

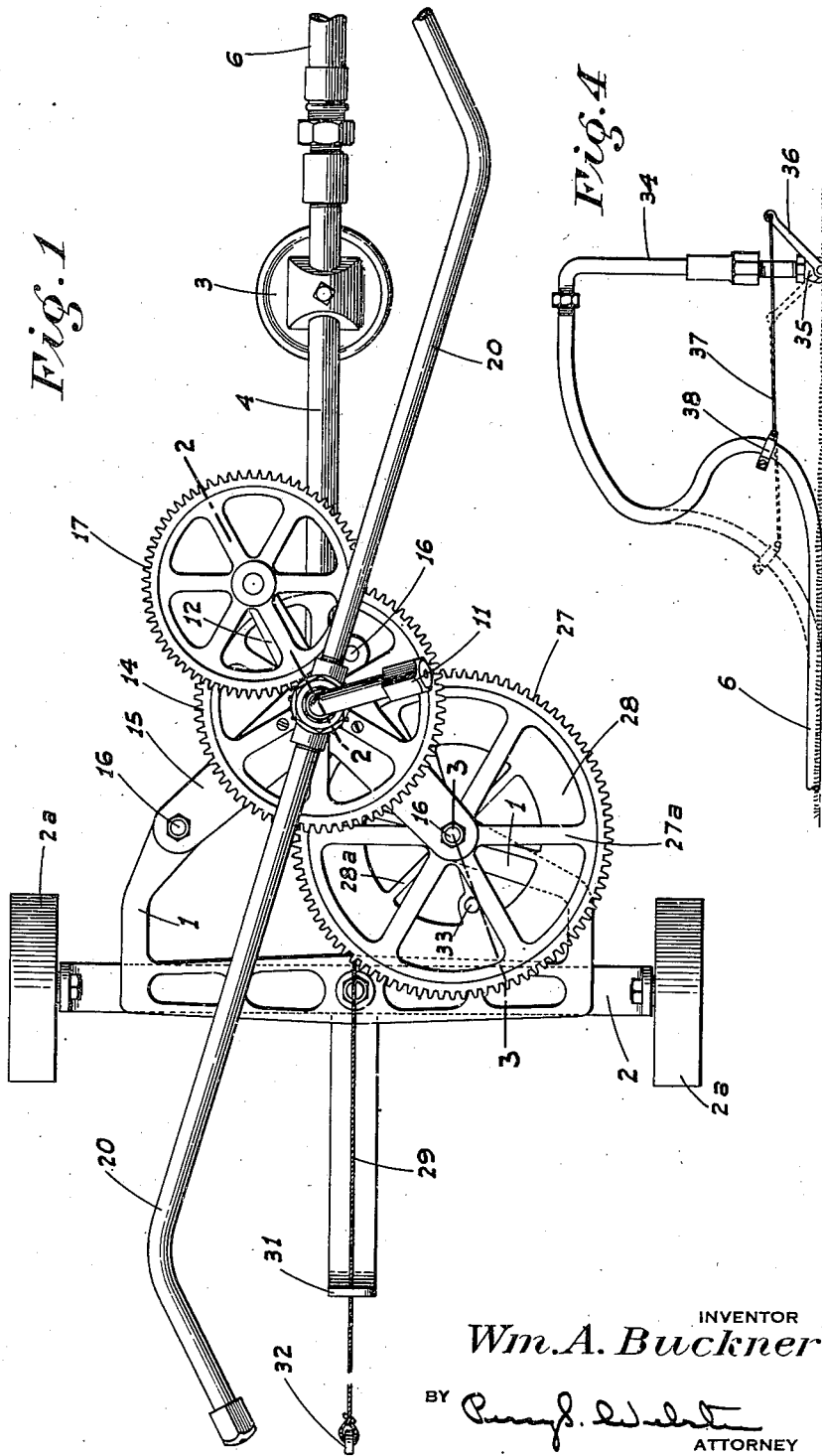
Sept. 3, 1935.

