Dec. 2, 1952 O. O. BROWN 2,620,233

ROTARY SPRINKLER HEAD

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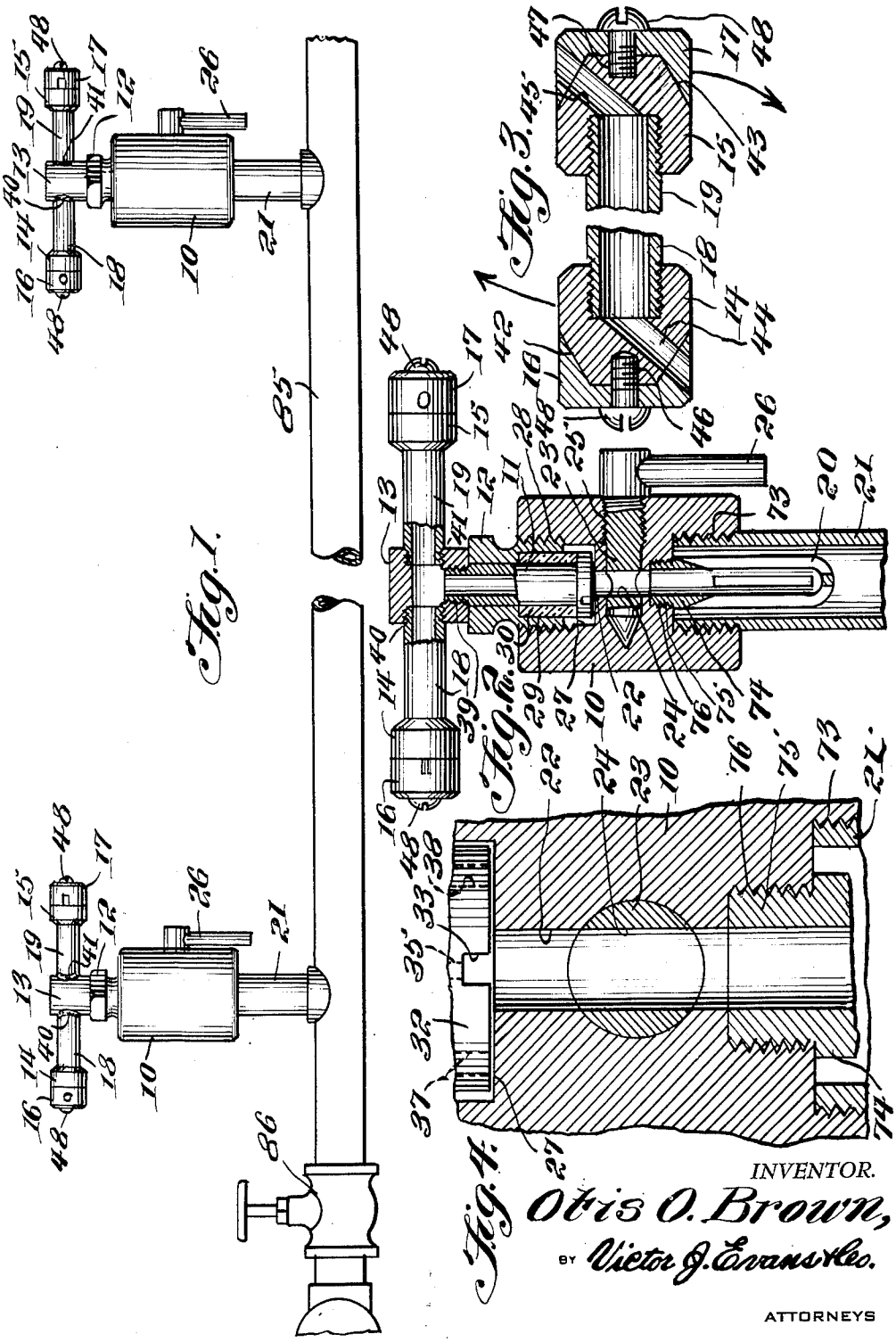


