

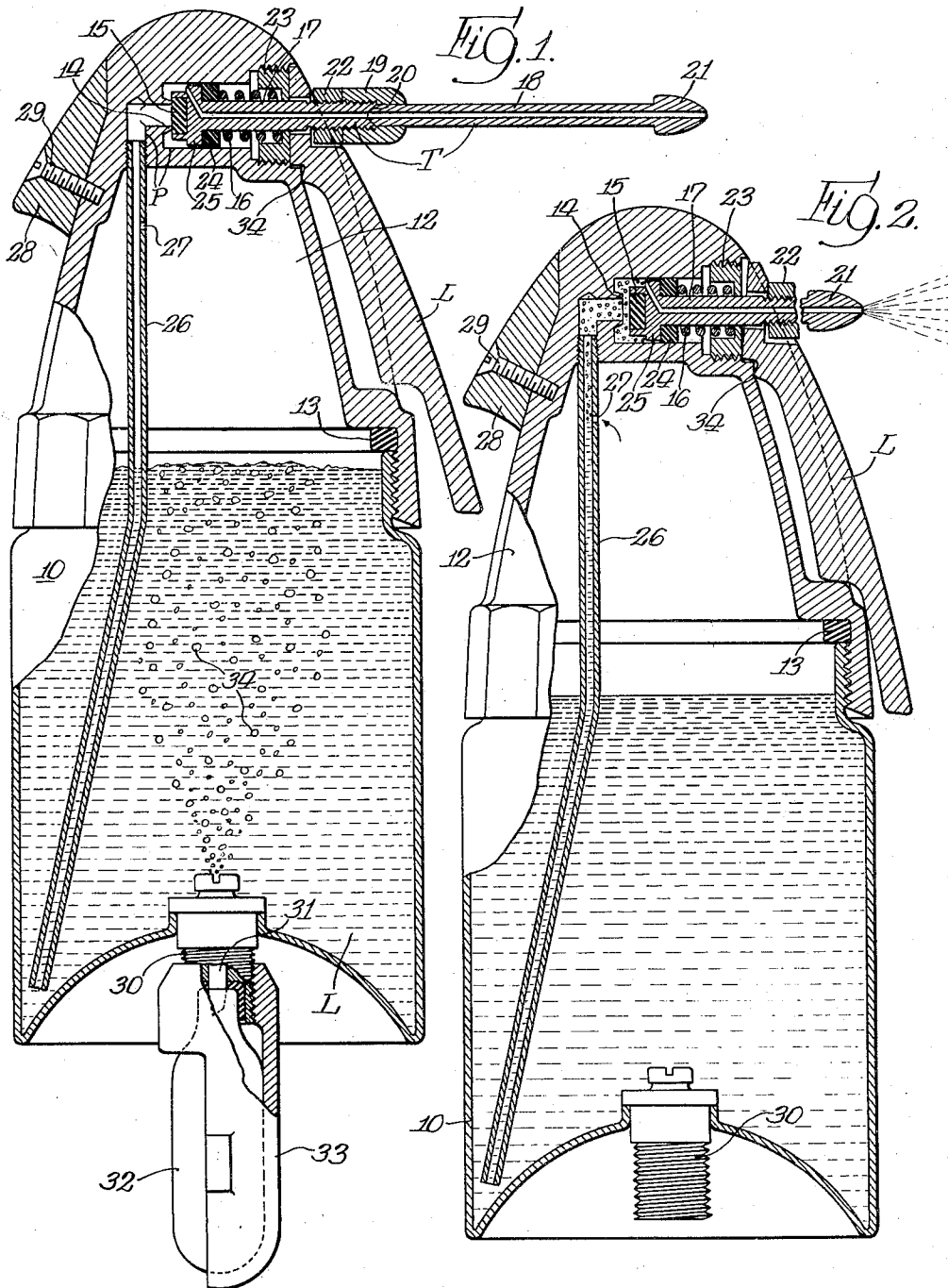
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SPRAYING DEVICE

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SPRAYING DEVICE

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My present invention relates to a spraying device which may be used for spraying insecticide or other fluids.

