



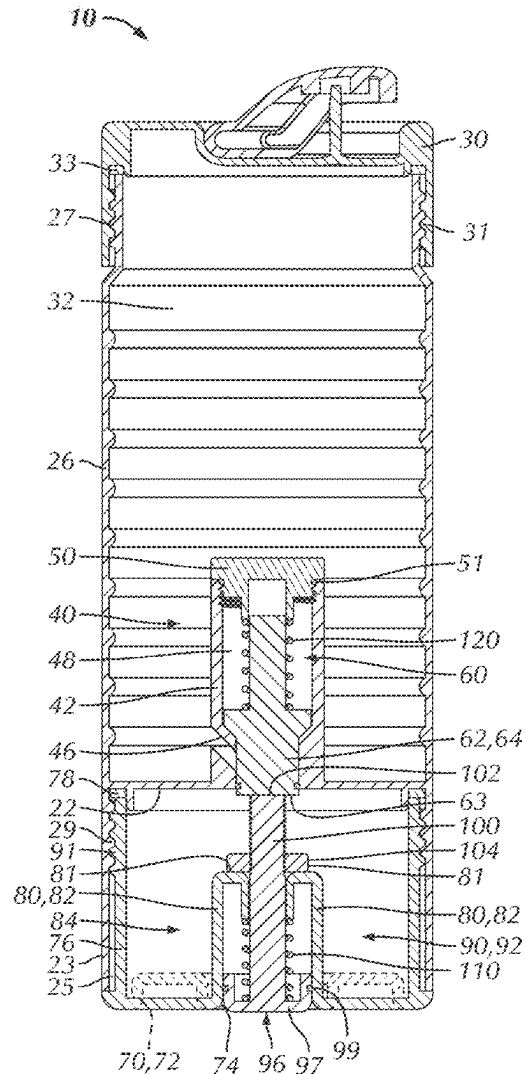
US 20250256904A1

(19) **United States**(12) **Patent Application Publication**
GREGG(10) **Pub. No.: US 2025/0256904 A1**(43) **Pub. Date: Aug. 14, 2025**(54) **WATER BOTTLE WITH SELECTIVELY
ACCESSIBLE COMPARTMENT FOR
STORING AND MIXING POWDERS**(52) **U.S. Cl.**
CPC **B65D 81/3211** (2013.01); **A47G 19/2272**
(2013.01); **B65D 47/0876** (2013.01)(71) Applicant: **Brandon GREGG**, Colmar, PA (US)(72) Inventor: **Brandon GREGG**, Colmar, PA (US)(21) Appl. No.: **19/051,818**(22) Filed: **Feb. 12, 2025****Related U.S. Application Data**

(60) Provisional application No. 63/552,872, filed on Feb. 13, 2024, provisional application No. 63/552,488, filed on Feb. 12, 2024.

Publication Classification(51) **Int. Cl.**
B65D 81/32 (2006.01)
A47G 19/22 (2006.01)
B65D 47/08 (2006.01)(57) **ABSTRACT**

A bottle provides for separately storing a powder and a liquid and selectively mixing the powder into the liquid. The bottle includes a main body having a bottom wall with a transfer passage, a perimeter wall attached to the bottom wall, and a main-body cap sealingly attachable to the perimeter wall. A main-body projection is sealingly attached to the bottom wall and forms a conduit with an outlet. A sealing body in the conduit has resting and activated positions, is biased toward the resting position, and is displaceable to unblock the outlet. A secondary body is sealingly attachable to the main body and has a bottom wall with an access passage and a secondary-body projection containing an activation body. The activation body is configured to displace the sealing plug when the activation body is in an activated position.