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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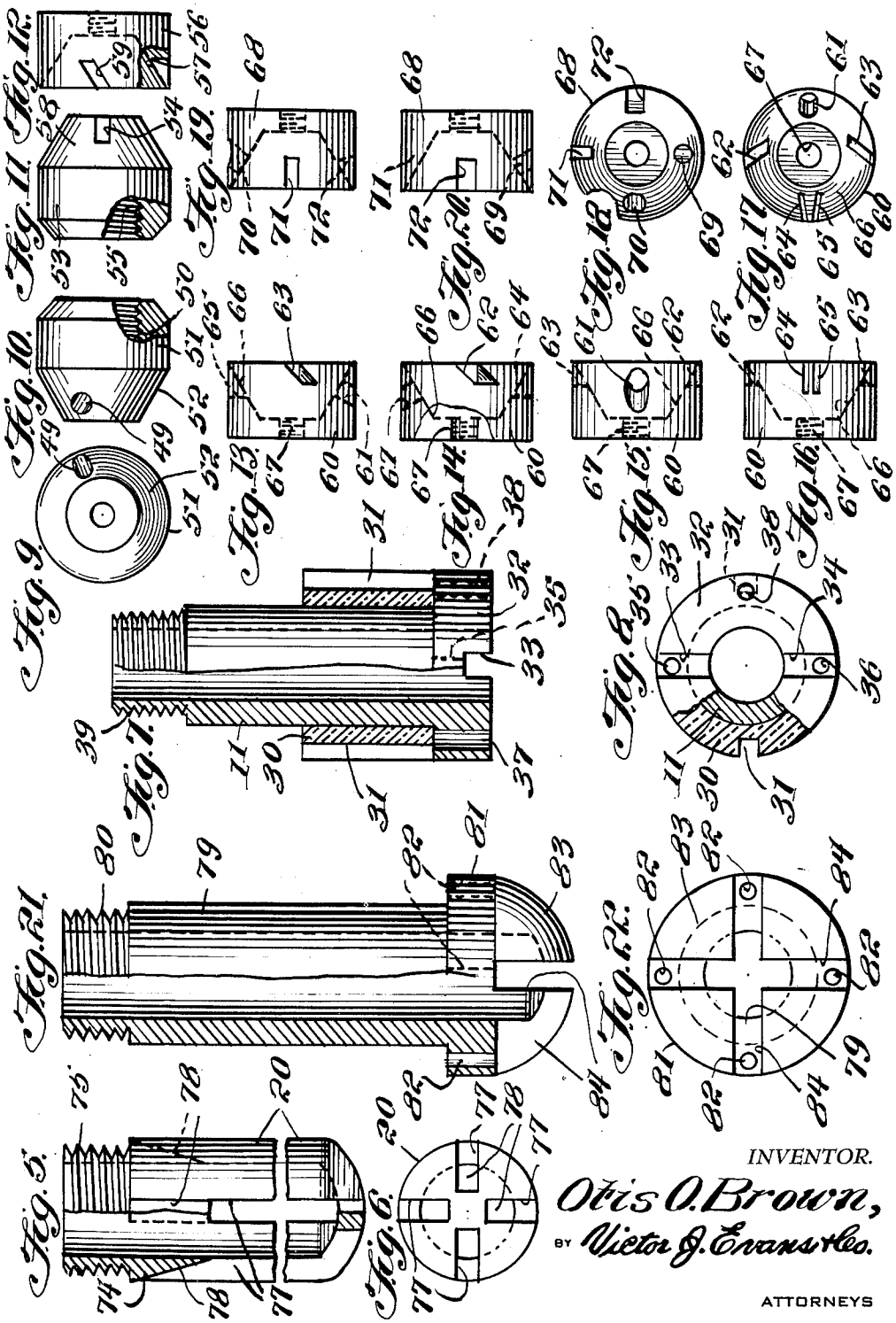
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ROTARY SPRINKLER HEAD

Otis O. Brown, Fall Brook, Calif.

