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3,081,918

CONTINUOUS SPRAY DEVICE FOR AEROSOL VALVES

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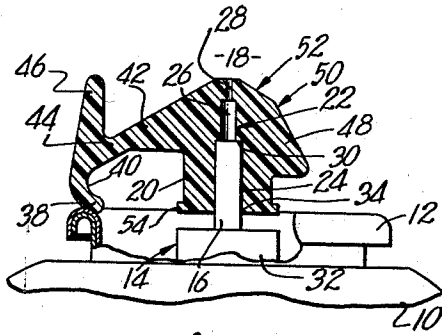


Fig. 1.

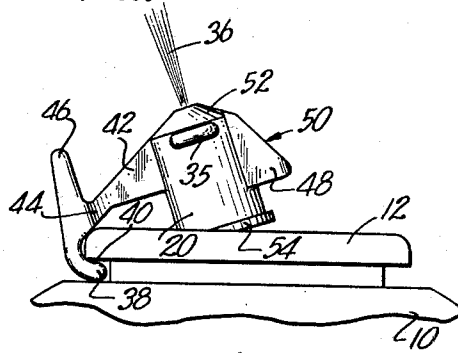


Fig. 2.

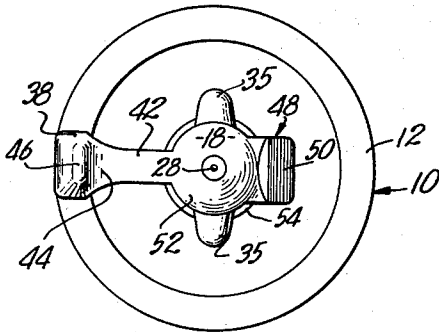


Fig. 3.

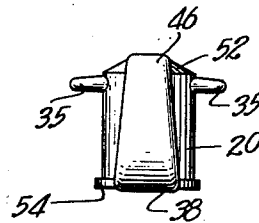


Fig. 4.

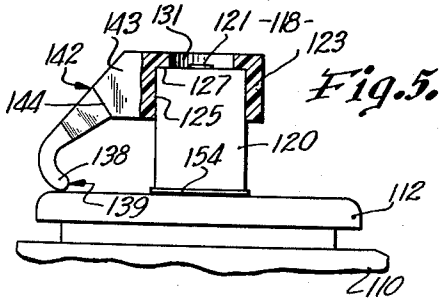


Fig. 5.

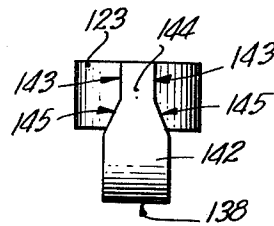


Fig. 7.

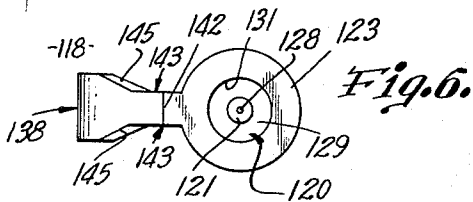


Fig. 6.

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3,081,918 CONTINUOUS SPRAY DEVICE FOR AEROSOL VALVES

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This invention relates to improvements in aerosol dispensers, and more particularly to an element for effecting a continuous spray to eliminate the need for holding the dispensing valve open when continuous spraying is desired.

Aerosol dispensers are today widely used in connection with many types of products, including insecticides. The substance to be dispensed is packaged in a container under pressure and the valves universally employed as a part of the container have become quite conventional. The most common type of valve has a spring-loaded discharge tube that is deflected laterally by the user normally through use of one finger on the hand that grasps the container itself. As soon as the discharge tube is released, it re-assumes a normal upright, closed position. Oftentimes however, it is desirable to spray continuously for a given period of time, but to do so, it is necessary that the operator hold the discharge tube laterally canted throughout the time that such spraying is to take place.

It is the primary object of the present invention therefore, to eliminate the necessity of continuous holding of the discharge tube or nozzle in the open position by provision of an element that is readily attachable to the outlet tube and capable of automatically engaging a portion of the container to hold the valve open until the element is released.

In the drawing:

FIGURE 1 is a fragmentary, side elevational view of a container, parts being broken away and in section to show its aerosol valve, a continuous spray device embodying one form of the instant invention being illustrated in vertical cross section operably mounted on the valve.

FIG. 2 is a fragmentary, side elevational view of the structure shown in FIG. 1, but illustrating the spray device in its operating position.

FIG. 3 is a plan view of the structure shown in FIGS. 1 and 2.

