

J. L. OAKES.

PUMP.

APPLICATION FILED JAN. 23, 1911.

1,019,272.

Patented Mar. 5, 1912.

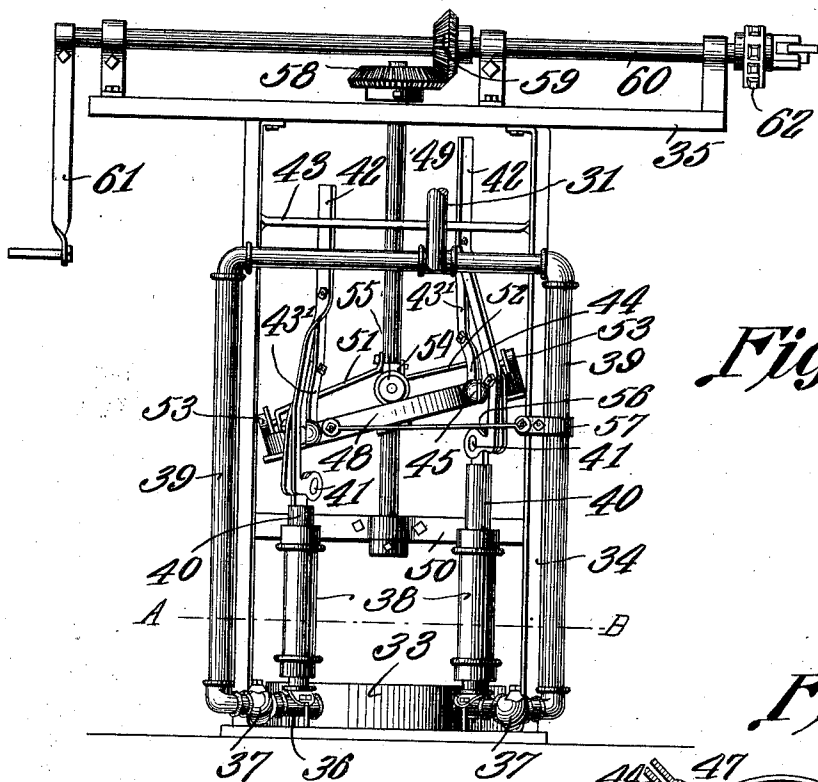


Fig. 1.

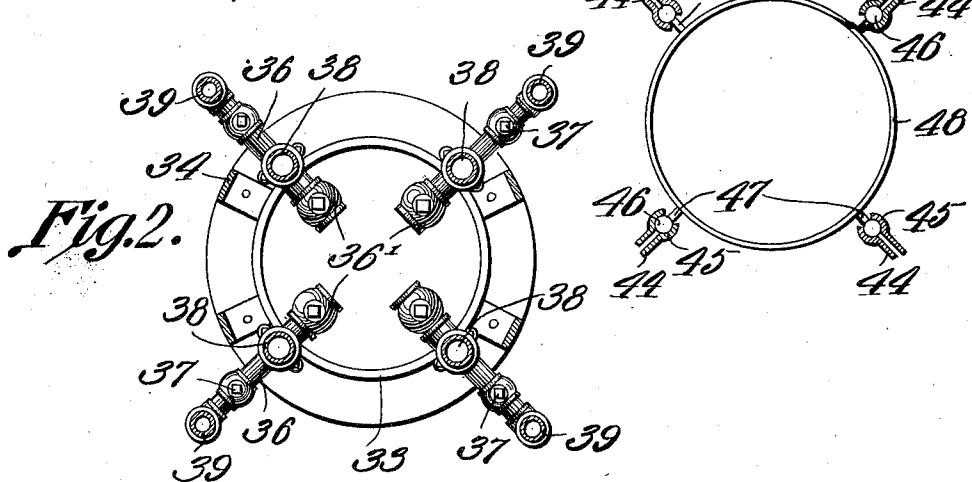


Fig. 2.

Fig. 3.

Witnesses

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JOHN L. OAKES, OF KIMBERLY, IDAHO.

PUMP.

1,019,272.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed January 23, 1911. Serial No. 604,184.

To all whom it may concern:

Be it known that I, JOHN L. OAKES, a citizen of the United States, residing at Kimberly, in the county of Twin Falls and State of Idaho, have invented a new and useful Pump, of which the following is a specification.

This invention relates to pumps for use in connection with machines for spraying trees, vines, and the like, one of the objects of the invention being to provide a multiple cylinder pump of novel form adapted to be housed within a tank containing the solution to be sprayed, said pump including novel means whereby the pistons thereof will be successively actuated so as to produce a continuous discharge of solution.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings, the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a rear elevation of the pump, the same being removed from the tank of the machine. Fig. 2 is a section on line A—B Fig. 1. Fig. 3 is a plan view of the wobble ring, adjacent parts being shown in section.

Referring to the figures by characters of reference 33 designates a base ring having standards 34 adapted to be attached to the top 35 of a tank or the like. The base ring 33 may be mounted on the bottom of the tank or, if preferred, the standards 34 may be suspended from the top 35 and thus constitute hangers for supporting the ring 33.

