Feb. 2, 1965 S. W. THOMPSON 3,168,249

LAWN SPRINKLER

Filed June 26, 1963 2 Sheets-Sheet 1

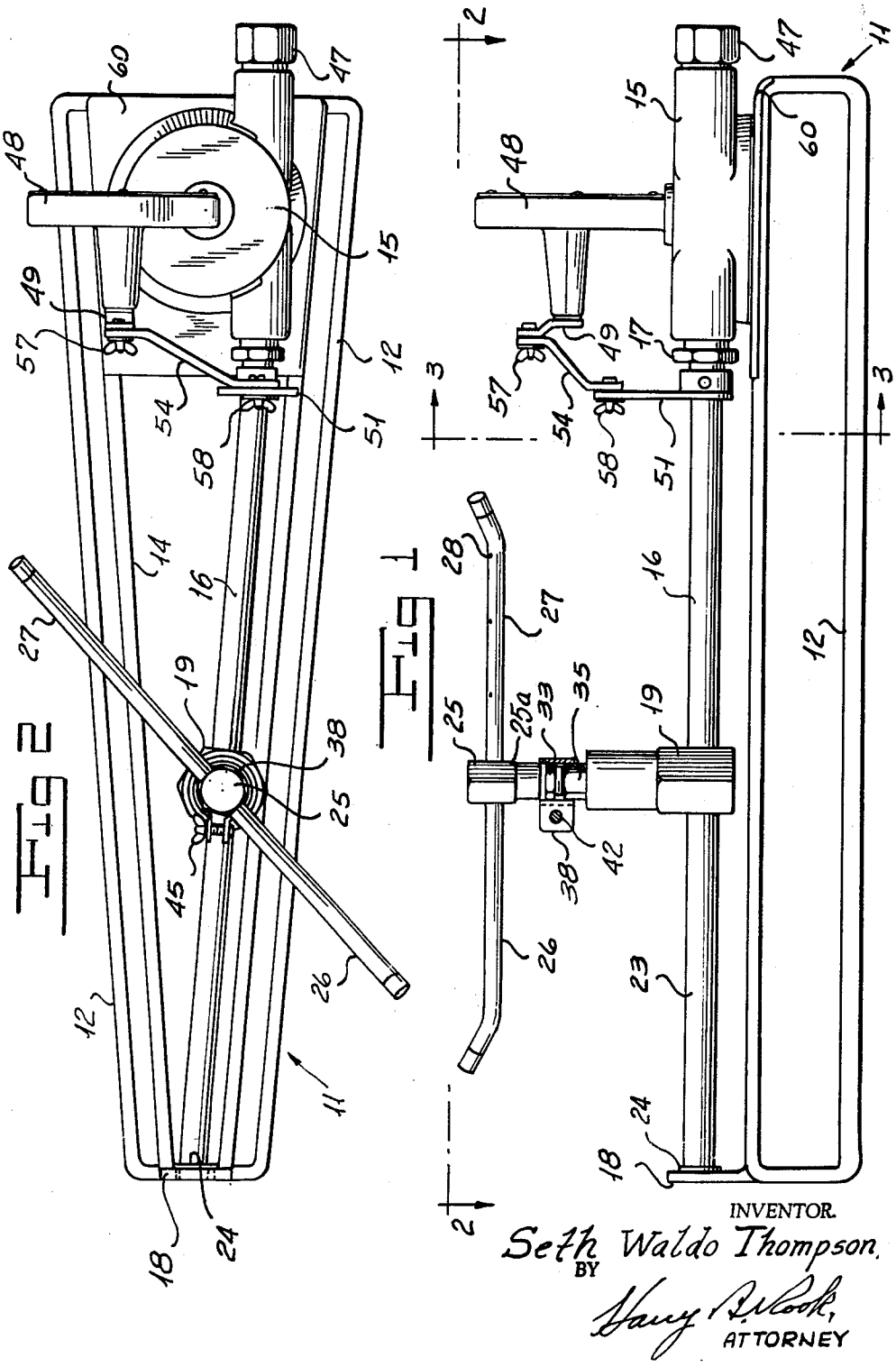


FIG 2

FIG 1

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LAWN SPRINKLER

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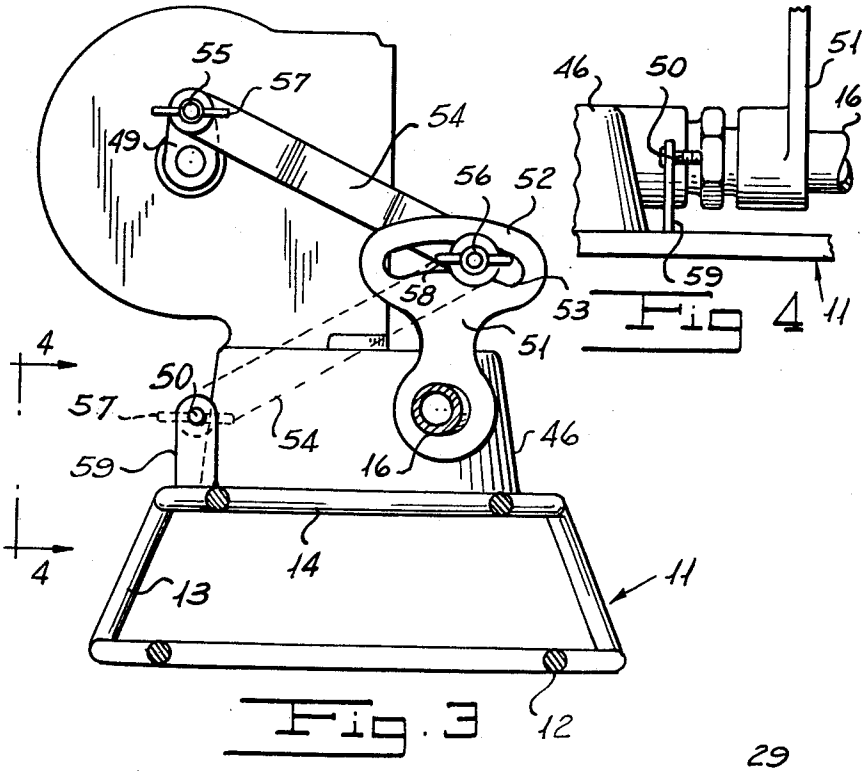


Fig. 3

Fig 4

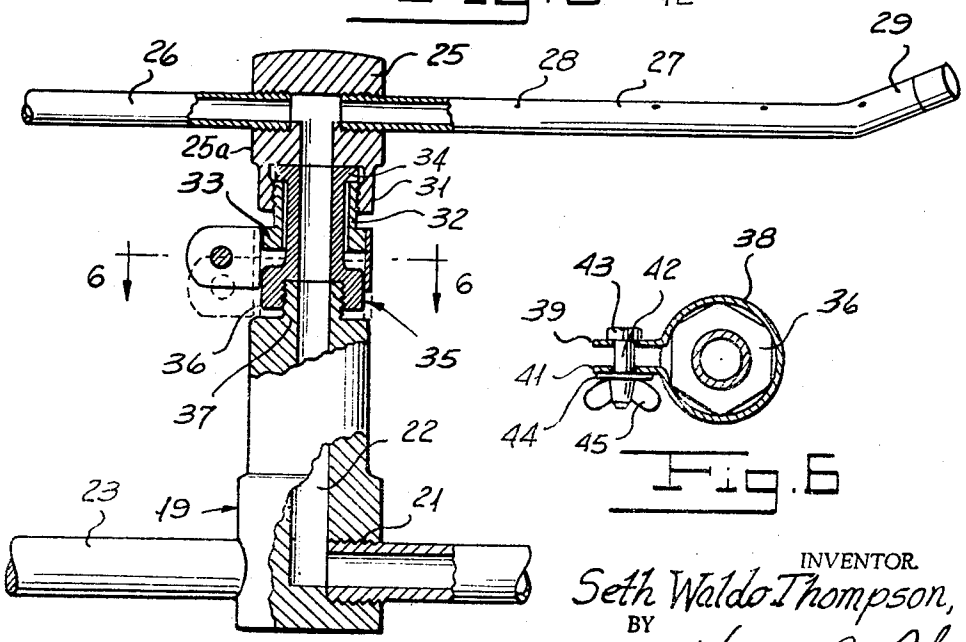


Fig. 5

Fig. 6

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LAWN SPRINKLER

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6 Claims. (Cl. 239—242)

One general object of the invention is to provide a lawn sprinkler having a sprinkler head which may be held stationary, may be rotated on a base, which also may be oscillated about an axis perpendicular to the axis of rotation while the sprinkler head is either stationary or rotating.

In accordance with my invention, the sprinkler head is mounted to rotate about a vertical axis on a supply pipe which is oscillatable by a water motor deriving its power from water passing therethrough on its way to the sprinkler head. The water motor is so connected to the supply pipe that said pipe may either be oscillated about a horizontal axis or locked in adjusted position. The rotary sprinkler head includes a body that has radially projecting sprinkler arms and is so mounted that it may be allowed to rotate or may be locked against rotation.

