June 25, 1963 C. M. MacCHESNEY 3,095,151

SPRINKLER ATTACHMENTS

Filed Aug. 27, 1962 3 Sheets-Sheet 1

FIG. 1

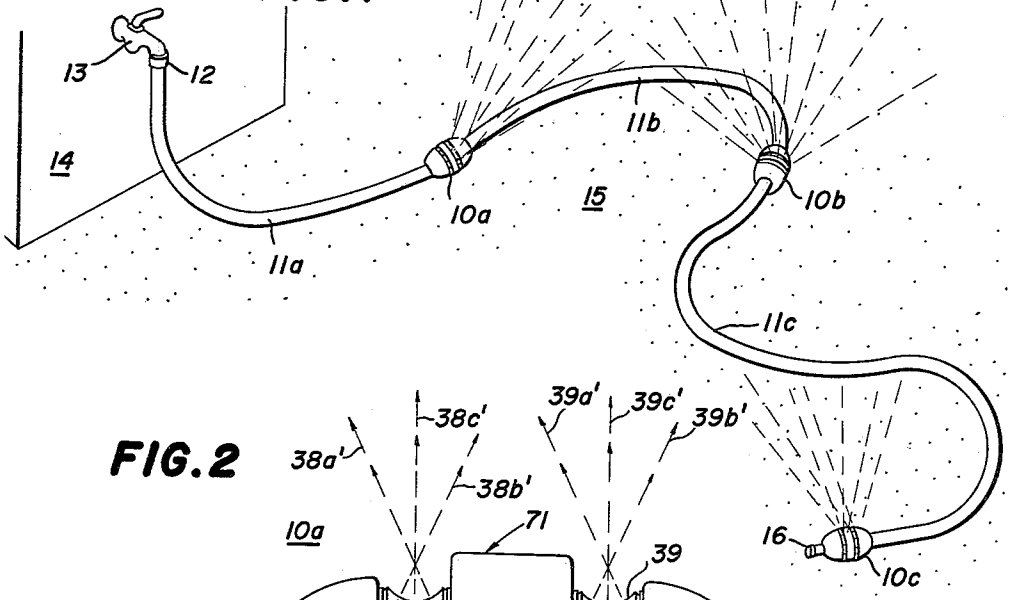
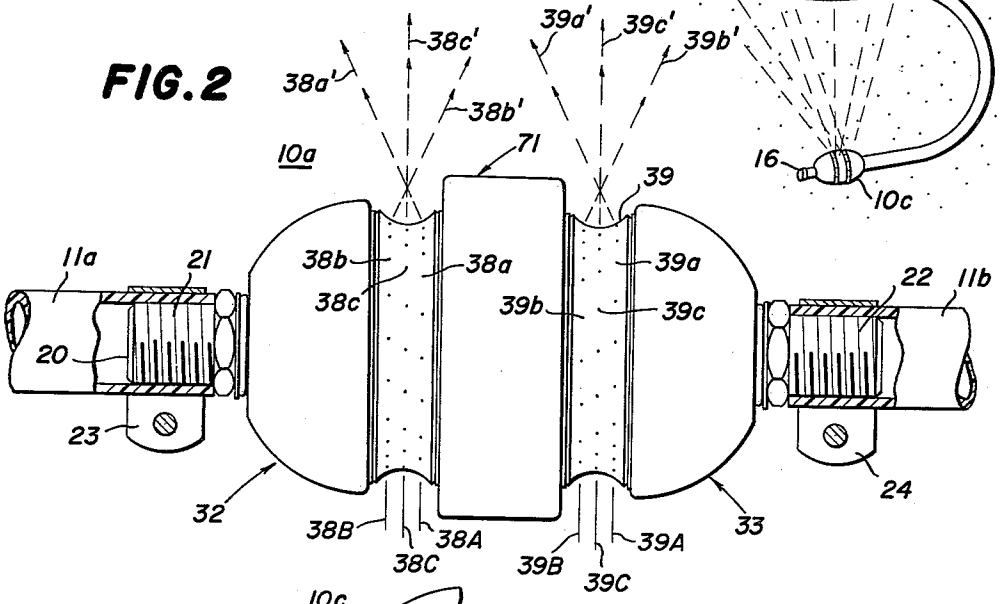


FIG. 2



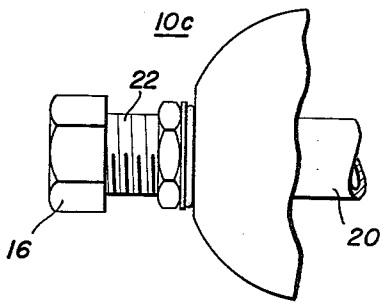


FIG. 3

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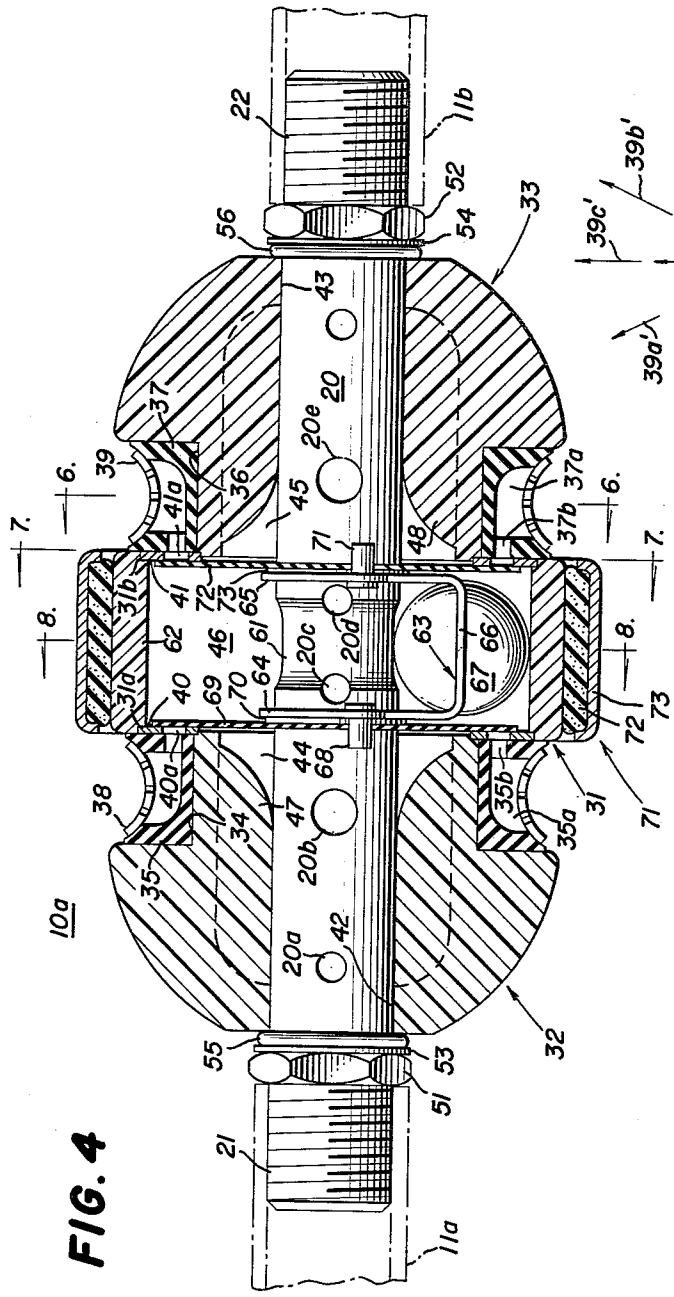


