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CLOSURE FOR PRESSURIZED DISPENSING CAN HAVING
AN ACTUATOR FOR THE DISCHARGE VALVE
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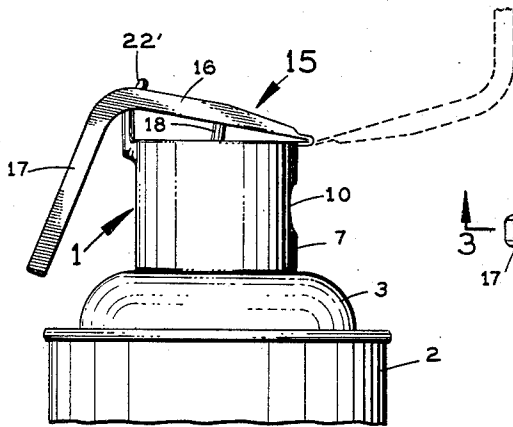


FIG. 1

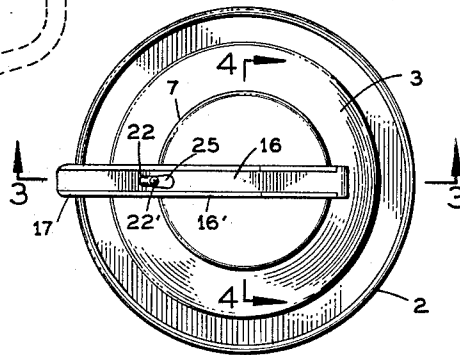


FIG. 2

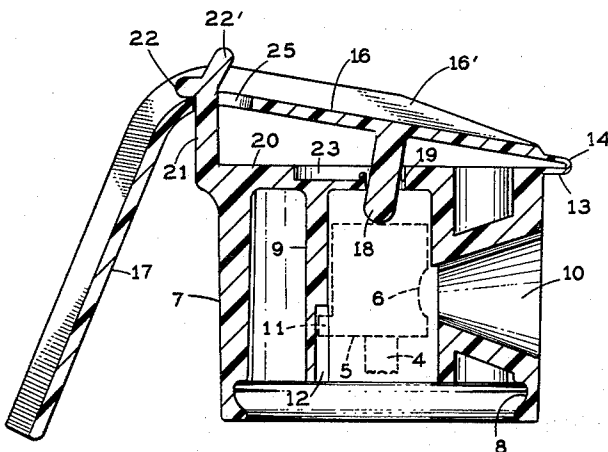


FIG. 3

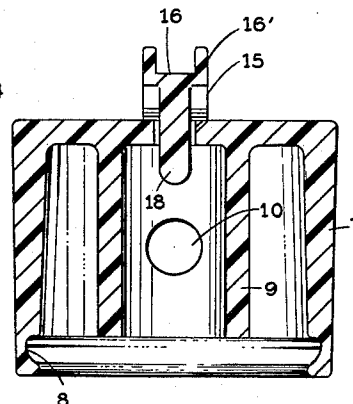


FIG. 4

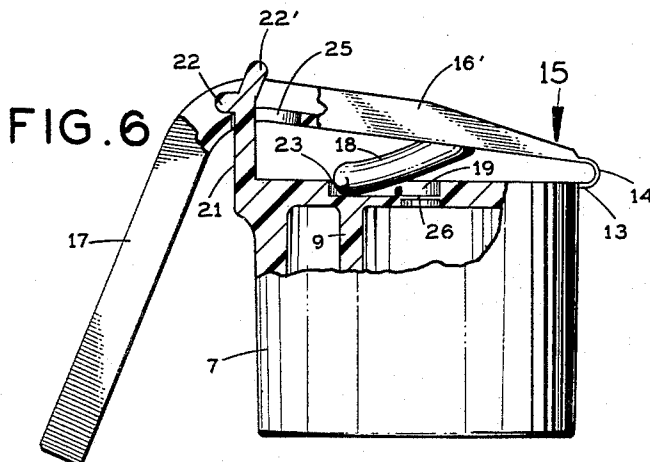


FIG. 6

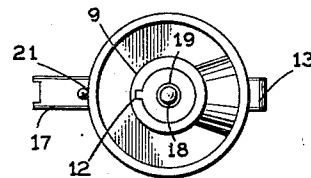


FIG. 5

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CLOSURE FOR PRESSURIZED DISPENSING CAN HAVING AN ACTUATOR FOR THE DISCHARGE VALVE

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6 Claims. (Cl. 222-394)

This invention relates to spraying devices, and more particularly to a device adapted to be fitted upon the top of a pressurized or spray can to spray the contents thereof.

