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SPRAY NOZZLE

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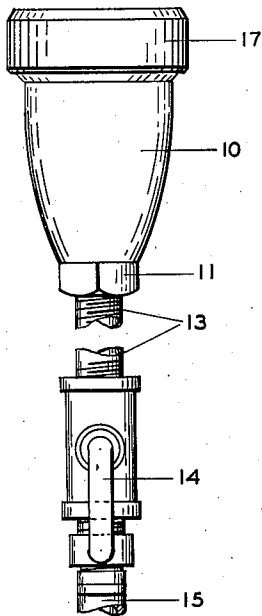


FIG. 1

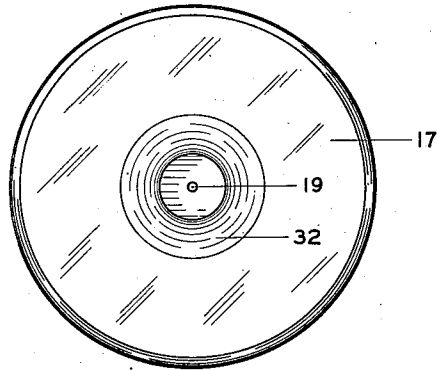


FIG. 2

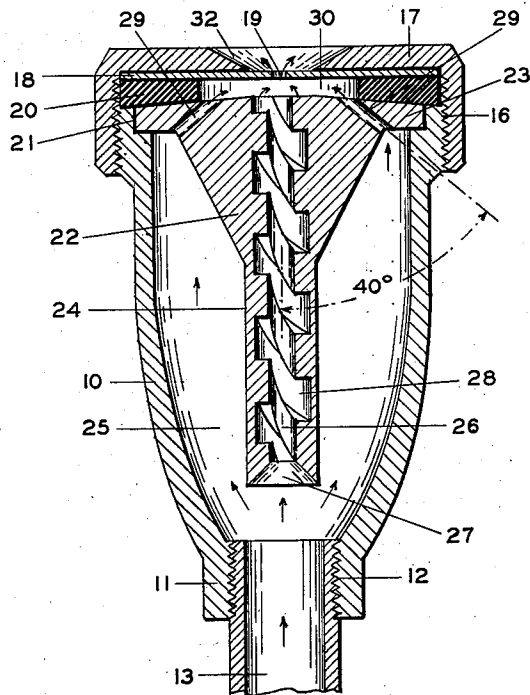


FIG. 3

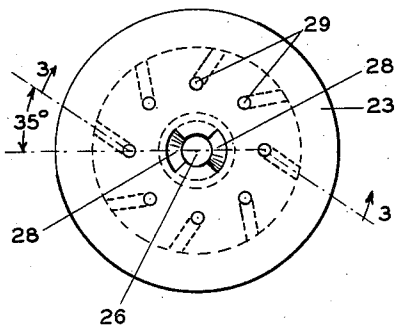


FIG. 4

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SPRAY NOZZLE

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2 Claims. (Cl. 299—115)

This invention relates primarily to a spray nozzle of that class which is employed for the spraying of fruit trees and the like, but it may also be employed for many other purposes. The particular object of the invention is to provide a nozzle which will deliver a fine spray for a great distance, thus being able to reach the tops of tall trees with a spray and not a solid stream of liquid.

10 The object of the invention is to provide a spray nozzle that shall be light, contain few parts, and be readily mounted upon the usual tubular handle or pipe.

15 Another object of the invention is to provide a spray nozzle that can be readily cleaned.

Another object of the invention is to provide a spray nozzle in which the liquid is given a double whirl or rotary motion before leaving the nozzle, thus creating a fine spray and yet having a sufficient force to carry it to a great height.

20 A further object of the invention is to provide a spray nozzle in which the diaphragms may be interchanged to regulate the volume of liquid discharged.

25 With these and other objects in view, our invention consists in certain novel construction and combination of parts as will hereinafter be fully described and claimed and further illustrated in the accompanying drawing which forms a part hereof, and in which like figures of reference refer to corresponding parts in all of the views, and it is understood that slight changes may be made without departing from the spirit of the invention.