FIG. 4

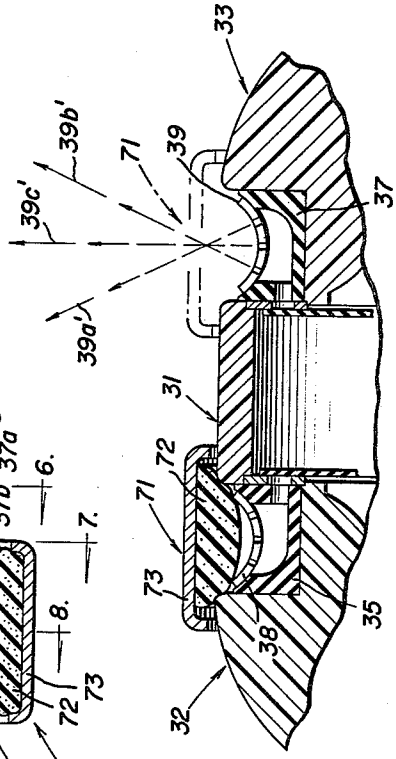


FIG. 5

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SPRINKLER ATTACHMENTS

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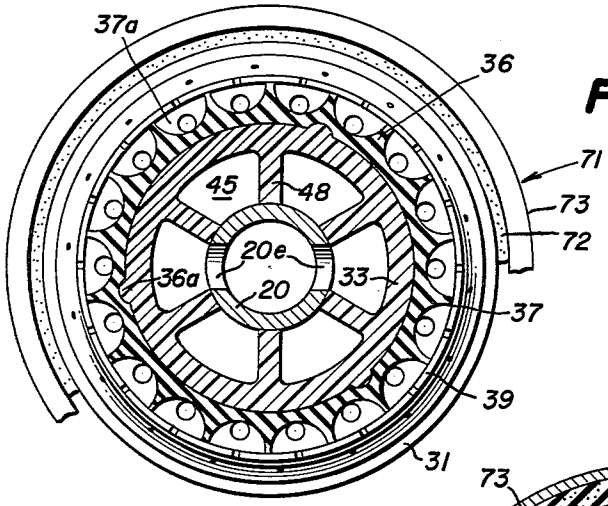


FIG. 6

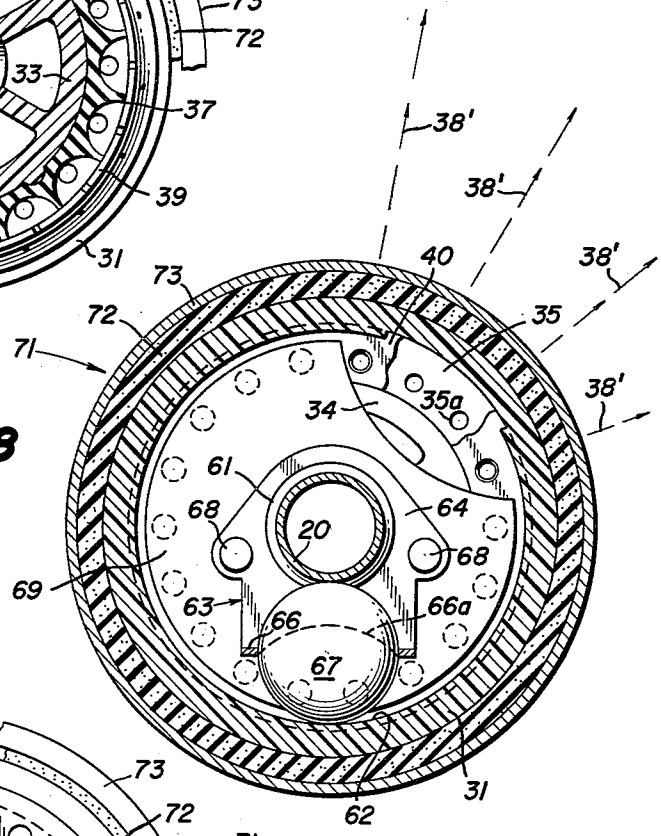


FIG. 8

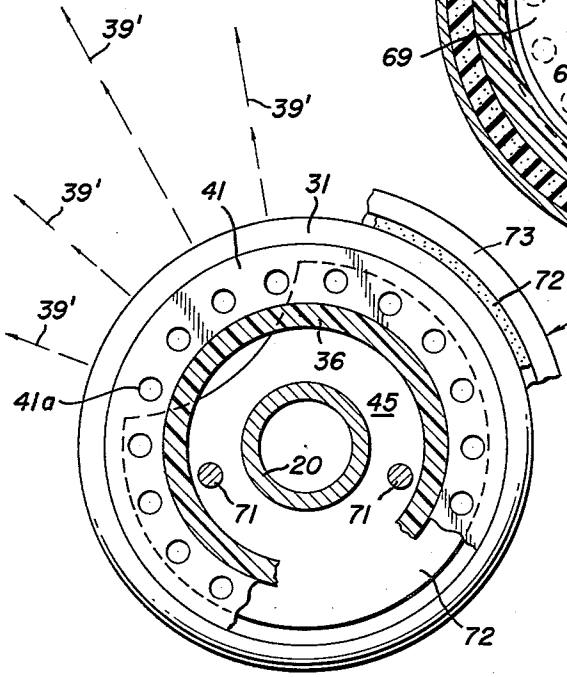


FIG. 7

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United States Patent Office 3,095,151 Patented June 25, 1963

3,095,151

SPRINKLER ATTACHMENTS

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Filed Aug. 27, 1962, Ser. No. 219,400
9 Claims. (Cl. 239—267)

The present invention relates to sprinkler attachments for a garden hose, or the like, and more particularly to such attachments that are adapted to be incorporated at spaced intervals in a garden hose for the purpose of effecting sprinkling of a large area of a lawn, or the like.

