LID WITH ROTATING CLOSURE

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ABSTRACT

A lid for a container. The lid comprising a plate circumscribe by a wall, the plating having an opening therethrough. A twisting closure movably affixed to the plate. The twisting closure movable from first position covering the opening to a second position wherein the opening is not covered. The twisting closure secured to the plate by a post protruding from the plate and a cap engaging the post and capturing a portion of the twisting closure therebetween.
LID WITH ROTATING CLOSURE

CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE PRESENT DISCLOSURE

[0002] 1. Field of the Present Disclosure
[0003] The present disclosure is directed to a lid for a container. The lid may include a twisting closure located on the upper surface of the lid. Furthermore, the lid may substantially seal the container, isolating its contents from the surrounding environment. In some aspects, the lid may be operated with just one hand.
[0004] 2. Related Art
[0005] Many devices, such as travel mugs for hot or cold beverage; reusable water bottles, and sport bottles, have lids and closures that do not meet all of the users' needs and desires. In particular, many travel coffee cups, for example, do not provide very good seals. They may leak with any but the slightest jostle, or they may leak when the user is drinking, which often results in the user spilling coffee all over his clothes. Many of these travel mugs have rudimentary closures that nonetheless require two hands to open or close. Alternatively, the user may grasp the mug between his knees and open it with one hand, but neither solution is very safe when the user is also driving a car.
[0006] Reusable water bottles, sport bottles, and the like often provide better seals so that the bottles do not leak under normal conditions. The tradeoff, however, is a closure that requires two hands, although some users may choose to use their teeth in place of a hand, e.g., when riding a bicycle. Furthermore, water and sport bottles are typically made from plastic or other non-insulating materials, making them less ideal for a user who wants to carry a hot beverage, such as, e.g., coffee, to keep it hot and not burn herself.
[0007] Accordingly, there is a need for a lid with a closure that creates a strong seal, prevents more or all leaks, and can be operated with one hand. Such a lid may have applications beyond beverage containers. In fact, any container that would benefit from being sealed against the surrounding environment while providing convenient access to its contents is contemplated for use with the present disclosure. In particular, dry ingredient containers for storing, e.g., sugar or flour, water bottles, sport bottles, travel mugs, thermal mugs, carafes, pitchers, and the like may all be used with the herein described lid.