35 In the drawing:

Figure 1 shows the side elevation of the device as attached to the hose of a pump or compressor.

Figure 2 is an enlarged end view of the nozzle.

40 Figure 3 is a longitudinal sectional view, partially taken on the line 3—3 of Figure 4, showing the construction and arrangement of the several parts.

45 Figure 4 is a top plan view of the twirler, showing the arrangement of the spiral bore and mixer ducts.

In devices for this purpose, it has been found most effective to attain height with a fine spray that will carry and deposit the compound where desired without drenching the tree with a large volume of fluid whereby the compound carried by the fluid will drop to the ground and does not adhere to the tree; and that the compound should be agitated and mixed in the nozzle and only a sufficient stream be employed to act as a carrier for the spray. We have therefore de-

signed a spray nozzle in which the greater volume of the liquid passing therethrough is broken up into a fine spray having a definite directional rotational movement which is carried outward by a central stream.

Referring to the drawing:

We have shown a tubular casing 10, drawn in at the lower end as at 11 and provided with the internal threads 12 for the upper end of the tubular handle or pipe 13 which is provided with a shut-off 14, and hose 15 from a compressor or pump (not shown).

The upper end of the casing 10 is formed with the external threads 16 for a cup-shaped cover 17 which is threaded thereon, and retains in place a diaphragm 18 formed with a small axial hole 19 and a tapered opening 32. Said diaphragm 18 is clamped upon a rubber gasket 20 located between said diaphragm 18 and the end of the casing 10.

20 The upper end of the casing 10 is also counter-bored as at 21 for the reception of the twirler member 22.

This twirler member 22 has a circular head 23 and a depending body portion or stem 24 which extends to within a short distance of the inlet end 11 of the casing 10, thus forming a chamber 25 within the casing 10.

The twirler member 22 is also formed with an axial bore 26 having a lower flared end 27 and a square threaded spiral groove or grooves 28 to impart a rotary movement to a portion of the liquid travelling upward therethrough.

The head 23 of the member 22 is provided with a series of equally spaced ducts 29 which extend through said head at two angles as indicated and which impart to the liquid passing therethrough, from the chamber 25, a rotary movement.

The liquids, both from the spiral bore 28 and the ducts 29, meet and mix within the mixing chamber 30, which is formed between the diaphragm 18 and the head 23 within the open center of the gasket 30. This mixture or spray being carried through the axial hole 19 in the diaphragm 18 by the force of the liquid passing upward through the bore 26 and out through the tapered opening 41 in the cap 17.

It is to be understood that the size and angle of the ducts 29 may be varied to suit different conditions, as also may be the shape and pitch of the spiral bore 28 of the twirler.

Different diaphragms having various size axial openings may be also used if desired to control the flow of liquid.

Having thus described our invention, what we

claim is new and desire to secure by Letters Patent, is:

1. A spray nozzle of the class described, comprising a tubular body member adapted to be mounted upon a feed pipe, a detachable cover for the outer end formed with a tapered axial opening therein, a diaphragm formed with an axial opening and secured within said cover, a double twirler mounted within said casing and formed with a head and a body portion, said body portion having a spiral bore in axial relation to the feed pipe and said head having a series of ducts annularly arranged about the said spiral bore at an acute angle thereto formed therein, both the ducts and the spiral bore communicating with a mixing chamber formed between said diaphragm and the head of the twirler, to produce a whirl of the liquid in said chamber.

2. In a spray nozzle, comprising a liquid chamber adapted to be mounted on a liquid feed pipe, a cover for said chamber formed with an axial opening therein, a whirler member having a head secured by said cover and a body member within said liquid chamber, a diaphragm and spacing washer between said head and the cover forming a mixing chamber, a spiral tubular bore extending through said body member and head and a series of ducts formed in said head, at an acute angle, both the spiral tubular bore and the ducts causing the liquid to whirl within the mixing chamber before passing through the axial opening in the cover.

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