Thus, I have provided a sprinkler which may have a stationary or rotating sprinkler head mounted on a base which is supported on the pipe which supplies the water or other fluid to the sprinkler head, which pipe may be oscillated about its axis.

An object of my invention is the provision of an oscillatable-type lawn sprinkler having a rotatable sprinkler head which may, if desired, be held stationary.

Still another object of the invention is to provide a lawn sprinkler including a rotatable sprinkler body mounted to rotate about a vertical axis on a liquid supply pipe which may or may not be oscillated about a horizontal axis, the said body having a plurality of outwardly projecting sprinkler arms provided with water outlet apertures and there being means for holding said body stationary with the arms in different angular positions, whereby the sprinkler head may be adjusted to sprinkle areas of different widths depending upon the positions of the sprinkler arms.

These and other objects and advantages will become apparent from the following detailed description when taken with the accompanying drawings. It will be understood that the drawings are for purposes of illustration and do not define the scope or limits of the invention, reference being had for the latter purpose to the appended claims.

In the drawings, wherein like reference characters denote like parts in the several views:

FIGURE 1 is a side elevational view of a lawn sprinkler embodying my invention.

FIGURE 2 is a plan of the sprinkler of FIGURE 1, as on the line 2—2 thereof, in the direction of the arrows.

FIGURE 3 is a transverse sectional view on the line 3—3 of FIGURE 1, in the direction of the arrows.

FIGURE 4 is a fragmentary side elevational view on the line 4—4 of FIGURE 3, in the direction of the arrows.

FIGURE 5 is a fragmentary side elevational view corresponding to portions of FIGURE 1, but to an enlarged scale and with parts in axial section.

FIGURE 6 is a horizontal sectional view on the line 6—6 of FIGURE 5, in the direction of the arrows.

Referring to the drawings in detail, the present embodiment of my sprinkler comprises a supporting frame 11, which may be formed of steel bar stock shaped to provide a relatively long base 12, defined by said stock, and tapering to a smaller width from the right hand end toward the left hand end, as viewed in FIGURE 2. Upstanding from said base 12 are inwardly converging portions 13 connected by top frame members 14 which support a housing 15 at the wider or right hand end as viewed in FIGURE 1. In this housing is suitable means for oscillating the sprinkler supply pipe 16, one end of which is rotatably mounted with respect to the outlet of the housing by suitable means including a packing gland 17 at the right hand end, as viewed in FIGURES 1 and 2.

The other end of said supply pipe is also rotatably mounted with respect to the frame 11 as by being turnably received in a flange portion 18 upstanding from the frame 11. The supply pipe 16 extends to the sprinkler head base 19 and, as viewed in FIGURE 5, terminates after being threaded into said base, as indicated at 21, so that it may supply water or other liquid to the hollow interior portion 22 of said base. The continuation of the pipe 16, here designated 23, may or may not be hollow like the pipe 16. It carries a flange or collar 24 normally abutting the flange 18 to limit leftward movement of said pipe 16 with respect to the frame 11, as viewed in FIGURES 1 and 2.

The rotatable sprinkler head 25 includes a body 25*a* which is mounted to rotate about a vertical axis on the base 19 and carries a plurality of, in this instance two, radially oppositely projecting hollow sprinkler arms 26 and 27, both provided with water outlet apertures 28 and with ends which may be upturned, as indicated at 29. The arms communicate with a passage in the body which communicates with the hollow internal portion or passage 22 in the base. The apertures are so directed that they tend to cause rotation in the opposite direction of the body of head when water emerges therefrom. The head 25 has an annular flange 31 depending therefrom in which is threaded a collar or bushing 32, the lower end portion of which is enlarged as indicated at 33.

This collar 32 serves to retain the outstanding flange or collar 34 of a fitting 35 between it and the body 25*a* of the head 25, so as to rotatably mount the head on the base and prevent undesired disengagement between the parts. This fitting has an enlarged depending portion 36 which is threadably engageable with the reduced-section top portion 37 of the base 19. There is an adjustable sheet metal collar or clamp 38 having outstanding ears 39 and 41 apertured and through which passes a bolt 42. The head 43 of the bolt is engageable with the ear 39 and the other ear 41 is engageable by a washer 44 which may be held thereagainst by a thumb nut 45.

