27 of the C-shaped clips 24.

Selected segments of hose 17 are then twisted to aim the associated sprinkler units and locked in place by the coaction between corresponding detents and the hose ribs. With the sprinkler units properly aimed and sized to cover the entire enclosure 54 or just selected portions of the enclosure 54 water may be supplied periodically. The general unsightliness and danger of tripping caused by hoses resting on or near the ground is obviated.

From the foregoing it will be evident that the present invention has provided an elevated and concealed sprinkler system in which all of the various advantages are fully realized.

What is claimed is:

1. An elevated sprinkler comprising:

- a. a horizontally elongated and continuous upright having an inner or generally concealed side and an outer or generally exposed side;
- b. multiple retainers connected to the generally concealed side of the upright and arranged at elevated positions;
- c. a flexible hose having a plurality of sprinkler units positioned at intervals along its end-to-end length, the hose being sized for placement into the retainers; and,

- d. orienting means for rotatably and positively positioning segments of the hose to selectively aim the sprinkler units.
2. The structure according to claim 1, wherein; the retainers are a row of C-shaped clips. 5
3. The structure according to claim 1, wherein the orienting means includes:
- locking elements connected to the hose; and,
 - detents connected at intervals to the upright, the locking elements and detents coacting in a manner to maintain the hose segments in desired twisted arrangements. 10
4. The structure according to claim 3, wherein; the locking elements are a plurality of ribs extending longitudinally along the exterior surface of the hose. 15
5. The structure according to claim 4, wherein; each detent is constituted by a pair of outwardly projecting lugs connected to opposing sides of a corresponding retainer. 20
6. The structure according to claim 1, wherein; each sprinkler unit includes a hollow stem extending diametrically across and entirely through the hose, the stem having an inlet between its ends located inside the hose. 25
7. The structure according to claim 6, wherein the stem includes:
- a closed end located against the hose exterior, and,
 - an open end formed by a segment of the stem projecting outside of the hose and which is partially closed to regulate the rate of spray. 30
8. The structure according to claim 1, wherein; the upright is a fence section having a plurality of vertical stakes and horizontal rails, an upper rail of which mounts the retainers. 35
9. The structure according to claim 8, including:

a series of fence sections arranged together to define an enclosed space with the retainers and hose positioned on the inside portion of the fence section so that they are generally concealed from view outside of the enclosed space.

10. An elevated and concealed sprinkler system, comprising:

- a. an elongated continuous upright arranged to form an enclosed space, the upright having an inner side facing the enclosed space and an outer side facing away from the enclosed space;
 - b. a row of multiple C-shaped clips connected to the inner side of the upright at elevated positions;
 - c. a plurality of detents connected to the inner side of the upright, near corresponding clips;
 - d. a flexible hose having an exterior surface formed with a plurality of longitudinally extending ribs, the ribs being shaped to coact with the detents to rotatably position segments of the hose; and,
 - e. a plurality of sprinkler units positioned at intervals along the end-to-end length of the flexible hose, each sprinkler unit including a hollow stem extending diametrically across and entirely through a portion of the hose and being formed with an inlet between its ends inside the hose;
- wherein, the hose is held at an elevated position by the clips and is concealed from view outside of the enclosed space described by the upright.
11. The structure according to claim 10 wherein; the upright is constituted by a series of fence sections; and,
- the hollow stem of each sprinkler head has a closed end located against the exterior of the hose and an open end formed by a segment of the stem projecting outside of the hose and which and partially closed to regulate the rate of spray.

* * * * *

40

45

50

55

60

65