HINGED DRAIN-BACK CAP

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ABSTRACT

A container closure comprising a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout at least partially defining a passageway through the base to permit contents in the container to be dispensed, the base being connected to a lid using a living hinge, the lid being pivotal about the hinge between an open position and a closed position to close the passageway and prevent the contents from being dispensed, the spout including an arcuate tapering front wall providing an arcuate threshold within an interior of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout, where the spout includes a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undispensed contents between the spout and circumferential wall to egress into the container.
HINGED DRAIN-BACK CAP
CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of U.S. Provisional Patent Application Ser. No. 60/812,799, filed Jun. 12, 2006, the disclosure of which is hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a cap for a fluid container, and more specifically to a cap that provides a drain-back feature and a hinged closure.

INTRODUCTION TO THE INVENTION

[0003] It is a first aspect of the present invention to provide a container closure comprising a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout at least partially defining a passageway through the base to permit contents in the container to be dispensed, the base being connected to a lid using a living hinge, the lid being pivotal about the hinge between an open position and a closed position to close the passageway and prevent the contents from being dispensed, the spout including an arcuate tapering front wall providing an arcuate threshold within an interior of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout, where the spout includes a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undispensed contents between the spout and circumferential wall to egress into the container.

[0004] In a more detailed embodiment of the first aspect, the upper wall includes a deformable internal flange to interface with a top surface of the neck of the container to form a seal between the base and neck. In yet another more detailed embodiment, the vertically extending circumferential wall includes a circumferential flange that engages the lid to provide a snap-fit connection when in the closed position. In a further detailed embodiment, the body portion includes an internal threaded pattern to engage a threaded receiver of the container, and the spout is not substantially recessed between the internal threaded pattern of the body portion. In still a further detailed embodiment, the arcuate threshold within the interior of the spout is opposite a vertically oriented distal opening in the rear wall of the spout.

[0005] It is a second aspect of the present invention to provide a container closure comprising a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout at least partially defining a passageway through the base to permit contents in the container to be dispensed, the spout including an arcuate tapering front wall providing an arcuate threshold within an interior of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout, where the spout includes a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undispensed contents between the spout and circumferential wall to egress into the container.

[0006] In a more detailed embodiment of the second aspect, the upper wall includes a deformable internal flange to interface with a top surface of the neck of the container to form a seal between the base and neck. In yet another more detailed embodiment, the body portion includes an internal threaded pattern to engage a threaded receiver of the container, and the spout is not substantially recessed between the internal threaded pattern of the body portion. In a further detailed embodiment, the arcuate threshold within the interior of the spout is opposite a vertically oriented distal opening in the rear wall of the spout. In still a further detailed embodiment, the body portion includes an internal threaded pattern to engage a threaded receiver of the container, and the drain is positioned above the internal threaded pattern of the body portion.

[0007] It is a third aspect of the present invention to provide a container closure comprising a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout extending directly above the upper wall, the spout including a passageway through the base to permit contents in the container to be dispensed, the spout arcuate tapering away from the body portion and including an arcuate threshold within an interior of the spout on a pouring side of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout and is inset from the body portion, where both the spout and circumferential wall are positioned vertically above the body portion and where the spout includes a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undispensed contents between the spout and circumferential wall to egress into the container.

[0008] In a more detailed embodiment of the third aspect, a distal portion of the spout includes a bell shaped with having a diameter that decreases as the distance from the body portion increases. In yet another more detailed embodiment, the invention further comprises a lid removable mounted to the vertically extending circumferential wall to close off the passageway and inhibit contents in the container from being dispensed. In a further detailed embodiment, the invention further comprises a lid integrally mounted to the base using a living hinge, the cap including a snap fit feature that selectively engages a corresponding snap fit feature of the base to close off the passageway and inhibit contents in the container from being dispensed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is an elevated perspective view of an exemplary closure in the open position in accordance with the present invention;

[0010] FIG. 2 is another elevated perspective view of the exemplary closure of FIG. 1 in the open position;

[0011] FIG. 3 is an elevated perspective view of the exemplary closure of FIG. 1 in the closed position;

[0012] FIG. 4 is a further elevated perspective view of the exemplary closure of FIG. 1 in the open position;
[0013] FIG. 5 is a profile view of the exemplary closure of Fig. 1 in the closed position;

[0014] FIG. 6 is a profile view of the exemplary closure of Fig. 1 in the open position;

[0015] FIG. 7 is an overhead view of the exemplary closure of Fig. 1 in the open position;

[0016] FIG. 8 is a cross-sectional view of the exemplary closure of Fig. 7, in the open position, taken across lines A-A;

[0017] FIG. 9 is a bottom view of the exemplary closure of Fig. 1 in the open position;

[0018] FIG. 10 is a still further elevated perspective view of the exemplary closure of Fig. 1 in the open position;

[0019] FIG. 11 is a frontal view of the exemplary closure of Fig. 1 in the open position; and

[0020] FIG. 12 is an isolated, magnified cross-sectional view of the exemplary closure of Fig. 8, in the open position, as shown by circle B of Fig. 8.