Arranged within the tank 1, preferably upon the bottom thereof, is a base ring 33 having standards 34 attached to the top 35 of the tank. It is to be understood, however, that if preferred, these standards 34 may be suspended from the top and thus constitute hangers for supporting the ring 33.

Arranged radially within the ring 33 are pipes 36 each of which opens into the space surrounded by the ring and is provided at its inlet end with a check valve 36' while

another check valve 37 is located adjacent the outer end of the pipe 36. A cylinder 38 opens into each pipe 36 at a point between the two check valves and the outer ends of said pipes 36 are connected, by means of pipes 39 to an outlet pipe 31. Each cylinder 38 has a piston 40 mounted to reciprocate therein, each piston being pivotally connected, as at 41, to a forked rod 42 mounted to reciprocate within a guide ring 43 secured to the upper portions of the standards 34. A hanger 43' is secured to and extends downwardly from each of the rods 42 and has a forked lower portion, as indicated at 44, said lower portion forming oppositely disposed socket members 45. These socket members receive between them ball-like heads 46 formed at the ends of studs 47 which studs project radially from a wobble ring 48. This ring extends around a drive shaft 49 journaled at its upper end within the top 35 and at its lower end within a cross bar 50 supported by two or more of the standards 34. An arm 51 extends from the shaft 49 at a point above the ring 48 and is inclined downwardly at an acute angle to the shaft. Another arm 52 extends in the opposite direction from the shaft and along lines parallel with the arm 51, both of these arms 51 and 52 carrying flange rollers 53 designed to bear downwardly on the upper edge of the ring 48. Oppositely extending horizontal arms 54 extend radially from the shaft 49 at points equidistant from the arms 51 and 52, each of these arms 54 carrying rollers 55 similar to the rollers 53 heretofore referred to and which also bear downwardly on the ring 48. As these rollers 53 and 55 are located at different distances from the base ring 33 it will be apparent that they serve to maintain the ring 48 constantly at an angle to the shaft 49. Said ring, however, is held against rotation by the engagement of heads 46 with the socket members 45 and by a link 56 connecting the ring with a clip 57 secured to one of the pipes 39.

A gear 58 is secured to the upper portion of the shaft 49 and meshes with a gear 59 secured to a shaft 60. This shaft extends transversely of the tank and may be provided at one end with a crank 61 or the like whereby it can be rotated by the operator. A sprocket 62 is connected to the other end of the shaft and receives motion from any desired source of power.

In using the machine motion is transmitted through sprocket 62, and the gears 59 and 58 to the shaft 49. As the arms 51, 52, and 54 are fixed relative to the shaft 49 and are disposed in peculiar relation thereto which has been set forth, it will be apparent that as the shaft rotates and the ring 48 cannot rotate, said ring will be given practically the same movement as that of a wabblor thus operating successively to reciprocate the pistons 40. During the up strokes of the pistons, portions of the solution will be drawn into the pipes 36 and during the down strokes thereof the solution thus drawn into the pipes will be forced past the check valves 37 and into the pipes 39 and thence to pipe 31, the check valves 37 obviously preventing the fluid from returning.

What is claimed is:—

1. In apparatus of the class described a pump including separate cylinders, pistons mounted for reciprocation therein, a guide, members pivotally connected to the pistons and mounted to reciprocate within the guide, a nonrotatable wabble ring, universal connection between the periphery of said ring and the respective members and constituting the sole supports of the ring, and an inclined series of spaced rollers mounted for rotation within the ring and bearing downwardly thereon for wobbling the ring to successively shift the pistons in one direction.

2. In apparatus of the class described a pump including a base, cylinders upstanding therefrom, pistons mounted for reciprocation within said cylinders, a guide, members movably connected to the pistons and mounted to reciprocate within the guide, a wabble ring, means for holding the ring

against rotation, universal connections between the periphery of the ring and the said members and constituting the sole supports of the ring, a driving element extending through the ring, and anti-friction devices supported at different distances from the base and fixed relative to each other, said devices being movable with said element for wobbling the ring to successively move the pistons in one direction during the rotation of said drive element, said anti-friction devices being mounted in a plane oblique to the axis of rotation of the driving element.

3. Apparatus of the class described including a plurality of cylinders, means for fixedly connecting the same, pistons mounted to reciprocate within the cylinders, a shaft, a wabble ring extending around and separate from the shaft, pivoted means for holding the ring against rotation, guides, members mounted to reciprocate within the guides and connected to the respective pistons, hangers pivotally connected to the said members, universal connections between the hangers and the peripheral portion of the ring, said hangers constituting the sole supports of the ring, and oppositely extending means revoluble with the shaft and supported in a plane inclined relative to the axis of rotation of the shaft, for bearing downwardly upon said ring and for wobbling the ring during the rotation of the shaft.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN L. OAKES.

Witnesses:

J. F. DENHAM,
GARE RIDGEWAY.