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[54] **ORIENTED OVERCAP AND NOZZLE FOR AEROSOL CAN**
3 Claims, 8 Drawing Figs.

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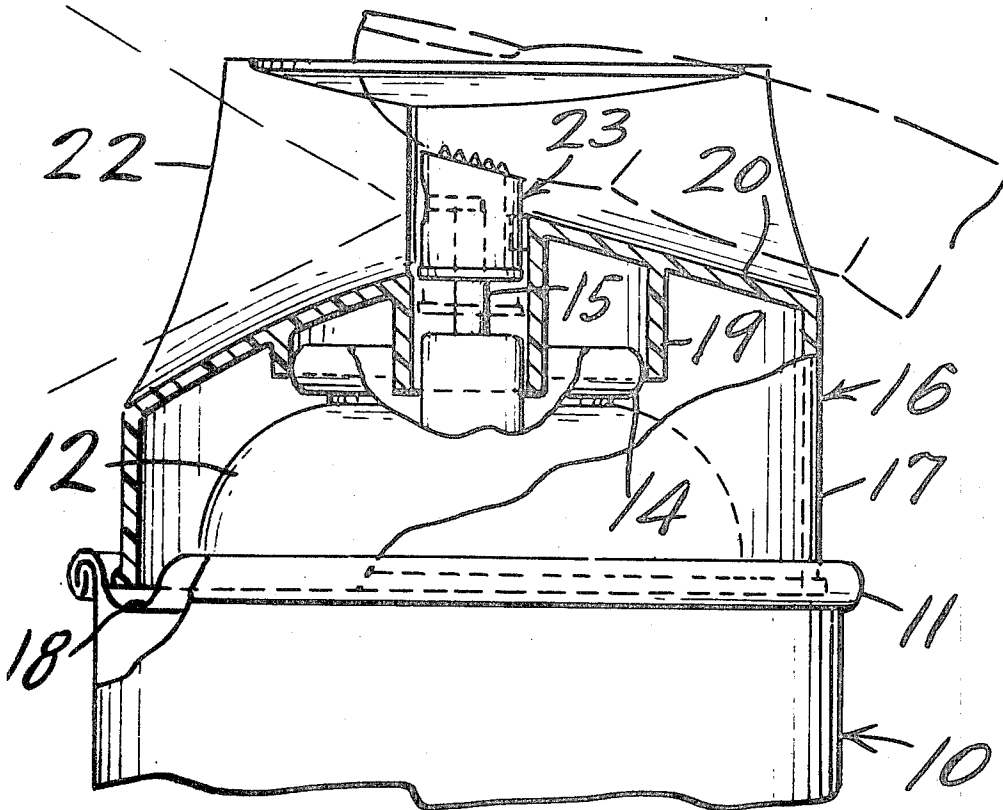
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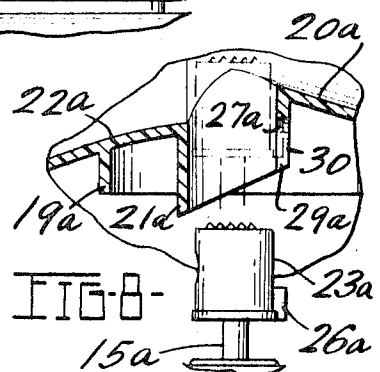
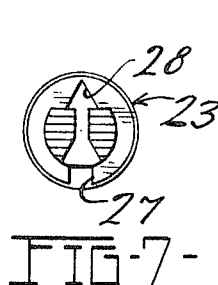
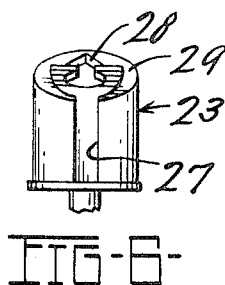
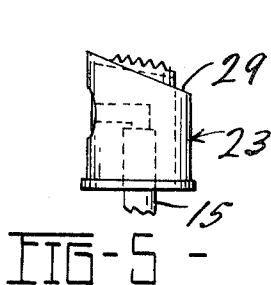
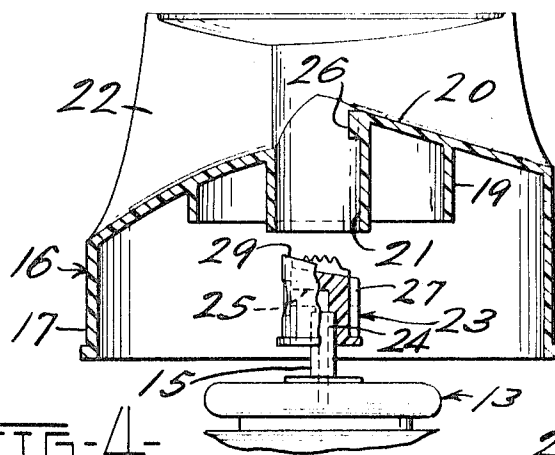
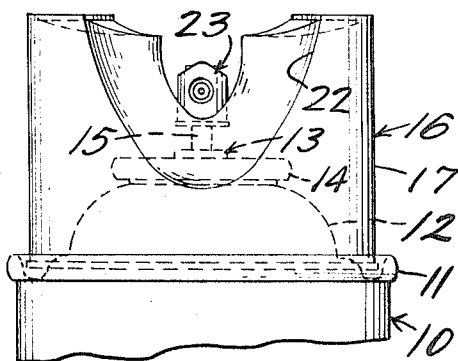
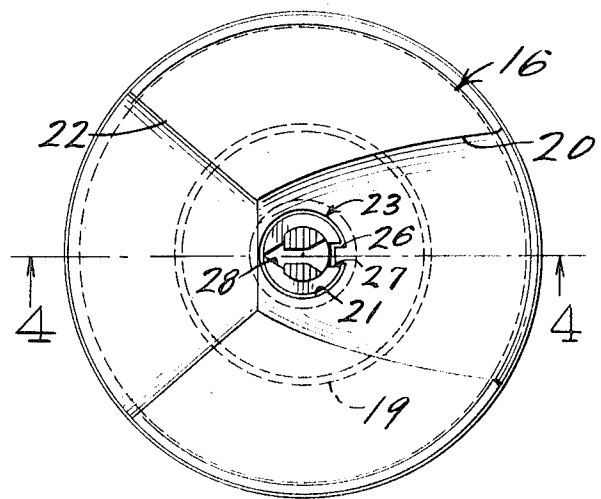
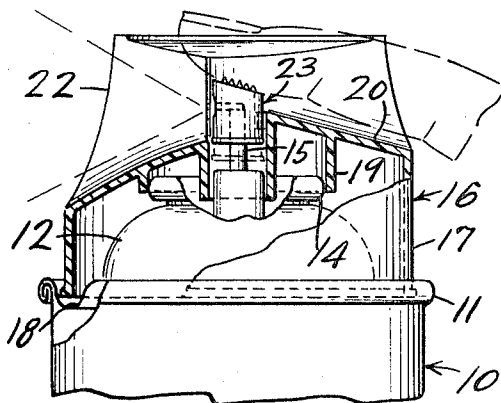
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ABSTRACT: An overcap and nozzle for an aerosol can or the like. The overcap has a finger depression in its top extending part way across and intersecting a nozzle opening also formed in the cap and through which the top of the nozzle protrudes. A user lays his finger in the recession and presses on the nozzle to release the spray out of a lateral orifice in the nozzle. The cap and nozzle have cooperating means which ensure their relative orientation with the orifice pointed away from the user. The cooperating means consist of a key and a keyway formed in the adjacent surfaces of the nozzle and the nozzle opening in the overcap. A ledge lying in a plane that is inclined to the axis of the nozzle is also formed on the surface having the keyway and engageably by the key so as to produce relative rotation of the nozzle and overcap as they are telescoped together longitudinally by insertion of the nozzle into the nozzle opening, thus ensuring entry of the key into the keyway without the necessity for careful manual or visual inspection by an operator.