SUMMARY OF THE PRESENT DISCLOSURE

[0008] The present disclosure meets the foregoing need and describes a lid with a sealed closure that can be opened or closed with one hand, which results in a significant satisfaction of consumer desires and needs and other advantages apparent from the discussion herein.
[0009] Accordingly, in one aspect of the present disclosure a lid for a container. The lid comprises a plate having an upper surface and a lower surface proximate thereto and at least one opening. The lid further comprises a wall circumscribing about the plate and sealingly affixed thereto. A twisting closure is rotatably attached to the upper surface, the twisting closure covering a portion of the upper surface. Wherein the twisting closure covers the at least one opening in the closed position and the open is not covered by the twisting closure in the open position.
[0010] According to another aspect of the present disclosure, a lid for a container comprises a plate having a wall extending downward from the plate and an upper surface configured to face away from the container when the lid is engaged with the container. The lid further comprises at least one opening and a post located on the plate and extending upwards. A twisting closure provided having an opening for receiving the post, the twisting closure disposed upon a portion of the plate and rotatable about the post between an open position and a closed position, the twisting closure configured to cover the at least one opening in the closed position, the twisting closure further configured to expose the at least one opening in the open position.
[0011] In yet another aspect of the present disclosure a lid for a container is provided. The lid comprises a plate having a wall extending from a periphery of the wall and at least one opening. The lid further comprises a post located on the plate and a twisting closure having a central aperture configured to receive the post, the twisting closure configured to rotate about the post between an open position and a closed position, the twisting closure further configured to cover the at least one opening in the closed position, the twisting closure further configured to expose the at least one opening in the open position. A cap is connected to the post, wherein the twisting closure is rotatably secured to the plate.
[0012] Additional features, advantages, and embodiments of the present disclosure may be set forth or apparent from consideration of the following detailed description, drawings, and claims. Moreover, it is to be understood that both the foregoing summary of the present disclosure and the following detailed description are exemplary and intended to provide further explanation without limiting the scope of the present disclosure as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The accompanying drawings, which are included to provide a further understanding of the present disclosure, are incorporated in and constitute a part of this specification, illustrate embodiments of the present disclosure and together with the detailed description serve to explain the principles of the present disclosure. No attempt is made to show structural details of the present disclosure in more detail than may be necessary for a fundamental understanding of the present disclosure and the various ways in which it may be practiced. In the drawings:
[0014] FIG. 1 shows a lid that is constructed according to the present disclosure and attached to a thermal mug;
[0015] FIGS. 2A, 2B show top views of the lid of FIG. 1 with the twisting closure in the closed position and in the open position, respectively;
[0016] FIG. 3A shows a front view of the lid of FIG. 1 attached to a thermal mug;
[0017] FIG. 3B shows a side view of the lid of FIG. 1 attached to a thermal mug;
[0018] FIG. 4A shows a cutaway of the lid of FIG. 1 with the twisting closure in an open position and the lid attached to a thermal mug;
[0019] FIG. 4B shows a cutaway of the lid of FIG. 1 with the twisting closure in a closed position;
[0020] FIG. 5 shows an exploded view of the lid of FIG. 1.
The embodiments of the present disclosure and the various features and advantageous details thereof are explained more fully with reference to the non-limiting embodiments and examples that are described and/or illustrated in the accompanying drawings and detailed in the following description. It should be noted that the features illustrated in the drawings are not necessarily drawn to scale, and features of one embodiment may be employed with other embodiments as the skilled artisan would recognize, even if not explicitly stated herein. Descriptions of well-known components and processing techniques may be omitted so as to not unnecessarily obscure the embodiments of the present disclosure. The examples used herein are intended merely to facilitate an understanding of ways in which the present disclosure may be practiced and to further enable those of skill in the art to practice the embodiments of the present disclosure. Accordingly, the examples and embodiments herein should not be construed as limiting the scope of the present disclosure, which is defined solely by the appended claims and applicable law. Moreover, it is noted that like reference numerals represent similar parts throughout the several views of the drawings.

According to the present disclosure, a lid 10 may be designed or constructed to attach to a container 11. The container 11 may, for example, a thermal mug, an insulated mug, a thermal carafe, an insulated carafe, a paper cup, a plastic cup, a plastic beverage container, a plastic tumbler, a dry ingredients container, an aluminum can, a metal beverage container, a plastic bottle, a drinking glass, a glass tumbler, a glass bottle, or the like. As shown in the embodiment of FIG. 1, the lid 10 comprises a plate 28 having upper surface 30 and a lower surface 36 (shown in FIGS. 4A and 4B). The lower surface 36 may also be known as an inner surface, as in certain embodiments this is the surface of the lid 10 that may face the interior of the container 11.

The embodiment of FIG. 1 further includes a wall 35 circumscribing the plate 28 (best shown in FIG. 2A and 2B). The wall 35 may extend upward from the plate 28, i.e. away from the container 11 to when the lid 10 is attached. The wall 35 may also extend downward from the plate 28, i.e. engaging the container 11 when the lid 10 is attached. In one embodiment, such as illustrated in FIG. 1, the wall 35 may extend both above and below the plate 28. It should also be appreciated that the wall 35 may extend substantially perpendicular to the plate 28, or at one or more angles with respect to the plate 28 such that a user is able to utilize the lid to drink 10 from the container 11.

