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V. S. TIDD ET AL  
ATOMIZING SPRAYING DEVICE

2,886,251

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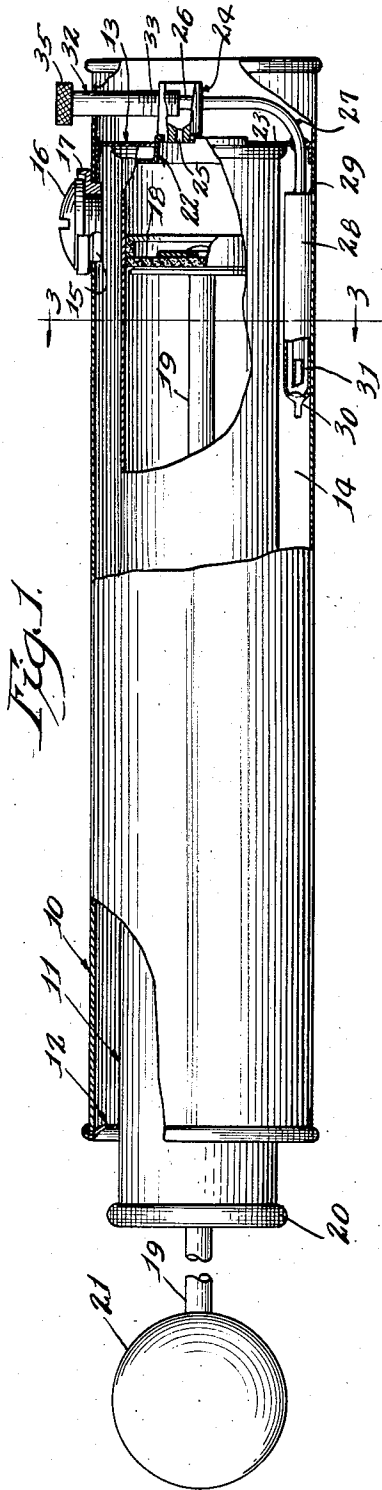


Fig. 1.

Fig. 4.

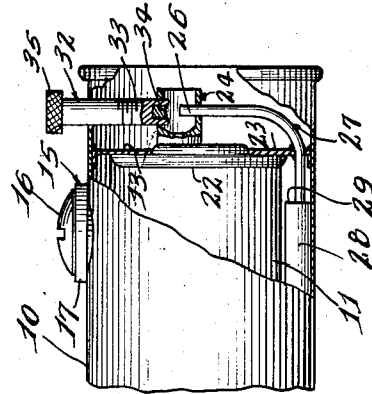


Fig. 3.

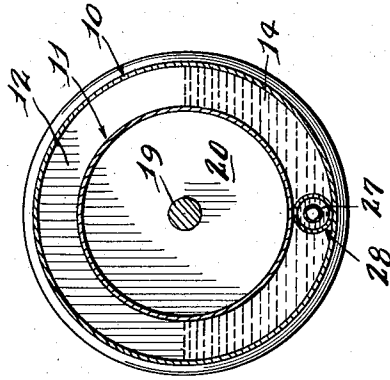
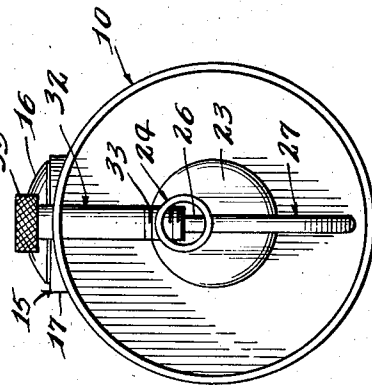


Fig. 2.



Inventors.  
Victor S. Tidd.  
William Dickison.

By. Wilson T. Jeffers  
Attorneys.

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ATOMIZING SPRAYING DEVICE

Victor S. Tidd, Lowell, Mich., and William Dickison, Des Plaines, Ill., assignors to Root-Lowell Manufacturing Co., Lowell, Mich., a corporation of Ohio

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2 Claims. (Cl. 239—342)

The present invention relates to an atomizing sprayer of a relatively small size and of such construction, shape and dimensions that it may be easily and readily stored when not in use in a drawer or other convenient place, or it may be positioned on end and stored on a shelf, whereby to conserve space and without danger of leakage in whatever position it may be stored.

