DRINK AND MISTING BOTTLE WITH TRIGGER LOCK

Cross-Reference to Related Applications

[0001] This application claims the benefit of U.S. Patent Application Serial No. 15/483,033 filed on April 10, 2017, which is incorporated herein by reference in its entirety.

Statement Regarding Federally Sponsored Research or Development

[0002] Not Applicable.

Appendix

[0003] Not Applicable.

BACKGROUND

Field of the Disclosure

[0004] The present disclosure pertains to a bottle closure having a drink spout, trigger actuated pump and misting nozzle, and a lock mechanism for preventing and permitting actuation of the pump and misting nozzle.

Summary

[0005] According to a first aspect of the present invention, there is provided a bottle closure for releasable attachment to a bottle and for providing hydration to a user, the bottle closure comprising:

a drink spout adapted and configured to be in fluid communication with the bottle to enable the user to extract a liquid;

a pump mechanism adapted and configured to be in fluid communication with the bottle to enable the liquid to be pumped and discharged through a nozzle;

a trigger mechanism operatively connected to the pump mechanism and moveable between a first trigger position and a second trigger position, the trigger mechanism adapted and configured to move the pump mechanism to pump the liquid as the trigger mechanism is moved between the first trigger position and the second trigger position; and

a lock mechanism having a radially extending engagement surface, the lock mechanism radially extending engagement surface being rotatable about an center axis of the bottle closure between an engaged position and a disengaged position, wherein when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface engages the trigger mechanism to prevent the trigger mechanism from moving in an axial direction relative to the bottle closure between the first trigger position and the second trigger position, and to prevent the trigger mechanism from moving the pump mechanism and pumping of the liquid,

wherein when the lock mechanism is in the disengaged position, the lock mechanism radially extending engagement surface is circumferentially spaced from the trigger mechanism to permit the trigger mechanism to move axially relative to the bottle closure between the first trigger position and the second trigger position, and to permit the trigger mechanism to move the pump mechanism and pump of the liquid;

wherein the lock mechanism is positioned at least in part between a cover of the bottle closure and a body of the bottle closure, the cover of the bottle closure extends at least in part around the body, the pump mechanism, and the lock mechanism; and

wherein the cover comprises a window, a portion of the trigger mechanism extends through the window in the cover of the bottle closure, and a portion of the lock mechanism extends through the window and is adapted and configured to allow a user to rotate the lock mechanism between the engaged position and the disengaged position.

[0006] According to a second aspect of the present invention, there is provided a bottle closure for releasable attachment to a bottle and for providing hydration to a user, the bottle closure comprising:

a first discharge aperture for dispensing a liquid;

a body;

a pump mechanism supported by the body comprising a variable volume fluid receiving cavity and a plunger reciprocally moveable within the fluid receiving cavity between a first plunger position in which the fluid receiving cavity has a first volume and a second plunger position in which the fluid receiving cavity has a second volume smaller than the first volume, the plunger configured to change the volume of the fluid receiving cavity as the pump mechanism moves between the first plunger

position and the second plunger position, the pump mechanism including a first check valve in a first intake liquid flow path configured for permitting fluid flow to the fluid receiving cavity from the first intake liquid flow path and for checking fluid flow from the pump mechanism to the first intake liquid flow path, the pump mechanism including a second check valve in a first discharge liquid flow path configured for permitting fluid flow from the fluid receiving cavity to the first discharge liquid flow path and for checking fluid flow from the first discharge liquid flow path to the fluid receiving cavity, the first discharge liquid flow path terminating at the first discharge aperture;

a trigger operatively connected to the plunger and reciprocally moveable relative to the body between a first trigger position and a second trigger position to move the plunger between the first and second plunger position, the plunger and trigger being configured such that the plunger is in the first plunger position when the trigger is in the first trigger position and the plunger is in the second plunger position when the trigger is in the second trigger position;

