July 15, 1947. L. J. CLARK ET AL 2,424,151

RESERVOIR FOR ATOMIZERS

Filed March 27, 1944

Fig-1

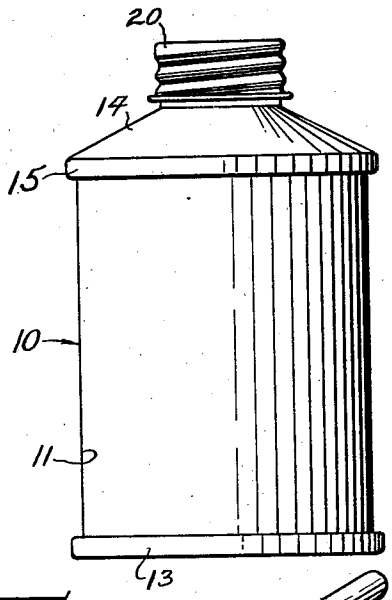


Fig-2

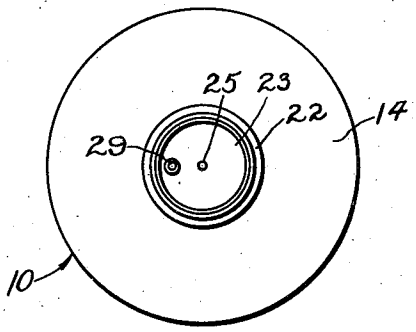


Fig-3

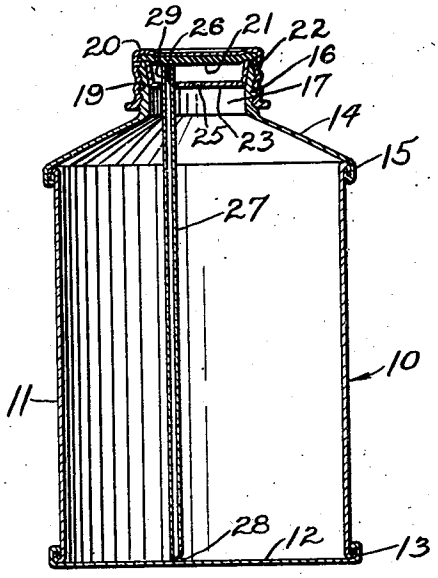
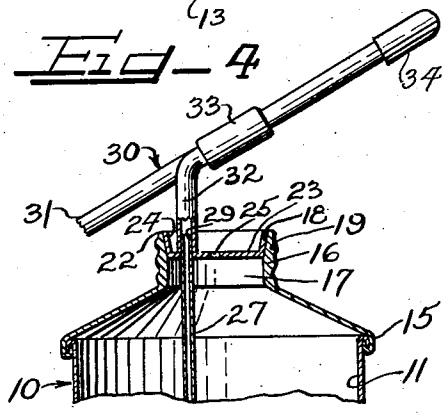


Fig-4



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RESERVOIR FOR ATOMIZERS

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4 Claims. (Cl. 222—464)

1

This invention relates to an insecticide dispenser. More particularly, the invention relates to a metal receptacle so constructed that it can be used both for storing a liquid insecticide and for the dispensing of the liquid insecticide in conjunction with an atomizer attachment employing a fluid, such as gas or air, under pressure.

It is therefore an important object of this invention to provide a relatively inexpensive and simple construction of an insecticide dispenser for use both in the storing of a liquid insecticide and in the dispensing of such insecticide in an atomized or highly dispersed state.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

On the drawings:

Figure 1 is an elevational view of an insecticide dispenser embodying the principles of our invention;

Figure 2 is a top plan view of the dispenser illustrated in Figure 1, with the cap or cover removed;

Figure 3 is a longitudinal sectional view of the dispenser of Figure 1; and

Figure 4 is a fragmentary sectional view of the dispenser fitted with an atomizing attachment, shown partly in section and partly in elevation, ready for use.

The reference numeral 10 indicates generally the insecticide dispenser of our invention. Said dispenser includes a cylindrical body portion 11, which may suitably be formed of thin sheet metal, a lower closure, or bottom, 12 secured to the lower end of the cylindrical wall portion 11 by a rolled bead 13, and an upper tapered portion 14, also secured to the cylindrical sidewall 11 by a rolled bead 15. Said upper tapered portion 14 is formed with a thickened, cylindrical neck portion 16 that provides a filling spout 17. The upper portion of said cylindrical neck 16 is slightly tapered, as at 18, to form an upwardly flared frusto-conical surface. Said neck 16 is externally threaded, as at 19.

A threaded cap 20 is adapted to be threaded on the external threads 19 to close the filling spout 17. Said cap 20 may suitably be provided with a crown seal 21 to effect a fluid-tight seal with the upper edge 22 of said neck portion 16.

The construction of the dispenser thus described is that of a conventional screw top metal container. Such a container could be used for the storage and shipping of a liquid insecticide but in order to dispense the insecticide in the

2

customary way, as by air or steam atomization, the contents of the receptacle would have to be transferred to a special dispensing device. In accordance with the principles of our invention, however, this conventional form of metal receptacle is provided with certain additional features of construction that adapt it for use as a dispenser for liquid insecticides or other liquids that are intended to be atomized when used.

