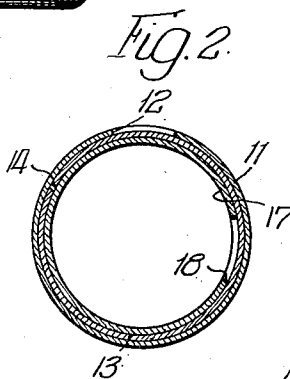
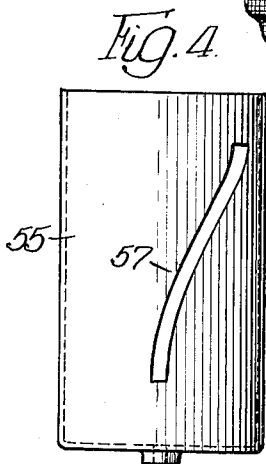
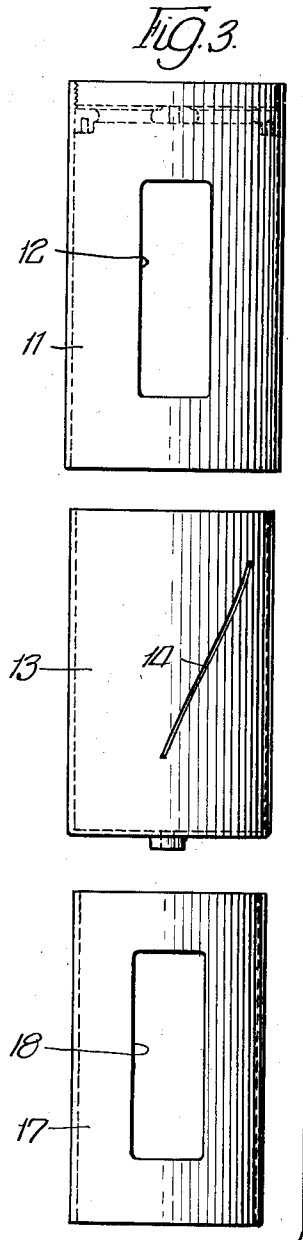
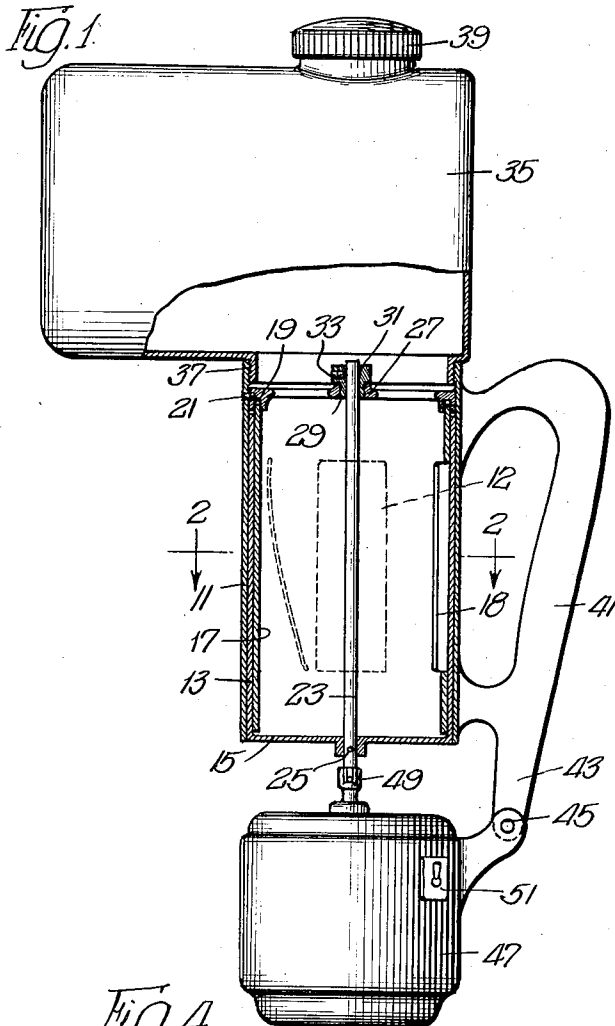


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CENTRIFUGAL PAINT SPRAYER

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CENTRIFUGAL PAINT SPRAYER

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3 Claims. (Cl. 299-63)

1

This invention relates to a new and improved sprayer and more particularly to a sprayer of the centrifugal type adapted for spraying paints, lacquers, insecticides and the like.