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5 Claims. (Cl. 299—69)

1

This invention relates to sprinklers of the type used for lawns, plants, trees and the like, and in particular a sprinkler having radially disposed arms journaled at the upper end of a valve casing with a water supply pipe positioned over a filter or strainer in the lower end of the casing.

The purpose of this invention is to provide an improved sprinkler head wherein rotating elements are journaled in bearings that wear indefinitely and wherein nozzles on the rotating head are provided with tips that are readily interchangeable with tips having different types of openings therein.

In the usual type of lawn sprinkler or sprinklers used in nurseries the rotating elements are formed of light materials so that the parts wear rapidly and the openings through the nozzle tips are comparatively small whereby the flow of water therethrough is restricted. With this thought in mind this invention contemplates a sprinkler head in which the rotating elements are journaled in a bushing with a bearing sleeve therein and the nozzles are provided with a plurality of interchangeable tips for regulating the size of the spray and the amount of water sprayed thereby.

The object of this invention is, therefore, to provide means for constructing a sprinkler head wherein the wearing parts are readily replaceable and the nozzles are provided with interchangeable tips.

Another object of the invention is to provide a rotary spray head having a removable filter and strainer therein.

A further object of the invention is to provide a rotary sprinkler head having a bearing sleeve in a bushing therein and in which nozzles thereof are provided with interchangeable tips which is of a simple and economical construction.

With these and other objects and advantages in view, the invention embodies a valve casing having a center opening with a valve therein extended therethrough, with a filter in the lower end and positioned to extend into a water supply pipe extended from the lower end, a bushing having valve sleeves therein mounted in the upper end and nozzles with interchangeable tips carried by arms mounted on a shaft journaled in the bushing.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

Figure 1 is an elevational view showing a plurality of sprinkler heads mounted on a feeder pipe.

Figure 2 is a vertical section through one of

2

the sprinkler heads shown in Figure 1 with parts broken away and with the outer ends of the arms of the sprinkler head shown in elevation.

Figure 3 is a sectional plan taken on line 3—3 of Figure 2 showing the nozzles and tips in which the tips are provided with outwardly inclined openings.

Figure 4 is a vertical section on an enlarged scale through the intermediate part of the valve casing with parts broken away.

Figure 5 is an elevational view with parts shown in section showing a filter positioned in the lower end of the valve casing.

Figure 6 is an end view looking upwardly toward the lower end of the filter shown in Figure 5.

Figure 7 is a detail showing the bearing bushing positioned in the upper end of the valve casing with parts shown in elevation and parts in section.

Figure 8 is an end view of the bushing shown in Figure 7 looking upwardly toward the lower end thereof and with parts broken away and shown in section.

Figure 9 is an end view showing one of the nozzles on the ends of the arms of the sprinkler head.

Figure 10 is a side elevational view of the nozzle shown in Figure 9.

Figure 11 is a view illustrating a modification wherein a nozzle, similar to the nozzle shown in Figure 10 is provided with a slot in the outer end.

Figure 12 is a side elevational view of a tip for a nozzle in which slots are provided in the inner edge of the tip.

Figures 13 to 17 inclusive show a form of nozzle tip with a round opening and flat slots therein.

Figures 18, 19 and 20 show a similar nozzle tip with combinations of round and flat openings of different sizes therein.

Figure 21 is a view showing a further modification wherein a filter or strainer, similar to the strainer shown in Figure 5 is provided with a head having slots and openings therethrough.

Figure 22 is an end view of the filter shown in Figure 21.