By virtue of this construction, upon loosening of the thumb nut 45, the head 25 is free to rotate as the collar 38 then drops down to the dotted line position shown in FIGURE 5 and releases the enlarged portion 33, which may be non-circular or hexagonal like the part 36 as viewed in FIGURE 6, to allow the whole head 25 to turn. When it is desired to stop the head from rotation, the collar 35 is raised to the position indicated in full lines in FIGURE 5, and the thumb nut 45 tightened. This engages the enlarged portions 33 and 36 and thereby locks the head 25 against rotation with respect to its base 19. It will be observed that the head 25 may be locked with the arms 26 and 27 in any desired angular relation to the horizontal axis of rotation, in the present instance, the supply pipe 16, and, depending upon the degree of the angle, areas of different widths may be sprinkled. For example, with the head set with the sprinkler arms parallel to supply pipe 16, the area sprinkled will be of the width greater than the distance between the outermost water outlet apertures of the sprinkler arms 26 and 27 while a much narrower area will be sprinkled when the sprinkler arms are set at the angle shown in FIGURE 2. When the arms are set perpendicularly to the supply pipe 16, the area sprayed will be extremely narrow, for

example, the distance between parallel rows of vegetables or flowers.

The details of the motor enclosed in the housing **15** are not part of the invention and, therefore, are not described in detail. Suffice to say that the lower portion **46** of the housing **15** may enclose a water-actuable device, such as a turbine or water wheel, blades of which are engaged by the water as it flows from the inlet connection **47** to the pipe **16**. This device may have a generally-vertical shaft carrying a worm which meshes with a suitable gear inside of the upper portion **48** of the housing, which gear is mounted on a shaft which carries at its outer end a crank **49** fixed thereto.

The sprinkler supply pipe **16** also carries a crank **51** fixed thereto, which crank desirably has an enlarged free end portion **52** in which is a desirably arcuate slot **53**. The cranks **49** and **51** may be joined by connecting rod **54**, end portions of which are here shown angular with respect to the intermediate portion, as viewed in FIGURE 2. These end portions are apertured and receive crank pins **55** and **56**, the former projecting from the crank **49**. The pin **56**, however, is carried by the rod **54**. These crank pins are respectively connected to the adjacent end of the rod **54** and the crank **51**, as viewed in FIGURES 1, 2 and 3, by thumb nuts **57** and **58** in a manner, well known in the art, which does not bind the connecting rod with respect to the crank pins. At the same time, it does not allow the rod to get loose from the pins to an undesired extent.

The connection between the rod **54** and the crank **51** is adjustable, in that the tightening of the thumb nut **58** may be at a selected position along the receiving slot **53**, so as to thereby adjust the angular position of the pipe **16** and thereby the corresponding position of the supported sprinkler head **25**. When it is not desired to oscillate the sprinkler head **25** and its supply pipe **16**, the connecting rod **54** is disconnected from the motor crank pin **55** and moved from the full line position to the dotted line position, as viewed in FIGURE 3 and, where a suitable threaded stud **50** or the like, holds the left hand end of the connecting rod locked in place with respect to a bracket **59** upstanding from the frame **11**, or from a plate **60** which may serve as a base for said housing **15**. The wing nut **57** may be screwed on the stud **50** to hold the connecting rod against unintentional disconnection from the stud. By adjusting the position of the pivot pin **56** in the slot **53** of the crank **51**, the pipe **16** may be rotated so as to dispose the axis of the rotary sprinkler head at the desired angle to the horizontal or the ground, and then with the sprinkler head held against rotation, the jets of water may be directed continuously to the desired area, for example, under a shrub.

From the foregoing disclosure it will be seen that the sprinkler described is versatile in that the head **25** and its arms **26** and **27** may be allowed to rotate while water is fed thereto through the inlet connection **47**, motor housing **15** and pipe **16**, while the motor oscillates said pipe. As an alternative, said sprinkler may rotate freely but without oscillation of said pipe, because of the change of the connecting rod **54** from the full to the dotted line position, as viewed in FIGURE 3.

As a further alternative, the head may be stopped from rotating by raising the collar or clamp **38** from the dotted line position to the full line position, shown in FIGURE **5**, and tightening the thumb nut **45**. This stoppage of rotation of the head **25** may take place to allow the water to flow out of the apertures **28** when the head is stationary or simply oscillated by operation of the water motor, when the connecting rod **54** is in the full line position of FIGURE 3. Thus, we have the option of rotating the head without oscillation, oscillating the head without rotation and with the sprinkler arms disposed at the desired angle, using both rotation and oscillation, or simply allowing the water to flow from a stationary head.

