

Dec. 27, 1960

S. DARVIE  
SPRAY DEVICE

2,966,283

Filed Nov. 20, 1958

2 Sheets-Sheet 1

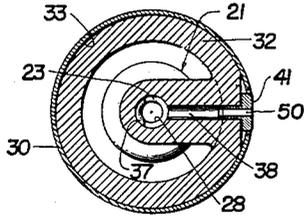


FIG. 2.

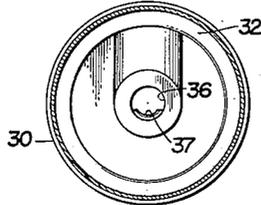


FIG. 6.

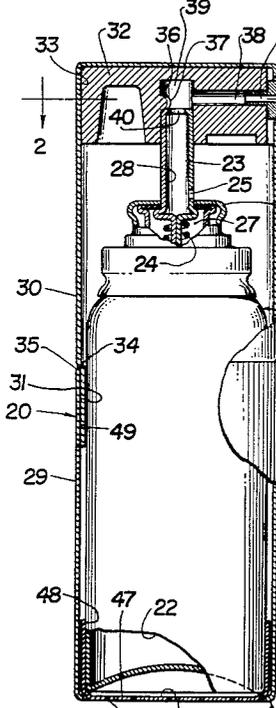


FIG. 1.

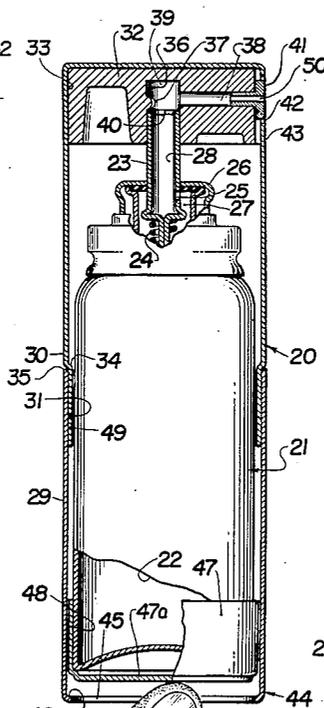


FIG. 4.

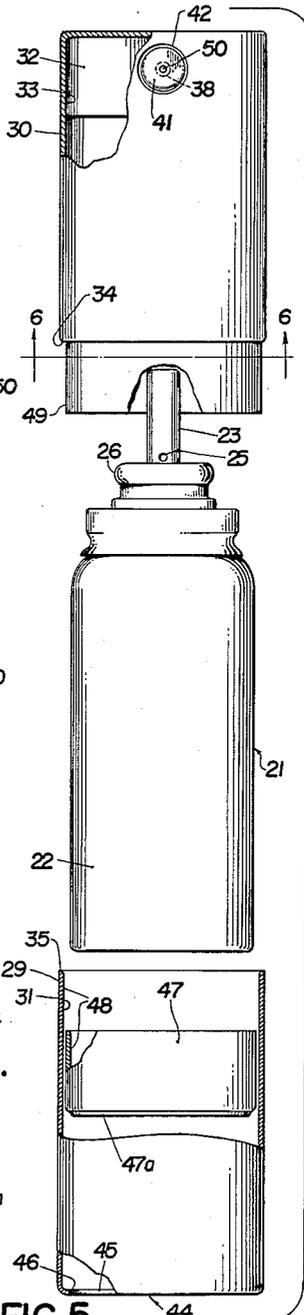


FIG. 5.



FIG. 3.

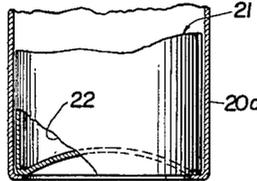


FIG. 7.

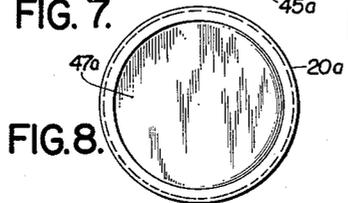


FIG. 8.

