Dec. 3, 1946. H. G. GRASS 2,411,964

AUTOMATIC SPRAYER

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Fig. 1

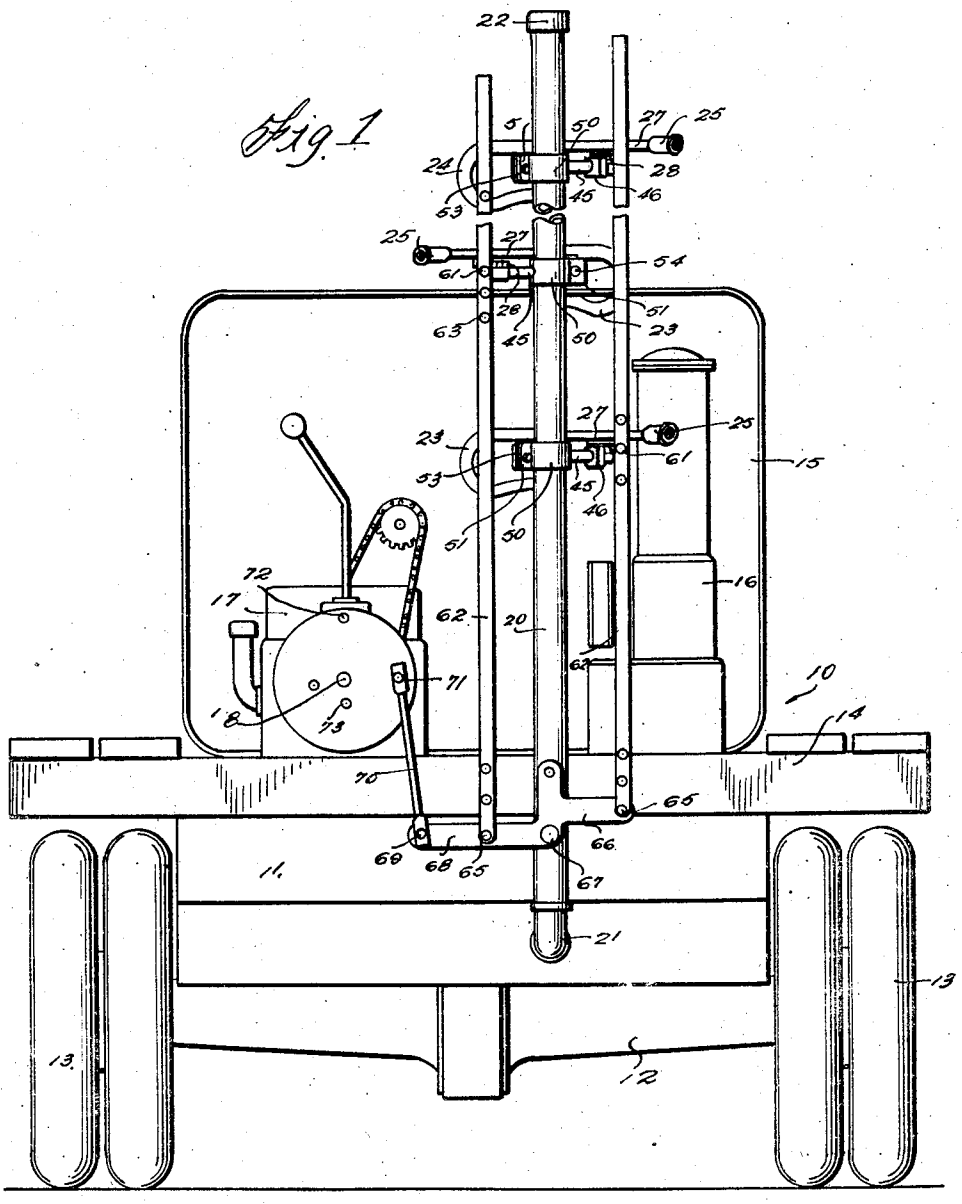
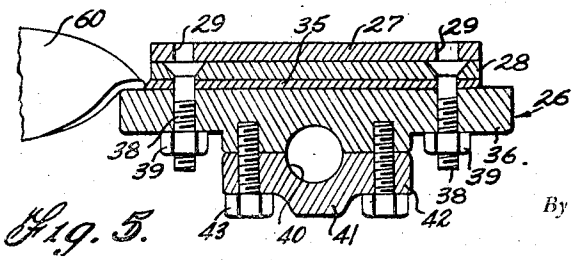