In many cans of this kind, and which are usually used for containing insecticides, deodorants, liquid soaps and many other liquid preparations, a plunger is provided at the top which, upon its depression, opens a valve and causes the spraying out of the contents. The ease with which these cans can be sprayed often causes them to be taken from the shelves in stores and "test sprayed" by customers. This results in the reduction of the can contents so that many of the cans, when purchased, are partially emptied or do not contain the required full amount. Also, some of these cans are so constructed that the possibility of them being accidentally sprayed while in shipping is likely.

It is an object of the present invention to provide a spraying device which will prevent the unauthorized or accidental spraying; which can be made economically, and if desired, of one-piece construction and of plastic material; which will be provided with closure means preventing accidental spilling; which will aid in directing the spray toward the desired area of dispersion; which can be made either as a removable or non-removable attachment to a standard spray can, and which will possess numerous other advantages apparent to those skilled in this art.

More particularly, the invention contemplates the provision of a cup-shaped cap member fitted over the plunger of a pressurized container or spray can, and which cap is provided with a hinged lever extending across the top of the cap, the lever having a stem extending downwardly from it and which passes through an aperture in the top of the cap, to reach the can plunger and cause it to be depressed to spray the can contents upon the manual depression of the lever. A feature of the invention resides in the provision of a flexible stem on the lever and which can be bent to and positioned at such an angle that it will be disigned from the aperture in the top of the cap and thus will not reach and contact with the plunger when the lever is depressed, and as a result the device can, when the stem is so angularly positioned, be rendered inoperative and the can prevented from spraying.

With these and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, wherein an illustrative embodiment of the invention is disclosed,

FIG. 1 is a side elevational view of a portion of a pressurized container or spray can with the improved spraying device fitted thereon;

FIG. 2 is a top plan view of the same;

FIG. 3 is a sectional view, taken substantially on the line 3-3 of FIG. 2, looking in the direction of the arrows;

FIG. 4 is a sectional view, taken substantially on the line 4-4 of FIG. 2, looking in the direction of the arrows;

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FIG. 5 is a view, on a reduced scale, of the sprayer device as seen from its under side, and

FIG. 6 is a side elevational view of the spraying device, with parts fragmentarily shown, to disclose construction.

The improved spraying device and closure, generally indicated at 1, is primarily adapted for fitment upon a pressurized container or spray can of the type partially shown in FIG. 1. Such can consists of a cylindrical body 2, provided with a domed top 3 through which a centrally positioned plunger is operative for opening a valve to cause spray-ejection of the can contents. The plunger includes a stem 4 (FIG. 3) which projects upwardly in the center of the can above the top thereof and which is provided at the top with a head or button 5 as is usually engaged by the finger and depressed to cause the ejection of the fluid through an outlet 6 provided in the side of the head or button 5.

The improved spraying device of the present invention is preferably, but not necessarily, made of molded plastic material, and if desired, it can be made in one piece. A plastic such as polypropylene is suitable for the purpose, since such material is resistant to acids, paints and chemicals.

In the form shown, the spraying device includes a cup-shaped body or cap 7, provided adjacent to its lower end with an internal annular groove 8, adapted for snap engagement with an upstanding ring, not shown, but conventionally provided on pressurized cans of the type disclosed and located around but spaced from the central stem 4. By the engagement of the groove 8 with such ring, the spraying device is securely attached to the top of the can and over the stem 4 and head or button 5 thereon. It can be otherwise attached, permanently or removably, to the top of the can.

Provided concentrically and integrally within the cap 7 is a sleeve 9 which encircles the plunger head or button 5 and conforms to the cylindrical shape of said head or button. A flared spray opening 10 of frusto-conical or funnel formation extending through the side wall of the sleeve 9 also extends through the side wall of the cap 7, and said opening 10 registers with the spray outlet 6 in the head 5. It is apparent from the foregoing, that when the head 5 is depressed the liquid sprayed through its outlet 6 will be sprayed out of the opening 10 to reach the area of dispersion.