W. A. BUCKNER
TRAVELING SPRINKLER

2,013,233

Filed Dec. 18, 1933

3 Sheets—Sheet 1



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3 Sheets-Sheet 2

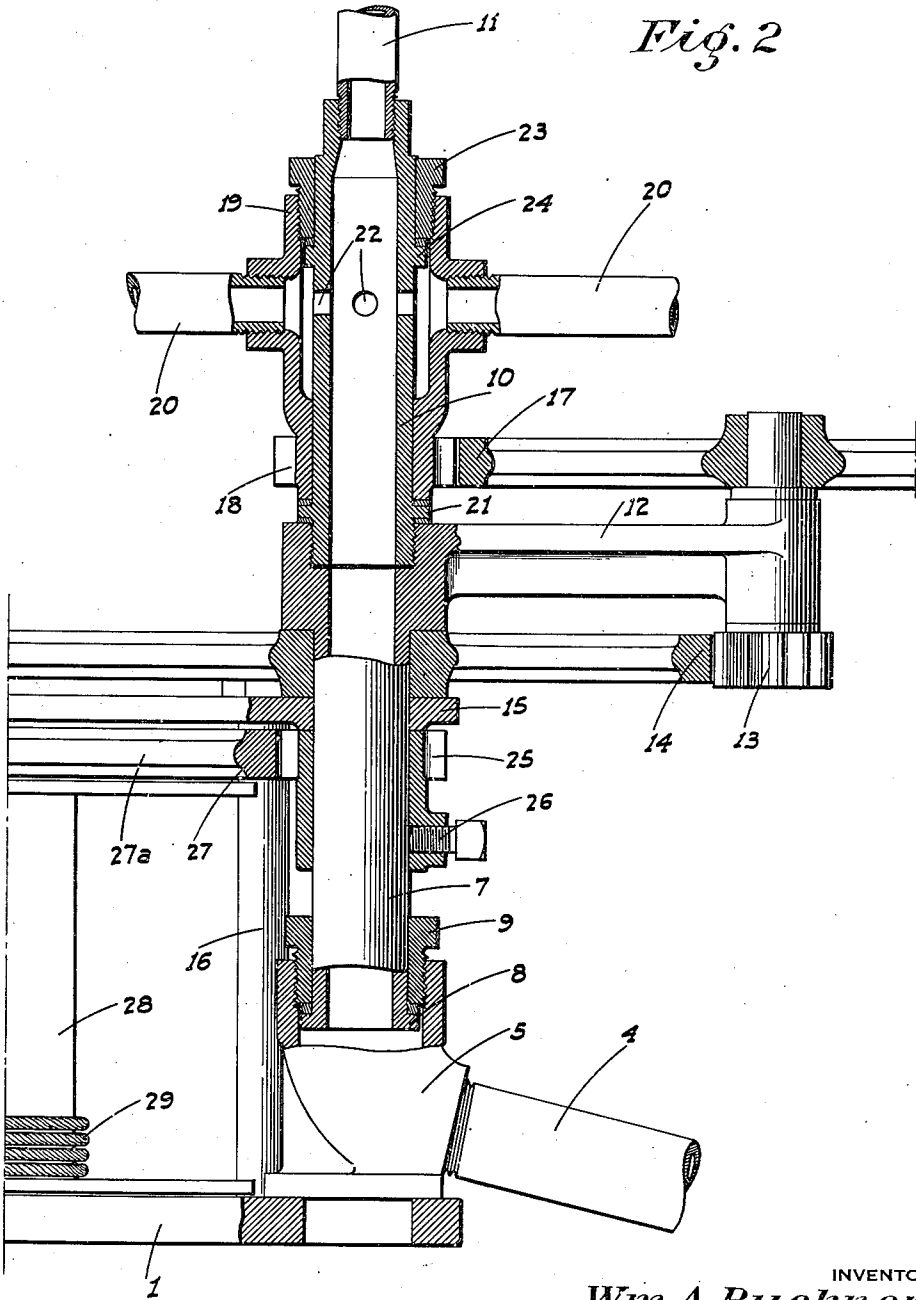


Fig. 2

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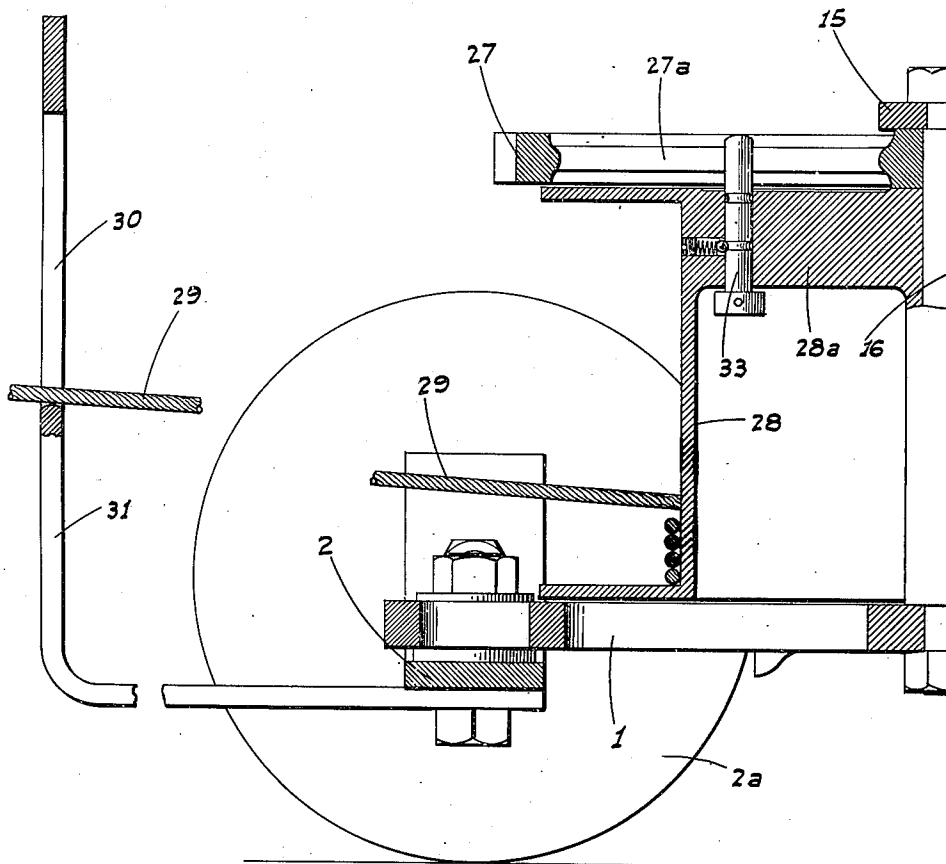
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Fig. 3



