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W. B. KOCHNER

2,585,254

SPRAYING DEVICE

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Fig. 1

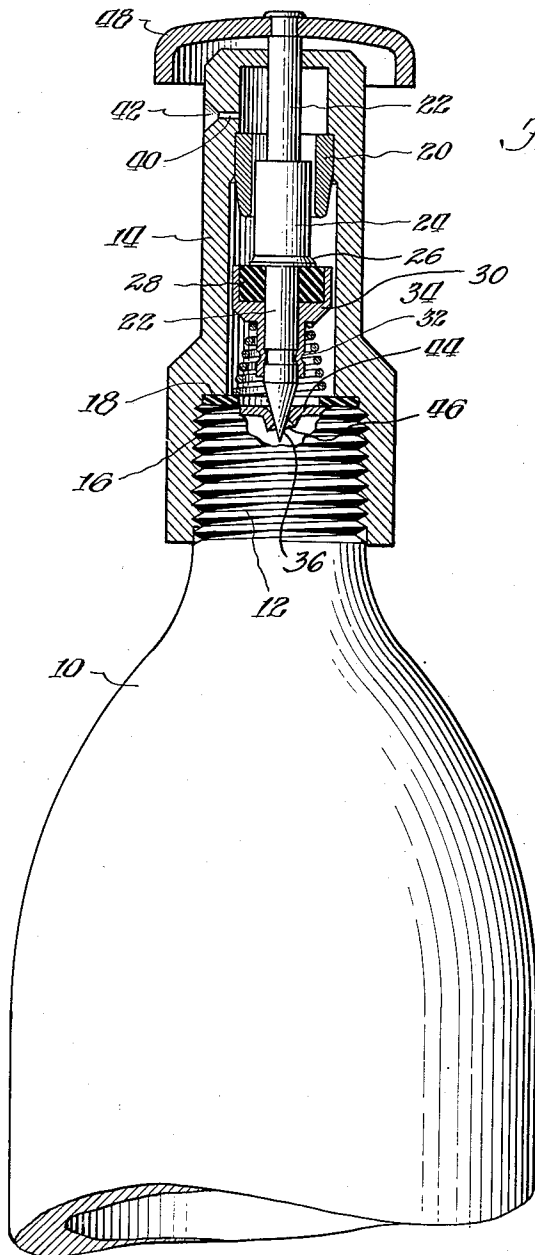


Fig. 2

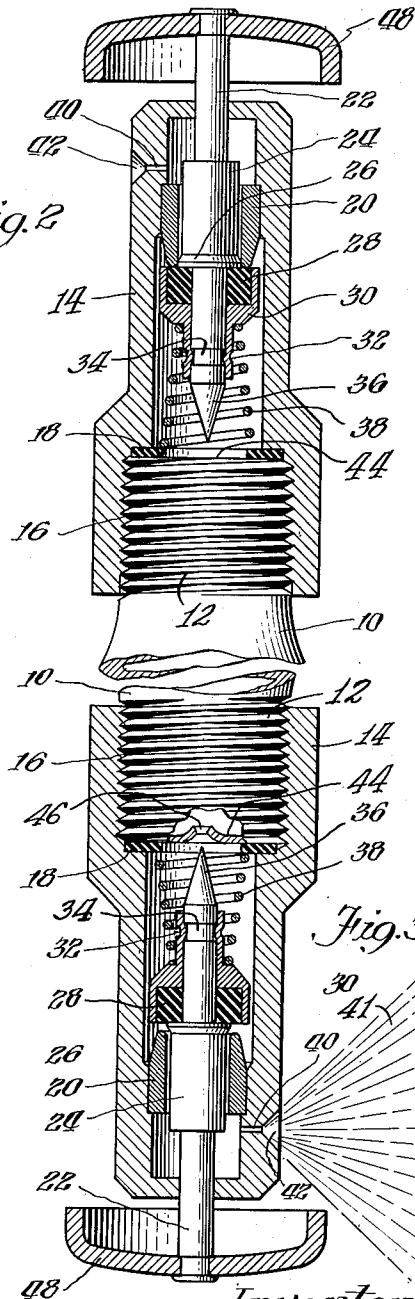
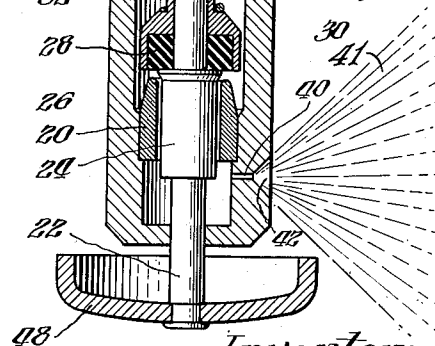


Fig. 3



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UNITED STATES PATENT OFFICE

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SPRAYING DEVICE

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1 Claim. (Cl. 299—95)

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This invention relates to a spraying device particularly adapted for screw-on attachment to a bulb containing both an insecticide or other liquid to be sprayed and a charge of compressed gas for effecting the spraying operation.