A twisting closure 20 may be connected to the upper surface 30 and held in place by retention 21 such as, but not limited to a cap, pin, clip, or similar structure. In one embodiment, the twisting closure 20 is secured to the plate 28 at substantially the center of the plate 28, such that the twisting closure 20 is at least partially rotatable about the center of the plate 28. The twisting closure 20 may have one or more vertical flanges 26. It should be appreciated that the vertical flanges 26 may make it easier for a user to rotate the closure, particularly via a one-hand operation. In an alternative embodiment, the vertical flanges 26 may be formed by a recess or depression in the twisting closer 20. In one embodiment, the twisting closure 20 extends the diameter of a substantially circular plate 28 and the vertical flanges 26 extend along the longitudinal axis of the twisting closure 20. In some aspects, the twisting closure 20 may be rotated from an open position of the lid to a closed position of the lid, and vice versa, with a one-handed operation.

The lid 10 may include one or more openings 31 for dispensing the contents of the container 11. For aspects that have more than one opening, the openings may be the same size or they may be different sizes. For example, a lid with two openings 31 may have a larger opening 31, which may be intended for dispensing the contents of the container 11, and a smaller opening 31, which may be intended to allow a smooth air flow into container 11 to replace the contents as it is dispensed.

FIGS. 2A, 2B show top views of the lid 10 with the twisting closure 20 in the closed position and in the open position, respectively. When the twisting closure 20 is in the closed position, shown in FIG. 2A, openings 31 may be covered by the twisting closure 20. Instead, non-opening areas 32 of the lid 10 may be exposed. When the twisting closure 20 is placed in the open position, shown in FIG. 2B, openings 31 may be exposed while non-opening areas 32 may be covered by the twisting closure 20. Note that cap 21 may not rotate with closure 20 and instead may remain in a fixed orientation relative to the body of the lid 10.

FIG. 3A shows a front view of the lid 10 attached to a container 11, while FIG. 3B shows a side view of the lid 10 attached to a container 11. In this regard, the wall 35 may include a higher portion 35a adjacent opening 31 and a lower portion 35b adjacent the non-opening areas 32 (shown in FIG. 2A and 2B).

FIG. 4A shows a cutaway of the lid 10 with the twisting closure 20 in an open position. The twisting closure 20 is located over non-opening areas 32 of the lid 10. Twisting closure 20 may fit over a post 33 located on the upper surface 30 of the lid. Post 33 may also hold twisting closure 20 in place as it is rotated between the closed position and the open position. In one embodiment, the twisting closure 20 rotates about an axis defined by the post 33, which may be positioned substantially in at the center of the plate 28. In one embodiment, illustrated in FIG. 4A, the twisting closure 20 includes an central opening, passage, or slot 27 which is adapted to receive the post 33.

Cap 21 may mate to post 33 to attach the twisting closure 20 to the lid 10. As seen in FIGS. 4A and 4B, cap 21 may fit inside post 33. FIGS. 4B and 5 show that cap 21 may include bumps or posts 40 on its side to retain it inside slots of post 33. As one of ordinary skill in the art will understand, different types of fitting between cap 21 and post 33 may utilize different orientations or arrangements of these parts without departing from the spirit and scope of the present disclosure, including the claims. Lid 10 may employ adhesive, such as glue, epoxy, or the like, friction, or other means known to one skilled in the art to further secure the connection of cap 21 to post 33. In one embodiment, the cap 21 is disposed within the opening 27. As shown in FIG. 4A, the opening 27 of the twisting closure 20 may include a cap retention flange 42, against which the cap 21 retains the twisting closure 20.