FIG. 4 is an end view of the device of FIGS. 1-3 entirely removed from the valve.

FIG. 5 is a fragmentary, side elevation view similar to FIG. 1, showing a modified form of the instant invention, parts being broken away for clearness.

FIG. 6 is a plan view of the unit shown in FIG. 5, but with the container omitted; and

FIG. 7 is an end elevational view of a portion of the device shown in FIGS. 5 and 6 entirely removed from the valve.

In the form of the invention illustrated in FIGS. 1-4, a container 10 has been chosen for illustration having a lip 12 at the top thereof. Such containers are quite conventional and extensively used in connection with many products to be dispensed. They are normally packed under pressure and ultimately dispensed through use of a pressure valve broadly designated by the numeral 14, valve 14 including a laterally deflectable spring-loaded discharge tube 16. The valve 14 forms no part of the instant invention and has, therefore, not been illustrated in detail.

Reference may be had to any one of the following United States Letters Patent for an understanding generally of the nature of such conventional valves: 2,351,751; 2,376,404; and 2,506,449. These patents are incorporated

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herein by reference as may be needed or desired for a full and better understanding of the principles of the instant invention.

It is but necessary to point out at this juncture, that the spring means of the valve 14 yieldably hold the discharge tube 16 in the vertical or upright position shown in FIG. 1, and that normally, the tube 16 is deflected laterally to open the same and permit escape of the material within the container 10 under pressure in a spray.

The continuous spray element of the embodiment of FIGS. 1-4 adapted to be used in connection with valve 14, is broadly designated by the numeral 18 and is preferably molded or otherwise made in its entirety from a suitable resilient or pliable material such as plastic, that is self-sustaining, yet capable of producing the results hereinafter described. It includes a sleeve 20 having a bore 22 therethrough, made up of stretches 24, 26 and 28 of progressively decreasing diameters, the stretch 24 of the bore 22 frictionally receiving the discharge member 16. The upper end of the member 16 bears against a downwardly facing shoulder 30 between the stretches 24 and 26 to hold the element 18 spaced from a housing 32, forming an enclosure for certain parts of the valve 14 and through which the discharge tube 16 projects, thereby permitting free tilting of the element as illustrated in FIG. 2, without interference between the lower end of the sleeve 20 and the housing 32. A flared mouth 34 at the lower end of the bore 22, facilitates insertion of the element 18 onto the tube 16. Handle means in the nature of oppositely extending, lateral wings 35 integral with the sleeve 20, also facilitates fitting of the element 18 on the member 16 and removal thereof. The diameters of the stretches 26 and 28 are less than the inside diameter of the tube 16 and tend to atomize the substance discharged from the container 10 so that it emanates from the stretch 28 in the form of a fine spray 36.

A small, arcuate hook 38 carried by the sleeve 20 in radially spaced relationship thereto, has its concave surface 40 facing the sleeve 20. Hook 38 constitutes an integral part of an arm 42 at the terminal end of the latter, the arm 42 likewise being integral with the sleeve 20. Arm 42 progressively decreases and progressively increases in width as the hook 38 is approached, presenting a zone 44 about which the hook 38 may deform in a hinge-like manner because of the resiliency of the material from which the element 18 is made. Handle means in the nature of a finger 46 integral with arm 42 and hook 38, extends upwardly from the latter and from the zone 44 of juncture between the arm 42 and the two parts 33 and 46.

A substantially triangular boss 48 integral with the sleeve 20 in diametrically opposed relationship to the arm 42, is provided with an inclined, roughened surface 50. The upper end of the sleeve 20 may take the form of a truncated cone 52 if desired, and a peripheral flange 54 at the base end of the sleeve 20, tends to reinforce the latter.

An operator grasping the container 10 in the palm of his hand, need merely press laterally and upwardly with one finger on the roughened surface 50 of boss 48 to tilt the element 18 from the position shown in FIGS. 1 and 3 to the position illustrated in FIG. 2. This manifestly tilts the discharge tube 16 to the open position. The lowermost and outermost convex surface of the hook 38, slides easily upwardly and outwardly over the uppermost convex surface of the lip 12 and the hook 38 automatically snaps into place beneath the lowermost annular edge of the lip 12, thereby holding the tube 16 open for continuous spraying until the element 18 is released. If desired, an upwardly directed arrow may be provided on the surface 50 of boss 48 to present visual instructions for operation.