To this end, a secondary closure member 23, comprising suitably a metal stamping having an upturned, outwardly flared annular flange 24, is employed. The secondary closure member 23 is adapted to be inserted in the tapered portion 18 of the spout 17 to be frictionally but removably retained therein. When in position, the secondary closure member 23 lies wholly within the filling spout 17 with its upper edge flush with the upper edge 22 of said filling spout. This provision makes it possible for the crown seal 21 to seal both the upper edge 22 and the upper edge of the secondary closure member 23 when the cap 20 is screwed home.

The secondary closure member, or thimble, 23, is provided with an air opening 25 of small, but predetermined diameter. The purpose of the aperture 25 is to admit air into the interior of the dispenser 10 during the removal of the liquid contents thereof. The thimble 23 is also apertured, as at 26, to permit the passage therethrough of a capillary tube 27. Said tube 27 has a lower tapered end 28, which should be either in contact with the bottom 12 or very closely adjacent thereto. The purpose of the taper on the end 28 is to insure against the opening being closed by full contact with the bottom wall 12, and to enable the withdrawal of substantially all of the liquid contents of the dispenser 10 when the device is in use.

The upper end 29 of said tube 27 terminates just inside the upper edge 22 of the filling spout 16, so that the cap 20 can be screwed in place without being interfered with by the tube end 29. Said tube 27 may or may not be secured in the secondary closure member 23, since if it is of the proper length as described, the end 29 will always project above the bottom wall of the secondary closure 23 sufficiently to enable said end to be attached to a portion of an atomizing device 30 (Fig. 4).

Said atomizing device 30 comprises merely a tube 31 through which air, steam or other gas under pressure is caused to flow at sufficient velocity to draw the liquid insecticide up the capillary tube 27 into the tube 32 that is attached

to said projecting end 29 of the capillary tube. The tubes 31 and 32 of the attachment 30 merge within the enlarged portion 33 and the liquid insecticide is carried along in the stream of the fluid under pressure out through a nozzle 34, from which the insecticide is atomized into the atmosphere.

The principles of atomization are so well understood as to require no further explanation.

With a construction such as described, the insecticide dispenser of our invention serves both as a storage receptacle for a liquid insecticide and also as a dispenser for the insecticide when attached to a suitable atomizing device. Initially, in filling the dispenser 10 with the liquid insecticide, the cap 20, secondary closure member 23 and tube 27 are, of course, removed and the liquid insecticide poured into the receptacle through the filling spout 17. The secondary closure member 23 and tube 27 are then inserted in place and the cap 20 threaded on to tightly seal the filling spout 16. The filled dispenser then looks no different from any other conventional, threaded cap-type of metal receptacle. When the dispenser is to be used, the threaded cap 20 is simply removed, the device 30 attached thereto by inserting the lower end of the tube 32 over the projecting end 29 of the tube 27, and a fluid under pressure, such as air or steam, introduced into the tube 31 to effect atomization of the liquid insecticide drawn up through the capillary tube 27 into the mixing chamber 33. Since no pressure is placed upon the dispenser 10, it can be made of the conventional thin sheet metal construction usually employed in making receptacles of this type.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

We claim as our invention:

1. In a dispenser for liquids including a receptacle having a filling opening and a closure therefor, a flanged member removably retained in said opening and provided with an air intake aperture and a second aperture, and a fluid discharge tube extending through said second aperture to a point adjacent the bottom of said receptacle, the upper end of said tube terminating within said filling opening below the rim thereof to permit sealing thereof by said closure but providing an upwardly projecting portion for telescoping connection to an atomizing device when said closure is removed.

2. In a dispenser for liquids including a receptacle having a filling opening and a closure therefor, an inverted thimble retained in said opening having an air intake aperture, and a capillary tube extending through and supported by said thimble, said tube having a lower tapered end terminating adjacent the bottom of said receptacle and an upper end projecting above the bottom of said thimble but below the rim of said filling opening and adapted to be covered by said closure when in closing position but providing an upwardly projecting portion for telescoping connection to an atomizing device when said closure is removed.

3. In a dispenser for liquids including a receptacle having an externally threaded neck providing a tapered filling opening and an internally threaded cap for closing said filling opening, an inverted apertured thimble frictionally positioned in the taper of said neck opening, and a capillary tube extending through said thimble to near the bottom of said receptacle and projecting above the bottom of said thimble but below the rim of said filling opening to provide an upwardly projecting portion for telescopingly receiving a tubular connection to an atomizing device, said cap sealing said thimble within said neck when closing said receptacle.

4. A dispenser for a liquid to be atomized, comprising a receptacle having an externally threaded filling spout, an inverted thimble-shaped secondary closure positioned wholly within said spout with the upper edge of said thimble-shaped closure substantially flush with the rim of said spout, said secondary closure having a bottom wall provided with an air intake aperture and an aperture for a capillary tube, a capillary tube extending from a point adjacent the bottom of said receptacle through said last named aperture to a point substantially on a level with said spout rim to provide an upwardly projecting portion for connection with an atomizing device, and a removable primary closure internally threaded for threading onto said spout to seal against both the rim of said spout and the upper edge of said secondary closure, whereby upon removal of said primary closure said upwardly projecting portion of said capillary tube is immediately available for telescoping connection to an atomizzing device.

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