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2 Sheets-Sheet 2

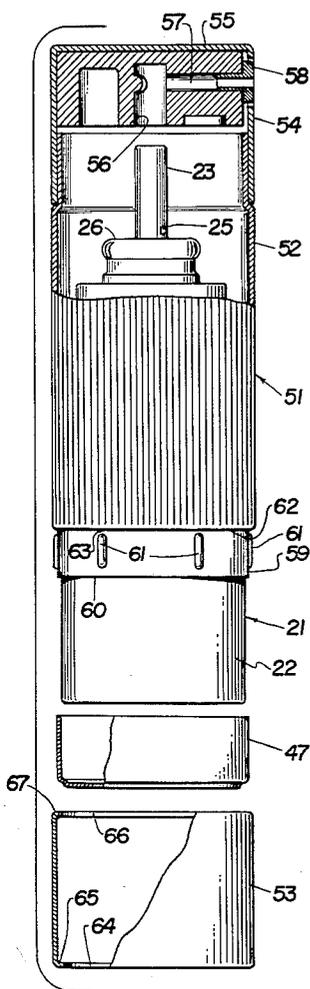


FIG. 9.

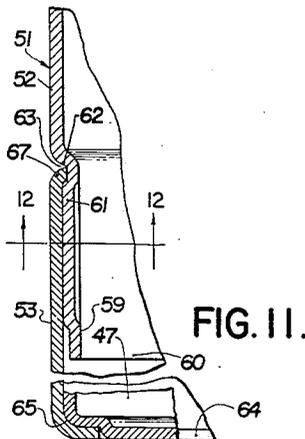


FIG. 11.

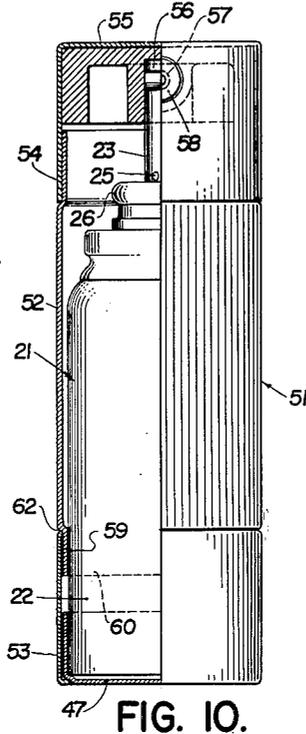


FIG. 10.

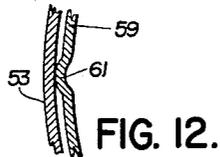


FIG. 12.

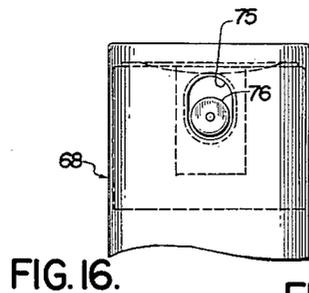


FIG. 16.

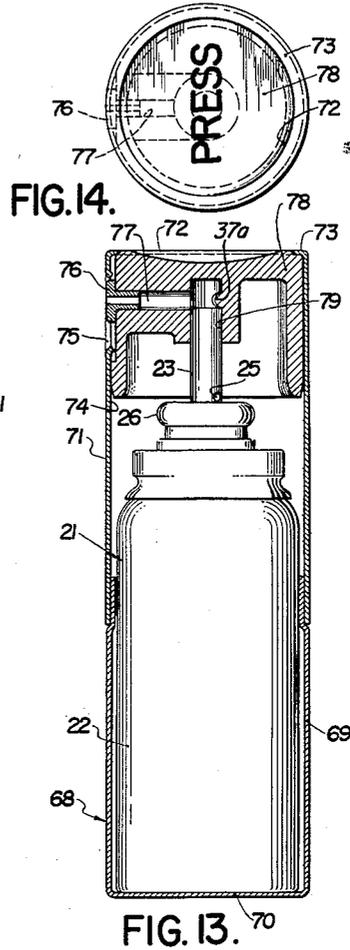


FIG. 13.

FIG. 14.