One object of the invention is to provide a relatively simple spraying device in the form of a body member to be screwed onto or otherwise suitably connected with the neck of a bulb containing liquid under pressure.

Another object is to provide puncturing and control valve mechanism in the body which involves comparatively few and simple parts and which permits a puncturing operation by pressing on a knob after which the knob can be released for closing the control valve and subsequently depressed when desired for opening the valve as much as and for the time period desired.

Still another object is to provide a body member in which a spring closed valve is mounted, the valve having a puncturing point to coact with a closed end of the bulb and puncture it when the valve is operated beyond its normal control limit, the valve operation not being interfered with by the puncturing operation whereby the mechanism of the combined puncturing and control valve device is reduced to a minimum of parts and results in a spraying device that can be manufactured very inexpensively.

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 claim and illustrated in the accompanying drawings wherein:

Figure 1 is an enlarged vertical sectional view through a spraying device embodying my present invention, it being mounted on a liquid and gas containing bulb and the parts being shown in the puncturing position;

Figure 2 is a similar sectional view through the spraying device showing the initial position of the parts when the device is screwed onto the bulb; and

Fig. 3 is a similar view showing the spraying device in operation.

On the accompanying drawing, I have used the reference numeral 10 to indicate a bulb adapted to contain both a quantity of liquid under pressure such as insecticide and a charge of gas or the like such as compressed CO₂ to dispense the liquid. This bulb is the usual construction of "Sparklet" bulb except that the neck is preferably threaded as indicated at 12 to simplify con-

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nection of my spraying device therewith and a liquid is contained in the bulb in addition to the usual gas charge only.

My spraying device comprises a body member 14 having threads 16 to coact with the threads 12, a gasket 18 being provided for sealing the joint between the neck of the bulb 10 and the body member 14 as shown in Figure 2. A sleeve-like insert 20 serves as a valve seat element through which a stem 22 extends with clearance between the stem and the valve seat as shown in Figure 3.

The stem has an enlarged part 24 terminating in a flange 26 against which a valve disk 28 of synthetic rubber or the like is positioned. The valve disk 28 is frictionally held in a cup-like element 30 and against the flange 26 by the cup element. The cup element has an annular crimp at 32 into a groove 34 of the stem 22 for holding the parts assembled. The lower end of the stem has a point indicated at 36. The valve disk 28 is normally held against the seat element 20 by a spring 38 as in Figure 2. The body 14 has a discharge opening 40 of capillary size terminating in a counter-sunk portion 42 to improve the action of the spray 41 issuing from the port 40.

The body 14 is adapted to be screwed onto the bulb 10 as in Figure 2 and the upper end 44 of the bulb is then adapted to be punctured as indicated at 46 by pressing a knob 48 on the upper end of the stem 22 downwardly from the position of Figure 2 to the position of Figure 1. This opens the valve at the elements 20 and 28, but the point 36 in the perforation 46 of the bulb keeps the gas from escaping. The knob 48 may then be released so that the spring 38 quickly closes the valve to minimize the escape of gas and the spraying device is then in the closed position of Figure 2 and ready for operation.

When it is desirable to dispense all or any portion of the liquid from the bulb, the bulb and the spraying device as a unit are inverted as in Figure 3 whereby partial depression of the knob 48 to the position shown will open the valve by reason of the valve disk 28 being spaced from the element 20 as illustrated. Accordingly, the liquid under pressure will flow out of the bulb past the cup 30 and through the element 20, and also past the enlargement 24 of the stem 22 to issue from the discharge port 40 as indicated by arrows and by the spray illustrated at 41. The valve of course can be opened as little as desired or as much as desired within its open limit and may be closed at any time desired if it is unde-

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sirable to dispense at one time the entire contents of the bulb.

When the liquid is all used up then the gas will commence to issue from the bulb and it will soon be exhausted whereupon the valve mechanism of the spraying device can be permitted to reclose and the device removed from the bulb by an unscrewing action. Another filled bulb can be readily substituted in the sprayer with a minimum of time and effort.

A spraying device of the character disclosed is primarily designed for household use in the spraying of small quantities of insecticide, mothicide, deodorant, sterilizing liquid or the like or even in the spraying of perfume or similar liquids in small quantities. It can also be used of course for any other liquids under pressure for which its use is found suitable.

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 claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within its scope.

I claim as my invention:

In a spraying device of the character disclosed, a cylindrical body member having an enlarged end provided with internal screw threads, a punc-

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turable bulb having external screw threads for cooperation with said internal screw threads for connecting said body member to said bulb, a valve in said body member, a spring between said valve and said bulb to normally close said valve, a push knob, a stem connected therewith for operating said valve, said stem extending slidably through the outer end of said body member, and a piercing element carried by said stem for puncturing said bulb when said valve is moved beyond its open-valve position, said piercing element being exposed when said body member is disconnected from said bulb for puncturing action on another bulb subsequently screw connected with said spraying device, said body member having a discharge port beyond the valve mechanism therein and inward of said outer end of said body member.

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The following references are of record in the file of this patent:

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