March 22, 1966 W. M. BRIGHT ET AL 3,241,731

CAPS WITH SPOUTS

Filed Aug. 8, 1963

FIG. 1

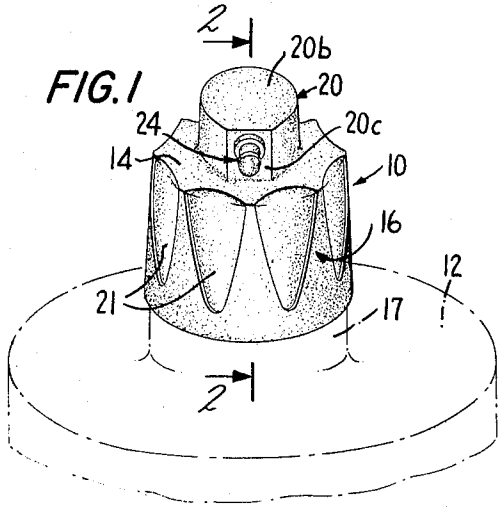


FIG. 2

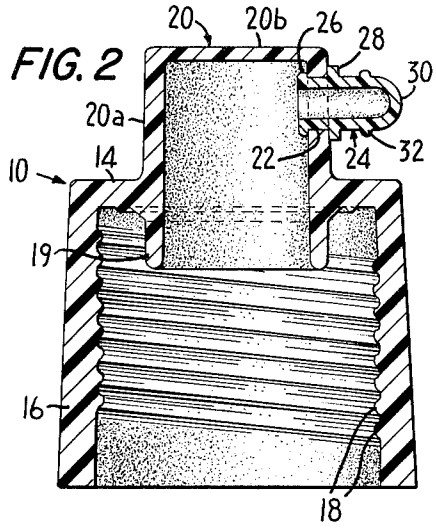


FIG. 3

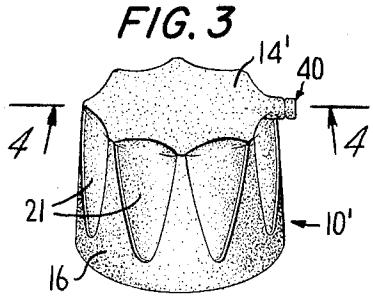


FIG. 4

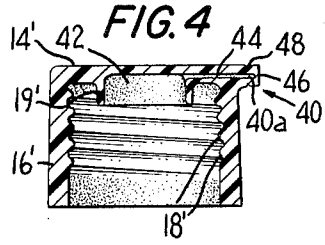


FIG. 5

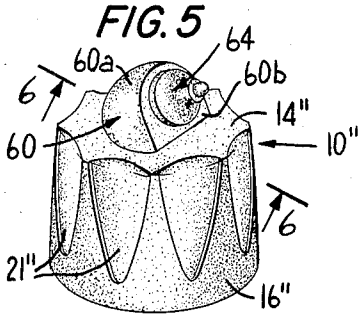
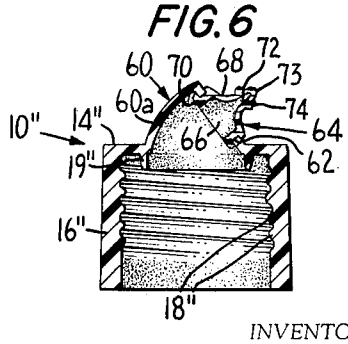


FIG. 6



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CAPS WITH SPOUTS

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This invention relates to improvements in caps for containers for liquids and, more particularly, to caps with spouts having closed ends which are cut off to open the container.

A variety of liquid products are now being marketed in containers with caps having spouts with closed ends which are cut off or with open ends having secondary closures which are removed to permit the product to be poured or forced out through the small orifice of the spout. In the presently known types of such containers, the spout projects upwardly from the top of the cap and directs a stream of the product in line with the axis of the container when it is turned upside-down and pressure is applied to the relatively flexible receptacle portion.

There are a number of disadvantages of the form of caps now in use. For one thing, it is quite inconvenient to invert the container completely when dispensing the product, inasmuch as the liquid often squirts out prematurely in an unintended direction in the course of inverting the container. It has also been found that the consumer generally holds the container upright and grips it tightly when he is cutting the closed end from the spout or removing the second closure. Often, the liquid suddenly squirts out because of the pressure exerted on the container by the user's grip.

Sometimes, the user is not careful to direct the spout away from his person and is sprayed with the product. Being sprayed with the product while opening the container is irksome and even angering to the user and results in the loss of the seller's product goodwill. Despite this and other disadvantages of the present types of containers having spouts with snip-off ends, their convenience and efficiency make them widely accepted.

This invention is directed toward overcoming the disadvantages of the present forms of caps with either snip-off spouts or secondary closures by providing, in accordance with the invention, a cap, which may be of any conventional screw-on type, with a spout arranged so that the liquid is directed to the side rather than vertically with respect to the vertical axis of the container.