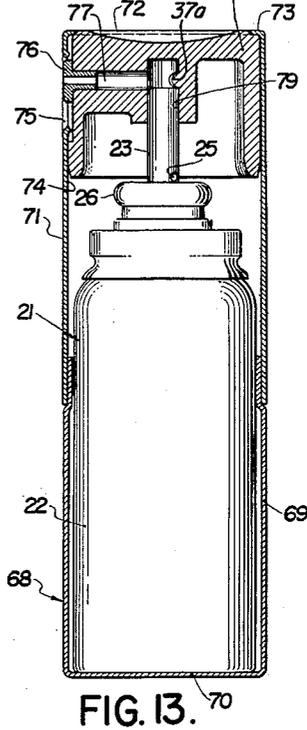
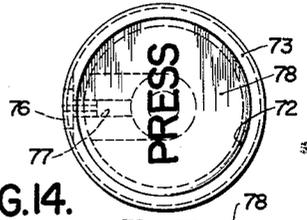


FIG. 15.

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2,966,283

SPRAY DEVICE

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3 Claims. (Cl. 222—183)

This invention relates to spray devices—more particularly to discharge containers for atomizer cartridges of the aerosol bomb type.

It is a common practice, especially in the cosmetic field, to employ cartridges of the above-mentioned category comprising a casing containing therein a colloidal suspension of perfume or other cosmetic in a gas under pressure, the casing having a manually depressible spring-loaded valve stem for releasing an atomized stream or spray of the contents. In conventional constructions of this class, the cartridge is housed in a container provided with a telescopically and slidably fitted cap which is in operative engagement with said stem, so that upon a manual depression of the cap the spring-loaded stem will be correspondingly depressed to open the valve in the stem, the cap being provided with a discharge nozzle in communication with the discharge opening in the stem. It has been found that this conventional type of spray device has a serious shortcoming, in that the said cap, being fully exposed, is frequently accidentally depressed and the vaporized contents of the cartridge discharged. This occurs particularly while the device is being carried in a handbag or pocket—causing damage to adjacent articles and embarrassment, in addition to a loss of the fluid.

It is one of the main objects of this invention to provide a spray device with a discharge cartridge of the above-described category that will be conveniently operable by manual pressure and will not have the aforesaid disadvantage of conventional devices. And in this aspect of my invention it is a further specific object thereof to provide a container for the cartridge having no outer or protruding depressible parts, whereby the danger of accidental discharge is eliminated.

Another object of my invention, in certain embodiments thereof, is the provision of a removable shell member for the outer container which enables access to be had to the interior thereof for the replacement of a used cartridge, said shell serving as a closure for the container and a discharge nozzle support coactively connected to the cartridge, but held against operatively depressing said valve stem.

It is further within my contemplation to provide, in a certain form of my invention, a container construction having a non-protruding actuating member for the cartridge, which conceals said cartridge and is adapted to receive thereon attractive surface ornamentation.

And it is my objective to provide a relatively simple device having the aforesaid features, and being adapted for mass production.

Other objects, features and advantages will appear from the drawings and the description hereinafter given.

Referring to the drawings,

Fig. 1 is a longitudinal section of an embodiment of my invention showing therein, in elevation, a cartridge device in its inoperative position with the valve stem thereof in its raised closed position, a fragment being removed for clarity.

Fig. 2 is a section of Fig. 1 taken along line 2—2.

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Fig. 3 is a bottom view of Fig. 1.

Fig. 4 is a view substantially like Fig. 1, but showing the cartridge member manually raised to its operative position with the valve stem in its depressed open position.

Fig. 5 is an exploded elevational view of certain of the components of the spray device of Fig. 1, portions being shown in section and fragments being removed for clarity.

Fig. 6 is a section of Fig. 5 taken along line 6—6.

Fig. 7 is a fragmentary longitudinal section of the lower portion of a modified form of spray device of my invention, without an actuator member, a fragment of the cartridge being shown in elevation.

Fig. 8 is a bottom view of Fig. 7.

Fig. 9 is a partly disassembled view of another embodiment of my invention shown partly in section and partly in elevation.

Fig. 10 is an assembled view, partly in elevation and partly in section, of the device of Fig. 9.

Fig. 11 is an enlarged fragmentary section of the lower left-hand corner portion of Fig. 10.

Fig. 12 is a fragmentary section of Fig. 11 taken along line 12—12.