Among the objects of the present invention is the provision of a sprayer assembly of small and compact construction whereby it may be easily carried about and made quickly available for use. In addition to its compact construction, the present invention comprehends a novel means and manner of sealing off the supply or siphon tube when not in use and thereby effectively preventing leakage while the sprayer is being stored or carried about preparatory to use.

The present invention further comprehends a novel sprayer comprising a pair of tubular or cylindrical members joined together with these members so arranged and spaced apart that the space therebetween provides a reservoir for a substantial quantity of an insecticide or other sprayable solution or fluid.

Another object of the present invention is the provision of a novel means in the reservoir for catching and retaining a limited quantity of the sprayable solution for spraying when the sprayer is pointed or directed upwardly.

A further object of the present invention is in the provision of a novel means for mounting and retaining the discharge end of the siphon or eduction tube in accurate alignment with the discharge orifice of the pump for optimum efficiency in atomizing the insecticide or sprayable solution.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawing:

Figure 1 is a fragmentary view, part in side elevation and part in vertical cross section, of the novel sprayer assembly and showing the position of the plunger or piston at substantially its forward position and the supply or eduction tube sealed to prevent siphoning of the spray solution.

Fig. 2 is a view in front or end elevation of the spraying device.

Fig. 3 is a view in vertical cross section taken in a plane represented by the line 3—3 of Fig. 1 and viewed in the direction of the arrows.

Fig. 4 is a fragmentary view, part in side elevation and part in vertical cross section, of the forward end of the sprayer assembly with the cut-off screw retracted from sealing engagement with the discharge end of the supply or eduction tube to permit siphoning of the spray solution and operation of the sprayer.

Referring to the disclosure in the drawing and more particularly to the illustrative embodiment of the present

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invention, the novel atomizing sprayer comprises a pair of tubular or cylindrical members 10 and 11 held in fixed relation and sealed by a transverse partition or end wall 12 at the rear of the outer member 10 and by a transverse partition or end wall 13 at the forward end of the inner member 11. As disclosed in Figs. 1 and 4, the partition or end wall 13 is spaced rearwardly or inwardly from the forward end of the outer cylinder 10 to provide an enclosure.

The longitudinally extending space 14 between the cylindrical or tubular members 10 and 11 provides a reservoir for receiving a substantial quantity of an insecticide, fungicide or other sprayable solution or fluid, the outer member 10 being provided with a filler opening having an internally threaded annular insert 15 adapted to be closed by a threaded filler cap 16 and sealing gasket detachably received in the upstanding flange 17 of the insert.

Mounted for reciprocation in the inner cylinder or tubular member 11 which forms the barrel of a pump is a cup-shaped plunger or piston 18 of leather or other suitable flexible material mounted on and carried by the inner or forward end of a plunger rod 19 slidably received and relatively loosely projecting through an opening in a pump plug 20 at the rear of the pump barrel or cylinder 11 for the admission of air about the plunger rod into the barrel or cylinder. A handle or knob 21 is provided to reciprocate the plunger.

At the forward end of the pump barrel or cylinder 11 and adjacent the partition 13 is provided a pump cap 22 having an embossment projecting into the enclosure 23 and in which cap is fixedly but eccentrically mounted a sleeve or nozzle 24 provided at its inner or rear end with a reduction having a relatively small orifice or discharge passage 25 for the air discharged under pressure from the forward end of the pump barrel 11 and opening into a relatively large discharge passage or internal bore.

The sleeve 24 provides a tube holder in which is fixedly and securely mounted the upstanding or projecting discharge end 26 of a supply, eduction or siphon tube 27 which projects through the transverse partition or end wall 13 and rearwardly into an elongated cup 28 disposed within and open to the reservoir 14. This cup is mounted in the underside of the sprayer or opposite to the filler opening and is of substantial length and open to the reservoir 14 at its forward end 29 and closed at its rear end 30 with the rear, open end 31 of the tube 27 projecting to adjacent the closed end or bottom 30 of the cup 28 for supplying or siphoning to the interior of the sleeve 24 spray solution or fluid from the reservoir 14.