Although a single embodiment has been illustrated and described, it will be understood that modification may be made within the scope of the invention.

I claim:

1. A sprinkler comprising a supporting frame, a water motor including a housing on said frame having an inlet and an outlet and provided with a driving crank outside said housing, a sprinkler supply pipe mounted on said frame to oscillate about a horizontal axis and connected to said outlet to receive water therefrom, a driving connection between said crank and said sprinkler supply pipe to oscillate the latter, said driving connection including a plurality of interconnected parts one of which is separable from the others between said crank and said sprinkler supply pipe, a rotary sprinkler including a base carried by said sprinkler supply pipe and having a passage communicating with said sprinkler supply pipe, a sprinkler head including a body rotatably mounted on said base about an axis perpendicular to said horizontal axis of the sprinkler supply pipe and having means communicating with said passage in the base and providing water outlet apertures directed to cause rotation of the sprinkler head when water emerges under pressure from said apertures, means including coacting parts on said base and said body for selectively holding said sprinkler head against rotation, and means on said frame to which one of said parts of said driving connection is separably connectable between said crank and said sprinkler supply pipe for selectively holding said sprinkler supply pipe against oscillation and stationary with the axis of rotation of said sprinkler head in any of a plurality of angular relations to the horizontal axis of said sprinkler supply pipe.

2. A sprinkler as defined in claim 1 wherein said means communicating with the passage in the base and providing water outlet apertures comprising sprinkler arms projecting from said body, and said means for holding the sprinkler head against rotation includes means for selectively holding said body stationary with said arms disposed selectively at any of a plurality of angular relations to the horizontal axis of said sprinkler supply pipe.

3. A sprinkler as defined in claim 1 wherein said part of the driving connection between said driving crank and said sprinkler supply pipe comprises a connecting rod having one end separably connected to said driving crank, and said connection also includes a second crank on said sprinkler supply pipe and means adjustably connecting it to the other end of said connecting rod, and the first-mentioned end of the connecting rod is connected to said means on the frame upon disconnection of the connecting rod from said driving crank.

4. A sprinkler comprising a supporting frame, a water motor including a housing on said frame having an inlet and an outlet and provided with a driving crank outside said housing, a sprinkler supply pipe mounted on said frame to oscillate about a horizontal axis and connected to said outlet to receive water therefrom, a driving connection between said crank and said sprinkler supply pipe to oscillate the latter, a rotary sprinkler including a base carried by said sprinkler supply pipe and having a passage communicating with said sprinkler supply pipe, a sprinkler head including a body rotatably mounted on said base about an axis perpendicular to said horizontal axis of the sprinkler supply pipe and having sprinkler arms projecting radially from said body communicating with said passage in the base and formed with water outlet apertures directed to cause rotation of the sprinkler head when water emerges under pressure from said apertures, and means including coacting parts on said base and said body for selectively holding said sprinkler head stationary with said arms disposed at any of a plurality of angular relations to the horizontal axis of said sprinkler supply pipe.

5. A lawn sprinkler comprising a supporting frame, a housing mounted on said frame, a water motor in said housing, said housing having a water inlet connection to

said motor and an outlet, a sprinkler supply pipe mounted on said frame to oscillate about a horizontal axis and connected to said outlet to receive water therefrom, a driving connection between said motor and said supply pipe for oscillation of said pipe with respect to said frame, a rotary sprinkler member carried by said sprinkler supply pipe, including a sprinkler head having water outlet apertures directed to cause rotation of the sprinkler head when water emerges under pressure from said apertures, and means defining a water passage interconnecting said sprinkler head and said sprinkler supply pipe whereby said sprinkler supply pipe and said sprinkler head are simultaneously supplied with water under pressure.

6. A sprinkler comprising a supporting frame, a water motor including a housing on said frame having an inlet and an outlet and provided with a driving crank outside said housing, a sprinkler supply pipe mounted on said frame to oscillate about a horizontal axis and connected to said outlet to receive water therefrom, a driving connection between said crank and said sprinkler supply pipe to oscillate the latter, said driving connection including a plurality of interconnected parts one of which is alternatively connectable in the driving connection or to the

frame, means on said frame coactive with said one part of said driving connection for selectively holding said sprinkler supply pipe against oscillation and stationary in a selected position directed in any of a plurality of angles relative to the horizontal axis of said supply pipe, and means carried by the sprinkler supply pipe carrying means defining water outlet apertures.

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