Fig. 13 is a longitudinal section of another modified form of my invention wherein the upper portion of the container member is depressible, the cartridge member being shown in elevation.

Fig. 14 is a top view of Fig. 13.

Fig. 15 is a fragmentary view of the upper portion of Fig. 13, but showing the valve stem of the cartridge member in its operatively depressed position.

Fig. 16 is a fragmentary side view of Fig. 15.

In the form of my invention illustrated in Figs. 1 to 6, the container member generally designated 20 houses therein the conventional cartridge 21, the latter comprising a casing 22 containing therein gaseous contents under pressure, the casing having a valve stem 23 urged by spring 24 into its raised position (with respect to the casing) illustrated in Fig. 1, said valve stem being movable downwardly to the depressed position (relative to the casing) shown in Fig. 4. The said stem 23 has an inlet aperture 25 which is disposed above the closure 26 of casing 22 when the stem is in its raised position, and below said closure 26 and in communication with the interior 27 of the casing when the stem is in its said depressed position. It is deemed unnecessary to further describe the details of construction of the cartridge member 21, inasmuch as it is well-known to those skilled in the art, and since no further description is required for an understanding of the present invention. Suffice it to say, for the purpose of this specification, that when said stem 23 is operatively depressed to the position shown in Fig. 4, it is in its open position whereby gaseous contents from the interior 27 of casing 22 will be discharged through the stem's passageway 28 and out through a discharge nozzle to be hereinbelow described; and when said valve stem 23 is in its normal raised position illustrated in Fig. 1, the said passageway 28 is out of communication with the said interior of casing 22, whereby there will be no discharge through the nozzle.

The said container member 20, in the particular form illustrated, comprises three components, the cylindrical body portion 29, the cap 30 in slidable engagement with the upper interior surface 31 of said body portion 29, and an upper end portion 32 which, in the particular form illustrated, is fixedly secured to the inner surface 33 of the said cap portion 30. For the purpose of this specification, the said cap of the container and said portion 32 will be regarded as a unitary member. It will be noted that the

cap 30 is pressed inwardly to provide an annular shoulder 34 which is in engagement with the upper edge 35 of cylindrical body portion 29, whereby said edge 35 serves as a stop to limit the downward sliding movement of said cap 30.

The said upper end portion 32 of the container member 20 contains an axial recess 36, the lateral wall forming the recess containing the intermediate inwardly protruding stop portion 37. Substantially opposite said stop 37 is the passageway 38 communicating with the upper portion or outlet chamber 39 of said recess 36. Said recess is proportioned to receive the upper portion of the stem 23, the position and proportions of said stop 37 being such as to serve as an abutment for the upper end of the stem. The said valve stem contains a discharge aperture 40 in communication with the said chamber 39 and passageway 38; and disposed at the outer end of said passageway 38 is the nozzle member 41 extending into the aperture 42 in the lateral wall 43 of container 20.

The base or bottom end portion 44 of the container member 20 contains an open portion 45 defined by the annular wall 46 extending inwardly from the lateral wall of the container member. Said annular wall 46 serves as a seat to receive the cup-shaped actuator member 47 slidably disposed within the lower portion of the container member 20 and embracing the bottom portion of the casing 22 of the cartridge 21. It will be observed that the thickness of the lateral wall 48 of said cup-shaped actuator member 47 is substantially equal to the thickness of the lowermost annular wall 49 of the cap member 30. The arrangement is such that the lateral wall 48 of actuator member 47 and the lateral wall of casing 22 are in slidable engagement with portions of the container member 20—said wall 48 being in slidable engagement with the inner surface of cylindrical body portion 29, and the lateral wall of the casing 22 being in slidable engagement with the inner surface of wall 49, as aforesaid. The container member 20 is, in the form illustrated, of elongated configuration and is proportioned to permit a longitudinal movement of said elongated cartridge member 21 therein.