The sprinkler attachment of the present invention comprises an improvement over the sprinkler attachment disclosed in U.S. Patent No. 2,737,418, granted on March 16, 1956 to Chester M. MacChesney; which sprinkler attachment is arranged in a garden hose and comprises a substantially ball-like casing having a longitudinal axis and provided with an annular array of sprinkler ports therein communicating with the interior thereof, and automatic mechanism arranged in the casing and operative when the casing is disposed with the longitudinal axis thereof in a generally horizontal position independently of the portion of the casing that is positioned downwardly for cutting-off the supply of water from the interior of the casing to all of the ones of the sprinkler ports that are generally directed downwardly, whereby the sprinkler attachment always produces a water fan that is directed generally upwardly and radially outwardly from the casing and substantially normal to the longitudinal axis thereof.

Accordingly, it is a general object of the invention to provide a sprinkler attachment of the character described that is of improved and simplified construction and arrangement.

Another object of the invention is to provide a sprinkler attachment of the character described comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of the casing and communicating with the interior thereof, wherein the outer end of the tube is adapted to be connected to a section of the associated garden hose to supply water into the interior of the casing, and wherein the casing has two independent and longitudinally spaced-apart annular arrays of sprinkler ports therein that commonly communicate with the interior thereof and that are directed generally radially outwardly therefrom, and automatic mechanism arranged in the casing and operative when the casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of the casing that is positioned downwardly for cutting-off the supply of water from the interior of the casing to all of the sprinkler ports in the two annular arrays that are directed generally downwardly.

Another object of the invention is to provide a sprinkler attachment of the character described, wherein the automatic mechanism that is arranged in the casing is operative to close all of the sprinkler ports in one of the annular arrays, except those sprinkler ports therein that are directed both upwardly and to the right, and to close all of the sprinkler ports in the other of the annular arrays except those sprinkler ports therein that are directed both upwardly and to the left, all as viewed from one end of the casing.

A further object of the invention is to provide a sprinkler attachment of the character described, and further comprising a manually operable valve element carried by the casing and selectively cooperating with the valve ports in the two annular arrays, wherein the valve element has a first position opening all of the sprinkler ports in both of the annular arrays and a second position closing all of the sprinkler ports in one of the annular arrays and a third position closing all of the sprinkler ports in the other of the annular arrays, whereby the sprinkler attachment produces a first water fan from the sprinkler ports in the one annular array that are both supplied with water and are in open condition and produces a second water fan from the sprinkler ports in the other annular array that are both supplied with water and are in an open condition, wherein the first water fan is directed both upwardly and to the right and the second water fan is directed both upwardly and to the left, all as viewed from one end of the casing.

A further object of the invention is to provide a sprinkler attachment of the character described, wherein the casing includes an intermediate section having a generally ring-shaped configuration and disposed between the sprinkler ports in the two annular arrays, and wherein the manually operable valve element has a substantially ring-like configuration and surrounds the intermediate casing section and is mounted thereupon for longitudinal movements with respect thereto selectively into its first, second and third positions mentioned.

A still further object of the invention is to provide a sprinkler attachment of the character described that comprises an improved casing assembly including two substantially identical end casing sections, each of substantially cup-shaped configuration, and that respectively carry two annular metal rings in which the sprinkler ports in the two annular arrays are respectively formed, thereby to achieve an economical construction and arrangement of the sprinkler attachment.

Further features of the invention pertain to the particular arrangement of the elements of the sprinkler attachment, whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of a garden hose incorporating a plurality of sprinkler attachments embodying the present invention;

FIG. 2 is a side elevational view, partly broken away, of the first sprinkler attachment incorporated in the garden hose, as shown in FIG. 1;

FIG. 3 is a fragmentary side elevational view of the last sprinkler attachment incorporated in the garden hose, as shown in FIG. 1, and illustrating an associated end cap carried by this sprinkler attachment;

FIG. 4 is an enlarged longitudinal sectional view of the first sprinkler attachment, as shown in FIG. 2, and illustrating in its central position a manually operable valve element carried by the casing of this sprinkler attachment;

FIG. 5 is an enlarged fragmentary longitudinal sectional view, similar to FIG. 4, of the upper portion of the first sprinkler attachment, and illustrating in one of its end positions the manually operable valve element carried by the casing of this sprinkler attachment.

FIG. 6 is an enlarged fragmentary lateral sectional view of the first sprinkler attachment, this view being taken in the direction of the arrows along the line 6—6 in FIG. 4;

FIG. 7 is another enlarged fragmentary lateral sectional view of the first sprinkler attachment, this view being taken in the direction of the arrows along the line 7—7 in FIG. 4; and

FIG. 8 is yet another enlarged lateral sectional view of the first sprinkler attachment, this view being taken in the direction of the arrows along the line 8—8 in FIG. 4.

Referring now to FIG. 1 of the drawings, there are illustrated three sprinkler attachments or devices 10*a*, 10*b* and 10*c* of identical construction and each embodying the features of the present invention. The three devices 10*a*, 10*b* and 10*c* are arranged in series relation in a garden hose including the corresponding sections 11*a*, 11*b* and 11*c*, whereby the first hose section is connected to the first device 10*a*, the second hose section 11*b* is connected between the first and second devices 10*a* and 10*b*, and the third hose section 11*c* is connected between the second and third devices 10*b* and 10*c*. The first hose section 11*a* is also provided with a connector 12 that may be readily connected and disconnected with respect to a sill cock 13 carried by a building 14 and connected therein to a pressurized water supply system, not shown. The garden hose is arranged in a predetermined pattern upon a lawn, or the like, 15 that is to be watered or sprinkled, so that the devices 10*a*, 10*b* and 10*c* are disposed in spaced-apart relation in order to cover effectively a substantially large area of the lawn 15. The third or last device 10*c* in the series in the garden hose carries a cap 16 closing the normal outlet therefrom.

