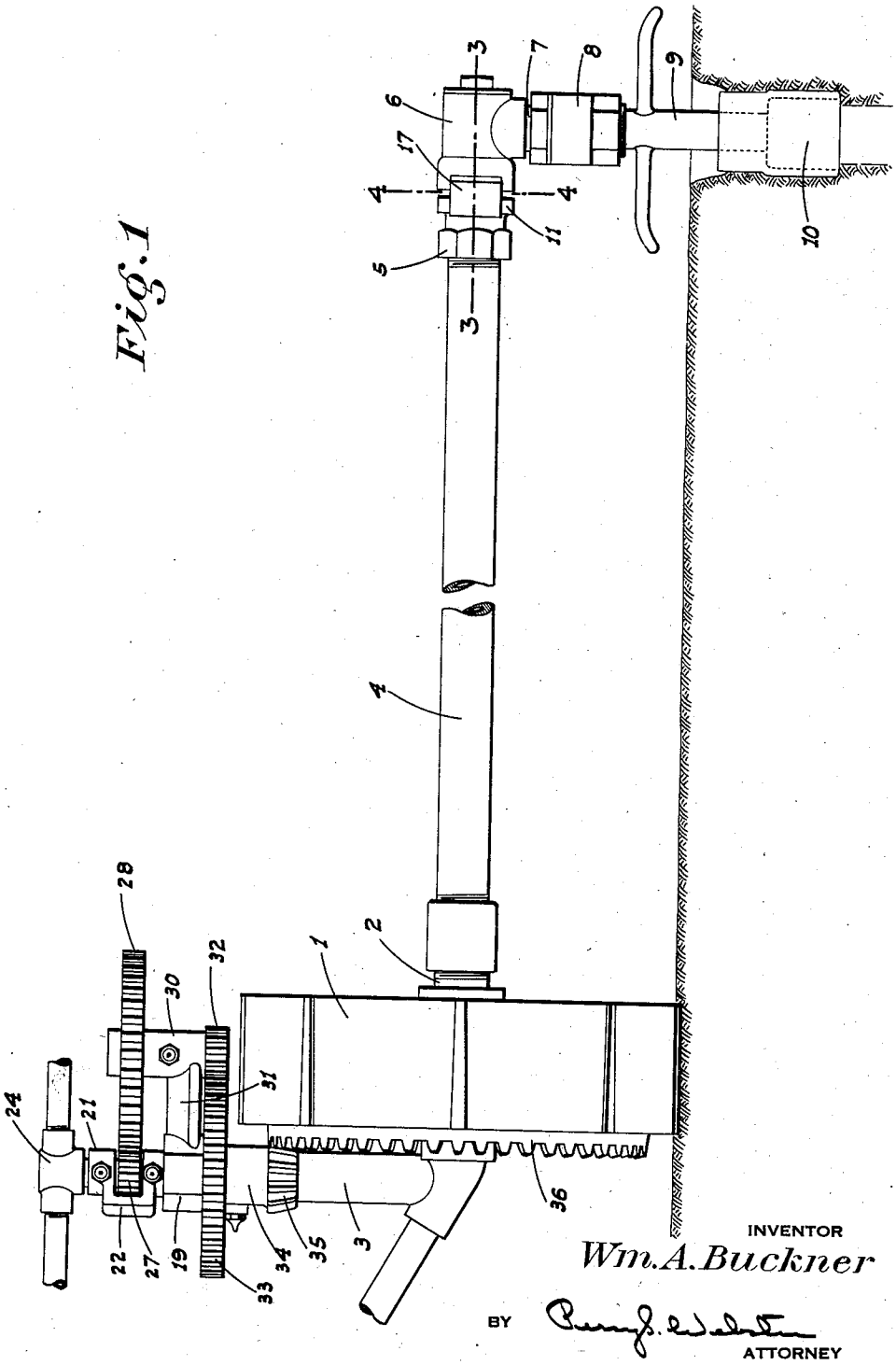
March 30, 1937. W. A. BUCKNER 2,075,336

TRAVELING SPRINKLER

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Fig. 1



INVENTOR

Wm. A. Buckner

BY

ATTORNEY

March 30, 1937. W. A. BUCKNER 2,075,336

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Fig. 2

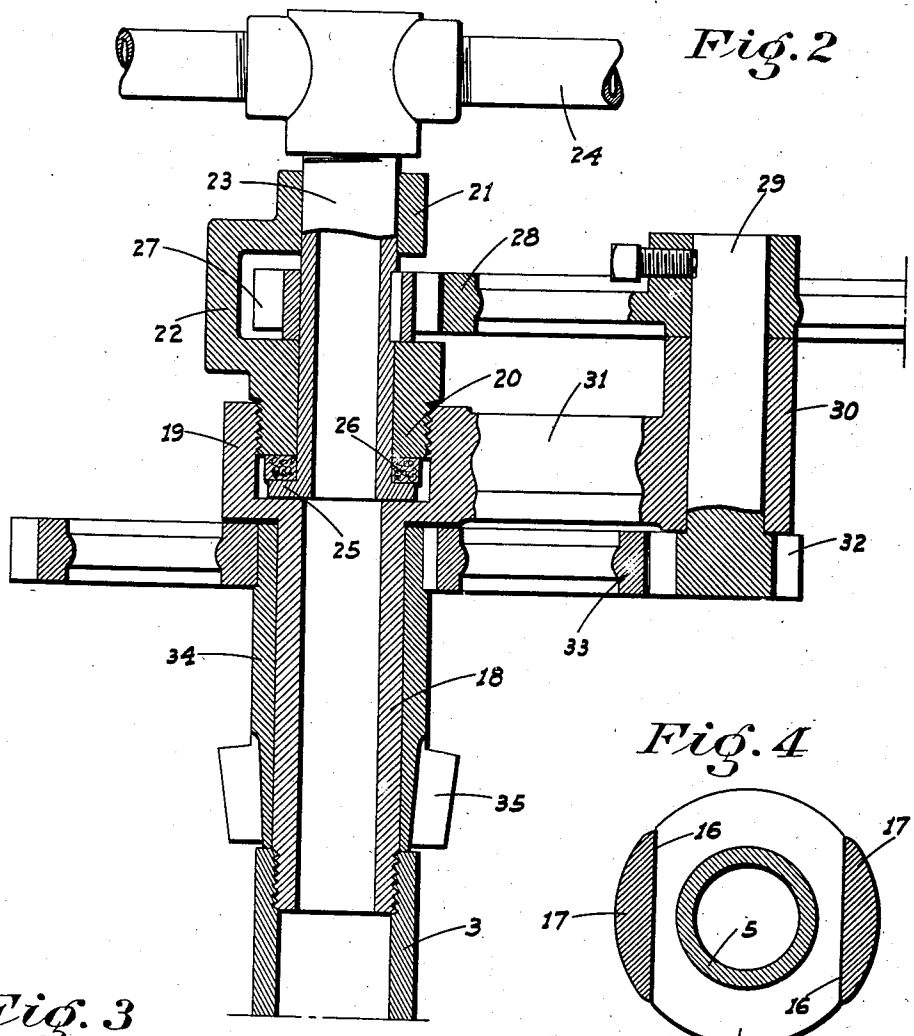
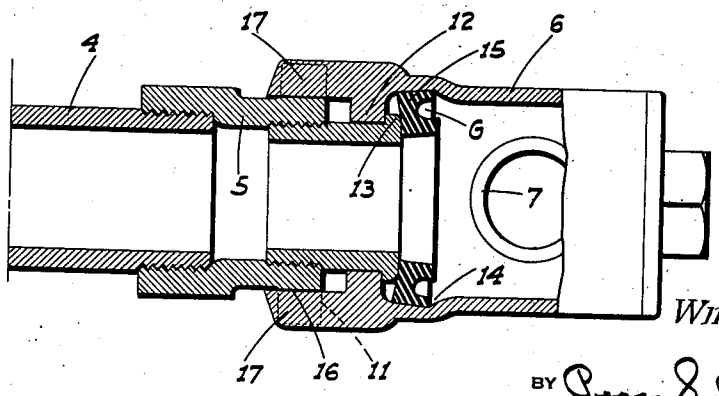


Fig. 4

Fig. 3



INVENTOR

Wm. A. Buckner

BY

ATTORNEY

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TRAVELING SPRINKLER

William A. Buckner, Fresno, Calif.

Application April 15, 1935, Serial No. 16,376

5 Claims. (Cl. 285—2)

This invention relates to traveling rotary sprinklers of that type which include a ground bearing wheel which directly supports the sprinkler unit, and a combination supply pipe and supporting arm projecting axially from the wheel and connected at its outer end to a vertical swivel connection which in turn is connected to a source of supply. Such a sprinkler is shown for instance in my copending application for patent, Serial No. 703,874, filed December 26, 1933, the present invention dealing particularly with the connection of the horizontal supply pipe with the swivel coupling.