Fig. 5.



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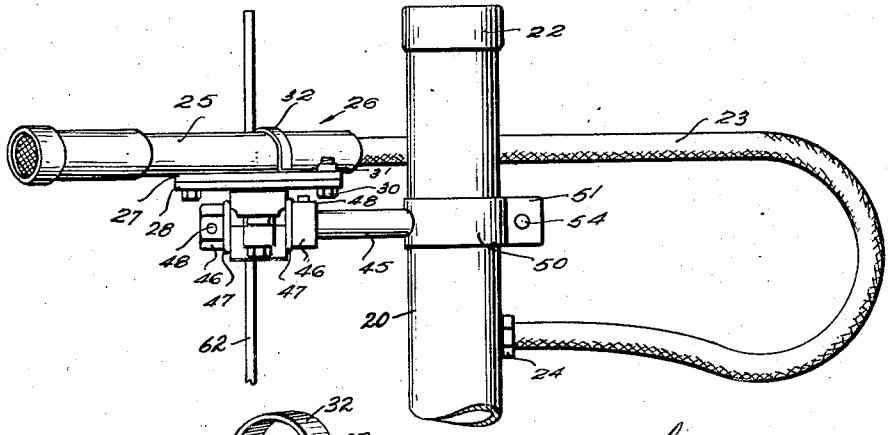


Fig. 2.

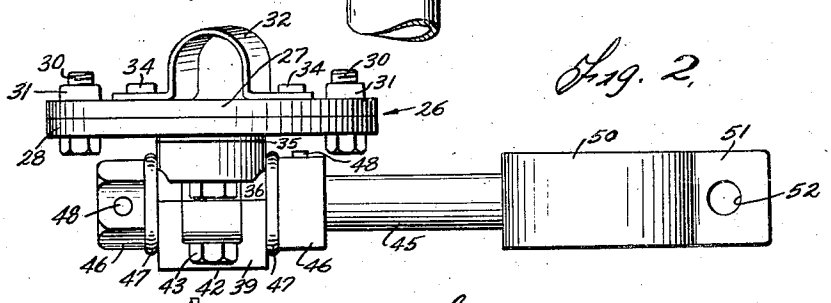


Fig. 3.

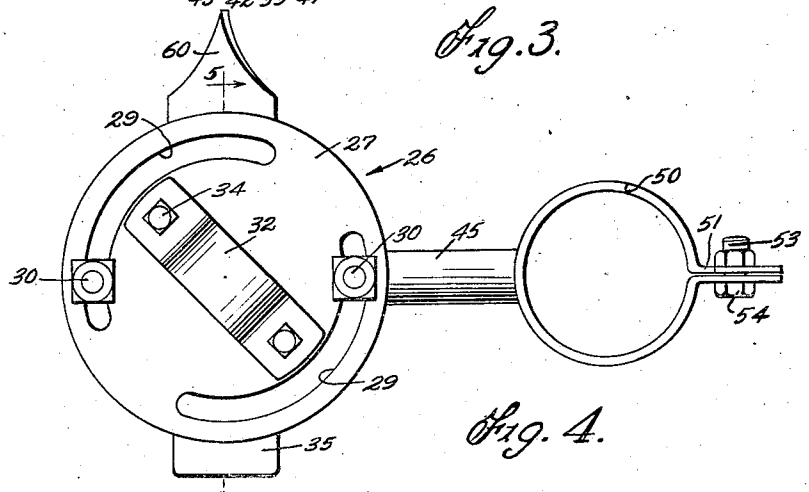


Fig. 4.