A spring 22 may surround post 33 and be held in place against the underside of cap 21. Spring 22 may further press down against a lip 25 formed in the twisting closure 20. In one embodiment, the twisting closure 20 includes central opening, passage, or slot 27. The opening 27 is adapted to receive the cap 21 and further includes the lip 25. As illustrated in FIGS. 4A and 4B, in one embodiment, the post and...
cap are connected and at least partially disposed in the opening 27 wherein the spring 22 is disposed annularly about the post 33 and cap 21, engaging the cap and lip 25. In this manner, twisting closure 20 may be pressed down against the upper surface 30 of the lid 10. It should be appreciated that a range of motion away from the plate 28 may be provided to the twisting closure 20, such as by having the cap retention flange 42 positioned as shown in FIG. 4A. Such a range of motion, against which the spring biases, may be utilized for embodiments where a seal 23 is provided that at least partially disposes the opening 31 of the lid, for example, as illustrated in FIG. 4B. In such embodiments, the twisting closure 20 is positioned closer to the plate 28 when the seal 23 is disposed in the opening 31 than when the twisting closure is positioned such that the opening 31 is uncovered and the seal 23 is engaging a non-opening area 32 of the plate 28.

[0031] When twisting closure 20 is in the open or closed position, as shown in FIGS. 4A and 4B respectively, a tab 24 located on the underside of the twisting closure may rest in a groove 34 located on the upper surface 30. While this structure is described as a tab, it may be a post, bump, or similar structure depending on the particular application at hand, as will be understood by one skilled in the art. Alternatively, tab 24 may be located on upper surface 30 and groove 34 may be on the underside of the twisting closure 20. Operation of the tab 24 and groove 34 will be described as shown in the picture, but one of ordinary skill in the art will be able to adapt the operation to different arrangements without undue experimentation and without departing from the spirit and scope of the present disclosure, including the claims.

[0032] Groove 34 may have a sloped or curved bottom that merges with upper surface 30 approximately midway between the open and closed positions. As twisting closure 20 is rotated from one position to the other, tab 24 presses against the bottom of the groove 34. As tab 24 is twisted against the sloped or curved bottom of groove 34, tab 24 rises and forces twisting closure 20 to rise as well. When twisting closure 20 rises, lip 25 compresses the spring 22 against cap 21. If the twisting closure is rotated far enough that tab 24 leaves groove 34 and comes to rest on the upper surface 30, the closure may be in a position of relative stability. A slight nudge backward and tab 24 may slide down the groove 34 that it just left, returning twisting closure 20 to its original position. A slight nudge forward and tab 24 will enter the next groove 34. The pressure created by spring 22 may encourage tab 24 to slide along the bottom of groove 34 into the next position. In this way, twisting closure 20 may snap or pop into either an open or closed position. Likewise, twisting closure may be less likely to accidentally or unexpectedly open or close.

[0033] Twisting closure 20 may include one or more seals 23 on its underside. When twisting closure 20 is in a closed position, seal 23 may be in contact with opening 31. The pressure of the spring 22 against lip 25 may assist seal 23 in forming a substantially air- or liquid-tight seal over opening 31. Lid 10 may also include a lower groove 13 defined by an inner rim 14 and an outer rim 15. Groove 13, rim 14, and rim 15 may serve to attach lid 10 to container 11 by threads (i.e. screw top), a snap-top, or the like. A gasket 12 may be located in groove 13 and may form a substantially air- or liquid-tight seal when lid 10 is attached to container 11. The combination of seal 23 and gasket 12 may create a substantially air- or liquid-tight seal around the contents of container 11. Thus, lid 10 may substantially reduce or prevent the contents of container 11 from spoiling, spilling, leaking, drying, absorbing moisture, becoming contaminated, or the like.

[0034] Lid 10 and container 11 may have a size and shape that makes them convenient for a user to hold in one hand. Furthermore, lid 10 and its component parts may be selected or designed so that twisting closure 20 can be rotated from one position to the other with just a thumb or forefinger. Thus, a thermal mug constructed according to the principles of the present disclosure may provide, for example, a thermal mug that is substantially free from leaks and can be opened with one hand. Such a mug would provide a tremendous benefit to, e.g., a driver who could now enjoy her coffee without having to worry about her mug leaking and without having to take both hands off the steering wheel to open or close the mug, further reducing the possibility of leaks.