It will be apparent that the laterally directed spouts having closed ends are adapted to be opened by cutting along a generally vertical or diagonal plane rather than in a horizontal plane. Therefore, most users will, it is believed, open them by holding the container with the axis of the spout directed to the side or away from the body and cutting with scissors which are pointed away from the body. It is very unlikely that the user will hold the scissors so that they lie parallel to his body, the wrist position enabling such an orientation of the scissor blades being quite unnatural and uncomfortable. With the scissors held and used in the usual manner, the spout will be pointed to the side and any fluid which happens to squirt out of the container will be directed harmlessly away from the user's person.

In dispensing the liquid from the container, it need only be tilted over until the level of fluid covers the inside of the spout orifice. Inasmuch as the spout is directed laterally when the axis of the container is vertical, the spout will be directed generally downward when the axis of the container is substantially horizontal. Therefore, unlike the presently known types of containers having spouts which are axially aligned with the container and from

which the contents often squirt out in alignment with the axis of the container when it is pointed horizontally or even slightly upwardly, the spout of a cap, in accordance with the invention, is pointed downwardly when the container is tilted to a generally horizontal position so that the contents are ejected downwardly.

For a better understanding of the invention, reference may be made to the following detailed description of exemplary embodiments, taken in conjunction with the figures of the appended drawing, in which:

FIGURE 1 is a pictorial view of a cap in place on a container;

FIG. 2 is a side view in section of the cap of FIG. 1 taken generally along the line 2—2 of FIG. 1;

FIG. 3 is a pictorial view of a second embodiment of a cap;

FIG. 4 is a view in section of the cap of FIG. 3 taken generally along the line 4—4 of FIG. 3;

FIG. 5 is a pictorial view of another embodiment of a cap; and

FIG. 6 is a view in section of a cap of FIG. 5 taken generally along the line 6—6 of FIG. 5.

Referring to FIGS. 1, 3 and 5, each of them illustrates a cap 10, 10′ or 10″ for a container 12, each cap including a generally flat top 14, 14′ or 14″ and an annular sleeve 16, 16′ or 16″ which extends downwardly from the perimeter of the top. Formed in the internal wall of the sleeve 16, 16′ or 16″ are threads 18, 18′ or 18″ (FIGS. 2, 4 and 6) by which the cap may be screwed onto a nozzle 17 upstanding from the container 12 and having an externally threaded upper end (not shown).

Downstanding from the underside of the cap top 14, 14′ or 14″ is a short, internal annular sealing flange 19, 19′ or 19″ which lies concentric to the sleeve 16, 16′ or 16″ and inwardly thereof and which is adapted to fit into and make a sealing engagement with the inner surface of the rim of the nozzle 17. The cap may be removed for pouring, if desired, by unscrewing and detaching it from the nozzle 17, concave depressions or flutes 21, 21′ or 21″ formed on the outer surface of the sleeve 16, 16′ or 16″ being provided for convenient gripping by the user's fingers.

Referring now particularly to the cap shown in FIGS. 1 and 2, a cylindrical-shaped projection 20 extends upwardly from the top 14 of the cap and is preferably formed integrally therewith. The inner surface of the side wall 20*a* of the projection 20 forms a chamber which is in communication with the interior of the receptacle 12 when the cap is installed thereon, and with a spout 24 which projects laterally from the projection.

Inasmuch as the cap is best made by molding it from a suitable plastic, the geometry of the cap makes it more practical that the spout 24 be molded as a separate member and then be pressed into a preformed opening 22 in the wall 20*a* of projection 20 near its top portion 20*b*. In this case, the spout 24 may include beads 26 and 28 at its juncture with the projection 20 which hold the spout 24 tightly within the opening 22. A portion 20*c* of the side wall 20*a* adjacent the opening 22 in the projection 20 is made flat in order to provide planar sealing and engaging surfaces for the beads 26 and 28.

The outer end of the spout 24 has a generally hemispherical closure 30 formed integrally therewith. Extending about the outer surface of the spout 24 adjacent the closure 30 is a small bead 32 which serves to guide the blade of a cutting instrument when the closure is being cut off.

It should be noted that the outermost part of the spout 24 lies within the plane defined by the outer surface of the sleeve 16. Accordingly, there are no projections which can interfere with cap attachment devices now in use.

Normally, the closure **30** of the spout **24** is cut off, preferably with scissors, along a plane defined by the inner surface of the bead **32** to open the container. However, when (1) the spout **24** is a separate member held within the opening **22** only by a tiny bead **26** and (2) the spout **24** and the projection **20** are somewhat resilient, the entire spout **24** may, when desired, be quite readily removed from the cap by grasping the exterior portion firmly and simultaneously pulling on the spout **24** and bending it to the side. The opening **22** then provides a discharge passage for the contents of the container. As previously indicated, the container may also be opened by unscrewing and removing the entire cap.