Referring now to the drawings wherein like reference characters denote corresponding parts a sprinkler head of this invention includes a valve casing 10, a bearing bushing 11 secured in the upper end of the valve casing by a nut 12, a head 13 having nozzles 14 and 15 with tips 16 and 17, respectively on the outer ends of arms 18 and 19, and a filter 20 which is positioned in a supply tube 21.

The valve casing 10 is provided with a cen-

trally disposed passage 22 and a valve 23 having an opening 24 therein is positioned in the casing with the opening thereof positioned to register with the passage 22, as illustrated in Figures 2 and 4. The stem of the valve 23 is threaded in the casing 10, as indicated by the threaded sections 25 and the outer end is provided with a handle 26.

The upper end of the valve casing 10 is provided with an enlarged counterbore 27 into the upper end of which the nut 12 is threaded by threads 28, and the nut is provided with an annular recess 29 in which a bearing sleeve 30 on the bushing 11 is positioned.

The outer surface of the sleeve 30 is provided with longitudinally extended slots 31 and, as illustrated in Figure 7 this sleeve rests upon a head 32 which is formed with slots 33 and 34 in the outer end and which is provided with openings 35 and 36 that extend through the head from the bases of the slots, and openings 37 and 38 that extend through the sides of the head. The bushing 11 is provided with a threaded end 39 on which the head 13 is threaded and, as illustrated in Figure 2, the sprinkler head is journaled in the nut 12 in the valve casing by the bushing and bearing sleeve 30 and as the sprinkler head rotates the head 32 provides a thrust collar with the openings through the head and slots 31 of the bearing sleeve providing lubricating passages through which water is supplied to the bearing elements.

The tubes 18 and 19 are threaded into the head 13 and permanently secured therein by welding, as indicated at the points 40 and 41. The nozzles 14 and 15 are threaded on the outer ends of the tubes as shown in Figure 3 and the outer ends of the nozzles are provided with frustro-conical shaped sections 42 and 43, respectively, with outlet passages 44 and 45 therein and with threaded sockets 46 and 47 in the outer ends. The bearing tips are provided with conical shaped sockets that nest over the sections 42 and 43 of the nozzle and the tips are secured in position by screws 48.

Figures 9 and 10 illustrate one of nozzles 14 or 15 in which an outlet passage 49 extends from the end of a threaded socket 50 in the nozzle body 51 through the frustro-conical shaped section 52 with the passage positioned on an angle instead of extending straight outwardly.

In the design illustrated in Figures 11 and 12 a nozzle 53 is provided with a rectangular shaped slot 54 which extends through the nozzle, communicating with a threaded socket 55 therein. The tip 56 which is provided with a conical shaped socket 57 that nests over the section 58 of the nozzle is provided with an outlet slot 59 that registers with the slot 54 to provide an outlet in the side of the tip of the nozzle.

In Figures 13 to 17, inclusive a tip 60 is illustrated that is provided with an inclined opening 61, sloping slots 62 and 63 and double slots 64 and 65 wherein the combination of slots and openings provides a unique spray. The tip 60 is provided with a conical shaped recess 66 that nests over the ends of the nozzle and a centrally disposed opening 67 through which the screw 48 extends.

The tip 68 illustrated in Figures 18, 19 and 20 is similar except that it is provided with a small circular opening 69, a larger circular opening 70, a narrow slot 71 and a wide slot 72.

It will be understood that tips may be provided with openings of different shapes and different combinations of openings may be provided in each tip.

The water supply tube 21 is threaded into a socket 73 in the lower end of the valve casing 10 and the screen or filter 20 is provided with a base 74 with a threaded sleeve 75 at the end by which the filter is screwed into a threaded socket 76 in the valve casing. The outer shell of the filter is provided with slots 77 and sloping surfaces 78 are provided in the upper ends of the slots, as illustrated in Figure 5.