Sprayers are now being generally used for the distribution or application of liquid materials, and to be of practical use such sprayers must be capable of uniform distribution and must be light enough to be manipulated manually. Sprayers which operate by compressed air are generally heavy and complicated and require a hose connection to a spray nozzle. With certain types of materials there may be an undesirable oxidation by means of the atomizing air.

It is an object of the present invention to provide a new and improved sprayer of the centrifugal type.

It is a further object to provide a sprayer of this type which comprises a single, self-contained power driven unit.

It is also an object to provide a centrifugal sprayer composed of but few and simple parts which may be readily taken apart for cleaning.

It is an additional object to provide a sprayer of this type in which the centrifugal discharge is limited to the desired discharge area and direction.

It is another object to provide a centrifugal sprayer which positively meters the amount of material discharged.

It is a further object to provide a construction which is simple in design and operation and designed for commercial production and use.

Other and further objects will appear as the description proceeds.

I have shown certain preferred embodiments of my invention in the accompanying drawings in which—

Figure 1 is a side elevation of the apparatus, partly in section;

Figure 2 is a transverse section taken on line 2-2 of Figure 1;

Figure 3 is an exploded view showing the three nested elements of the apparatus; and

Figure 4 is an elevation of a modified form of rotating element.

In the drawings, the construction shown comprises the outer fixed element 11 which is in the form of a tube of open-ended cylinder. The intermediate rotating element 13 is a cylinder open at one end and having a closed bottom 15, this inner rotating member 13 fitting closely within the outer fixed element 11. An inner supply element 17, which is also cylindrical in form and open at both ends, fits closely within the inter-

2

mediate rotating member 15. In the form of construction shown, the upper end of the inner supply element 17 is secured to a spider 19 which is held in place inside the upper end of the outer fixed member 11 by set screws 21.

The bottom 15 of the intermediate rotating member 13 is provided with a central opening through which passes the drive shaft 23, the shaft being secured to the bottom 15 of member 13 by means of the cross pin 25. The upper end of shaft 23 extends through the inner hub 27 of spider 19, this hub supporting a bearing 29 which engages shaft 23. Shaft 23 is held in place by means of a collar 31 secured to the shaft by set screw 33, this collar 31 resting on the upper face of the hub 27.

A supply tank 35 for the liquid being sprayed is shown as threaded into the upper end of the fixed outer element 11 at 37. The supply tank 35 is provided with a supply opening which is closed by the cap 39 which may be screwed in place. The outer fixed element 11 has a handle 41 secured thereto in a suitable manner, as for example, by welding. A projection 43 from the lower end of handle 41 provides a hinged support at 45 for a drive motor 47. This drive motor 47 is provided with a detachable coupling 49 for connecting it to the lower end of the drive shaft 23 so that the motor may drive the shaft. A switch 51 shown on motor 47 by means of which the motor may be put into and out of operation, it being understood that the motor is provided with a usual connecting cord (not shown) having a plug for connection to a source of electric power. The particular construction of the motor and its control forms no part of the present invention and any suitable construction may be used.

As the elements are shown in Figure 3, the several elements are all turned so as to expose the openings or slots therein, but it will be understood that this showing is diagrammatic and that when assembled they will preferably be located as shown in Figures 1 and 2. The outer fixed element 11 is provided with a discharge opening 12 located away from the viewer in Figure 1 and therefore indicated in broken lines since it is covered by the rotating element 13 and inner supply element 17. The inner supply element 17 is provided with a supply opening 18 which, in the construction shown, is located on the side adjacent the handle 41. The rotating intermediate element 13 is provided with a diagonally extending feed slot 14 so located vertically as to pass

3

within the areas of openings 12 and 18 when element 13 is rotated.