In the cap illustrated in FIGS. 3 and 4, a short, tubular spout **40** extends from the edge of the top **14'**. The underside of the top **14'** includes a recess **42** which lies within the sealing flange **19'**. A small passage **44**, extending radially through the top **14'** of the cap, connects the orifice **40***a* of the spout **40** to the recess **42**. The outer end of the spout **40** includes a closed end **46** and a small groove **48** formed adjacent thereto which defines a cutting plane along which the end **46** of the spout **40** can be severed to open the container.

In the embodiment of FIGS. 5 and 6, a projection **60** is formed integrally with the top **14''** and includes a spherical-segment-shaped portion **60***a* and a flat portion **60***b* in which a fairly large opening **62** is formed. The flat portion **60***b* intersects the top **14'''** at an angle of approximately 45°. Installed in the opening **62** of the nipple **60** is a spout member **64**, which includes an inner enlarged part **66** having a pair of spaced-apart beads **68** and **70** on its outer surface which tightly engage the flat portion **60***b* to firmly secure the spout **64** in the opening **62**.

The outer end of the spout member **64** includes a narrow passage **72** which is approximately perpendicular to the flat portion **60***b* and terminates in a closed end **73**. About the circumference of the spout member **64** adjacent the closed end **73** is a bead **74** which defines a plane along which the closed end **72** may be cut off to open the container, the inner surface of the bead **74** serving to guide scissors or a knife. Like the embodiment of the cap of FIGS. 1 and 2, the outermost part of the spout **64** does not extend beyond the plane defined by the outer surface of the sleeve **16''**, so there is nothting to interfere with the cap attachment apparatus.

To open any of the above-described caps, the user will by force of habit hold the scissors with the blades directed away from him and will orient the container so that the spout lies generally perpendicular to the blades and is therefore directed to the side. When the closed ends are snipped off, any liquid or bubbles ejected from the container will be directed harmlessly away to the side.

When the liquid is to be dispensed, the user tilts the container, at the same time applying pressure to it, until the contents are ejected through the open spout, the spout, of course, being aimed in the direction of the vessel which is to receive the contents. Inasmuch as the spout is oriented generally laterally rather than parallel to the axis of the container, it need be only partially tilted in order for the liquid to be dispensed in a downward stream, unlike the presently known containers having axially aligned spouts from which the liquid often prematurely squirts out horizontally.

Thus, there is provided, in accordance with the invention a cap for a container for liquid having a spout which directs a stream of the liquid generally laterally with respect to the axis of the container and which is adapted to be opened when the spout is directed to the side with respect to the user, thereby preventing accidental ejection of the liquid into the user's face or clothing when the user is opening it and preventing a premature ejection of the contents in a horizontal or upward stream when the container is being tilted to dispense the contents.

It will be understood by those skilled in the art that the

embodiments of the invention described above are meant to be merely exemplary and are susceptible of considerable variation and modification without departing from the spirit and scope of the invention. For example, the spout may be directed either downwardy or upwardly with respect to the horizontal, and the claims, in referring to a spout directed laterally with respect to the vertical axis of the container, are intended to encompass this and other variations from the specific embodiments. Therefore, the scope of the invention will not be deemed limited except as defined in the appended claims.

We claim:

1. A cap for a container for liquids comprising a body portion, means on said body portion to detachably secure and seal the cap on the container, an annular downwardly extending rib on said body portion, said rib defining an outlet chamber inwardly thereof and disposed to be in sealing engagement with a rim on the receptacle, and spout means on said body portion having a substantially straight discharge passage therein communicating with said outlet chamber and disposed at an angle to the vertical axis of the container to direct a stream of liquid at an angle with respect to the vertical axis of said container, said spout means having a closure portion formed integrally therewith and means defining a cutting plane to facilitate the cutting away of said closure portion to open the container.

2. A cap for a container for liquid comprising a top portion, means on said top portion to secure and seal the cap on the container, a nipple portion projecting upwardly from said top portion and an annular downwardly extending rib on said top portion, said rib and said nipple together defining an outlet chamber in the cap, and said rib disposed to be in sealing engagement with a rim on the receptacle, and spout means having a substantially straight discharge passage therein on said nipple portion and communicating with said outlet chamber, said passage disposed at a substantial angle to the vertical axis of the container to direct a stream of liquid in the container at an angle with respect to the vertical axis of the container, said spout means having a closure portion formed integrally therewith and means formed in said spout means adjacent said closure portion defining a plane along which said closure may be cut off to open the container.