DETAILED DESCRIPTION

[0021] The exemplary embodiments of the present invention are described and illustrated below to encompass methods selectively dispensing contents from a container, as well as devices allowing the selective dispensing of contents from a container. Of course, it will be apparent to those of ordinary skill in the art that the preferred embodiments disclosed below are exemplary in nature and may be reconfigured without departing from the scope and spirit of the present invention. However, for clarity and precision, the exemplary embodiments as described below may include optional steps, methods, and features that one of ordinary skill should recognize as not being requisite to fall within the scope of the present invention.

[0022] Referring to FIGS. 1-12, a drain-back cap 10 according to an exemplary embodiment of the present invention is designed to be joined to a fluid container and includes a base 12 joined to a lid 14 by a living hinge 16. In an exemplary embodiment, the hinge 16 is a thin, flexible plastic extension molded integrally with the base 12 and lid 14. As seen particularly in FIGS. 2 and 6, the hinge 16 can be given a contoured shape across its width that allows tension to hold the lid 14 in the open position when moved into that position by a user, so as not to interfere with the pouring operation. Alternatively, other shapes and contours can be used for the hinge 16.

[0023] The base 12 of the drain-back cap 10 comprises a circumferential skirt 18 attaching to the neck of a container (not shown), and an upper wall 20 extending from the body portion. The upper wall includes an internal lip 21 circumferentially extending downward that is adapted to engage a top portion of the neck of a container. The circumferential skirt 18 includes a pattern of threads 22 along its inner circumferential surface that are adapted to engage corresponding threads around the neck of the container so that screwing engagement between the neck and skirt 18 is operative to engage or disengage the cap 10 with respect to the container and selectively form a seal between the neck of the container and the internal lip 21 of the cap 10. Alternatively, other manners of joining the cap 10 to the fluid container can be used and are within the scope of the invention such as, without limitation, snap connections between the base 12 and neck of the container similar to those discussed below for retaining the lid 14 in its closed position. A series of vertically oriented ribs 24 are distributed around the outer circumferential surface of the skirt 18 to facilitate screwing engagement between the neck and skirt 18.

[0024] The upper wall 20 includes a spout 26 at least partially defining a passageway 28 through the base 12 to permit contents in the container to be dispensed, the base 20 being connected to a lid 14 using a living hinge, the lid 14 being pivotal about the hinge 16 between an open position and a closed position to close the passageway 28 and prevent the contents from being dispensed. The spout 26 includes a generally arcuate tapering exterior slope a kin to a bell shape that defines a distal orifice 29 extending from the base of the spout to the top of the spout. The generally arcuately tapering of the exterior of the spout also corresponds to an interior tapering providing an arcuate threshold 30 for inhibiting pouring of the contents until the level of the fluid contents exceeds the threshold, as will be appreciated by persons skilled in the art. The spout 26 is surrounded by a trough 32, defined by the lower exterior portion of the spout 26 and a vertically raised circumferential wall 34 that circumscribes the spout. The trough 32 forms an annular path that is sloped so that a rearward portion 36 on the back side of the spout 26 lies at a lower level than a forward portion 38 on the front side of the spout, when the fluid container and cap 10 are resting in an upright position. (This, in turn, means that the rearward portion 36 will be the lowest point along the trough 32 because the trough 32 lies substantially in a plane.) The trough 32 includes a drain 40, at the rearward portion 36 of the spout 26, which is in direct communication with the passageway 28. This allows any fluid that makes its way into the trough 32 to egress through the drain 40 and back into the fluid container below. Thus, when the fluid container and cap 10 are resting in an upright position, any fluid that has spilled over the edge of the spout 26 and into the surrounding trough 32 during a pouring operation will flow down to the rearward portion 36 on the back side of the trough 32 and egress through the drain 40 and back into the fluid container. Alternatively, instead of the drain 40 being in direct communication with the passageway 28, as shown in the drawings, the drain 40 could comprise a separate opening through the upper wall 20 allowing the excess contents to flow back into the container without flowing through the passageway 28. It should be noted that the spout 26 and circumferential wall 34 are elevated above the circumferential skirt 18. Thus, the spout is not recessed within the interior portions bounded by the skirt and does not extend into the interior portions of the container.