The filter or screen may also be provided as illustrated in Figure 21 wherein a tubular body 79 is provided with a threaded upper end 80 and a collar 81 with openings 82 therethrough is provided on the lower end, wherein with the upper end threaded into the socket 76 the collar 82 on the lower end fits inside of the supply tube 21. The collar 81 is formed with an arcuate outer end 83 and the outer end is provided with slots 84 in which the openings 82 are positioned.

With the parts arranged in this manner a plurality of sprinkler heads may be positioned on a header 85, that may be provided with a valve 86, and by changing the tips of the nozzles various types of sprays may be obtained and the sprays may be regulated to provide a comparatively small amount of water for young plants or trees and to supply larger quantities of water particularly as the trees grow.

With this combination of elements sprays may be provided for substantially any purpose.

It will be understood that other modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. A sprinkler comprising a valve casing, a head having arms with spray nozzles thereon positioned in the upper end of the valve casing, a tubular bushing extended downwardly from the sprinkler head and into the valve casing, a bearing sleeve positioned on the outer surface of the bushing and through which the sprinkler head is journaled in the valve casing, said bushing having a thrust collar with openings therethrough on the lower end, a supply tube extended downwardly from the lower end of the valve casing, and a filter removably mounted in the valve casing and positioned in the said supply tube.

2. A sprinkler comprising a valve casing, a head having arms with spray nozzles thereon positioned in the upper end of the valve casing, a tubular bushing extended downwardly from the sprinkler head and into the valve casing, a bearing sleeve positioned on the outer surface of the bushing and through which the sprinkler head is journaled in the valve casing, said bushing having a thrust collar with openings therethrough on the lower end, a nut positioned around the upper end of the tubular bushing and having an annular recess in which the bearing sleeve is positioned, said nut threaded in the upper end of the valve casing, a supply tube extended downwardly from the lower end of the valve casing, and a filter removably mounted in the valve casing and positioned in the said supply tube.

3. A sprinkler comprising a valve casing, a head having arms with spray nozzles thereon positioned in the upper end of the valve casing, a tubular bushing extended downwardly from the sprinkler head and into the valve casing, a bearing sleeve positioned on the outer surface of the bushing and through which the sprinkler head

is journaled in the valve casing, said bushing having a thrust collar with openings therethrough on the lower end, said thrust collar of the bushing having lubricating openings therethrough and said bearing sleeve having lubricating slots in the outer surface, a nut positioned around the upper end of the tubular bushing and having an annular recess in which the bearing sleeve is positioned, said nut threaded in the upper end of the valve casing, a supply tube extended downwardly from the lower end of the valve casing, and a filter removably mounted in the valve casing and positioned in the said supply tube.

4. A sprinkler comprising a valve casing, a head having arms with spray nozzles on the ends thereof positioned in the upper end of the valve casing, said nozzles having frustro-conical shaped outer ends with outlet openings positioned in the conical surfaces thereof, spray tips with laterally positioned openings therein nested over the outer ends of the nozzles with the openings of the tips in registering relation with the outlet openings of the nozzles, a tubular bushing extended downwardly from the sprinkler head and through which the said head is journaled in the valve casing, a supply tube extended downwardly from the lower end of the valve casing, and a filter removably mounted in the valve casing and positioned in the said supply tube.

5. A sprinkler comprising a valve casing, a head having arms with spray nozzles on the ends thereof positioned in the upper end of the valve casing, said nozzles having frustro-conical shaped outer ends with outlet openings positioned in the

conical surfaces thereof, spray tips with laterally positioned round and rectangular shaped openings therein nested over the outer ends of the nozzles with the openings of the tips in registering relation with the outlet openings of the nozzles, a tubular bushing extended downwardly from the sprinkler head and into the valve casing, a bearing sleeve positioned on the outer surface of the bushing and through which the sprinkler head is journaled in the valve casing, said bushing having a thrust collar with openings therethrough on the lower end, a supply tube extended downwardly from the lower end of the valve casing, and a filter removably mounted in the valve casing and positioned in the said supply tube.

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