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For the most part, the resiliency in the hook 38 is of itself sufficient to cause it to rise slightly as it passes over the upper edge of the lip 12 and to cause it to snap into place beneath the lip 12. However, the resiliency of the arm 42, and particularly the hinge action at zone 44, permits the needed movement on the part of hook 38 to automatically and operably loop itself over the lip 12 when pressure is applied to the boss 48.

The hinge action that is presented at the zone 44 is even more important however, from the standpoint of ease of release of the hook 38 from the lip 12. When release is desired, it is but necessary for the operator to press inwardly on the outer face of the finger 46, thereby swinging the hook 38 from beneath the lip 12 as the hinge action takes place at the zone 44. Upon such release of the hook 38, the inherent tendency of the tube 16 to return to the position shown in FIG. 1, will likewise restore the element 18 to the non-operating position shown in FIGS. 1 and 3.

Here again, the word "Stop" may be applied to the outer face of the finger 46 adjacent its upper end, to indicate to an operator that the finger 46 may be depressed inwardly toward the arm 42 in order to discontinue the spraying action. If the word "Lock" is applied to the convex surface of the hook 38, the operator will become apprised of the function of the hook 38. And, use of the word "Push" on the surface 50 may well be helpful to the operator.

In the embodiment of the invention depicted by FIGS. 5-7, it is to be initially pointed out that aerosol containers 110 are normally provided with a finger-manipulable sleeve 120 on the discharge tube thereof (not shown) in much the same manner as sleeve 20 is mounted on the tube 16. The numeral 121 designates a small central boss at the upper end of the sleeve 120 which has an outlet orifice 128. Such sleeves 120 are also normally provided with a reinforcing flange 154 at the base thereof, and such base is spaced from the valve housing (comparable to housing 32) to avoid interference as above described.

It is possible, therefore, in the embodiment of FIGS. 5-7, to utilize the sleeve 120 to present a continuous spray element 118 that includes the sleeve 120 as a part thereof. A collar 123 of resilient material, has a cavity 125 that frictionally receives the sleeve 120, and a shoulder 127 within the collar 123 bears against the upper end 129 of the sleeve 120. An opening 131 in the collar 123 surrounds the boss 121 concentrically therewith.

An arm 142 integral with the collar 123 and extending radially outwardly and downwardly therefrom, as in the case of the arm 42, terminates in an arcuate hook 138 of much the same nature as hook 38. Arm 142 is provided with flat, vertical faces 143 adjacent the collar 123, and with edges 145 between faces 143 and hook 138 that converge as the faces 143 are approached, presenting a zone 144 that permits a hinge action when the element 118 is manipulated in much the same manner as above described with respect to element 18. Hook 138 operably engages with lip 112 of the container 110 when pressure is applied to the collar 123 at a point diametrically opposed to the

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arm 142. Element 118 may be released by simply applying finger pressure to its lowermost terminal end 139.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In combination with a container for fluid under pressure wherein the container has a lip at the top thereof and a valve provided with a laterally deflectable discharge tube, an element on the tube having a resilient arm provided with a hook thereon, said arm being of sufficient length to permit looping of the hook over the lip only when the tube is deflected to hold the latter deflected.

2. In combination with a container for fluid under pressure wherein the container has a lip at the top thereof and a valve provided with a laterally deflectable discharge tube, an element having a sleeve on the tube and having a resilient arm provided with a hook thereon, said arm being of sufficient length to permit looping of the hook over the lip only when the tube is deflected to hold the latter deflected.

3. In combination with a container for fluid under pressure wherein the container has a lip at the top thereof and a valve provided with a laterally deflectable discharge tube, an element having a sleeve on the tube and having a resilient arm provided with a hook thereon, said arm being of sufficient length to permit looping of the hook over the lip only when the tube is deflected to hold the latter deflected, said hook having a collar integral therewith and fitted on the sleeve.

4. In combination with a container for fluid under pressure wherein the container has a lip at the top thereof and a valve provided with a laterally deflectable discharge tube, an element on the tube having a resilient arm provided with a hook thereon, said arm being of sufficient length to permit looping of the hook over the lip only when the tube is deflected to hold the latter deflected, said element having handle means for facilitating release of the hook from the lip.

5. In combination with a container for fluid under pressure wherein the container has a lip at the top thereof and a valve provided with a laterally deflectable discharge tube, an element on the tube having a resilient arm provided with a hook thereon, said arm being of sufficient length to permit looping of the hook over the lip only when the tube is deflected to hold the latter deflected, said element having a roughened pushing surface for facilitating the looping of the hook over the lip.

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