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TRAVELING SPRINKLER

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2 Claims. (Cl. 299—50)

This invention relates to traveling sprinklers for large areas such as golf courses, my principal object being to provide a sprinkler of this general character which will move of itself in a straight line for a predetermined distance, while at the same time throwing a rotary spray on both sides of its line of travel as well as centrally along such line. In this manner rectangular areas such as straight golf fairways may be watered more evenly and efficiently than by the use of circularly traveling sprinklers or fixed rotary sprinklers, since the corner portions of the area are either missed by a rotary sprinkler or the like, or the sprays must project over into the rough in order to catch the corner portions.

This object 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 top plan view of the sprinkler.

Figure 2 is an enlarged fragmentary vertical section on the line 2—2 of Figure 1.

Figure 3 is a similar view on the line 3—3 of Figure 1.

Figure 4 is a somewhat diagrammatic elevation showing the means for shutting off the water.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a base frame swivelly supported at its forward end clear of the ground on a truck 2 having a single pair of widely spaced wheels 2a. The rear end of the frame is indirectly supported from the ground by a ground engaging shoe 3 adjustably mounted on a rigid length of pipe 4 which trails from the frame 1 and is mounted in an upwardly facing elbow fitting 5 rigidly secured on said frame. A flexible hose 6 of a length equal at least to one-half the distance the sprinkler is to travel is connected to the rear end of the pipe.

Projecting upwardly from the fitting 5 is a tubular spindle 7 having an annular flange 8 on its lower end engaged by a thrust nut 9 in the upper end of the fitting. An extension spindle 10 is connected to and projects upwardly from the spindle 7, the two spindles in operation being a rigid unit and being made separate merely on account of the necessities of manufacture and assembly. An upwardly and laterally projecting main nozzle pipe 11 is secured in the top

of the spindle 10 to spray a ringlike area of large radius.

Rigid with the spindle 7 at its upper end is a radial arm 12 turnably mounted on the outer end of and under which is a pinion 13. This pinion engages a gear 14 concentric with the spindle 7 and secured against turning on an upper frame member 15. This member is rigidly connected to and held definitely spaced from the frame 1 by suitably disposed posts 16 therebetween.

Fixed with the pinion 13 above the arm 12 is a gear 17 meshing with a pinion 18 formed on a sleeve 19. This sleeve is turnably mounted on the spindle 10 and carries a pair of opposed radially projecting reaction nozzle arms 20, which spray the area adjacent the sprinkler, or inside the area sprayed by nozzle 11. At its lower end the sleeve closely engages the spindle 10 and is supported on a flange 21 projecting outwardly from said spindle just above the arm 12. Intermediate its ends, especially in the plane of connection of the nozzle arms therewith, said sleeve is spaced from the spindle somewhat so as to permit water to freely flow to the nozzle arms from the interior of said spindle by means of openings 22 in the latter. The sleeve is prevented from upward movement and a water-tight fit with the spindle obtained by a packing nut 23 secured in the sleeve and cooperating with a shoulder 24 projecting outwardly from the spindle 10 below said nut.

Mounted on the spindle 7 below the frame 15 is a pinion 25 which may if desired be yieldably held against rotation by a set screw 26. This pinion meshes with a gear 27 turnable on one of the posts 16. Below said gear and separate therefrom is a drum 28, also turnable on said post and on which a cable 29 is wound, the drum being supported on the base 1 while the gear 27 is supported on the drum.

One end of the cable is anchored on the drum from which it passes forwardly and through a guide slot 30 in a vertical arm 31 mounted on the forward end of the truck to a connection with a ground anchor or spike 32. This spike is removably disposed in the ground and is placed in the desired position by the operator whenever the sprinkler is to be used. The arm 31 is disposed ahead of the wheels of the truck and in a plane centrally therebetween, the periphery of the adjacent side of the drum also lying in said plane.