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ORIENTED OVERCAP AND NOZZLE FOR AEROSOL CAN

BACKGROUND OF THE INVENTION

This invention relates to an overcap and nozzle for an aerosol can or the like of the type in which the overcap has a finger recess so that the user may orient the can in his hand in order to obviate the possibility that the spray may be aimed at himself when he depresses the nozzle. In such a can, the nozzle must be oriented relative to the overcap. In the assembly of filled aerosol cans, the last steps are the placement of the small nozzle on the upper end of the release valve and the positioning of the overcap on the upper end of the can in circumjacent position relative to the nozzle.

Because of the necessity for orienting the nozzle and the finger recess in the overcap, the assembly of these parts on such a can has required an operator to align the nozzle opening with the finger recess and spray shield portion of the overcap even though they are held in alignment by interrelated means such as a key and keyway. This has introduced a manual inspection and manual operation into the assembly line procedure. 0025

It is therefore the principle object of this invention to provide an overcap and nozzle for an aerosol can or the like which have cooperating means so that they can be successively assembled on the valve stem and end of an aerosol can, respectively, and readily orient themselves without the necessity for inspection and manual alignment.

It is a further object of the instant invention to provide an overcap having a transversely aligned finger recess and a spray shield which intersect an opening in the overcap for the reception of a spray nozzle, with cooperating means on the overcap and spray nozzle so that the overcap may merely be placed upon the spray nozzle and the cooperating means will act to orient the nozzle and overcap to align the nozzle spray orifice along the transverse direction of the finger recess and spray shield without the necessity for manual inspection and assembly.

DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a fragmentary side view in elevation, with parts broken away and parts shown in section, of an overcap and nozzle embodying the invention;

FIG. 2 is a fragmentary front view in elevation taken from the left side of FIG. 1 with certain parts shown in phantom;

FIG. 3 is a top plan view shown on a slightly enlarged scale;

FIG. 4 is a fragmentary vertical sectional view taken along the line 4-4 of FIG. 3;

FIG. 5 is a greatly enlarged view in side elevation of a nozzle comprising a part of the combination of the invention;

FIG. 6 is a detailed view in elevation taken from the right side of FIG. 5;

FIG. 7 is a detailed top plan view of the nozzle shown in FIGS. 5 and 6; and

FIG. 8 is a fragmentary view in vertical section, with parts broken away, similar to FIG. 4, but illustrating another embodiment of the invention.

PREFERRED EMBODIMENT

A conventional aerosol can is fragmentarily shown in the drawings and indicated by the reference number 10. The can has an end seam 11 by which its breast portion 12 is secured and sealed to the end of the can 10. At the center top of the breast portion 12 there is positioned a valve mechanism, generally indicated by the reference number 13, which comprises an interior valve (not shown) and an annular flange 14 by which the valve mechanism 13 is secured to the breast portion 120 such a conventional valve 13 has a central valve tube 15 which protrudes axially from the valve 13 beyond the flange 14.

A spray guide overcap according to the invention is generally indicated by the reference number 16. The overcap 16 has an outer annular skirt 17 which fits downwardly into a recessed groove 18 formed interiorly of the seam 11 and may have a frictional engagement therewith to retain the overcap 16 on the end of the can 10. Similarly, the overcap 16 is illustrated as having an inner, shorter annular skirt 19 which may be frictionally engageable with the exterior of the valve flange 14, as shown in FIG. 1. It may be desirable to have both of the skirts 17 and 19 frictionally engage their respective portions of the can 10 or, in other arrangements, sufficient frictional force may be exerted by one of the skirts 17 or 19 to hold the overcap 16 on the can 10.

The overcap 16 also has a transversely extending finger depression 20, an axially extending nozzle opening 21 which intersects the finger depression 20 and a outwardly flared, spray shield portion 22 that is transversely aligned with the finger depression 20.

A nozzle 23 has a center bore of such size as to frictionally receive the upper end of the valve tube 15 and a lateral discharge orifice 25 intersecting the center bore 24 for directing the spray horizontally out of the nozzle 23. The nozzle 23 is of such diameter as to slidably telescope within the nozzle opening 21 in the overcap 16 and the vertical dimensions of the overcap 16 and nozzle 23 on the stem 15 are such that when all of the parts are assembled together, the orifice 25 is above the level of the adjacent edge of the spray shield 22 as can be seen best in FIGS. 1 and 2.

In order to maintain the nozzle 23 in proper orientation relative to the finger depression 20 and spray shield 22 of the overcap 16, a preferred embodiment of the invention has cooperating guide means which consist of a key 26 and keyway 27 formed, respectively, at the upper edge of the finger depression 20 and nozzle opening 21 in the overcap 16 and at one side of the nozzle 23. Once the key 26 is engaged in the keyway 27, by telescoping the overcap 16 over the nozzle 23, their engagement prevents subsequent relative rotation of the overcap 16 and nozzle 23 so as to ensure that the orifice 25 is always pointed outwardly in the direction indicated by an arrow 28, for example, which may be molded into the top of the nozzle 23.

When a user wishes to spray some of the contents out of the can 10, he lays his finger in the depression 20, as illustrated in FIG. 1, and presses downwardly upon the upper end of the nozzle 23. This opens the valve and the material contained in the can 10 is sprayed outwardly from the nozzle 23, as indicated in FIG. 1, in the direction confined by the shield portion 22.