In the form of construction shown, the motor drives the shaft 23 and the rotating element 15 in the counter-clockwise direction, as seen in Figure 2. It will be understood that the liquid to be sprayed is poured in through cap 39 and fills the inner supply element 17. It is retained in that element 17 by the bottom 15 of the rotating element 13. The liquid may extend up into the tank 35 or fill that tank when operation is initiated. The intermediate element 13 is rotated rapidly by motor 47 and as the feed slot 14 passes opposite the supply opening 18 in the inner supply member 17 the liquid fills that slot. As the member 13 continues to rotate the slot 14 carries a load of the liquid filling the slot between the members 11 and 17 until the slot 14 is exposed by the discharge opening 12. At that point the speed of rotation of the rotating element 13 generates centrifugal force such that the liquid contained in slot 14 is thrown outwardly through the discharge opening 12. It will be understood, of course, that this movement of the discharge liquid is not in a radial direction, but in a direction approximately tangential to the arc of movement of the rotating element 13 so that the liquid is sprayed generally to the left, as seen in Figures 1 and 2. It will also be understood that in the construction of the apparatus the discharge opening 12 may be varied in its exact location in order to direct the spray as desired.

Figure 4 shows an inner rotating element 55 which is similar to rotating element 13, but which has a feed slot 57 considerably wider than the feed slot 14 of rotating element 13. It will be apparent that the capacity of the slot 14 serves to meter the quantity of liquid discharged at each rotation of the rotating member. Consequently, the enlarged slot 57 of Figure 4 will discharge more liquid than the comparatively narrow slot 14 shown in Figures 1 to 3 inclusive. Interchangeable rotating elements may be provided so that a single device may be selectively equipped with elements giving different discharge capacities. It will be understood also that variations in the size of the feed slot may be desirable with liquids of different viscosities since they will also affect the amount of discharge. The construction, as shown, carries the liquid in the slot 14 or 57 for only approximately $\frac{1}{4}$ of a revolution. This reduces the dispersion of the liquid between the rotating member 13 and inner and outer members 17 and 11 so that with small clearances between these members there is a minimum of frictional loss and of loss of material between the members.

4

While certain preferred embodiments of the invention have been shown, they are to be understood to be illustrative only as it is capable of variation to meet differing conditions and requirements and I contemplate such modifications as come within the spirit and scope of the appended claims.

I claim:

1. In a centrifugal sprayer, an outer fixed element with a discharge opening therein, an intermediate rotating element, said rotating element having a feed slot formed therein, the feed slot being adapted to be aligned with the discharge opening in certain rotary positions of the rotating element, and an inner supply element with a supply opening therein, the supply opening being out of alignment with the discharge element and adapted to be aligned with the feed slot in certain rotary positions of the rotating element.
2. In a centrifugal sprayer, an outer fixed element with a discharge opening therein, an intermediate rotating element, said rotating element having a feed slot formed therein, the feed slot being adapted to be aligned with the discharge opening in certain rotary positions of the rotating element, and an inner supply element with a supply opening therein, the supply opening being out of alignment with the discharge element and adapted to be aligned with the feed slot in certain rotary positions of the rotating element, the outer fixed element, the intermediate rotating element and the inner supply element all being of circular cross section and closely fitted one within the other.
3. In a centrifugal sprayer, an outer fixed element with a discharge opening therein, an intermediate rotating element, said rotating element having a feed slot formed therein, the feed slot being adapted to be aligned with the discharge opening in certain rotary positions of the rotating element, and an inner supply element with a supply opening therein, the supply opening being out of alignment with the discharge element and adapted to be aligned with the feed slot in certain rotary positions of the rotating element, the outer fixed element, the intermediate rotating element and the inner supply element all being of cylindrical form and closely fitted within one another, the inner supply element being secured at its upper edge to the outer fixed element.

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References Cited in the file of this patent
UNITED STATES PATENTS

Number	Name	Date
2,023,710	Ongue	Dec. 10, 1935