In order to insure the registry of the outlet 6 with the spray opening 10, the head 5 is formed with a radially-projecting lug 11 which engages with a groove 12 provided in the wall of the sleeve 9. When the head 5 is fitted within the sleeve 9, which can be done by removing the head or button 9 from the end of the stem of the plunger, and with the lug 11 entering the groove 12, the outlet 6 will be positioned in registry with the opening 10 while permitting the slight vertical movement of the head or button 5 required to secure the spraying operation.

Projecting radially from the sprayer body or cap 7 at the top thereof is a tongue 13 which is formed integrally with the cap 7 and which is flexible to permit of it being doubled over or folded upon itself, as shown at 15. Attached to one end of the tongue 13 is a lever 15, which is channel-shaped in cross section to lend stiffness and rigidity to it. Said lever 15 has a top part 16 extending transversely across the top of the cap 7. Extending downwardly from the top part 16 of the lever is a handle part

or finger-piece 17 intended for engagement by the hand to depress the lever and cause the same to force the head 5 downwardly to spray the contents of the can.

Projecting downwardly from the under side of the top part 16 of the lever is a stem 18 which, in its normal position of extension from the lever 15, is disposed at substantially right angles to the part 16 of the lever and the stem extends and is movable through an aperture 19 provided in the top wall 20 of the cap 7. When the stem 18 extends downwardly in the manner shown in FIG. 3, it is in a position to contact with the upper end of the head or button 5. As a result, when the lever 15 is depressed by pressure imposed on the handle portion 17, the stem 18 will depress the head or button 5 and the contents of the can will then be sprayed out of the registered outlet 6 and opening 10.

Provided in the lever 15 is a slot 25 and an upstanding lug 21 passes through the slot, the lug being provided at the top with a laterally-projecting lip 22 which fits over the lever at one end of the slot 25 and limits the upward swing of the lever. The tendency of the tongue 13, constituting the hinge for the lever, to flatten, normally holds the lever in its raised position and against the lip 22 as shown in FIG. 3. The lug 21 at its top is provided also with an upstanding lip 22' that extends above the side walls 16' of the lever 15, such lip constituting a means to manually force the lug 21 forwardly to release the lip 22 and to permit the lever to be swung to the dotted line position shown in FIGURE 1.

In the operative position of the device, the stem 18 is positioned as shown in FIG. 3. However, prior to the spray device being readied for use, it can be positioned in an inoperative position as shown in FIG. 6, with the stem 18 so located that it will not act to depress the head 5 when the lever 15 is depressed. The stem 18, formed as a part of the lever 15, is relatively flexible and as a result it can be bent angularly to position it at an acute angle to the lever 15 rather than at right angles to the part 16 thereof. The stem 18 can be put in such an angular position by forcing the lever 15 upwardly past the lip 22 to swing it to the position substantially as shown in dotted lines in FIG. 1. In this position of the lever, the stem 18 is accessible and by finger pressure it can be bent or angularly positioned acutely to the lever. With the stem in such acute-angled position, the lever 15 is then brought down and engaged under the lip 22. Since at that time the stem was in the acute-angled position, it will be disaligned from the aperture 19 and it therefore will not pass through the same but instead will come to rest upon a seat in the form of a recess 23 provided in the top wall 20 of the cap 7. While in this position, the lever 15 is capable of up and down movement, but without the stem 18 depressing the head or plunger button 5.

As initially provided on the pressurized can, the spraying device is in the condition shown in FIG. 6. That is to say, at that time the end of the stem 18 is resting against the seat or recess 23 and the device is thus inoperative as far as spraying is concerned. As also provided initially, the top wall of the sprayer has its aperture 19 closed by an integrally-formed diaphragm 26, so that the can, with the spraying device on it, and with the parts thereof in the position shown in FIG. 6, will be closed and cannot be operated by the depression of the lever 15. Thus, while the can so equipped is located on a shelf in a store, it is prevented from having its liquid contents reduced by the unauthorized use or test spraying by possible customers. The diaphragm 26 also tends to seal the top of the cap while the can is on a shelf.