a lock mechanism having a radially extending engagement surface, the lock mechanism radially extending engagement surface being movable in a circumferential direction about the bottle closure between an engaged position and a disengaged position, wherein when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface engagement surface engages the trigger to prevent the trigger from moving axially relative to the bottle closure between the first trigger position and the second trigger position, and to prevent the trigger mechanism from moving the plunger between the first and second plunger positions, wherein when the lock mechanism is in the disengaged position, the lock mechanism radially extending engagement surface engagement surface is circumferentially spaced from the trigger to permit the trigger to move axially relative to the bottle closure between the first trigger position and the second trigger position, and to permit the trigger to move the plunger between the first and second plunger positions; and

a second discharge aperture separated from the first discharge aperture, the second discharge aperture in fluid communication with a second intake liquid flow path;

wherein the lock mechanism is positioned at least in part between a cover of the bottle closure and the body of the bottle closure, the cover of the bottle closure extends at least in part around the body, the pump mechanism, and the lock mechanism; and

wherein the cover comprises a window, a portion of the trigger extends through the window in the cover of the bottle closure, and a portion of the lock mechanism extends through the window and is adapted and configured to allow a user to rotate the lock mechanism between the engaged position and the disengaged position.

[0007] According to a third aspect of the present invention, there is provided a container for providing hydration to a user, the container comprising:

a bottle having a bottle finish; and

a bottle closure adapted and configured to be releasably secured to the bottle by the bottle finish, the bottle closure comprising:

a body;

a drink spout adapted and configured to be in fluid communication with the bottle to enable a user to extract a liquid;

a pump mechanism coupled to the body and adapted and configured to be in fluid communication with the bottle and movable to enable a liquid to be pumped and discharged through a nozzle;

a trigger mechanism coupled to the body and operatively connected to the pump mechanism and moveable between a first trigger position and a second trigger position, the trigger mechanism adapted and configured to

actuate the pump mechanism to pump a liquid as the trigger mechanism is moved between the first trigger position and the second trigger position; and

a lock mechanism having a radially extending engagement surface, the radially extending engagement surface being rotatable about a center axis of the bottle closure between an engaged position and a disengaged position, wherein when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface engages the trigger mechanism to prevent the trigger mechanism from moving axially relative to the bottle closure between the first trigger position and the second trigger position, and to prevent the trigger mechanism from moving the pump mechanism and pumping of the liquid, wherein when the lock mechanism is in the disengaged position, the lock mechanism radially extending engagement surface is circumferentially spaced from the trigger mechanism to permit the trigger mechanism to move axially relative to the bottle closure between the first trigger position and the second trigger position, and to permit the trigger mechanism to move the pump mechanism and pump of the liquid;

wherein the lock mechanism is positioned at least in part between a cover of the bottle closure and the body of the bottle closure, the cover of the bottle closure extends at least in part around the body, the pump mechanism, and the lock mechanism; and

wherein the cover comprises a window, a portion of the trigger mechanism extends through the window in the cover of the bottle closure and a portion of the lock mechanism extends through the window and is adapted and configured to allow a user to rotate the lock mechanism between the engaged position and the disengaged position

[0008] Further features and advantages, as well as the structure and operation of various embodiments disclosed herein, are described in detail below with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The accompanying drawings, which are incorporated in and form a part of the specification, illustrate the embodiments of the present disclosure and together

What is Claimed Is:

1. A bottle closure for releasable attachment to a bottle and for providing hydration to a user, the bottle closure comprising:

a drink spout adapted and configured to be in fluid communication with the bottle to enable the user to extract a liquid;

a pump mechanism adapted and configured to be in fluid communication with the bottle to enable the liquid to be pumped and discharged through a nozzle;

a trigger mechanism operatively connected to the pump mechanism and moveable between a first trigger position and a second trigger position, the trigger mechanism adapted and configured to move the pump mechanism to pump the liquid as the trigger mechanism is moved between the first trigger position and the second trigger position; and

a lock mechanism having a radially extending engagement surface, the lock mechanism radially extending engagement surface being rotatable about an center axis of the bottle closure between an engaged position and a disengaged position, wherein when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface engages the trigger mechanism to prevent the trigger mechanism from moving in an axial direction relative to the bottle closure between the first trigger position and the second trigger position, and to prevent the trigger mechanism from moving the pump mechanism and pumping of the liquid, wherein when the lock mechanism is in the disengaged position, the lock mechanism radially extending engagement surface is circumferentially spaced from the trigger mechanism to permit the trigger mechanism to move axially relative to the bottle