In the operation of this device, a finger is inserted through the open bottom portion 45 of the container member, as illustrated in Fig. 4, thereby engaging the actuator member 47, forcing the cartridge 21 upwardly and pressing the stem against the stop 37, thereby causing a downward depression of the stem 23 against the action of the spring 24. When this occurs, said inlet aperture 25 of the valve stem is brought into communication with the interior 27 of casing 22, whereby some of the gas under pressure within the casing will be discharged into the passageway 28 of the stem 23, the outlet chamber 39, passageway 38 and then out through the orifice 50 of the nozzle 41.

Thus, by the simple operation of inserting a finger through said open portion 45, and actuating the cartridge 21 upwardly, a spray is discharged through the nozzle 41. This operation is performed without any need to remove the cap 30, or to depress the cap as is required in conventional spray devices of this category. Because of the fact that the entire container 20 is of fixed proportions when the cap 30 is operatively in place, there is no danger whatsoever of accidentally discharging the spray device upon an inadvertent pressure applied to the cap 30, or to any other part of the device. Since no part of the casing 22 or of the actuator member 47 protrudes outwardly beyond the base 44 of the container member, the danger of such an accidental discharge is obviated. In other words, only by a deliberate insertion of a finger through the open portion 45 is it possible to effect a discharge. And this operation can be done as easily and as readily as the operation of depressing a conventional slidable lid, and certainly with less effort than it required in those conventional devices where the lid must first be removed and pressure applied directly to the valve stem.

As aforesaid, the upper edge 35 of the body portion 29 of the container serves as a stop, whereby the cap member 30 serves as a closure, the closed position being such that there is no danger of the cap's actuating the valve stem. Yet, since said cap 30 is slidably disposed in place, it can readily be removed for the purpose of replacing the cartridge when necessary.

It will be observed that the base 47a extends across the open portion 45 at the bottom of the container member, so that said base 47a is visible through the said open portion. The arrangement is such that visible ornamentation and notations 47b can be applied to the outer surface of base 47a, as clearly indicated in Fig. 3.

In the embodiment of my invention illustrated in Figs. 7 and 8, the actuator member 47 is dispensed with, the container member 20a being proportioned to slidably accommodate therein the cartridge 21. With this construction it is evident that a finger inserted through open portion 45a at the bottom of the container will be able directly to engage the bottom of the cartridge 21, to cause an operative movement thereof upwardly. While this form is less expensive than the form as above described, it does not have the advantage of a separate wall, such as base member 47a, adapted to receive thereon decorative ornamentation or desirable notations.

In the embodiment of my invention illustrated in Figs. 9 to 12, the cartridge member 21 employed therein is similar to that employed in the embodiments above-described; but in this form the cartridge is operatively insertable through the bottom of the container member, rather than through the top thereof as is the case in the forms hereinabove described. Specifically, the container member, referred to generally as 51 comprises the body portion 52, the bottom removable cap 53 and the top fixed closure cap 54 fixedly secured to body portion 52 and having a top portion 55 substantially similar to the top portion 32 first above-described. The valve stem 23 is operatively positioned within the recess 56 which communicates with the passageway 57 and the nozzle member 58, also in the manner above-described.

The bottom end of body portion 52 contains the annular wall 59 surrounding and defining the bottom opening 60 through which the said cartridge 21 is inserted—said annular wall 59 having pressed outwardly therefrom a plurality of vertical ridges 61, said ridges being spaced from the bottom shoulder 62 of body portion 52 so as to provide gaps 63 between the ridges and said shoulder. The bottom cap 53 has an open portion 64 at the base thereof, said portion being defined by the annular wall 65 forming the seat for the actuator member 47, in the manner above-described. Said bottom cap 53 is proportioned to accommodate therein the lower portion of cartridge 21 when said bottom cap is operatively in place, as illustrated in Fig. 10. At the top of said cap 53 there is an open portion 66 defined by a slightly inwardly extending peripheral lip 67, the cap being so proportioned that the said peripheral lip 67 extends into the gaps 63 between the ridges 61 and said shoulder 62 when the cap is operatively in place. The material of the cap 53 is somewhat springy, so that the said lip 67 operatively snaps into place when said member is brought into its final assembled closure position. It can similarly be removed by a slight downward pull. In this embodiment of my invention, the entire cartridge member 21 is actuated in an upwardly direction upon an insertion of a finger through open portion 64, precisely in the manner set forth in connection with the other embodiments of my invention above-described.

