Feb. 15, 1966 N. B. LERNER 3,235,131

PROTECTIVE COVER FOR DISPENSING VALVE ASSEMBLY

Filed May 25, 1961

FIG. 1.

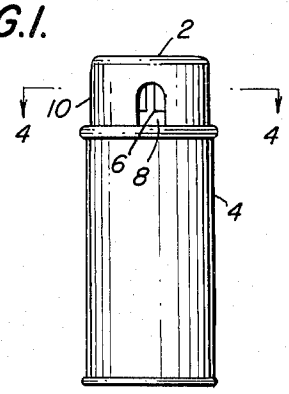


FIG. 2.

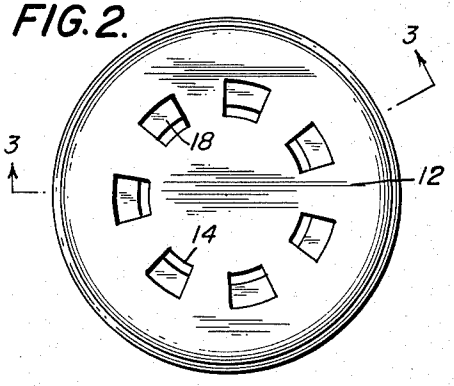


FIG. 4.

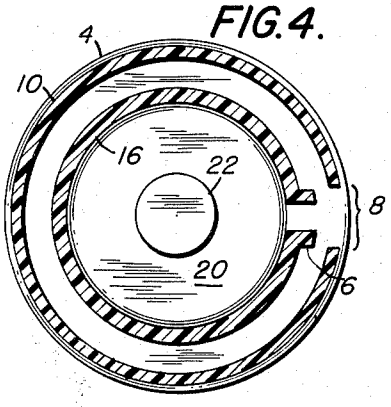


FIG. 3.

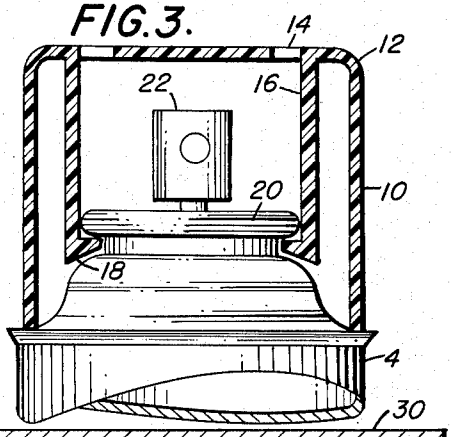
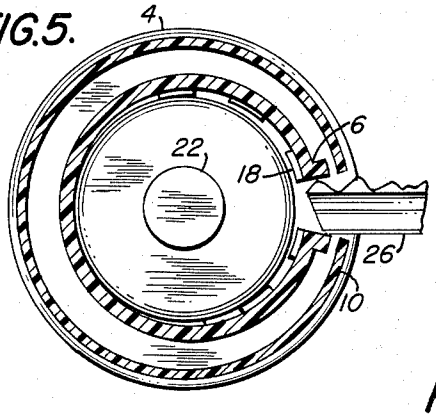


FIG. 5.



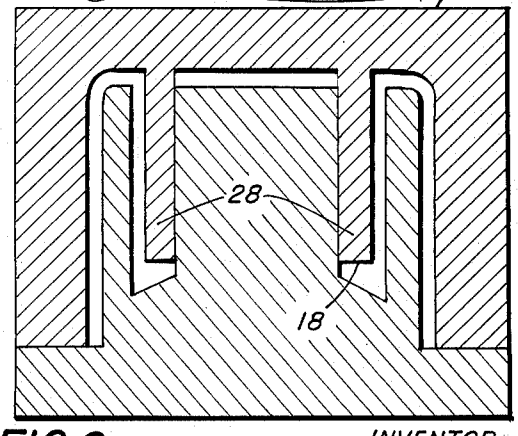


FIG. 6.

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3,235,131

PROTECTIVE COVER FOR DISPENSING VALVE ASSEMBLY

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9 Claims. (Cl. 222—182)

This invention is directed to a new and novel protective cap or cover for a dispensing valve assembly incorporated into an aerosol container, and the method of making same.

More particularly, this invention relates to a one-piece locking cap or cover for a dispensing valve assembly incorporated into a disposable container of the aerosol type, and to the method of making the one-piece locking cover.

Aerosol spray containers have become highly successful as articles of commerce for dispensing many and varied types of materials such as paints, shaving creams, perfumes, hair sprays, insecticides and innumerable other materials.

The materials to be dispensed from aerosol containers are, in general, comprised of the special formulations to be sprayed, together with a pressurizing fluid medium to force the formulation through the dispensing opening when the valve is held in the open position. In general, the valves are designed to be readily opened with very slight finger pressure.

It is obviously desirable to protect the valve assembly against contamination in storage and to shield the valve assembly against accidental discharging at any time, since any movement of the valve assembly will cause some of the gas pressurized contents of the container to escape.

Caps or closures which snap over the valve assembly and onto the shoulder of the container have been produced and are commonly used. This has been satifactory for most products and handling conditions. These caps or covers are readily removed by merely pulling upwardly, thus exposing the valve assembly.