In view of the foregoing, it will be understood, that a portion of the water supplied by the first hose section 11*a* to the first device 10*a* is used thereby and the remainder of this water is supplied from the first device 10*a* to the second hose section 11*b*. Similarly, a portion of the water supplied by the second hose section 11*b* to the second device 10*b* is used thereby and the remainder of this water is supplied from the second device 10*b* to the third hose section 10*c*. Finally, all of the water supplied by the third hose section 11*c* to the third device 10*c* is used thereby due to the fact that the normal outlet from the third device 10*c* is closed by the cap 16.

Referring now to FIGS. 2 and 4, the first device 10*a* there illustrated essentially comprises a longitudinally extending substantially cylindrical tube 20 carrying at the opposite ends thereof two longitudinally extending external threads 21 and 22. The outer end of the first hose section 11*a* is fitted over one end of the tube 20 to enclose the thread 21 and is secured in place thereon by a conventional hose clamp 23; similarly, the inner end of the second hose section 11*b* is fitted over the other end of the tube 20 to enclose the thread 22 and is secured in place thereon by a conventional hose clamp 24. Thus, the tube 20 communicates directly between the outer end of the first hose section 11*a* and the inner end of the second hose section 11*b*.

Referring now to FIG. 3, it will be observed that in the third device 10*c* the cap 16 is directly threaded upon the outer end of the thread 22 carried by the other end of the tube 20, thereby to close the same, since the third device 10*c* comprises the last of the devices included in the series in the garden hose, as previously explained.

Again referring to FIGS. 2 and 4, the first device 10*a* further comprises a substantially ball-like hollow casing assembly removably carried by the intermediate portion of the tube 20 in surrounding relation therewith; which casing assembly includes an intermediate section 31 having a generally ring-shaped configuration and a pair of identical end casing sections 32 and 33 each having a generally cup-shaped configuration. The tube 20 is formed of a suitable aluminum alloy; the intermediate casing section 31 is formed of a suitable brass; and each of the end casing sections 32 and 33 is integrally molded of a suitable rigid plastic material, such, for example, as phenol-formaldehyde condensation products. The end casing section 32 comprises an inwardly projecting annular shoulder 34 that carries a substantially ring-like body 35; and likewise, the end casing section 33 comprises an inwardly projecting annular shoulder 36 that carries a substantially ring-like body 37; which bodies 35 and 37 are identical, each being integrally molded of a suitable resilient material, such as a synthetic elastomeric rubber-like composition. The bodies 35 and 37 respectively carry metal bands 38 and 39 respectively surrounding substantially cylindrical outer surfaces thereof. Also, the bodies 35 and 37 respectively carry metal rings 40 and 41 respectively surrounding annular inner surfaces thereof. The bands 38 and 39 and the rings 40 and 41 may be formed of a suitable brass.

The end casing section 32 includes an outer end wall in which there is provided a cylindrical hole 42 that is arranged concentric with the longitudinal axis of the end casing section 32 and which hole 42 closely fits over the adjacent section of the tube 20 when the end casing section 32 occupies its assembled position upon the tube 20; and, similarly, the end casing section 33 includes an outer end wall in which there is provided a cylindrical hole 43 that is arranged concentric with the longitudinal axis of the end casing section 33 and which hole 43 closely fits over the adjacent section of the tube 20 when the end casing section 33 occupies its assembled position upon the tube 20. In the casing assembly, the end casing sections 32 and 33 are disposed on opposite sides of the intermediate casing section 31 and in facing relation therewith. The end casing section 32 has a substantially centrally disposed cylindrical cavity 44 therein; and, similarly, the end casing section 33 has a substantially centrally disposed cylindrical cavity 45 therein; which cavities 44 and 45 are arranged in facing and communicating relation with a cavity 46 provided in the intermediate casing section 31. The end casing section 32 carries a plurality of radially inwardly directed and longitudinally extending ribs 47 disposed in the cavity 44 and engaging the surrounded section of the tube 20, when the casing section 32 occupies its assembled position thereon, so as concentrically to locate the casing section 32 with respect to the longitudinal axis of the tube 20. Similarly, the end casing section 33 carries a plurality of radially inwardly directed and longitudinally extending ribs 48 disposed in the cavity 45 and engaging the surrounded section of the tube 20, when the casing section 33 occupies its assembled position thereon, so as concentrically to locate the casing section 33 with respect to the longitudinal axis of the tube 20. Further, the intermediate portion of the tube 20 has a series of longitudinally spaced-apart cross holes 20*a*, 20*b*, 20*c*, 20*d*, 20*e* and 20*f* formed therein that communicate with the composite cavity formed in the casing assembly by the individual cavities 44, 45 and 46, whereby water under pressure is supplied from the interior of the tube 20 via the holes 20*a*, etc., into the interior of the casing assembly.

In the casing assembly, the end casing sections 32 and 33 are clamped into respective facing relation with the opposite sides of the intermediate casing section 31, the inner annular surfaces of the bodies 35 and 37 respectively directly engaging the rings 40 and 41, and the outer peripheral portions of the rings 40 and 41 respectively fitting into corresponding annular recesses 31*a* and 31*b* respectively provided in the opposite sides of the intermediate casing section 31. The clamping together of the casing sections 31, 32 and 33 into the casing assembly is effected by an arrangement comprising a pair of nuts 51 and 52 respectively carried by the threads 21 and 22 respectively provided on the opposite ends of the tube 20, respectively adjacent metal washers 53 and 54, and respectively adjacent O rings 55 and 56 formed of rubber, or the like, and respectively engaging the adjacent outer end walls of the respective end casing sections 32 and 33, the elements 53, 54 and 55 and 56 also surround the tube 20; whereby water-tight joints are provided between the casing sections 31, 32 and 31, 33 and between the tube 20 and the casing sections 32 and 33. Thus, the nuts 51 and 52 comprise abutments carried by the tube 20 between which the elements 53, 55, 32, 31, 33, 56 and 54 are clamped in assembled relation, as noted above. Of course, after removal of the hose sections 11*a* and 11*b*.

either of the nuts 51 or 52 may be removed from the adjacent end of the tube 20, whereupon the other of the elements 53, etc., or 54, etc., may be removed in sequence from the tube 20, so as to accommodate repair or replacement of any one of these elements.