The form of my invention illustrated in Figs. 13 to 16 contains the same cartridge member 21 as in the above-mentioned embodiments; but the device is adapted to receive manual pressure applied through the top portion of the device, rather than through the bottom thereof. This embodiment of my invention has a container member 68 comprising a cylindrical body portion 69 with

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the bottom end portion 70 thereof closed, said container member having slidably fitted thereover the top cap member 71 the upper end portion thereof having an open portion 72 defined by the upper annular peripheral wall 73. In the lateral wall 74 of said cap member is the vertically elongated aperture 75 proportioned to accommodate therein, for vertical slidable movement, the said nozzle 76. This nozzle extends into the passageway 77 of the upper discharge component 78 of cap member 71, said upper portion 78 having a recess 79 therein, substantially similar to recesses 36 and 56 of the forms above-described, and proportioned to receive therein the valve stem 23. The said upper portion 78, however, is to be distinguished from the corresponding upper portions 32 and 55 of the other forms of my invention, in that portion 78 is slidably movable within the upper portion of cap member 71.

In the operation of this form of my invention, a finger is inserted through the open portion 72 at the top of the container member 68, as illustrated in Fig. 15, pressure being applied to the portion 78 to cause it to slide downwardly and thereby cause an operative depression of valve stem 23, whereby a portion of the gaseous contents of cartridge 21 is discharged from the stem into the passageway 77 and through the nozzle 76. Because of the fact that the aperture 75 in the wall container member 68 is elongated, to accommodate the operative movement of the nozzle 76, the said slidable upper portion 78 is free to be moved between its operative upper and lower positions.

In this form of my invention it is evident that the advantages characteristic of the other embodiments are also present, in that there are no protruding or slidable parts that can be accidentally depressed to cause an inadvertent discharge of the gaseous contents of cartridge 21. The operation of this form of my invention is just as simple as the others, except that pressure is applied directly to the valve stem 23, rather than indirectly through the body of the cartridge 21, to produce an operative spray.

In the above description, the invention has been disclosed merely by way of example and in preferred manner; but obviously many variations and modifications may be made therein. It is to be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except insofar as such limitations are specified in the appended claims.

I claim:

1. In a spray device of the type having an elongated casing with gaseous contents therein under pressure and

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with a spring-loaded valve stem at one end movable between a depressed open position and a raised closed position, said stem having a discharge aperture therein, the combination of an elongated container member housing said casing and stem, said container member having opposite end portions flanking a lateral wall, a vertically movable discharge member of rigid material in the upper part of said container member and having a recessed portion into which said stem extends, said discharge member being operatively movable between two limiting positions and being wholly disposed within said container member in both of said positions, said discharge aperture of the stem being in communication with said recessed portion, said recessed portion having a rigid stop portion in engagement with said stem, a discharge nozzle connected to said discharge member and in communication with said recessed portion, said nozzle being independent of and in spaced relation to said stop portion, a vertically elongated apertured portion in the lateral wall of said container member, said nozzle being disposed in registry with said elongated apertured portion and within the confines of said container member, and an open portion in the upper end portion of the container member, whereby manual access to the interior of the container member may be had therethrough for operatively depressing said movable discharge member and thereby operatively depressing said stem.

2. In a spray device, the combination according to claim 1, said discharge aperture being at the upper end of said stem, said discharge member having a passageway communicating between said recessed portion and said discharge nozzle, said stop portion protruding partially into said recessed portion substantially at the level of and opposite to said passageway.

3. In a spray device, the combination according to claim 2, said stop portion protruding partially into said recessed portion at a portion opposite said discharge nozzle, said nozzle having its outermost portion disposed wholly within the elongated apertured portion of said container member.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

2,418,036	Lane -----	Mar. 25, 1947
2,602,569	Ryan -----	July 8, 1952
2,658,714	Fooshee -----	Nov. 10, 1953
2,665,037	Zublin -----	Jan. 5, 1954
2,673,008	Ryan -----	Mar. 23, 1954
2,753,214	Abplanalp -----	July 3, 1956
2,914,222	Meshberg -----	Nov. 24, 1959