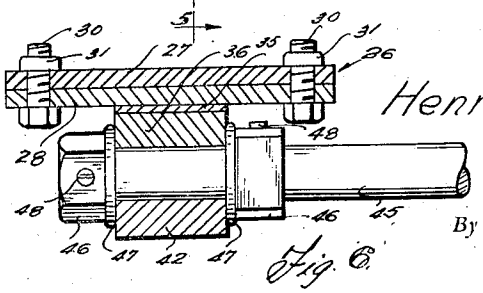


Fig. 6.

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Patented Dec. 3, 1946 2,411,964

UNITED STATES PATENT OFFICE

2,411,964

AUTOMATIC SPRAYER

Henry George Grass, Dinuba, Calif.

Application September 26, 1944, Serial No. 555,835

2 Claims. (Cl. 299—37)

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This invention relates to an automatic sprayer and more particularly to a device for spraying trees and the like, as in orchards.

A primary object of this invention is the provision of an improved automatic sprayer provided with a plurality of oscillatory nozzles, which may be mechanically oscillated to provide complete and effective coverage of the tree or trees being sprayed.

An additional object is the provision in such a device of improved means whereby the angle of the nozzle relative to the spray apparatus may be readily adjusted.

Still further objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter, and disclosed in the accompanying drawings, wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a rear elevational plan view of a truck or the like having one form of automatic spraying apparatus including features of the instant invention mounted thereon.

Figure 2 is an enlarged detail view of one of the nozzles and the mounting means therefor comprising a feature of this invention.

Figure 3 is an enlarged side elevational view of the mounting means disclosed in Figures 1 and 2.

Figure 4 is a top plan view of the detail shown in Figure 3.

Figure 5 is a sectional view taken substantially along the line 5—5 of Figure 4 as viewed in the direction indicated by the arrows.

Figure 6 is an enlarged sectional view taken substantially along the line 6—6 of Figure 5.

Like reference numerals refer to like parts throughout the several views of the drawings.

Having reference now to the drawings, and more particularly to Figure 1, there is generally indicated at 10 a truck body comprised of a conventional frame 11 and including a rear axle 12 and driving wheels 13, as well as the other elements of such a vehicle of conventional construction, (not shown). Mounted on the truck frame 11 is a storage tank 15 adapted to certain suitable spray fluid, a pump 16 of any conventional design, and a driving motor 17, including a drive shaft 18, likewise of conventional design.

An outlet pipe 20 extends from a suitable outlet 21 extending from the storage tank 15 upwardly in vertical alignment with the truck body 10 and terminates in a closure cap 22. Suitable flexible connections 23 extend from outlets in the pipe 24 to spray nozzles 25 of any desired type.

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Nozzles 25 are secured to pipe 20 as by clamps generally indicated at 26.

Clamps 26 are, as best shown in Figure 3, each comprised of a pair of plates 27 and 28. Plate 27, is as best shown in Figure 4 provided with a pair of arcuate grooves 29 adjacent its periphery through which extend bolts 30 which likewise extend through suitable apertures in plate 28, adapted to be secured in position as by nuts 31, thus providing a releasable connection between the two plates 27 and 28, whereby upon loosening of the nuts 31 the two plates may be rotated with respect to each other. A bracket 32 provided with suitable apertures therethrough is secured as by bolts or screws 34 to plate 27 and is adapted to surround a portion of nozzle 25 in order to secure the same in relatively rigid related assembly with plate 27.