[0035] FIG. 5 shows an exploded view of the lid 10. As shown in FIG. 5, the twisting closure 20 and all associated parts, including cap 21 and spring 22, may be located on and attached to the upper surface 30 on the lid 10. This separates and isolates the moving parts of the lid 10 from the contents of container 11, which may extend the life of the mechanism and may make cleaning lid 10 easier.

[0036] While the present disclosure has been described in terms of exemplary embodiments, those skilled in the art will recognize that the present disclosure can be practiced with modifications in the spirit and scope of the appended claims. These examples given above are merely illustrative and are not meant to be an exhaustive list of all possible designs, embodiments, applications or modifications of the present disclosure.

What is claimed is:
1. A lid for a container, the lid comprising:
a plate having an upper surface and a lower surface proximate thereto and at least one opening;
a wall circumscribing about the plate and sealingly affixed thereto;
a twisting closure rotatably attached to the upper surface, the twisting closure covering a portion of the upper surface;
wherein the twisting closure covers at least one opening in the closed position and the opening is not covered by the twisting closure in the open position.
2. The lid of claim 1, wherein the twisting closure is rotatable about a central axis between the closed position and the open position.
3. The lid of claim 1, further comprising a cap engageable with the plate and configured to attach the twisting closure to the upper surface.
4. The lid of claim 3, further comprising a spring disposable between the cap and the twisting closure, the spring further configured to bias the twisting closure against the upper surface.
5. The lid of claim 1, wherein the twisting closure further comprises at least one seal configured to seal the at least one opening in the closed position.
6. The lid of claim 5, wherein the seal seals the twisting closure over the at least one opening.
7. The lid of claim 1, further comprising a gasket disposed about a lower circumference of the wall and configured to seal the lid onto the container.
8. The lid of claim 1, wherein the twisting closure further comprises a lip engageable with the spring.
9. A lid for a container, the lid comprising:
   a plate having a wall extending downward from the plate
   and an upper surface configured to face away from the
   container when the lid is engaged with the container;
   at least one opening;
   a post located on the plate and extending upwards;
   a twisting closure having an opening for receiving the post,
   the twisting closure disposed upon a portion of the plate
   and rotatable about the post between an open position
   and a closed position, the twisting closure configured to
   cover the at least one opening in the closed position, the
   twisting closure further configured to expose the at least
   one opening in the open position.
10. The lid of claim 9, further comprising:
    a spring at least partially disposable within the opening of
    the twisting closure; and
    a cap configured to connect to the post, the cap further
    configured to hold the spring and the twisting closure in
    place.
11. The lid of claim 10, wherein the spring is positioned
    between the cap and the twisting closure such that the spring
    presses against the cap and presses the twisting closure
    against the upper surface.
12. The lid of claim 9, further comprising at least one seal
    configured to seal the at least one opening when the twisting
    closure is in the closed position.
13. The lid of claim 12, wherein the seal seals the twisting
    closure over the at least one opening.

14. The lid of claim 9, further comprising a gasket configured
    to seal the lid onto the container.
15. The lid of claim 9, wherein the wall extends upward from
    the upper surface.
16. A lid for a container, the lid comprising:
    a plate having a wall extending from a periphery of the
    wall;
    at least one opening;
    a post located on the plate;
    a twisting closure having a central aperture configured to
    receive the post, the twisting closure configured to rotate
    about the post between an open position and a closed
    position, the twisting closure further configured to cover
    the at least one opening in the closed position, the twisting
    closure further configured to expose the at least one
    opening in the open position; and
    a cap connected to the post, wherein the twisting closure is
    rotatably secured to the plate.
17. The lid of claim 16, further comprising a spring configured
    to press against the cap and to press the twisting closure
    against the upper surface.
18. The lid of claim 16, further comprising at least one seal
    configured to seal the at least one opening when the twisting
    closure is in the closed position.
19. The lid of claim 18, wherein the seal seals the twisting
    closure over the at least one opening.
20. The lid of claim 16, further comprising a gasket configured
    to seal the lid onto the container.

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