The easy removal of the prior cap assemblies have often been found to be undesirable. For example, when the container is on display, the cap can be easily removed and a touch of the nozzle will inadvertently spray the contents. Further, there is no way of knowing whether the spray container had been tampered with. Also, small children could readily remove the cap and accidentally spray the contents.

It is an object of this invention to provide a one-piece locking cap for spray containers and the like.

It is a further object of this invention to provide a mold having complementary parts for making the one-piece locking cap of this invention.

These and other objects and advantages will become apparent from the following detailed description, together with reference to the accompanying drawings wherein

FIGURE 1 is a front elevational view of a cover of this invention positioned on a spray can.

FIGURE 2 is a top view of an embodiment of a one-piece cover of this invention showing the molding voids in the top surface.

FIGURE 3 is a partial section showing a vertical cross-sectional view taken through section lines 3—3 of FIGURE 2 and showing the cover positioned on a spray can.

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FIGURE 4 is a horizontal cross-sectional view taken along section lines 4—4 of FIGURE 1 showing the cover in locking engagement on the collar of the spray can.

FIGURE 5 is a horizontal cross-sectional view as in FIGURE 4, wherein the locking lips are partially disengaged so that the cover can be removed.

FIGURE 6 is a cross-sectional view of a complementary mold showing the finger projections to form the locking lip sections of the cap in FIGURES 1–5 inclusive.

Referring now to the figures, there is shown in FIGURE 1 the one-piece locking cover 2 positioned onto a spray can 4. The vertical distending ribs 6, positioned on the inner cylinder are shown through the aperture 8 formed in the outer sleeve 10 of the cap.

In FIGURE 2, there is shown a top view of a one-piece molded cover of this invention having sectional locking lips. In the figure, the top 12 of the cover has molding finger voids 14 positioned in the top of the cover. As will be described hereinafter, these molding finger voids are in alignment with the sectioned locking lips 18 positioned on the inner tubular member of the cover.

In FIGURE 3, there is shown a vertical cross-sectional view of the cover taken along section lines 3—3 of FIGURE 2, and positioned over spray nozzle 22 on a spray can for illustrative purposes. The one-piece cover is comprised of an outer sleeve 10, a top 12, an inner tubular member 16 positioned within the outer shell and depending from the top 12. The locking lips 18 are positioned at the bottom of the inner tubular member and extend inwardly to engage the underside of the collar 20 of the spray can to prevent removal of the cover from the spray can with pulling or twisting forces. The molding finger voids 14 are positioned in the top 12 of the cover and are in vertical alignment with the sectional locking lips 18.

The inwardly extending sectioned locking lips 18 shown in FIGURE 3 are positioned at the bottom edge of the inner member and are spaced about the inner circumference. In the embodiment wherein the locking lips are sectioned the exact number of sections on the locking lips, the position and spacing about the circumference of the inner flexible tubular member and the length of each lip section are correlated to produce locking engagement when the cover is snapped into place.

In FIGURE 4, which is a horizontal cross-sectional view of the embodiment taken along section line 4—4 of FIGURE 1, there is shown the inner flexible tubular member 16 positioned on the collar 20 of the spray can, encircling and protecting the nozzle 22. The vertical distending ribs 6 are shown integrally molded with the inner tubular member 16. The view shown is in the locked or captive position. The outer sleeve 10 is shown positioned within the outer wall 4 of the spray can and spaced from and encircling the inner cylindrical wall. Aperture 8, in the outer sleeve of the cap and in alignment with the ribs 6 provide a key way for entrance of an object to be inserted to distend the vertical ribs 6 on the inner tubular member.

In FIGURE 5, there is shown the cross-sectional view of the cap as in FIGURE 4 but in the distended position

ready for removal from the spray can by an upwardly tilting movement. As shown in the figure, a key 26 or other object is inserted through aperture 8 and forced against and between the vertical distending ribs 6. Further movement of the key inwardly causes the flexible inner wall to distort and to force a portion of the locking lip sections 18 from beneath the collar of the spray can. In this position, a slight upward tilting of the cover causes it to be completely removed.

It is to be understood that the height of the inner tubular member is sufficient to receive the spray nozzle and that the outer shell will be seated about the shoulder of the spray can when the cover is in locking engagement.

In FIGURE 6 there is shown a vertical cross-sectional view of a complementary mold for easy and ready molding of a one-piece locking cap as shown in FIGURE 3. In the figure there is shown molding fingers 28 depending from the top of the mold 30, to form the locking lip sections 18. An inlet, not shown, is provided to inject the plastic material in the embodiment wherein a thermoplastic material is to be injection molded. It is noted that multiple fingers are provided to project through the top cavity and downwardly and adjacent the inner surface of the inner tubular member. This results in locking lip section projecting inwardly and about the inner circumference of the inner tubular member.

Preferably, the cover is molded in one piece having the sectioned locking lips. In this embodiment the molding fingers necessary to obtain the sectioned lips will result in molding voids in the top surface of the cover. The size of the molding voids can be kept at a minimum, thus resulting in a top surface having large areas for receiving advertising or instructional matter. If desired, the molding finger voids in the top can be shaped in forms to indicate the type of matter being sprayed, such as shapes of automobiles if paint is the spraying matter.