Referring now to FIGS. 4 and 6, the resilient body 37 carried by the annular shoulder 36 of the end casing section 33 is integrally molded, as previously noted, whereby the same comprises the previously mentioned substantially cylindrical outer surface in which there are provided a plurality of pockets 37*a* arranged in circumferentially spaced-apart relation; and also, the resilient body 37 comprises the previously mentioned substantially annular inner surface in which there are provided a corresponding plurality of passages 37*b* arranged in circumferentially spaced-apart relation; and in the arrangement, the passages 37*b* respectively communicate with inner portions of the pockets 37*a*. The ring 41 overlies the annular surface mentioned of the resilient body 37 and has a corresponding plurality of valve ports 41*a* formed therein and arranged in circumferentially spaced-apart relation; which valve ports 41*a* respectively communicate with the passages 37*b* formed in the resilient body 37; and which valve ports 41*a* commonly communicate with the composite cavity defined in the casing assembly. The band 39 overlies the cylindrical surface mentioned of the resilient body 34 and has a corresponding plurality of sets of sprinkler ports formed therein and arranged in circumferentially spaced-apart relation; which sets of sprinkler ports respectively communicate with the pockets 37*a* formed in the resilient body 37. The constructions of the elements 35, 38 and 40 respectively correspond to those of the elements 37, 39 and 41, as described above; whereby the resilient body 35 comprises the pockets 35*a* and the passages 35*b*, the band 38 comprises the plurality of sets of sprinkler ports, and the ring 40 comprises the valve ports 40*a*.

More particularly, each of the sets of sprinkler ports formed in the band 39 comprises, as best shown in FIG. 2, three individual sprinkler ports 39*a*, 39*b* and 39*c*; and in the arrangement, the sprinkler ports 39*a* are arranged in a first annular array positioned around the band 39, the sprinkler ports 39*b* are arranged in a second annular array positioned around the band 39, and the sprinkler ports 39*c* are arranged in a third annular array positioned around the band 39. The first annular array of sprinkler ports 39*a* formed in the band 39 are arranged in a first forwardly disposed lateral plane, indicated at 39A; the second annular array of sprinkler ports 39*b* formed in the band 39 are arranged in a second rearwardly disposed lateral plane, indicated at 39B; and the third annular array of sprinkler ports 39*c* formed in the band 39 are arranged in a third lateral plane, indicated at 39C and disposed intermediate the planes 39A and 39B. The first sprinkler ports 39*a* are directed generally radially outwardly from the band 39 with a rearward inclination, as indicated by the correspondingly directed broken line 39*a* in FIG. 2; the second sprinkler ports 39*b* are directed generally radially outwardly from the band 39 with a forward inclination, as indicated by the correspondingly directed broken line 39*b'* in FIG. 2; and the third sprinkler ports 39*c* are directed generally radially outwardly from the band 39 and substantially in the plane 39C, as indicated by the correspondingly directed broken line 39*c'* in FIG. 2. Also, the individual sprinkler ports 39*c* are angularly offset with respect to the corresponding individual sprinkler ports 39*a*, and the individual sprinkler ports 39*b* are angularly offset with respect to the corresponding individual sprinkler ports 39*c*, as clearly shown in FIG. 2.

In order to insure proper registry of the passages 37*b* formed in the resilient body 37 and the valve ports 41*a* formed in the ring 41, the annular shoulder 36 carried by the end casing section 33 is provided with three angularly spaced-apart outwardly directed projections 36*a* that fit into three corresponding grooves formed in the inner surface of the resilient body 37 and that fit into three corresponding aligned grooves formed in the inner edge of the ring 41, as shown in FIGS. 4 and 6. The construction of the elements 34, 35, 38 and 40 respectively correspond to those of the elements 36, 37, 39 and 41, as described above; whereby the band 38, comprises the plurality of sets of sprinkler ports, each including the three individual sprinkler ports 38*a*, 38*b* and 38*c*, with the three annular arrays of sprinkler ports mentioned respectively disposed in the three corresponding planes 38A, 38B and 38C, and respectively correspondingly directed, as indicated by the broken lines 38*a'*, 38*b'* and 38*c'*, as shown in FIG. 2.

Further, the first device 10*a* comprises mechanism for selectively controlling valving of the valve ports 40*a* formed in the ring 40 and valving of the valve ports 41*a* formed in the ring 41. More particularly, a first annular trackway 61 is formed in the midportion of the tube 20 and surrounded by the intermediate casing section 31; and a second annular trackway 62 is formed by the interior surface of the intermediate casing section 31; wherein the second annular trackway 62 surrounds the first annular trackway 61 in radially outwardly spaced-apart relation therewith, as shown in FIGS. 4 and 8. A substantially U-shaped member 63 is arranged in the cavity 46 and including a pair of legs 64 and 65 and a connecting head 66. The ends of the legs 64 and 65 have longitudinally spaced-apart and aligned circular holes formed therein through which the intermediate portion of the tube 20 projects, the legs 63 and 64 being disposed on opposite sides of the first trackway 61 formed in the tube 20. Accordingly, the member 63 is loosely mounted upon the tube 20 for relative rotation with respect thereto and constitutes a pendulum, as explained more fully below. A substantially circular hole 66*a* is formed in the central portion of the head 66, and an enlarged sphere or ball 67 is arranged mutually between the trackways 61 and 62 and within the hole 66*a* in the head 66. The hole 66*a* has a diameter that is slightly smaller than that of the sphere 67, so that the sphere 67 is thus trapped in the hole 66*a* in the head 66 of the member 63 and between the trackways 61 and 62. In the mechanism described, the member 63 is preferably formed of a suitable aluminum alloy, and the sphere 67 is preferably formed of a suitable brass or bronze.

In view of the foregoing, it will be understood that when the tube 20 is disposed in a generally horizontal position, the sphere 67 is gravity biased into a bottom position in the trackway 62, regardless of the portion of the casing assembly that is positioned downwardly, whereby the sphere 67 rolling in the trackways 61 and 62 into its bottom position pivots or rotates the member 63 as a pendulum into a downwardly directed position. The leg 64 of the member 63 carries a pair of outwardly projecting pins 68 disposed on opposite sides of the tube 20; and a substantially disk-like valve element 69 is removably secured to the outer side of the leg 64 with a metal washer 70 disposed therebetween, the valve element 69 and the washer 70 both surrounding the adjacent section of the tube 20. The valve element 69 is properly located with respect to the adjacent leg 64 by the projection of the two pins 68 through two corresponding holes formed through the valve element 69. The valve element 69 is positioned immediately adjacent to the associated surface of the ring 40 and thus in cooperating relation with certain of the valve ports 40*a* formed therein. Similarly, the leg 65 carries a pair of outwardly projecting pins 71 disposed on opposite sides of the tube 20; and a substantially disk-like valve element 72 is removably secured to the outer side of the leg 65 with a metal washer 73 disposed therebetween, the valve element 72 and the washer 73 both surrounding the adjacent section of the tube 20. The valve element 72 is properly located with respect to the adjacent leg 65 by the projection of the two pins 71 through two cor-

responding holes formed through the valve element 72. The valve element 72 is positioned immediately adjacent to the associated surface of the ring 41 and thus in cooperating relation with certain of the valve ports 41*a* formed therein.