It frequently happens that an area being watered has undulations at various points, so that the path engaged by the wheel in its travel about the swivel connection as an axis varies relative to the level of said connection. Since the arm or pipe extending between the wheel and connection is necessarily rigid, this change of level of the wheel tends to bind the swivel joint, preventing its desired and necessary freedom of rotation.

It is therefore the principal object of this invention to eliminate this binding action by the provision of a vertically yieldable connection between the supply pipe and the swivel unit, so that the movement of the pipe due to any change of level of the wheel within reasonable limits will not be imparted to the swivel spindle to bind the same. At the same time a water-tight connection between the pipe and said unit is maintained at all times.

In addition to this important feature, the construction of the sprinkler itself has been simplified over what is shown in the above mentioned copending application as will be obvious from the description now to follow.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of my improved sprinkler and mounting unit.

Figure 2 is an enlarged sectional elevation of the sprinkler unit detached.

Figure 3 is a sectional plan of the swivel coupling unit taken on the line 3—3 of Figure 1.

Figure 4 is a cross section on the line 4—4 of Figure 1.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes the ground engaging wheel of the sprinkler which is turnable on a horizontal spindle 2 which, beyond and adjacent the outer face of the wheel, is formed with an upstanding water passage member 3. The spindle beyond the inner face of the wheel is connected to a length of rigid pipe 4. This pipe at its opposite end is secured to a tubular unit 5 which projects into a housing 6. This housing is supported by a depending tubular spindle 7 which is turnably mounted in a body 8 with a water-tight fit in any suitable manner, such as for instance that shown in my Patent No. 1,996,899, dated April 9, 1935. This body is adapted for connection to a stationary source of water supply under pressure, which may be either underground or surface.

In the present instance the body 8 is shown as being connected to a tubular spindle 9 depending therefrom, which is adapted to be removably coupled with an underground coupling and valve unit 10, preferably that shown in my Patent No. 1,996,900, dated April 9, 1935. The wheel may thus travel through a circular path about the spindle 7 as an axis.

The unit 5 while actually made in two parts on account of manufacturing requirements is in effect a single element and will be so considered. It is provided intermediate its ends and outwardly of the housing 6 with an enlarged flange 11; the unit beyond the flange projecting through the adjacent end wall 12 of the housing with a somewhat loose fit so as to permit of a limited amount of vertical play of the unit relative to the housing. Inwardly of the wall said unit terminates in an enlarged flange 13 which engages the inner face of said wall about the opening therein.

Pressed into a circumferential recess 14 formed in the housing adjacent said end wall, is a heavy resilient rubber washer 15. This washer is inserted through the opposite end of the housing after the unit 5 is in place and overlaps the flange 13 to not only snugly engage the same with a water-tight fit, but also yieldably pressing the same against the end wall 12. The washer is provided with a relatively deep circumferential groove G on its outer face, or that which is exposed to the water pressure, so that such pressure tends to expand the washer against the wall of the recess 14 to insure a water-tight fit therewith at all times.

The flange 11 is cut away on opposite sides in

straight parallel relation, as shown at 16, the straight portions of the flange being engaged in guiding relation by flat lugs or ears 17 projecting outwardly from the opposite sides of the housing. In this manner the pipe 4 is positively held from turning or from horizontal movement relative to the housing and yet can have limited swivel movement in a vertical direction; the possible amount or angle of such movement being determined by the spacing of the flange 11 from the adjacent end of the housing as well as of course by the relative size of the member 5 where it passes through the end wall 12 and the opening in said wall.

With such movement the flange 13 is tilted inwardly of the housing and away from the end wall 12 either at the top or bottom as the case may be, and temporarily distorts the corresponding portion of the resilient washer. Said washer however still remains engaged with the flange 13 and with the wall of the recess 14 throughout its extent so that no leakage of water can occur.