The inner tubular member is flexible and is provided with vertical distending ribs to cause sufficient distortion of the member to remove a portion of the locking lip section from beneath the collar of the spray can to which it is adapted. A flange can be provided on and about the opening to reinforce the rib section. The exact thickness of the inner tubular member and the exact number of locking lip sections, as well as the size of the sections, can be readily determined by those skilled in the art to correlate the cap to the spray nozzle container.

Preferably the one-piece cap is molded of a thermoplastic material such as the polyolefin resins. It is obvious that these can be pigmented with opaque and/or colored material.

Since certain changes can be made in the above invention and different embodiments of the invention can be made without departing from its scope, it is intended that all matter be interpreted as illustrative and not by way of limitation.

What is claimed is:

1. A one-piece locking cap for spray cans and the like comprising an outer sleeve, a top and a flexible inner tubular member positioned within the outer sleeve and depending from the top, said inner tubular member having locking lip sections about the inner circumference and spaced vertical distending ribs defining an opening in the wall of the inner tubular member; the inner tubular member and the locking lip sections dimensions correlated to the container to which it is adapted; the height and contour of said outer sleeve correlated to the container to which it is adapted, and a key way positioned in said sleeve in alignment with the vertical distending ribs on the inner tubular member; said top containing multiple orifices positioned above the locking lip sections of the inner tubular member, each orifice at least the area of each locking lip section positioned therebelow.

2. The locking cap of claim 1 wherein the locking lip sections are positioned on the lower rim of the inner tubular member.

3. The locking cap of claim 1 wherein the locking lip sections are positioned on the lower rim of the inner tubular member; and the spaced vertical distending ribs contain a flange.

4. In combination, a spray can having a spray nozzle, a collar positioned about the spray nozzle and a shoulder; and a one-piece locking cap comprising an outer sleeve, a top and a flexible inner tubular member positioned within the outer sleeve and depending from the top; said inner tubular member having locking lip sections about the inner circumference and spaced vertical distending ribs defining an opening in the wall of the inner tubular member, the dimensions of the locking lip sections correlated to that of the collar of the spray can to which it is adapted, the height of the inner tubular member sufficient to protect the spray nozzle; said outer sleeve of a height to encircle the shoulders of the spray can and a key way positioned in said outer sleeve in alignment with the vertical distending ribs on the inner tubular member; and said top containing multiple orifices positioned above the locking lip sections of the inner tubular member, each orifice at least the area of each locking lip section positioned therebelow.

5. In combination with a container having an end wall with a rim portion providing a shoulder and a well portion outwardly from said shoulder, a cap covering said end wall of the container having a top, a side wall bottomed in said well and an integral internal split annular lock embracing said rim and underlying said shoulder, said side wall of the cap having an access opening therethrough adjacent the split portion of said lock and said split portion of said lock having means thereon engageable with an implement inserted through said access hole for spreading the lock off of said shoulder to accommodate removal of the cap from the container; said integral internal split annular lock comprised of lip sections about the inner circumference of the annular lock.

6. The cap of claim 5 wherein the top contains orifices positioned above the lip sections of the annular lock, each orifice at least the area of each lip section positioned therebelow.

7. A one-piece locking cap for spray cans and the like comprising an outer sleeve, a top and a flexible inner tubular member positioned within the outer sleeve and depending from the top, said inner tubular member having integral locking lip sections about the inner circumference and spaced vertical distending ribs defining an opening in the wall of the inner tubular member; the inner tubular member and the locking lip sections dimensions correlated to the container to which it is adapted; the height and contour of said outer sleeve correlated to the container to which it is adapted, and a key way positioned in said sleeve in alignment with the vertical distending ribs on the inner tubular member; said top containing multiple orifices positioned above the locking lip sections of the inner tubular member, each orifice at least the area of each locking lip sections positioned therebelow.

8. A one-piece locking cap for spray cans and the like having a shoulder comprising an outer sleeve, a top and a flexible inner tubular member positioned within the outer sleeve and depending from the top, said inner tubular member being split and having integral locking lip sections about the inner circumference; the inner tubular member and the locking lip sections dimensions correlated to the shoulder of the container to which it is adapted, the height and contour of said outer sleeve correlated to close the end of the container to which it is adapted, and an opening positioned in said sleeve in alignment with the split portion of the inner tubular member to give access for spreading the locking section off of the shoulder; said top containing multiple orifices positioned above the locking lip sections of the inner tubular member, each

orifice at least the area of each locking lip section positioned therebelow.

9. A one-piece self-locking snap on container cap for a container having a collar thereon comprising a top and a tubular member having an integral internal split annular lock for embracing and underlying said collar; said annular lock comprised of locking lip sections; said top containing orifices positioned above the locking lip sections of the annular lock, each orifice at least the area of each locking lip section positioned therebelow; said split portion of said lock having means thereon engageable with an implement for spreading the lock off said collar for removal of the cap from the container.

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