One object of the invention is to provide a device which may be used for spraying insecticide without the necessity of having a manual pump or the like to effect the spraying operation, the device instead using a bulb of compressed gas or the like to produce the necessary pressure to displace the liquid from a container therefor.

A further object is to provide an insecticide spray unit which may contain a quantity of insecticide sealed against evaporation and ready at any time for instant use by the mere depression of a lever on the device, the lever operating a valve mechanism to control the spray as desired.

A further object is to provide spraying mechanism wherein the liquid is displaced by gas under compression and is atomized by introduction of some of the gas into the liquid stream during the dispensing operation.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing, wherein:

Figure 1 is a vertical sectional view through an insecticide spray device embodying my invention, the valve being shown in closed position and the apparatus being illustrated during the process of charging the vase with compressed gas from a Sparklet bulb or the like, and

Figure 2 is a similar sectional view showing the valve in open position and illustrating the action of the liquid and gas to effect the desired spraying operation.

On the accompanying drawing, I have used the reference numeral 10 to indicate a suitable vase or container for liquid L, such as an insecticide. A removable head 12 is provided for the vase 10, the head being screwed on the vase with a gasket at 13 to effect an airtight seal.

The head 12 has therethrough a passageway, indicated at P, in which is located a valve seat 14. A plug 15 is adapted to seat thereagainst under the bias of a spring 16. The plug 15 is provided at one end of a discharge tube T comprising a first section 17 and a second section 18 coupled together as by a coupling nut 19. The sections 17 and 18 are sealed relative to each other by a ground seat at 20.

The tube section 18 has a discharge nozzle 21 of any suitable shape. A shoulder nut 22 is

mounted on the tube section 17 and serves as a lock nut for the coupling nut 19. It also serves as a shoulder against which the upper end of a lever L may engage for opening the valve, as shown in Figure 2.

The spring 16 is interposed between a closure nut 23 and a washer 24 on the discharge tube T and engages a head 25 thereof in which the plug member 15 is located. The washer 24 serves as a seal so that liquid through the valve will flow through the bore of the discharge tube T instead of past the spring 16 and out through the bore of the nut 23.

The passageway P at its extreme inner end receives a syphon tube 26 depending to a position where its lower intake end is located adjacent the bottom of the vase 10. The syphon tube 26 has a minute opening 27 of a few thousandths of an inch diameter, which serves an important purpose, as will hereinafter be described.

The vase 10 and head 12 are adapted to be held in the hand of the user with the fingers engaging the lever L to depress it, as shown in Figure 2. A rest member 28 is provided which forms a projection on the head 12 secured thereto by a screw 29. This projection is adapted to rest on the upper edge of the user's hand between the thumb and first finger. The stop shoulder 28 thereby forms a convenient support for the spraying device when in use.

In the bottom of the vase 10, a fitting 30 is provided having a hollow piercing pin 31. The pin 31 is adapted to pierce a compressed gas bulb, such as a Sparklet bulb 32, when the bulb is forced against the pin by a holder 33 in a well known manner. After the vase 10 is filled with the liquid L, the piercing operation is performed as illustrated in Figure 1, whereupon compressed gas passes upwardly in the form of bubbles 34 through the liquid L and fills the space above the liquid in the head 12. After the gas is discharged from the bulb, the bulb may be removed by unscrewing the holder 33 and the usual check valve in the fitting 30 will close to prevent escape of the liquid from the vase.

Whenever it is desired to use the spraying device, it is supported in the hand, as already described, and the lever L depressed as in Figure 2, thereby causing the lever to pivot at point 34 on the head 12 and effect opening of the valve. The compressed gas in the head 12 will displace the liquid L upwardly through the syphon tube 26 and some of the compressed gas will slowly pass through the minute opening 27, thereby mixing with the liquid and effecting atomization thereof

as it leaves the nozzle 21. Thus, the discharge from the nozzle will be in the form of a spray rather than a needlelike stream of liquid.