To prevent leakage of the spray solution or fluid from the reservoir 14 when the sprayer is not in operation or is being stored, there is provided an adjustable screw 32 having its shank projecting through an opening in the circumferential wall of the outer cylinder 10 into the enclosure 23 and with the lower end 33 of this screw threaded into a tapped opening in the sleeve or tube holder 24 in alignment with the discharge end 26 of the supply or eductor tube 27. The lower end 33 of the screw 32 is hollow whereby to receive an insert 34 of a plastic composition having sealing characteristics whereby when the end 33 of the screw is projected or threaded downwardly by manipulating or rotating its knurled end 35, it receives the discharge end 26 of the supply tube 27 (Fig. 1) and this open end 26 is effectively sealed and held sealed against leakage until the operator again unscrews and withdraws the end 33 of the screw sufficiently to fully uncover the discharge end 26, whereupon operation of the pump by reciprocation of the pump or plunger rod 19 discharges a stream of air through the orifice or discharge passage 25 across the

open end 26 of the tube 27 to withdraw or siphon spray solution from the reservoir and discharges the solution with the air as an atomized or fine spray.

The reservoir 14 is capable of receiving a substantial quantity of the spray solution which is free to continuously flow into the elongated cup 28 when the sprayer is held in a substantially horizontal plane or normal operating position. Thus the sprayer may be continuously operated so long as spray solution remains in the reservoir.

The location and arrangement of the cup 28 is such as to catch and retain a quantity of the spray solution for spraying in the event the sprayer is pointed or directed upwardly, at which time the main body of the spray solution collects in the rear of the reservoir. When the supply in the cup 28 is exhausted, a fresh supply is readily made available for spraying by merely tipping the sprayer, whereby the cup 28 is again filled.

Having thus disclosed the invention, we claim:

1. An atomizing sprayer consisting of a pair of concentric cylindrical members, the inner of which provides a pump cylinder, a pump in said pump cylinder with the latter spaced from the outer cylindrical member to provide an annular space therebetween providing a reservoir for an insecticide or spray solution, a transverse partition connecting the rear of the encompassing cylindrical member to the pump cylinder and a transverse partition connecting the forward end of the pump cylinder to the encompassing cylindrical member to provide end closures for the reservoir with the partition at the forward end of the pump cylinder spaced rearwardly of the forward end of the encompassing cylindrical member to provide an enclosure bounded by the forward partition and the open forward end of the encompassing member, a sleeve mounted at one end in said forward partition and projecting forwardly therefrom and longitudinally of said concentric cylinders with its forward end disposed in said enclosure but spaced rearwardly of the open end of the encompassing cylindrical member to provide a nozzle having an orifice at its inner end opening into the pump cylinder for the passage of air under pressure from the pump cylinder into the sleeve member and an

enlarged bore at its outer end for discharge of the atomized spray solution, an elongated cup member mounted in and open to the fluid in the reservoir, a supply tube projecting through the forward partition with its discharge end projecting radially through the wall of said sleeve member and into its enlarged bore intermediate the ends of the sleeve member, and its other end projecting into and terminating adjacent the bottom of the cup for receiving and supplying spray solution into the enlarged bore of the sleeve member, whereby upon operation of the pump air under pressure is discharged through said orifice into said enlarged bore and the spray solution is siphoned from the bottom of the cup through said supply tube.

2. An atomizing sprayer as set forth in claim 1, including sealing means for sealing the discharge end of the supply tube when the sprayer is not in use or being stored, said sealing means comprising a screw having its outer end projecting through the wall of the encompassing cylindrical member and its inner end projecting through and adjustably mounted in the wall of the sleeve member in alignment with the discharge end of the supply tube, the end of the screw being hollow and of substantially greater dimensions than the discharge end of the supply tube to receive therein the latter, said hollow end provided with a sealing composition to seal off the discharge end of the supply tube when the sprayer is not in use and the screw is adjusted to receive within its hollow end the discharge end of the supply tube.

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