Secured to the underside of plate 28, is a strap iron 35 interposed between plate 28 and a supporting member 36, plate 28, iron 35 and support 36 being secured together as by bolts 38 passed through suitable apertures therein, and countersunk so as to be flush with the upper surface of plate 28, and nuts 39. Supporting member 36 is provided with a longitudinally extending semi-circular groove 40 in its base corresponding with a similar groove 41 in a clamping member 42 adapted to be secured to member 36 as by bolts 43. A supporting rod 45 is adapted to pass through the cylindrical bore formed of grooves 40 and 41, in such manner that the plate assembly and its associated supporting members are free to pivot thereabout. The bracket assembly is held in position on rod 45, as by means of collars 46 and washers 47, collars 46 being secured on rod 45 as by means of set screws 48.

The opposite end of rod 45 terminates in a circular clamp 50 having projecting lugs 51 through suitable apertures 52 in which is adapted to be passed a locking bolt 53 and nut 54, clamp 50 being adapted to be positioned around pipe 20.

From the foregoing it will now be seen that the nozzles 25 may be adjusted angularly, in a horizontal plane with respect to pipe 20, by virtue of the adjustable feature of plates 27 and 28, and that the nozzles and their associated assemblies are free to oscillate in a vertical direction, by virtue of the pivotal connection of rod 45 with the plate assembly 26.

Referring back now to strip iron 35, it will be

seen, as best shown in Figures 4 and 5, that the same is twisted as at 60 from a horizontal to a vertical plane. Secured to vertical portion 60 as by suitable bolts 61 are vertically extending sectional iron strips 62, each provided with a plurality of holes or apertures 63 therefor to permit adjustment as may be required. The lower ends of strips 62 are secured as by pivots 65 to a bellcrank lever 66 pivotally mounted as by a pivot 67 on pipe 20. It will now be seen that pivotal movement of bellcrank member 66, occasions vertical reciprocatory movement of members 62 and consequent oscillatory movement of nozzles 25, it here being pointed out that any desired number of nozzles 25 and their related mounting assemblies, can be mounted on pipe 20, and on opposite sides thereof, all those nozzles on any one side of the pipe being operated by one of irons 62.

The means for oscillating the nozzles through bellcrank member 66, include an extending portion 68 of the member to an extremity of which is pivotally secured as on a pivot 69 an arm 70 the opposite end of which is pivotally secured as on a pivot 71 to a timing disk 72 rotatably mounted on and secured to the drive shaft 18 of motor 17. Thus it will be seen that as the motor turns over the disk 72 is rotated, and arm 71 consequently moved thereby to provide oscillatory movement of bellcrank lever 66.

Means are also provided for varying the speed of oscillation of the nozzles 25, such means taking the form of a plurality of holes 73 through timing disk 72 and spaced at varying distances from the periphery thereof. Thus it will be seen that according to the hole or aperture 73, in which pivot 71 is seated, and the corresponding distance from drive shaft 18 of pivot 71 being thus determined, the speed of oscillation of the nozzles will be varied as desired.

From the foregoing it will now be seen that there is herein provided a device accomplishing all the objects of this invention and others including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiments hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

1. In a mounting for a nozzle adapted to be mounted in a pipe connected to a source of fluid, means for mounting said nozzle for oscillation in a vertical plane with respect to said pipe, and means for varying the angular relation of said nozzle to said pipe in a horizontal plane, said last-mentioned means including a pair of plates, one of said plates being secured to said nozzle, and the other of said plates being secured to said mounting means, and means for varying the relative position of said plates with respect to each other in a horizontal plane.

2. In a mounting for a nozzle adapted to be mounted in a pipe connected to a source of fluid, means for mounting said nozzle for oscillation in a vertical plane with respect to said pipe, and means for varying the angular relation of said nozzle to said pipe in a horizontal plane, said last-mentioned means including a pair of plates, one of said plates being secured to said nozzle, and the other of said plates being secured to said mounting means, means for varying the relative position of said plates with respect to each other in a horizontal plane, and means for securing said plates in adjusted position with respect to each other.

HENRY GEORGE GRASS.