The passage member 3 at its upper end, which is below the top of the wheel 1 is secured to the lower end of an upstanding relatively small passage extension 18 which terminates above the top of the wheel in an enlarged tapped head or socket 19. Screwed into the head is a boss 20, another boss 21 being upwardly spaced therefrom; said bosses being connected on one side by an integral member 22 so that a rigid bearing unit of substantially U-shape form is provided. These bosses form spaced bearings for a tubular spindle 23 on the upper end of which a sprinkler nozzle head 24 of suitable character is removably mounted. The lower end of the spindle has an enlarged flange 25 disposed inside the head 19 under the boss 20, a water sealing gasket ring 26 being disposed about the spindle between said flange and the boss 20.

A pinion 27 is secured to the spindle between the bosses, this pinion engaging a gear 28 overhanging the wheel 1. This gear is fixed on a depending shaft 29 journaled in a bearing 30 formed integral with a supporting arm 31 which projects radially from and is integral with the head 19. The lower end of this shaft below the arm is formed with a pinion 32. This pinion engages a gear 33 fixed on a sleeve 34 which is turnable on and extends lengthwise of the extension 18 between the head 19 and the upper end of the member 3; these parts preventing vertical movement of said sleeve without interfering with its rotation. The lower end of this sleeve is formed with a bevel pinion 35 engaging a bevel gear 36 formed on the adjacent face of the wheel 1.

By means of this construction it will be seen that with the rotation of the spindle 23 due to water passing under pressure through the nozzle unit, the gear 28 will be rotated at a relatively slow speed. This in turn imparts rotation at a still slower speed to the gear 33 and pinion 35, so that the wheel is also rotated.

With a sprinkler unit construction as above described a very compact, simple and strong arrangement is provided. The drive being taken from the spindle 23 between its bearings, any tendency to binding is eliminated without the necessity of employing very long bearings. Also it is very easy to remove the spindle for replacement of the washer if necessary, without having to first shift the member 3 outwardly relative to the wheel as was previously the case.

As will be clear from Figure 2, the pinion 27 and gear 28 are removably mounted on their respective axial supports. By reason of this arrangement, other pinion and gear units, having different relative proportions, may be used if it is desired to alter the speed of travel of the ground bearing wheel without altering the speed of rotation of the nozzle spindle.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. A water supply and coupling device for a rotary traveling sprinkler comprising a rigid substantially horizontal supply pipe adapted for connection at one end to the sprinkler, a relatively fixed vertical and rotatable supply spindle at the other end of the pipe, a housing member rigid with the upper end of the spindle and having a vertical wall, a tubular member mounted on said other end of the pipe and projecting loosely through said wall, whereby said member may have limited swivel movement relative to the housing, means between the housing and member confining such movement in a vertical plane, and water sealing means between the housing and member and functioning irrespective of relative movement between the housing and member.

2. A water supply and coupling device for a rotary traveling sprinkler comprising a rigid substantially horizontal supply pipe adapted for connection at one end to the sprinkler, a relatively fixed vertical and rotatable supply spindle at the other end of the pipe, a housing member rigid with the upper end of the spindle and having a vertical wall, a tubular member mounted on said other end of the pipe and projecting loosely through said wall, whereby said member may have limited swivel movement relative to the housing, said member outwardly of said wall being vertically flattened on opposite sides, lugs projecting from the housing and engaging the flattened portions in guiding relation, and yieldable water sealing means between the housing and the member inside of the housing.

3. A water supply and coupling device for a rotary traveling sprinkler comprising a rigid substantially horizontal supply pipe adapted for connection at one end to the sprinkler, a relatively fixed vertical and rotatable supply spindle at the other end of the pipe, a housing member rigid with the upper end of the spindle and having a vertical wall, a tubular member mounted on said other end of the pipe and projecting loosely through said wall, whereby said member may have limited swivel movement relative to the housing, means between the housing and member confining such movement in a vertical plane, an enlarged flange on the end of the member inside the housing and engaging the adjacent face of the end wall, and a resilient rubber washer pressed into the housing and engaging the inner end of the member in water sealing relation to yieldably hold said flange against the wall.

4. A coupling device for a rotary traveling sprinkler comprising a relatively fixed vertical water supply spindle, a rigid supply pipe extend-

ing from the spindle and adapted at its outer end for connection to a sprinkler, and horizontally rigid swivel connecting means between the spindle and the adjacent end of the pipe arranged to allow of limited vertical movement only of said pipe.

5. A coupling comprising a housing open at one end, a tubular member projecting loosely into the open end of the housing whereby said member and housing may have relative lateral movement, and opposed flat cooperating parallel surfaces on said member and housing to limit such movement to one plane only.

WILLIAM A. BUCKNER.