closure between the first trigger position and the second trigger position, and to permit the trigger mechanism to move the pump mechanism and pump of the liquid;

wherein the lock mechanism is positioned at least in part between a cover of the bottle closure and a body of the bottle closure, the cover of the bottle closure extends at least in part around the body, the pump mechanism, and the lock mechanism; and

wherein the cover comprises a window, a portion of the trigger mechanism extends through the window in the cover of the bottle closure, and a portion of the lock mechanism extends through the window and is adapted and configured to allow a user to rotate the lock mechanism between the engaged position and the disengaged position.

2. A bottle closure in accordance with claim 1 wherein, the trigger mechanism has a trigger portion, connecting portion, and pivot portion, the pivot portion is pivotally coupled to a body of the bottle closure, the connecting portion is adapted and configured to impart a generally vertical force to the pump mechanism when the bottle closure is in an upright position and the trigger portion is actuated and the connecting portion pivots about the body of the closure, the lock mechanism radially extending engagement surface is engageable with the connecting portion of the trigger mechanism when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface is spaced from the connecting portion of the trigger mechanism when the lock mechanism is in the disengaged position.

3. A bottle closure in accordance with claim 2 wherein the connecting portion of the trigger mechanism extends from the body of the bottle closure in a direction substantially perpendicular to the pump mechanism when the trigger mechanism is in the first trigger position.

4. A bottle closure in accordance with claim 1, wherein the body of the bottle closure includes a stop extending radially from the body of the bottle closure, the stop is adapted and configured to be engageable with the lock mechanism to limit rotation of the lock mechanism to between the engaged position and the disengaged position.

5. A bottle closure for releasable attachment to a bottle and for providing hydration to a user, the bottle closure comprising:

a first discharge aperture for dispensing a liquid;

a body;

a pump mechanism supported by the body comprising a variable volume fluid receiving cavity and a plunger reciprocally moveable within the fluid receiving cavity between a first plunger position in which the fluid receiving cavity has a first volume and a second plunger position in which the fluid receiving cavity has a second volume smaller than the first volume, the plunger configured to change the volume of the fluid receiving cavity as the pump mechanism moves between the first plunger position and the second plunger position, the pump mechanism including a first check valve in a first intake liquid flow path configured for permitting fluid flow to the fluid receiving cavity from the first intake liquid flow path and for checking fluid flow from the pump mechanism to the first intake liquid flow path, the pump mechanism

including a second check valve in a first discharge liquid flow path configured for permitting fluid flow from the fluid receiving cavity to the first discharge liquid flow path and for checking fluid flow from the first discharge liquid flow path to the fluid receiving cavity, the first discharge liquid flow path terminating at the first discharge aperture;

a trigger operatively connected to the plunger and reciprocally moveable relative to the body between a first trigger position and a second trigger position to move the plunger between the first and second plunger position, the plunger and trigger being configured such that the plunger is in the first plunger position when the trigger is in the first trigger position and the plunger is in the second plunger position when the trigger is in the second trigger position;

a lock mechanism having a radially extending engagement surface, the lock mechanism radially extending engagement surface being movable in a circumferential direction about the bottle closure between an engaged position and a disengaged position, wherein when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface engagement surface engages the trigger to prevent the trigger from moving axially relative to the bottle closure between the first trigger position and the second trigger position, and to prevent the trigger mechanism from moving the plunger between the first and second plunger positions, wherein when the lock mechanism is in the disengaged position, the lock mechanism radially extending engagement surface engagement surface is circumferentially spaced from the trigger to permit the trigger to move axially relative to the bottle closure between the first trigger position and the second

trigger position, and to permit the trigger to move the plunger between the first and second plunger positions; and

a second discharge aperture separated from the first discharge aperture, the second discharge aperture in fluid communication with a second intake liquid flow path;

wherein the lock mechanism is positioned at least in part between a cover of the bottle closure and the body of the bottle closure, the cover of the bottle closure extends at least in part around the body, the pump mechanism, and the lock mechanism; and

wherein the cover comprises a window, a portion of the trigger extends through the window in the cover of the bottle closure, and a portion of the lock mechanism extends through the window and is adapted and configured to allow a user to rotate the lock mechanism between the engaged position and the disengaged position.