[0025] The circumferential wall 34 includes a circumferential flange 42 and an inset vertical wall 44 that engages with an inner circumferential surface 46 of the lid 14 to provide a snap fit between the lid and wall that retains the lid in its closed position. To disengage the lid, the lid 14 is operatively pushed upward on a lip 48 extending from the front of the lid to break the friction fit between the features. Alternatively, the inner circumferential surface 46 can be increased in length so that this surface circumscribes the circumferential wall 34 at its base to provide a snap fit retaining the lid in its closed position.
Fabrication of the exemplary drain-back cap may be carried out using injection molding or functionally equivalent processes. In this manner, the base and spout may be injection molded as a single piece, and optionally include the lid as an integral component. When the lid is fabricated concurrently with the base and spout, the lid is molded in the open position so that the resiliency of the material used to mold the lid will tend to direct the lid to the open position when not mounted to the base over the spout.

It is to be understood that the dimensions and tolerances shown on the figures are exemplary in nature and do not in any way limit the scope of the invention. The invention could be practiced with any or all of the dimensions or tolerances having different values that those shown on the figures.

Following from the above description and invention summaries, it should be apparent to those of ordinary skill in the art that, while the methods and apparatuses herein described constitute exemplary embodiments of the present invention, the invention contained herein is not limited to this precise embodiment and that changes may be made to such embodiments without departing from the scope of the invention as defined by the claims. Additionally, it is to be understood that the invention is defined by the claims and it is not intended that any limitations or elements describing the exemplary embodiments set forth herein are to be incorporated into the interpretation of any claim element unless such limitation or element is explicitly stated. Likewise, it is to be understood that it is not necessary to meet any or all of the identified advantages or objects of the invention disclosed herein in order to fall within the scope of any claims, since the invention is defined by the claims and since inherent and/or unforeseen advantages of the present invention may exist even though they may not have been explicitly discussed herein.

What is claimed is:

1. A container closure comprising:
   - a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout at least partially defining a passageway through the base to permit contents in the container to be dispensed, the base being connected to a lid using a living hinge, the lid being pivotal about the hinge between an open position and a closed position to close the passageway and prevent the contents from being dispensed, the spout including an arcuate tapering front wall providing an arcuate threshold within an interior of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout, the spout including a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undisposed contents between the spout and circumferential wall to egress into the container.
   - the upper wall includes a deformable internal flange to interface with a top surface of the neck of the container to form a seal between the base and neck.

3. The container closure of claim 1, wherein:
   - the vertically extending circumferential wall includes a circumferential flange that engages the lid to provide a snap-fit connection when in the closed position.

4. The container closure of claim 1, wherein:
   - the body portion includes an internal threaded pattern to engage a threaded receiver of the container; and
   - the spout is not substantially recessed between the internal threaded pattern of the body portion.

5. The container closure of claim 1, wherein:
   - the arcuate threshold within the interior of the spout is opposite a vertically oriented distal opening in the rear wall of the spout.

6. The container closure of claim 1, wherein:
   - the body portion includes an internal threaded pattern to engage a threaded receiver of the container; and
   - the drain is positioned above the internal threaded pattern of the body portion.

7. A container closure comprising:
   - a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout at least partially defining a passageway through the base to permit contents in the container to be dispensed, the spout including an arcuate tapering front wall providing an arcuate threshold within an interior of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout, the spout includes a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undisposed contents between the spout and circumferential wall to egress into the container.
   - the upper wall includes a deformable internal flange to interface with a top surface of the neck of the container to form a seal between the base and neck.

9. The container closure of claim 7, wherein:
   - the body portion includes an internal threaded pattern to engage a threaded receiver of the container; and
   - the spout is not substantially recessed between the internal threaded pattern of the body portion.

10. The container closure of claim 7, wherein:
    - the arcuate threshold within the interior of the spout is opposite a vertically oriented distal opening in the rear wall of the spout.

11. The container closure of claim 7, wherein:
    - the body portion includes an internal threaded pattern to engage a threaded receiver of the container; and
    - the drain is positioned above the internal threaded pattern of the body portion.

12. A container closure comprising:
    - a base for placement on a neck of a container, the base including a body portion engaged upon the neck and an upper wall extending from the body portion, the upper wall having a spout extending directly above the upper wall, the spout including a passageway through the
base to permit contents in the container to be dispensed, the spout arcuately tapering away from the body portion and including an arcuate threshold within an interior of the spout on a pouring side of the spout, the upper wall including a vertically extending circumferential wall that circumscribes the spout and is inset from the body portion, where both the spout and circumferential wall are positioned vertically above the body portion and where the spout includes a drain recessed with respect to the circumferential wall, the drain in communication with the passageway allowing undispensed contents between the spout and circumferential wall to egress into the container.

13. The container closure of claim 12, wherein a distal portion of the spout includes a bell shaped with having a diameter that decreases as the distance from the body portion increases.

14. The container closure of claim 12, further comprising a lid removable mounted to the vertically extending circumferential wall to close off the passageway and inhibit contents in the container from being dispensed.

15. The container closure of claim 12, further comprising an lid integrally mounted to the base using a living hinge, the cap including a snap fit feature that selectively engages a corresponding snap fit feature of the base to close off the passageway and inhibit contents in the container from being dispensed.