More particularly, as shown in FIG. 7, an upper left-hand segment has been cut-out of the valve element 72, whereby the valve element 72 overlies and closes all of the valve ports 41*a* provided in the ring 41, except those valve ports 41*a* that are disposed in the upper left-hand segment of the ring 41 and that are connected by the passages 37*b* to the ones of the sprinkler ports 39*a*, 39*b* and 39*c* formed in the band 39 that are directed upwardly and to the left, as viewed in FIG. 7; whereby the water fan that is projected from the band 39 is always directed upwardly and to the left, as indicated by the broken lines 39', as shown in FIG. 7, and as viewed from the end casing section 33 toward the intermediate casing section 31, as seen in FIG. 2. Similarly, as shown in FIG. 8, an upper right-hand segment has been cut-out of the valve element 69, whereby the valve element 69 overlies and closes all of the valve ports 40*a* provided in the ring 40, except those valve ports 40*a* that are disposed in the upper right-hand segment of the ring 40 and that are connected by the passages 35*b* to the ones of the sprinkler ports 38*a*, 38*b* and 38*c* formed in the band 38 that are directed upwardly and to the right, as viewed in FIG. 8; whereby the water fan that is projected from the band 38 is always directed upwardly and to the right, as indicated by the broken lines 38', as shown in FIG. 8, and as viewed from the end casing section 33 toward the intermediate casing section 31, as seen in FIG. 2. Since the rings 40 and 41 are respectively carried by the casing sections 32 and 33 they rotate therewith, as the casing assembly is rolled into various positions along the lawn 15, as shown in FIG. 1; however, the pendulum 63 is always downwardly directed, as previously explained; whereby the valve elements 69 and 72 always respectively uncover only the upper left-hand segment of the valve ports 41*a* and the upper right-hand segment of the valve ports 40*a*, with the constant result that the water fan 39' from the band 39 is directed upwardly and to the left and the water fan 38' from the band 38 is directed upwardly and to the right, as respectively illustrated in FIGS. 7 and 8, and regardless of the portion of the casing assembly that is positioned downwardly and in contact with the lawn 15, as shown in FIG. 1.

In the arrangement, the two valve elements 69 and 72 are of identical construction, and each thereof comprises a flexible sheet of resilient material, such, for example, as a synthetic rubber. Thus, to produce the two valve elements 69 and 72, two identical valve elements are merely assembled in oppositely facing directions upon the two sets of pins 68 and 71; which assembly produces the respective directions (left and right) of the two water fans 39' and 38' from the respective bands 39 and 38.

Finally, the first device 10*a* comprises a manually operable valve element 71 of substantially ring-like form and mounted upon the intermediate casing section 31 in surrounding relation therewith and selectively movable between an intermediate position, as shown in FIG. 4, a first end position, as shown in full lines in FIG. 5, and a second end position, as shown in broken lines in FIG. 5. The valve element 71 is of composite construction including an inner ring 72 formed of resilient elastomeric material, such as a synthetic rubber, and an outer ring 73 formed of a suitable brass. The inner ring 72 selectively cooperates with the bands 38 and 39 selectively to close all of the sprinkler ports 38*a*, etc., and 39*a*, etc., respectively formed therein; while outer ring 73 holds the inner ring 72 in place therein and serves as facility for effecting ready longitudinal shifting or sliding of the inner ring 72 upon the intermediate casing section 31 and upon the two bands 38 and 39.

When the valve element 71 occupies its intermediate position, as shown in FIG. 4, the inner ring 72 is compressed between the outer surface of the intermediate casing section 31 and the inner surface of the outer ring 72, and the inner ring 72 is disposed in uncovering relation with both of the bands 38 and 39; whereby the first device 10*a* is operative to project the two previously described water fans 39' and 38' from the respective bands 39 and 38, as previously described in connection with FIGS. 7 and 8. When the valve element 71 occupies its one end position, as shown in full lines in FIG. 5, the inner ring 72 is positioned in surrounding relation with the outer surface of the band 38 and some of the compression is relieved upon the inner ring 72, with the result that the inner ring 72 expands and fits substantially the sides of the concave band 38 serving to stopper all of the sprinkler ports 38*a*, etc., formed therein; whereby the first device 10*a* is operative to project only the water fan 39' from the band 39, as previously described in connection with FIG. 7. When the valve element 71 occupies its other end postion, as shown in dotted lines in FIG. 5, the inner ring 72 is positioned in surrounding relation with the outer surface of the band 39 and some of the compression is relieved upon the inner ring 72, with the result that the inner ring 72 expands and fits substantially the sides of the concave band 39 serving to stopper all of the sprinkler ports 39*a*, etc., formed therein, whereby the first device 10*a* is operative to project only the water fan 38' from the band 38, as previously described in connection with FIG. 8.

Accordingly, the first device 10*a* is selectively operative to produce both of the water fans 38' and 39', only the water fan 38', or only the water fan 39', in response to operation of the valve element 71 into the individual ones of its three positions, as described above; which arrangement is very advantageous, since it accommodates adjustment of the characteristic of the first device 10*a* depending upon its individual location upon the lawn 15, so as to prevent objectionable operation thereof to project its water fan upon a walkway, etc.

As a constructional example of the first device 10*a*: the tube 20 may have an overall length of about 6" and an inside diameter of about 0.580"; the intermediate casing section 31 may have an overall length of about $1\frac{5}{16}$" and an outside diameter of about 2.340"; and the remainder of the dimensions of the other elements thereof may be selected from the scale of the drawings employing as a base the above noted dimensions.

Of course, the construction and arrangement and mode of operation of the other devices 10*b* and 10*c* are the same as those described with reference to the first device 10*a*; and in passing, it is mentioned that there is no particular number of the devices that should be included in the garden hose, since such number is appropriately selected in view of the water pressure that is encountered in the water supply system to which the garden hose is connected. However, with the normal range of water pressure that is ordinarily encountered in city water supply systems, the inclusion of about three of the devices in the garden hose is generally recommended.