6. A bottle closure in accordance with claim 5, wherein the trigger has a trigger portion, connecting portion, and pivot portion, the pivot portion is pivotally coupled to the body of the bottle closure, the connecting portion is adapted and configured to impart a vertical force to the pump mechanism when the trigger portion is actuated and the connecting portion pivots about the body, the lock mechanism radially extending engagement surface is engageable with the connecting portion of the trigger when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface is spaced from the connecting portion of the trigger mechanism when the lock mechanism is in the disengaged position.

7. A bottle closure in accordance with claim 5, wherein the body of the bottle closure includes a stop extending radially from the body of the bottle closure, the stop is adapted and configured to be engageable with the lock mechanism to limit rotation of the lock mechanism to between the engaged position and the disengaged position.

8. A container for providing hydration to a user, the container comprising:

a bottle having a bottle finish; and

a bottle closure adapted and configured to be releasably secured to the bottle by the bottle finish, the bottle closure comprising:

a body;

a drink spout adapted and configured to be in fluid communication with the bottle to enable a user to extract a liquid;

a pump mechanism coupled to the body and adapted and configured to be in fluid communication with the bottle and movable to enable a liquid to be pumped and discharged through a nozzle;

a trigger mechanism coupled to the body and operatively connected to the pump mechanism and moveable between a first trigger position and a second trigger position, the trigger mechanism adapted and configured to actuate the pump mechanism to pump a liquid as the trigger mechanism is moved between the first trigger position and the second trigger position; and

a lock mechanism having a radially extending engagement surface, the radially extending engagement surface being rotatable about a center axis of the bottle closure between an engaged position and a disengaged position,

wherein when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface engages the trigger mechanism to prevent the trigger mechanism from moving axially relative to the bottle closure between the first trigger position and the second trigger position, and to prevent the trigger mechanism from moving the pump mechanism and pumping of the liquid, wherein when the lock mechanism is in the disengaged position, the lock mechanism radially extending engagement surface is circumferentially spaced from the trigger mechanism to permit the trigger mechanism to move axially relative to the bottle closure between the first trigger position and the second trigger position, and to permit the trigger mechanism to move the pump mechanism and pump of the liquid;

wherein the lock mechanism is positioned at least in part between a cover of the bottle closure and the body of the bottle closure, the cover of the bottle closure extends at least in part around the body, the pump mechanism, and the lock mechanism; and

wherein the cover comprises a window, a portion of the trigger mechanism extends through the window in the cover of the bottle closure and a portion of the lock mechanism extends through the window and is adapted and configured to allow a user to rotate the lock mechanism between the engaged position and the disengaged position.

9. A container in accordance with claim 8, wherein the trigger mechanism has a trigger portion, connecting portion, and pivot portion, the pivot portion is pivotally coupled to the body of the bottle closure, the connecting portion is adapted and

configured to impart a vertical force to the pump mechanism when the trigger portion is actuated and the connecting portion pivots about the body of the closure, the lock mechanism radially extending engagement surface is engageable with the connecting portion of the trigger mechanism when the lock mechanism is in the engaged position, the lock mechanism radially extending engagement surface is spaced from the connecting portion of the trigger mechanism when the lock mechanism is in the disengaged position.

10. A container in accordance with claim 8, wherein the body of the bottle closure includes a stop extending radially from the body of the bottle closure, the stop being adapted and configured to be engageable with the lock mechanism to limit rotation of the lock mechanism to between the engaged position and the disengaged position.

11. A container in accordance with claim 8, wherein the bottle finish comprises a first plurality of threads, and wherein the body of the bottle closure includes a second plurality of threads adapted and configured to be engageable with the first plurality of threads.

12. A container in accordance with claim 11, wherein the body of the bottle closure includes a third plurality of threads arranged about a dip tube in fluid communication with the pump mechanism, the third plurality of threads adapted and configured to be engageable with a secondary bottle positionable within the bottle.