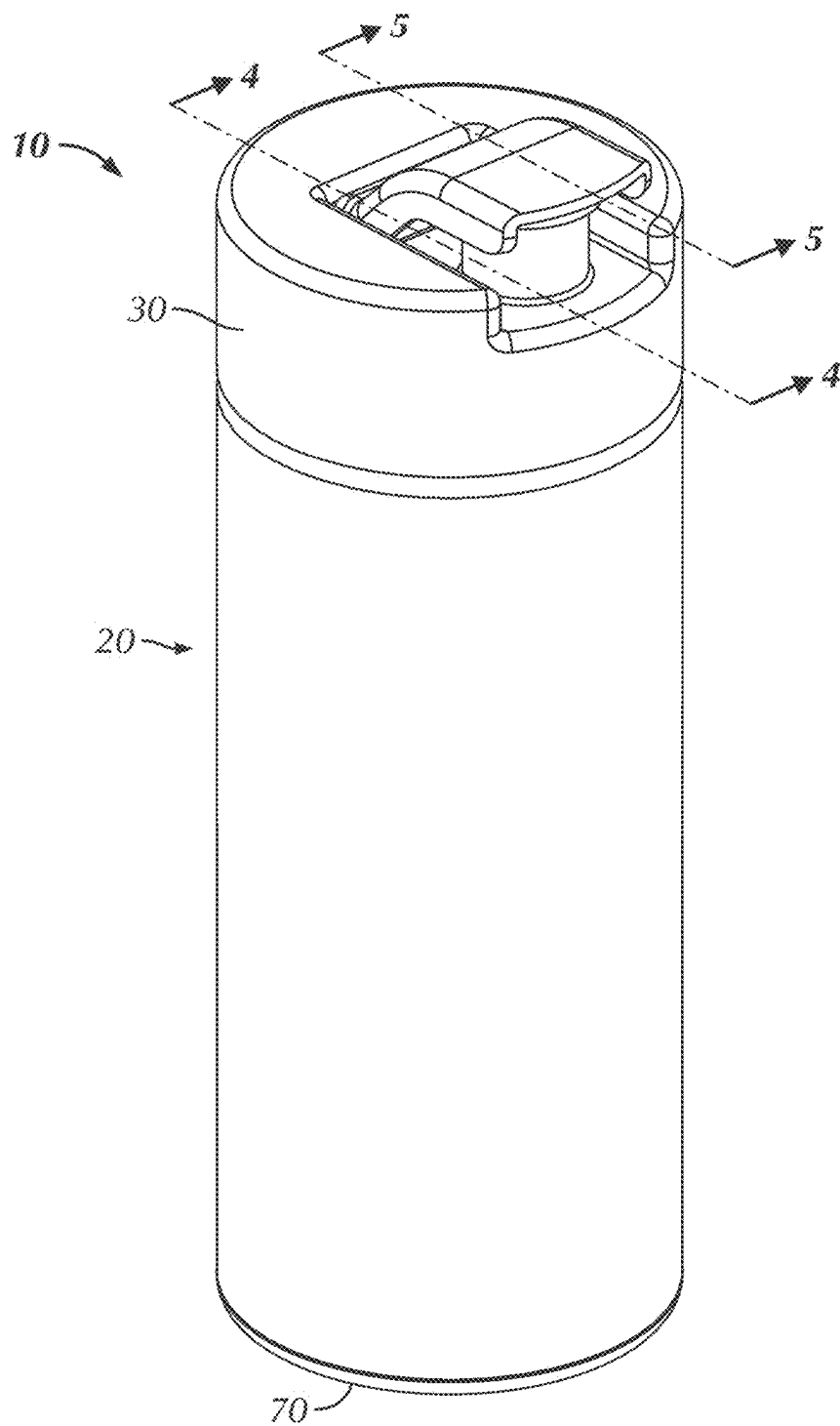


FIG. 1

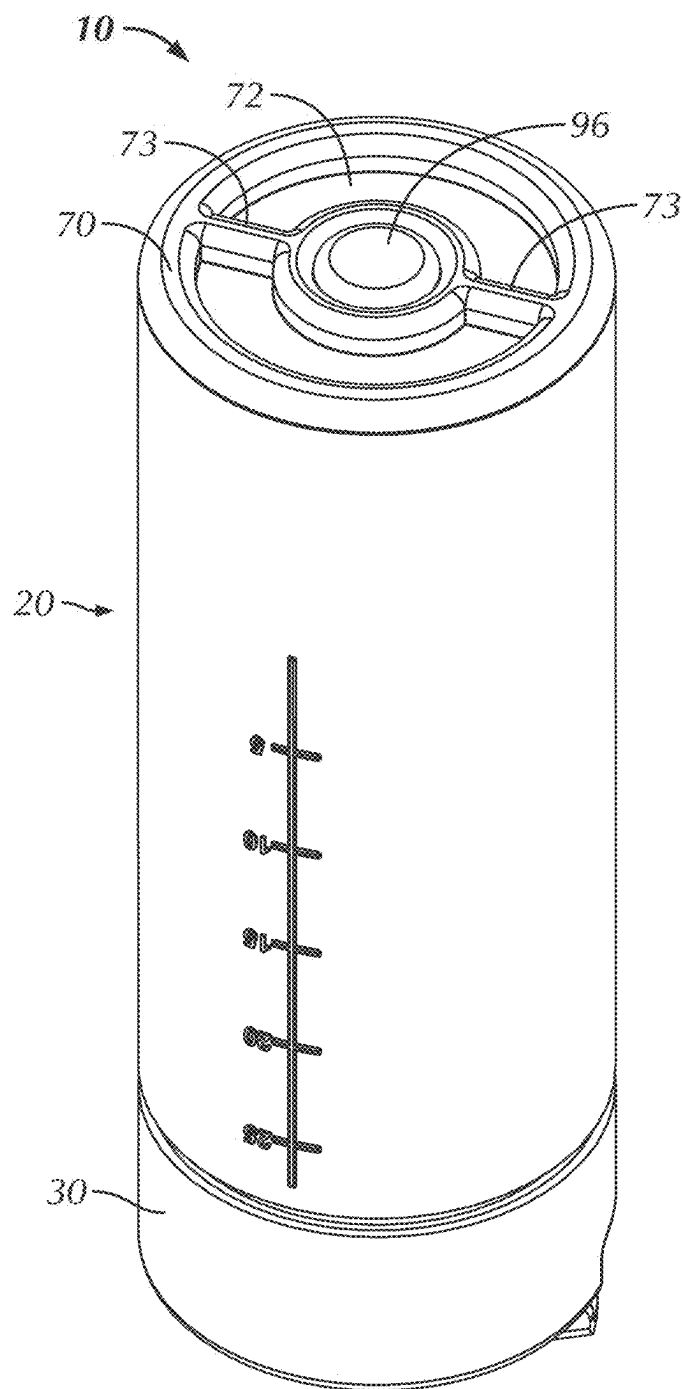


FIG. 2

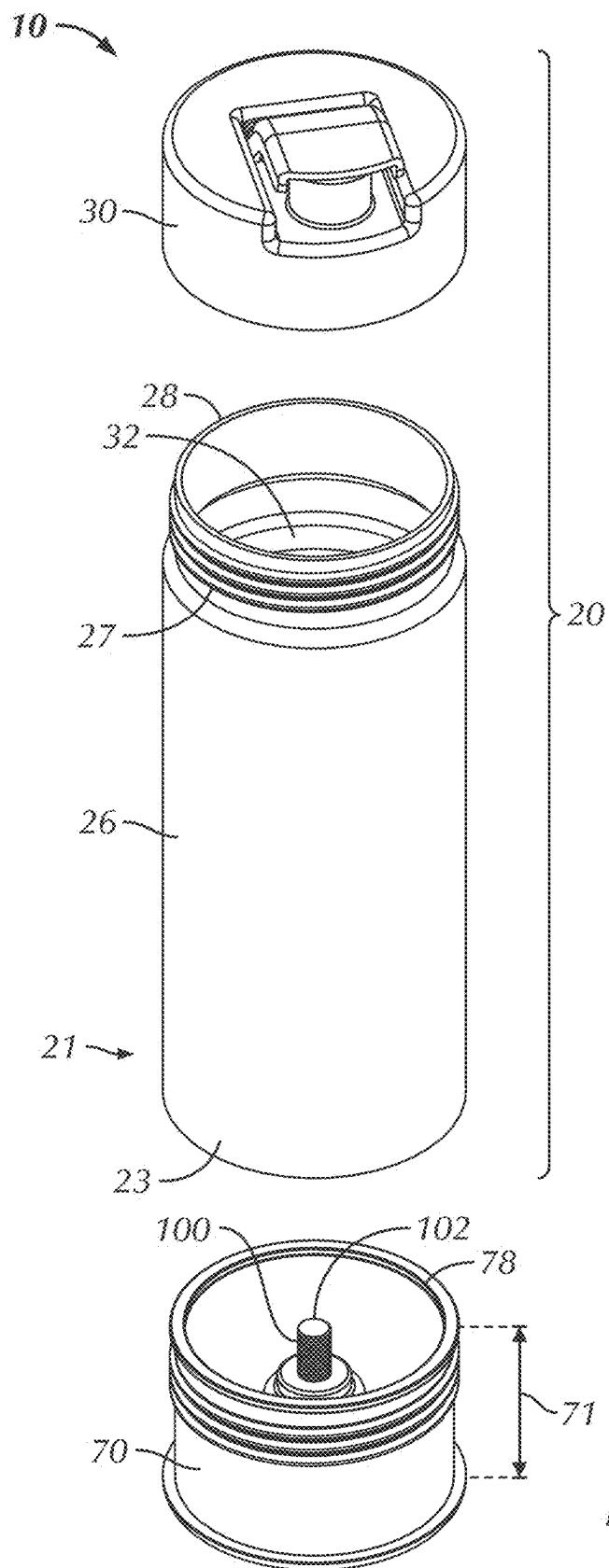


FIG. 3

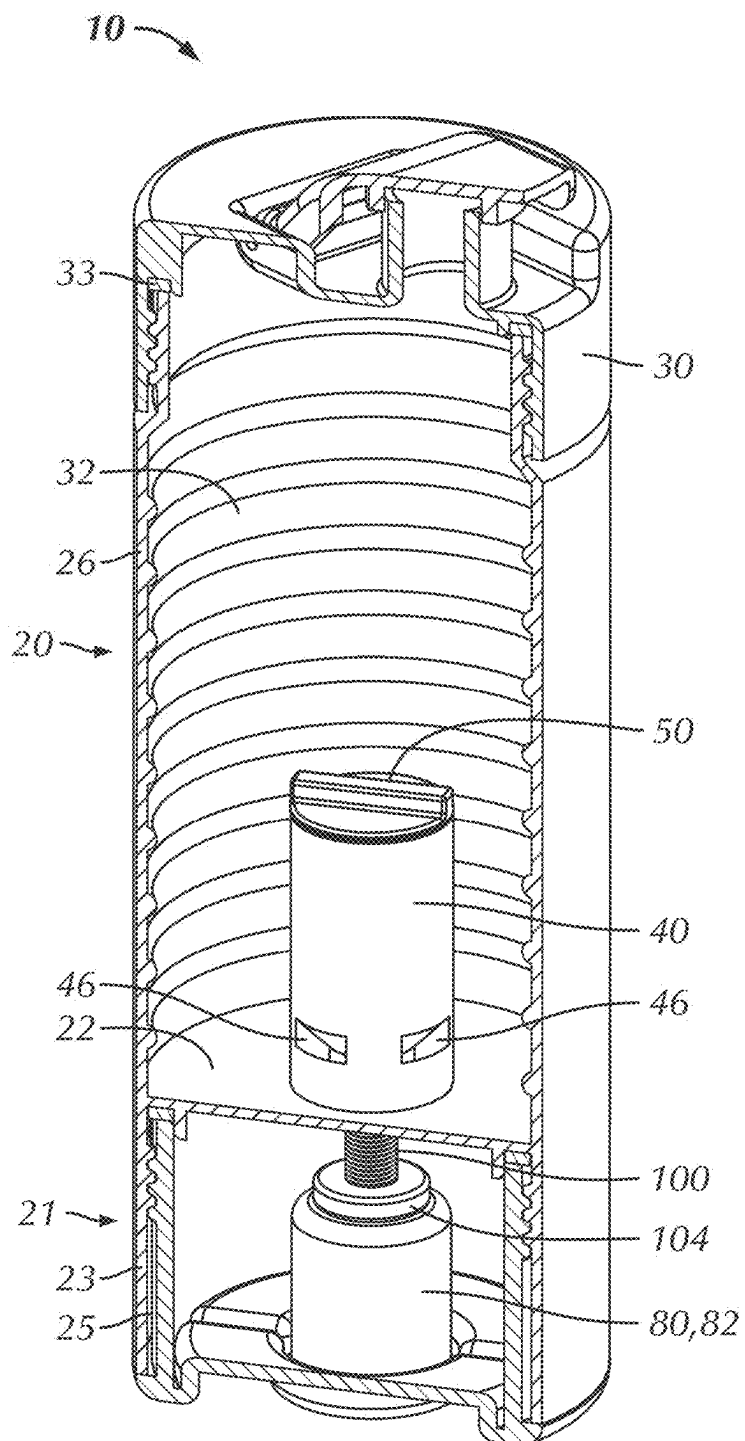


FIG. 4

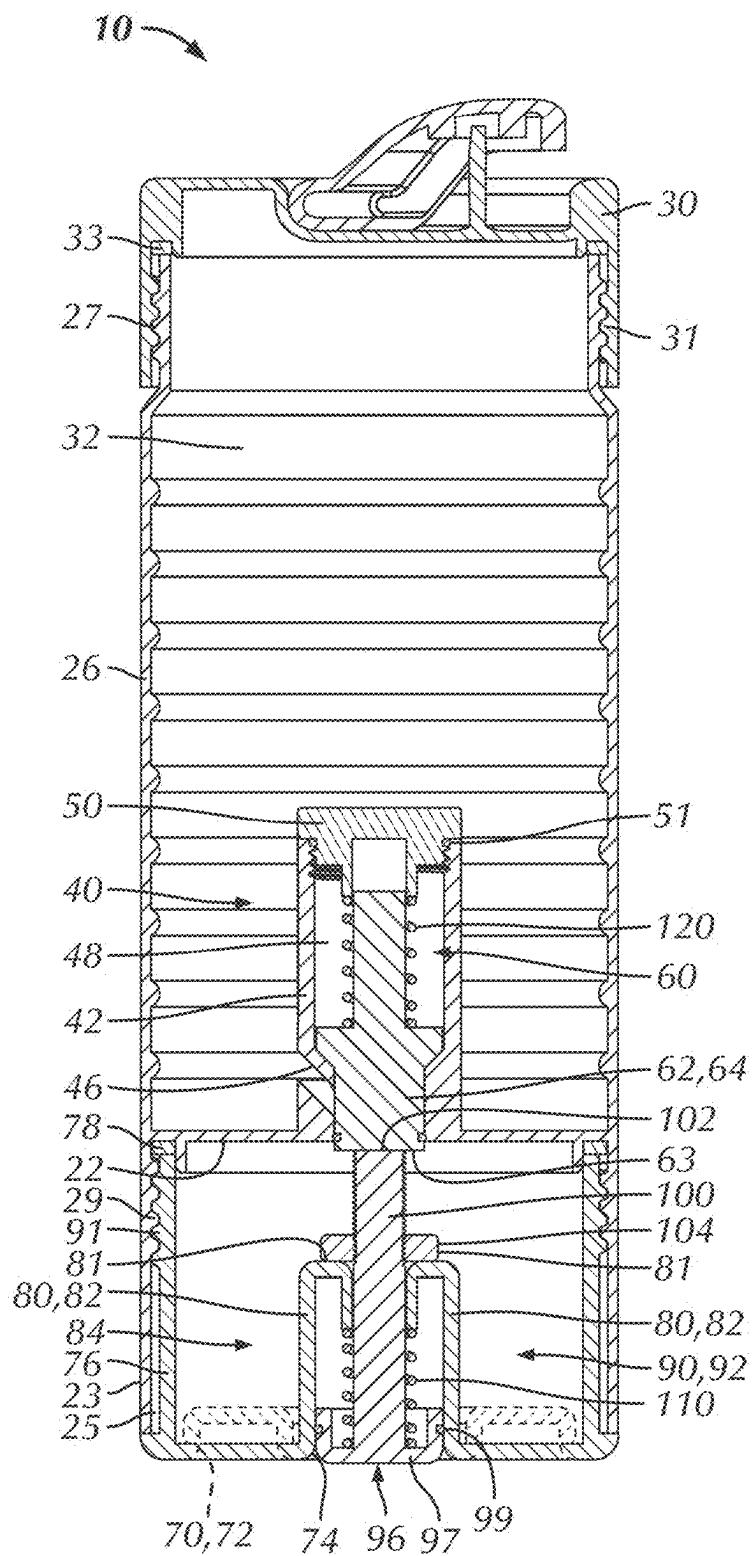


FIG. 5

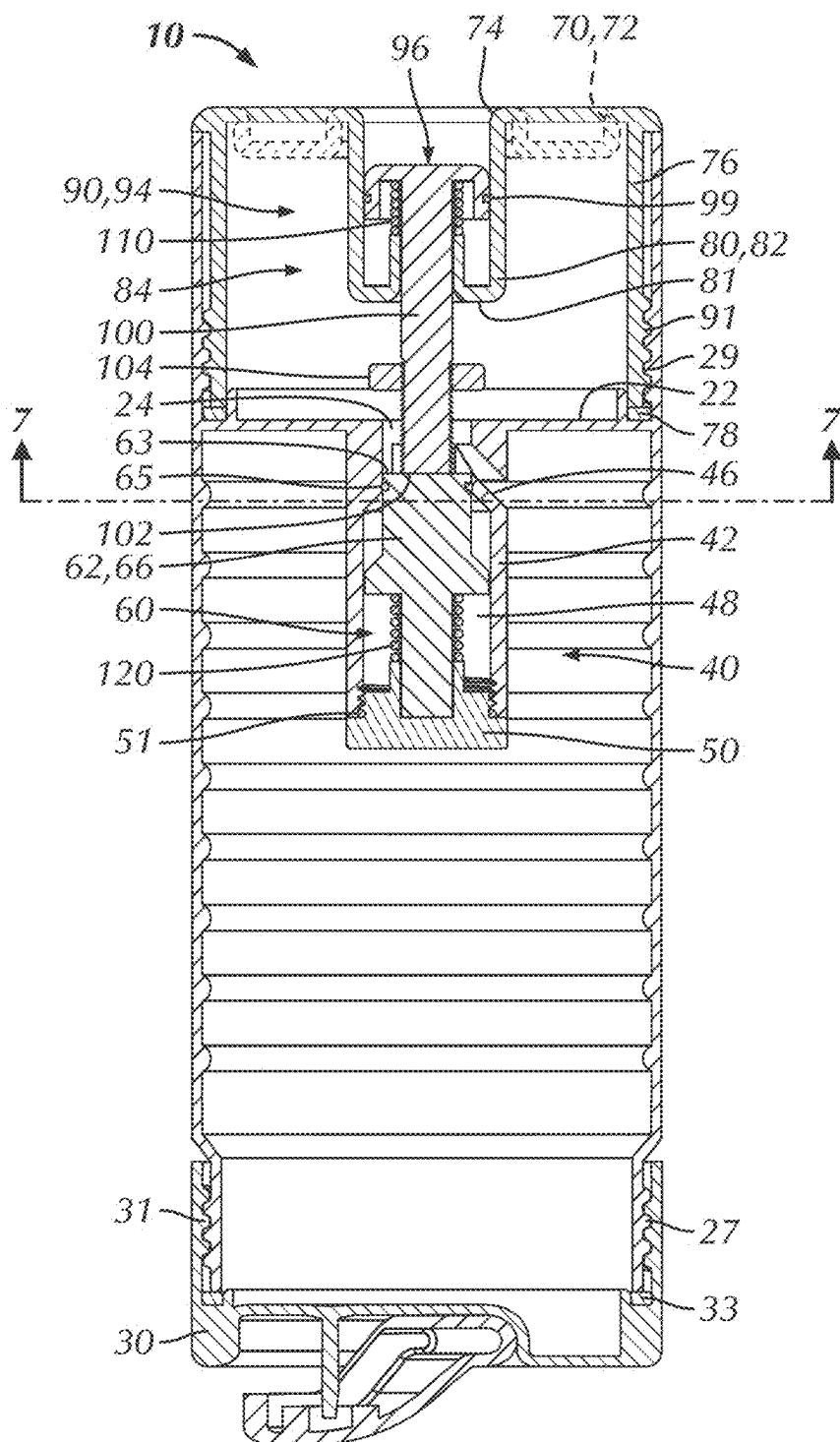


FIG. 6

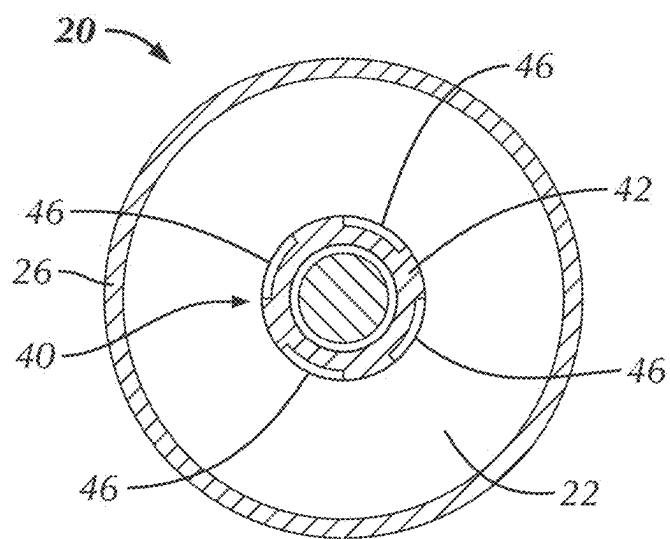


FIG. 7

WATER BOTTLE WITH SELECTIVELY ACCESSIBLE COMPARTMENT FOR STORING AND MIXING POWDERS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of U.S. Provisional Patent Application No. 63/552,488 filed on Feb. 12, 2024 and No. 63/552,872 filed on Feb. 13, 2024. The applications cited in this paragraph are hereby incorporated into the present application by reference.