In view of the foregoing, it is apparent that there has been provided a sprinkler attachment or device of improved and simplified construction and arrangement which is automatically operative to discharge water therefrom only in a generally upward direction, regardless of its supported position upon a lawn, or the like, and which may be selectively preset to limit the upward discharge of water therefrom, either to the right or to the left, as viewed from one end of the casing of the device, thereby always to effect gentle watering or sprinkling of the lawn, without damage thereto, and in a controlled or preset pattern covering a maximum area thereof.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be

made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A sprinkler attachment comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of said casing and communicating with the interior thereof, the outer end of said tube accommodating the connection thereto of a water hose section in order to supply water into the interior of said casing, said casing having two longitudinally spaced-apart annular arrays of sprinkler ports therein that commonly communicate with the interior thereof and that are directed generally radially outwardly therefrom, automatic mechanism arranged in said casing and operative when said casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of said casing that is positioned downwardly for cutting-off the supply of water from the interior of said casing to all of the sprinkler ports in said two annular arrays that are directed generally downwardly, and a manually operable valve element carried by said casing and selectively cooperating with the sprinkler ports in said two annular arrays, said valve element having a first position opening all of the sprinkler ports in said two annular arrays and a second position closing all of the sprinkler ports in one of said annular arrays and a third position closing all of the sprinkler ports in the other of said annular arrays.

2. A sprinkler attachment comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of said casing and communicating with the interior thereof, the outer end of said tube accommodating the connection thereto of a water hose section in order to supply water into the interior of said casing, said casing having two longitudinally spaced-apart annular arrays of sprinkler ports therein that commonly communicate with the interior thereof and that are directed generally radially outwardly therefrom, automatic mechanism arranged in said casing and operative when said casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of said casing that is positioned downwardly for cutting-off the supply of water from the interior of said casing to all of the sprinkler ports in said two annular arrays that are directed generally downwardly, said casing including an intermediate section having a generally ring-shaped configuration and disposed between the sprinkler ports in said two annular arrays, and a manually operable valve element having a substantially ring-like configuration and surrounding said intermediate casing section and mounted thereupon for longitudinal movements with respect thereto and selectively cooperating with the sprinkler ports in said two annular arrays, said valve element having an intermediate position opening all of the sprinkler ports in said two annular arrays and one end position closing all of the sprinkler ports in any of said annular arrays and another end position closing all of the sprinkler ports in the other of said annular arrays.

3. A sprinkler attachment comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of said casing and communicating with the interior thereof, the outer end of said tube accommodating the connection thereto of a water hose section in order to supply water into the interior of said casing, said casing having two longitudinally spaced-apart annular arrays of sprinkler ports therein that commonly communicate with the interior thereof and that are directed generally radially outwardly therefrom, automatic mechanism arranged in said casing and operative when said casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of said casing that is positioned downwardly for cutting-off the supply of water from the interior of said casing to all of the sprinkler ports in said two annular arrays that are directed generally downwardly, said casing including an intermediate section having a generally ring-shaped conguration and disposed between the sprinkler ports in said two annular arrays, and a manually operable valve element having a substantially ring-like configuration and formed of elastomeric material and tightly surrounding said intermediate casing section and mounted thereupon for longitudinal movements with respect thereto and selectively cooperating with the sprinkler ports in said two annular arrays, said valve element having an intermediate position uncovering and opening all of the sprinkler ports in said two annular arrays and one end position covering and closing all of the sprinkler ports in one of said annular arrays and another end position covering and closing all of the sprinkler ports in the other of said annular arrays.

4. A sprinkler attachment comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of said casing and communicating with the interior thereof, the outer end of said tube accommodating the connection thereto of a water hose section in order to supply water into the interior of said casing, said casing including an intermediate section having a generally ring-shaped configuration, two metal rings carried by said casing in longitudinally spaced-apart relation and respectively arranged adjacent to the opposite ends of said intermediate casing section, said rings having two annular arrays of sprinkler ports respectively formed therein that commonly communicate with the interior of said casing and that are directed generally radially outwardly from said casing, automatic mechanism arranged in said casing and operative when said casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of said casing that is positioned downwardly for cutting-off the supply of water from the interior of said casing to all of the sprinkler ports in said two annular arrays that are directed generally downwardly, and a manually operable control element having a substantially ring-like configuration and surrounding said casing and mounted thereupon for longitudinal movements with respect thereto, said control element having an intermediate position surrounding said intermediate casing section and a first end position surrounding a first of said rings and a second end position surrounding a second of said rings, said control element in either one of its end positions surrounding the corresponding one of said rings covering and closing all of the sprinkler ports in the corresponding one of said annular arrays formed in said one ring.

5. A sprinkler attachment comprising a longitudinally extending tube, a substantially ball-like hollow casing assembly removably carried by the intermediate portion of said tube in surrounding relation therewith, said casing assembly including an intermediate casing section having a generally ring-shaped configuration and a pair of end casing sections each having a generally cup-shaped configuration, said end casing sections being disposed on opposite sides of said intermediate casing section and in facing relation therewith in said casing assembly, a pair of abutment elements respectively carried by the opposite end portions of said tube and respectively engaging the adjacent end portions of said end casing sections for securing said casing sections together in water-tight relation in said casing assembly, at least one of said abutment elements being selectively removable from the associated end portion of said tube to accommodate the removal of said casing assembly from the intermediate portion of said tube, the opposite ends of said tube accommodating the connection thereto of two corresponding water hose sections and the intermediate portion of said tube having an opening therein communicating with the interior of said casing assembly, said end casing sections respectively having two annular arrays of sprinkler ports formed therein that are respectively disposed adjacent to the

opposite sides of said intermediate casing section and that commonly communicate with the interior of said casing assembly and that are directed generally radially outwardly from said casing assembly, automatic mechanism arranged in said casing assembly and operative when said tube is disposed in a generally horizontal position and independently of the portion of said casing assembly that is positioned downwardly for cutting-off the supply of water from the interior of said casing assembly to all of the sprinkler ports in said two annular arrays that are directed generally downwardly, and a manually operable control element having a substantially ring-like configuration and surrounding said casing assembly and mounted thereupon for longitudinal movements with respect thereto, said control element having an intermediate position surrounding said intermediate casing section and a first end position surrounding the adjacent portion of a first of said end casing sections and a second end position surrounding the adjacent portion of a second of said casing sections, said control element in either one of its end positions surrounding the adjacent portion of the corresponding one of said end casing sections covering and closing the sprinkler ports in the corresponding one of said annular arrays formed in said one end casing section.