To place the spraying device in use, the lever 15 is raised to substantially the position shown in dotted lines in FIG. 1; the stem 18 is straightened to bring it to its right-angled position with respect to the part 16 of the lever 15, and the lever is then brought down to bring the lip 22 over it. Upon the descent of the lever, and while the stem is thus disposed at right angles to it, the end of the stem will come

into contact with the diaphragm 25 to thereby rupture the same and enable the end of the stem to pass through the then-formed aperture 19 and to reach and contact with the top of the head or button 5. Thereafter, depression of the lever 15 will always cause the head or button 5 to be depressed and the contents to be sprayed out of the can. While the tongue 13 has been illustrated as being integral with the cap 7, it will be clearly apparent that any type of hinge may be employed such as a snap-on connection between the lever 15 and the cap 7. It is contemplated however that the device shall be molded as an integral structure as illustrated but it may be found desirable from the standpoint of possible manufacture that the device be molded in two parts with the lever 15 being subsequently connected in hinged arrangement with respect to the cap 7.

It will be apparent from the foregoing that a spraying device is provided which will be clean and easily-operated. When in the condition shown in FIG. 6, the top of the can will be sealed and the operating lever will be so arranged that accidental or intentional depression will not cause spraying. Also, when the parts are in the inoperative position shown in FIG. 6, waste of contents by test spraying by customers will be prevented. Among other advantages provided are ease of operation because of the use of a relatively large handle; the spraying device can be used on standard spray nozzles; it does not require the use of a separate closure cap nor the removal of such cap to spray; it can be inexpensively made because of its unitary, integral construction and its outlet is automatically directed toward the area to be sprayed because of the lever pointing toward and thus indicating the position of the spray outlet.

While I have thus described a single embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claims.

What I claim is:

1. A spraying head for pressurized containers of the type having a vertically-arranged plunger for depression to spray the can contents, said plunger being provided with a button at the top, the button having a spray outlet, a cap fitted over the plunger and having a central sleeve surrounding the button, the cap having a spray opening in its side wall, interfitting means on the button and sleeve for registering the spray outlet with the spray opening, the cap having a top wall, a folded tongue at the top of the cap constituting a hinge for a lever extending from the tongue and passing across the top of the cap, said lever having a downwardly-extending stem, the top wall of the cap having an opening through which the stem passes to contact with the top of the button so that the button will be depressed upon the manual depression of the lever, the stem being capable of being angularly positioned so that it will contact with the top wall of the cap rather than pass through the opening upon depression of the lever, and means engaging with the lever for restraining its upward pivotal movement away from the top of the cap.

2. A spraying head as provided for in claim 1, wherein the top wall of the cap is provided with a recess in its upper surface forming a seat against which the end of the stem rests when the stem is acutely positioned, and the means which restrains the lever from upward swing being a lip provided on a lug extending upwardly from the top of the cap.

3. In a spraying head for a pressurized can of the type having a plunger arranged for depression to spray the can contents, a cap fitted on the top of the can around the plunger, a pivoted lever on the top of the can for depressing the plunger, a flexible element extending from the lever to contact the plunger on the downward depression of the lever, said flexible element being bendable so that it can be angularly positioned to prevent it from contacting with the plunger when the lever is depressed.

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4. In a spray head as provided for in claim 3, wherein the cap has an opening in its top through which the flexible element passes to reach the plunger, and wherein the top of the cap contacts with the end of the stem when the element is bent so that its end is disaligned with the opening while the lever is depressed.

5. In a spray head for a pressurized can of the type having a plunger arranged for depression to spray the contents of the can, a cap fitted on the top of the can over the plunger, the cap and plunger having registered spray openings, the cap having an integrally-hinged lever extending across its top, a stem extending downwardly from the lever, the top of the cap having an aperture through which the stem passes to contact with the top of the plunger, the stem being flexible so that it can be bent laterally to disalign it from the aperture in the cap so that it will not pass through the aperture when the lever is depressed, and means for restricting the pivotal movement of the lever.

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6. In a spray head as provided for in claim 5, wherein a penetrable diaphragm is provided to close the aperture in the top of the cap, and which diaphragm is puncturable by the stem when the lever is depressed while the stem is aligned with the aperture.

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