My spraying device eliminates any manual pumping effort and provides a device which is portable, convenient and attractive. The unit illustrated may be made in any size, it being shown approximately full size and capable of spraying a pint of fluid for a considerable distance merely by opening the valve and controlling the spray as desired. Whenever the lever is released, the valve closes and the spray is thereby automatically cut off and the liquid sealed against evaporation.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope without sacrificing any of the advantages thereof.

I claim as my invention:

1. A spraying device of the character disclosed comprising a container for liquid and gas under pressure, a passageway through a wall of said container, a discharge tube in said passageway having on its outer end a discharge nozzle and on its inner end a valve plug, a valve seat in said passageway, a nut threaded into said passageway and located outwardly relative to said valve plug, a spring interposed between said nut and said plug to normally retain said plug seated against said seat, a lever having one end surrounding said discharge tube, a shoulder on said tube, said lever having an edge pivoting against said container at a point spaced from the axis of said tube, the surrounding portion of said lever directly engaging said shoulder to effect outward movement of said discharge tube and thereby unseating of said plug relative to said seat, and a syphon tube extending from said passageway to an intake position below the level of liquid in said container.

2. In a spraying device, a container for liquid and compressed gas for displacing the liquid, a passageway through a wall of said container, a discharge tube in said passageway having on its outer end a discharge nozzle and on its inner end a valve plug, a valve seat in said passageway, spring means tending to seat said plug against said seat, a lever having one end surrounding said discharge tube, a shoulder on said tube, said lever being provided with an edge portion which pivots against said container at a point spaced from the axis of said tube, the surrounding portion of said lever directly engaging said shoulder to effect outward movement of said discharge tube and thereby unseating of said plug relative to said seat, and a syphon tube extending from said passageway to an intake position below the level of liquid in said container, said syphon tube having an opening therein above the level of the liquid to receive gas from said container.

3. A spraying device comprising a vertically arranged cylindrical container for liquid and for compressed gas to displace the liquid from the container, a substantially horizontal passageway in said cylindrical container adjacent the top thereof, a valve seat in said passageway, a discharge tube movable in said passageway and having a valve plug at one end to seat against said valve seat and a discharge nozzle at its other end, a lever for effecting such unseating of the valve and having an operating portion extending downwardly along said cylindrical container to be gripped by the fingers of the user as the spraying device is used with the container gripped in the user's hand, a rest projection on said container adapted to engage the upper edge of the user's hand to support the container against slipping downward in the hand during use, and a syphon tube depending from said passageway into said container.

4. A spraying device comprising a vertical cylindrical container for liquid and for compressed gas to displace the liquid from the container, said container adjacent its top sloping upwardly and inwardly, a substantially horizontal passageway in the sloping part of said container, a valve seat in said passageway, a discharge tube projecting from said passageway and having a discharge nozzle at its outer end, a lever for controlling the flow of liquid and gas to said discharge tube and having an operating portion extending downwardly along said container to be gripped by the fingers of the user as the spraying device is used, a rest projection on the sloping part of said container adapted to engage the user's hand to support the container during use, and a syphon tube depending from said passageway into said container.

5. In a spraying device, a vase, a head thereon, a passageway through said head, a discharge tube in said passageway having a discharge nozzle, a valve plug at the inner end of said discharge tube, a valve seat in said passageway, a spring in said head and surrounding said valve plug to bias it to seat against said valve seat, a retainer for said spring, a lever surrounding said discharge tube, said discharge tube having a shoulder for said lever to engage said lever having an edge portion to engage said vase for moving the discharge tube to unseat said valve plug from said valve seat when the lever is swung to pivot at the point of engagement at said edge with said vase, and a syphon tube extending from said passageway to a position adjacent the bottom of said vase, said vase and head being adapted to contain liquid and a compressed gas, and said syphon tube having an opening located above the level of the liquid to receive compressed gas to mix with the liquid in the syphon tube and effect atomization of the liquid at said nozzle.

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