3. A cap for a container for liquid, comprising a top portion, an annular sleeve extending downwardly from and about the perimeter of said top portion, means on said sleeve to detachably secure the cap on the container, an annular downwardly extending rib on said top portion, said rib defining an outlet chamber inwardly thereof and disposed to be in sealing engagement with a rim on the receptacle, the outlet chamber including a recess formed in the underside of said top portion, a radially directed substantially straight passage in said top portion communicating with said outlet chamber, and a spout extending from the edge of said top portion and having a substantially straight orifice communicating with said outlet passage and aligned therewith and disposed at an angle to the vertical axis of the container to direct a stream of liquid at an angle with respect to the vertical axis of said container, and said spout having a closure portion and means defining a cutting plane to facilitate the cutting away of the closure portion to open the container.

4. A cap for a container for liquids, comprising a top portion, means to secure and seal the cap on the container, a nipple portion projecting upwardly from said top portion, said nipple defining a chamber communicating with the interior of the container, said nipple having an opening lying in a plane thereof which is disposed at an angle to the plane of said top portion, and a spout member removably installed in said opening, said spout member including passage means for directing a stream of liquid in the container at an angle to the vertical axis

of the container, means for securing the spout in said opening including a pair of spaced-apart outwardly projecting beads defining a groove therebetween for removably receiving the wall of said nipple surrounding said opening, a closure portion formed integrally therewith at the outer end thereof and means adjacent the closure defining a plane along which said closure portion may be cut off to open the container.

5. A cap for a container for liquids, comprising a top portion, means to secure and seal the cap on the container, a nipple portion projecting upwardly from said top portion, said nipple defining a chamber communicating with the interior of the container, said nipple having an opening lying in a plane thereof which is disposed at an angle to the plane of said top portion, and a spout member removably installed in said opening, said spout member including passage means for directing a stream of liquid in the container at an angle to the vertical axis of the container, means for securing the spout in said opening, a closure portion formed integrally therewith at the outer end thereof and means including an outwardly projecting bead formed adjacent the closure defining a plane along which said closure portion may be cut off to open the container.

6. A cap for a container for liquids, comprising a top portion, means to secure and seal the cap on the container, a nipple portion projecting upwardly from said top portion, said nipple defining a chamber communicating with the interior of the container, said nipple having an opening lying in a plane thereof which is disposed at an angle to the plane of said top portion, and a spout member removably installed in said opening, said spout member including a large diameter body portion defining a large cavity therein, an integrally formed end closure portion, an integrally formed intermediate portion between said body portion and said closure portion and defining a gradually constricting orifice, passage means in the spout body communicating with said orifice for directing a stream of liquid in the container at an angle to the vertical axis of the container, means for securing the spout in said opening, and means adjacent the closure defining a plane along which said closure portion may be cut off to open the container.

7. A cap according to claim 6 wherein said large diameter body portion of said spout member has a pair of spaced-apart outwardly projecting beads formed thereon, said beads lying in substantially parallel planes and defining a groove therebetween for removably receiving the nipple surface surrounding the opening.

8. A cap according to claim 6 wherein said nipple consists of a generally spherical-segment wall and a planar wall intersecting the plane of the cap top portion at an angle of about 45°, the opening in said nipple being formed in said planar wall.

9. A cap for a container for liquids, comprising a top portion, an annular sleeve extending downwardly from the perimeter of said top portion, means on said annular sleeve for securing the cap on the container, a downwardly extending annular rib spaced inwardly of said sleeve and defining on the interior thereof an outlet chamber and disposed to make sealing engagement with a rim on a container, a generally cylindrical nipple having a flat wall portion at the upper end thereof, the inner wall of said cylindrical nipple lying generally contiguous to the inner face of said downwardly extending annular rib, a flat wall portion formed on said cylindrical nipple and having a circular opening formed therein, a spout member comprising a cylindrical body portion defining a central substantially straight discharge passage and a closure portion formed on one end of said body portion, an outwardly projecting first bead adjacent the other end of said spout member body portion, said first bead disposed in a plane substantially perpendicular to the axis of said spout member discharge passage and having a diameter slightly greater than the diameter of the opening in said flat wall portion of the nipple, and a second outwardly projecting bead formed on said spout member body portion, said second bead lying in a plane substantially perpendicular to the axis of said spout member discharge passage and spaced from said first bead and defining therewith a groove for receiving the flat wall portion of the nipple surrounding the opening, said second bead having a substantially larger diameter than said first bead, whereby said spout member is inserted into said opening by pressing the first bead against the outer surface of the flat wall member adjacent said bead to resiliently mutually compress said first bead and the wall of said flat portion surrounding the opening therein and said spout member being prevented from being further inserted into said opening by engagement of said larger diameter second bead against the outer surface of said flat wall portion of the nipple.

10. A cap according to claim 9 wherein said spout member includes an outwardly projecting bead adjacent said end closure portion and defining a plane along which said closure portion may be cut off to open the container.

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