The drum and gear 27 are releasably brought into driving engagement with each other at will by a vertical pin 33 adjustably mounted in one

spoke 28a of the drum and adapted to project upwardly therefrom to extend in the path of rotation of any of the spokes 27a of the gear 27. Thus when the pin is raised, the gear will drive the drum but when the pin is lowered the gear can turn free of the drum, allowing the latter to be rotated in either direction to either rapidly wind or unwind the cable. The above described gear arrangement reduces the speed of rotation of the drum from that of the sleeve 19 to a very great extent, or so that the sprinkler will travel only about from 25 to 30 feet per hour.

In operation the sprinkler is disposed at the desired starting point, the drum is allowed to run free and the cable is pulled out from the same for a length desired for the operation of the sprinkler. The spike is then set in the ground. When water is fed to the nozzle arms 20 the rotation of the sleeve to which they are attached imparts rotation to the gear 17 and thence to the pinion 13. The pinion 13 engaging the stationary gear 14, the arm 12 and the spindles 7 and 10 to which said arm is connected rotate also, causing the nozzle 11 to throw a spray through a circular path. At the same time the pinion 25 is of course rotating which, being meshed with the gear 27, causes the drum to be rotated when the pin 33 is disposed in the path of the gear spokes. The direction of rotation of the sleeve 19 is of course governed by the setting of the nozzle arms 20 so that the drum will rotate in a direction to cause the cable to be wound thereon. Therefore as the water issues from the nozzle arms 20 the sprinkler as a whole moves forward in a straight line toward the anchor 32, the swivel truck on which the same is mounted in connection with the cable guiding slot assuring a straight movement of the sprinkler without deviation. As soon as the arm 31 reaches the anchor of course the sprinkler can travel no further. The nozzle arms 20 would be held stationary, throwing the water in one spot only, unless the set screw 26 were arranged to then slip to permit rotation of the nozzle arms. Even then however the water would of course be directed in the same circular path until the operator shut off the water.

It is therefore highly desirable that the water shall be automatically shut off as soon as the sprinkler reaches the end of its limit of travel as above described. To accomplish this I provide the following means.

The outer end of the hose 6 is connected to an elbow fitting 34 which is swivelly connected to the intake pipe which has a valve 35 therein connected to the underground source of supply. This valve is of the type adapted to be opened or closed by a movement of a control handle through an arc of less than a complete revolution. To this arm I apply a pull wire 37 or the like which extends to a band 38 adjustably clamped on the hose at a point near the valve. To make this device effective a bend is initially left in the hose adjacent the valve as shown in Figure 4, the clamping band being engaged with the hose beyond the bend. The wire is taut between the bend and the valve arm when the latter is open. Then when the bend is finally straightened out by the

straightening of the hose due to the drag of the sprinkler thereon as the latter reaches its limit of travel, the wire 37 pulls the valve handle 36 to a closed position.

Though the valve here shown is one of the conventional plug form, it may be of any suitable type, such as that shown in my Patent No. 1,762,503, dated June 10, 1930. In any event it is evident that the action will be the same.

It will be noted that the center nozzle 11 is considerably larger than the reaction nozzles 20, and that the water can flow straight through the spindle to this nozzle with a minimum of frictional loss, enabling a great volume of water to be projected a greater distance than the smaller streams issuing from the relatively restricted and back-pressure creating nozzles 20.

Therefore, since the nozzle 11 only makes one revolution for every considerable number of revolutions of the reaction nozzles, it throws water over a much wider and greater area. Also, by reason of the slow rotation of the main nozzle, there will be no drag-off of the stream where it issues from the nozzle as would be the case if it were rotated rapidly.

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 traveling sprinkler comprising a rotary sprinkler unit, a wheeled truck supporting the unit for movement along the ground, a cable drum turnably mounted in connection with the truck, an anchor to which the cable from the drum is connected adapted to be secured to the ground in the direction of possible movement of the truck, a gear disposed axially of the drum in close relation thereto but separate therefrom, said gear and drum having spokes with openings therebetween, gearing connections between the sprinkler unit and the gear, and a pin mounted in one of the drum spokes parallel to its axis and movable longitudinally at will to be projected into or moved clear of the path of movement of the gear spokes.

2. A traveling sprinkler comprising a rotary sprinkler unit, a base on which said unit is mounted, means supporting the rear end of the base from the ground, a wheeled truck on which the front end of the base is swivelly supported, a cable drum turnably mounted on the base, means between the drum and unit to rotate the drum with the rotation of the unit, a vertical arm on the truck ahead of the wheels thereof and having a slot, the cable from the drum extending through the slot, and means to releasably anchor the forward end of the cable to the ground.

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