According to the invention the assembly of the nozzle 23 on the valve tube 15 and the overcap 16 is facilitated by cooperating means on the nozzle 23 and overcap 16 which function to orient them relative to each other and which eliminate the necessity for a visual inspection and manual assembly. These cooperating means comprise the key 26 and keyway 27 by which final orientation is achieved and the key 26 and an inclined ledge 29. In the embodiment of the invention illustrated in FIGS. 1-7 the ledge 29 extends circumferentially of the upper surface of the nozzle 23 and is inclined relative to the plane of its axis with its highest point being located at the front of the nozzle 23, i.e., above the spray orifice 25 and at the end of the arrow 28. The inclined ledge 29 has such radial width as to accommodate the bottom flat surface of the key 26.

After a nozzle 23 has been assembled on the valve tube 15 (orientation of the nozzle 23 relative to the stem 15 is, of course, immaterial), an overcap 16 may be automatically dropped downwardly along the line of the axis of the tube 15. The upper end of the valve nozzle 23 enters the nozzle opening 21 and, when the overcap 16 is released by the mechanism, gravity slides the overcap 16 downwardly until the bottom surface of the key 26 strikes the inclined ledge 29. Regardless of the angular orientation of the cap 16 relative to the nozzle 23, when the key 26 engages the inclined ledge 29,

the downward inclination of the ledge 29 causes the overcap 16 to rotate relative to the nozzle 23 until the key 26 enters the keyway 27. The overcap 16 then drops vertically so that the nozzle 23 protrudes vertically upwardly out of the nozzle opening 21 and a final slight downward pressure exerted on the top of the overcap 16 seats its skirts 17 and 19 on their respective friction surfaces.

Conversely, if desired, and as illustrated in FIG. 8, the lower end of a skirt 30 which defines a nozzle opening 21a, may be cut off at an incline to form an annular ledge 29a circumscribing a nozzle opening 21a. A nozzle 23a has a key 26a formed at its upper rear edge which is engageable in a keyway 27a formed in the skirt 30. In a fashion similar to that already described for the embodiment of the invention illustrated in FIGS. 1—7, inclusive, when the overcap 16 is dropped downwardly over the valve stem 23a, the key 26a engages the ledge 29a and gravity causes the overcap 16a to rotate relative to the nozzle 23a until the key 26a drops into the keyway 27a. As in the earlier described embodiment of the invention, this cooperative action of the key 26a and ledge 29a eliminates the necessity for visual inspection and manual rotation of the overcap 16a relative to the nozzle 23a in order to engage the key 26a in the keyway 27a to insure proper orientation of the nozzle 23a and overcap 16a.

I claim:

1. A spray guide overcap and nozzle for an aerosol can which includes a dispensing valve having an axially protruding tube at the center top of such aerosol can,

1. said overcap having an inverted, generally cup-shaped body comprising, (a) a skirt enclosing the dispensing valve, (b) a top having a finger depression extending at least part way across the top, and (c) a central, axially extending nozzle guide having an inner cylindrical surface and intersecting said finger depression,

2. a tubular nozzle having (a) a center bore adapted to

receive the valve tube, (b) a lateral discharge orifice communicating with said center bore and (c) a generally cylindrical exterior surface, said nozzle fitting into an extending through said nozzle guide, said discharge orifice being located above that portion of said cap top located outwardly therefrom when said cap and said nozzle are in place on the can, and

3. cooperating assembly orientation guide means on said cap and said nozzle, said guide means comprising (a) a key on the first one of said cylindrical surfaces of said nozzle and of said guide, (b) an axially extending keyway in the second of said cylindrical surfaces that is engageable by said key and (c) an end surface at the end of the second of said cylindrical surfaces, said end surface being inclined relative to the axis of said nozzle and said guide from a point directly opposite to said keyway toward said keyway, said end surface being engageable by said key when said cap is telescoped over said nozzle for effecting rotation of said cap on such axis and thereby correctly aligning said cap on said can with said discharge orifice directed away from said finger depression.

2. A spray guide over cap and nozzle according to claim 1 in which the key is positioned on and integral with the cap top and protrudes into the upper end of the nozzle guide, the key way is axially extending slot in the surface of the nozzle and the inclined end surface is a circumferentially extending ledge on the upper end of said nozzle.

3. A spray guide overcap and nozzle according to claim 2 in which the key protrudes radially into the upper end of the nozzle guide from the side of the cap top where the finger depression is located, the keyway is formed in the side of the nozzle opposite the discharge orifice and the ledge is located on the upper end of said nozzle with its lower portion intersecting the upper end of said keyway.

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