6. A sprinkler attachment comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of said casing and communicating with the interior thereof, the outer end of said tube accommodating the connection thereto of a water hose section in order to supply water into the interior of said casing, said casing having two annular arrays of sprinkler ports therein that are respectively arranged substantially in two longitudinally spaced-apart substantially laterally extending planes, all of the sprinkler ports in each of said annular arrays commonly communicating with the interior of said casing and being generally radially directed outwardly therefrom in the corresponding one of said laterally extending planes, and automatic mechanism arranged in said casing and operative when said casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of said casing that is positioned downwardly for closing all of the sprinkler ports in one of said annular arrays except those sprinkler ports therein that are directed both upwardly and to the right in the corresponding one laterally extending plane as viewed in the longitudinal direction from one end of said casing and for closing all of the sprinkler ports in the other of said annular arrays except those sprinkler ports therein that are directed both upwardly and to the left in the corresponding other laterally extending plane as viewed in the longitudinal direction from said one end of said casing.

7. A sprinkler attachment comprising a substantially ball-like hollow casing having a longitudinal axis, a tube carried by an end portion of said casing and communicating with the interior thereof, the outer end of said tube accommodating the connection thereto of a water hose section in order to supply water into the interior of said casing, said casing having two longitudinally spaced-apart annular arrays of sprinkler ports therein that commonly communicate with the interior thereof and that are directed generally radially outwardly therefrom, automatic mechanism arranged in said casing and operative when said casing is disposed with the longitudinal axis thereof in a generally horizontal position and independently of the portion of said casing that is positioned downwardly for cutting-off the supply of water from the interior of said casing to all of the sprinkler ports in one of said annular arrays except those sprinkler ports therein that are directed both upwardly and to the right and for cutting-off the supply of water from the interior of said casing to all of the sprinkler ports in the other of said annular arrays except those sprinkler ports therein that are directed both upwardly and to the left all as viewed from one end of said casing, and a manually operable valve element carried by said casing and selectively cooperating with the sprinkler ports in said two annular arrays, said valve element having a first position opening all of the sprinkler ports in said two annular arrays and a second position closing all of the sprinkler ports in said one annular array and a third position closing all of the sprinkler ports in said other annular array, whereby said sprinkler attachment produces a first water fan from the sprinkler ports in said one annular array that are both supplied and open and produces a second water fan from the sprinkler ports in said other annular array that are both supplied and open, wherein said first water fan is directed both upwardly and to the right and said second water fan is directed both upwardly and to the left all as viewed from said one end of said casing.

8. A sprinkler attachment comprising a longitudinally extending tube, a substantially ball-like hollow casing assembly removably carried by the intermediate portion of said tube in surrounding relation therewith, said casing assembly including an intermediate casing section having a generally ring-shaped configuration and a pair of end casing sections each having a generally cup-shaped configuration, said end casing sections being disposed on opposite sides of said intermediate casing section and in facing relation therewith in said casing assembly, a pair of abutment elements respectively carried by the opposite end portions of said tube and respectively engaging the adjacent end portions of said end casing sections for securing said casing sections together in water-tight relation in said casing assembly, at least one of said abutment elements being selectively removable from the associated end portion of said tube to accommodate the removal of said casing assembly from the intermediate portion of said tube, the opposite ends of said tube accommodating the connection thereto of two corresponding water hose sections and the intermediate portion of said tube having an opening therein communicating with the interior of said casing assembly, said end casing sections respectively having two annular arrays of sprinkler ports formed therein that are respectively disposed adjacent to the opposite sides of said intermediate casing section and that commonly communicate with the interior of said casing assembly and that are directed generally radially outwardly from said casing assembly, a pendulum device arranged in said casing and surrounded by said intermediate casing section and rotatably mounted upon the intermediate portion of said tube projecting through said intermediate casing section, said pendulum device being operated into a position directed downwardly when said tube is disposed in a generally horizontal position and independently of the portion of said casing that is positioned downwardly, two valve elements arranged in said casing and respectively cooperating with the sprinkler ports in said two annular arrays, and means controlled by said pendulum device in its position directed downwardly for operating said valve elements respectively to close all of the sprinkler ports in said two annular arrays that are directed generally downwardly.

9. A sprinkler attachment comprising a longitudinally extending tube, a substantially ball-like hollow casing assembly removably carried by the intermediate portion of said tube in surrounding relation therewith, said casing assembly including an intermediate casing section having a generally ring-shaped configuration and a pair of end casing sections each having a generally cup-shaped configuration, said end casing sections being disposed on opposite sides of said intermediate casing section and in facing relation therewith in said casing assembly, a pair of abutment elements respectively carried by the opposite end portions of said tube and respectively engaging the adjacent end portions of said end casing sections for securing said casing sections together in water-tight relation in said casing assembly, at least one of said abutment elements being selectively removable from the as-

sociated end portion of said tube to accommodate the removal of said casing assembly from the intermediate portion of said tube, the opposite ends of said tube accommodating the connection thereto of two corresponding water hose sections and the intermediate portion of said tube having an opening therein communicating with the interior of said casing assembly, said end casing sections respectively having two annular arrays of sprinkler ports formed therein that are respectively disposed adjacent to the opposite sides of said intermediate casing section and that commonly communicate with the interior of said casing assembly and that are directed generally radially outwardly from said casing assembly, a pendulum device arranged in said casing and surrounded by said intermediate casing section and rotatably mounted upon the intermediate portion of said tube projecting through said intermediate casing section, said pendulum device being operated into a position directed downwardly when said tube is disposed in a generally horizontal position and independently of the portion of said casing that is positioned downwardly, two valve elements arranged in said casing and respectively cooperating with the sprinkler ports in said two annular arrays, and means controlled by said pendulum device in its position directed downwardly for operating one of said valve elements to close all of the sprinkler ports in the cooperating one of said annular arrays except those sprinkler ports therein that are directed both upwardly and to the right and for operating the other of said valve elements to close all of the sprinkler ports in the cooperating other of said annular arrays except those sprinkler ports therein that are directed both upwardly and to the left all as viewed from one end of said casing.

References Cited in the file of this patent

UNITED STATES PATENTS

2,709,624 MacChesney ---------- May 31, 1955
2,737,418 MacChesney ---------- Mar. 6, 1956