BACKGROUND OF THE INVENTION

[0002] The practice of employing reusable bottles for the storage, transportation, and consumption of water and other drinks has become common. Bottle users often wish to employ a reusable bottle for drinks other than water, including drinks made from a combination of a powder and a liquid. For example, bottle users, especially those interested in fitness, may wish to use a water bottle to prepare a drink from a combination of a powder and a liquid. Powders that may be combined into a liquid to make a drink include protein powders, powdered energy drinks, powdered electrolyte replacements, and other powders prepared for mixing into water or another liquid.

[0003] Certain kinds of drinks made from powders are best prepared close to the time of consumption, rather than being prepared in advance, due to refrigeration requirements, the potential for spoilage (especially without refrigeration), convenience of transportation, or other concerns. As a result, bottle users may wish to measure out a dry powder at one location and time—for example, in a home kitchen—and mix the powder with a liquid at a later time for consumption as a drink. The present disclosure relates to a bottle allowing for the separate storage of a powder and a liquid and for subsequently mixing the powder and the liquid.

SUMMARY OF THE INVENTION

[0004] Briefly stated, a bottle is disclosed for separately storing a powder and a liquid and for selectively mixing the powder into the liquid. The bottle comprises a main body. The main body has a main-body bottom wall having a transfer passage extending therethrough. A main-body perimeter wall is sealingly attached to the main-body bottom wall and forms a main-body upper opening. A main-body cap is sealingly attachable to the main-body perimeter wall to seal the main-body upper opening. The main-body bottom wall, the main-body perimeter wall, and the main-body cap together enclose a main-body volume. The transfer passage is in fluid communication from the main-body volume outside of the main body. A main-body projection is sealingly attached to the main-body bottom wall. The main-body projection includes a main-body-projection perimeter wall surrounding the transfer passage and sealingly attached to the main-body bottom wall. The main-body-projection perimeter wall forms a main-body projection conduit. The main-body-projection perimeter wall comprises an outlet linking an interior space of the projection conduit to the main-body volume. A main-body-projection cap is sealingly attachable to the main-body-projection perimeter wall. A sealing body comprises a sealing plug disposed for movement with respect to the outlet. The sealing plug is biased to

a closed position blocking the outlet and is displaceable to an open position un-blocking the outlet. A secondary body is configured to be sealingly attachable to the main body to engage a lower portion of the main body. The secondary body has a secondary-body bottom wall having an access passage extending therethrough. A secondary-body perimeter wall is sealingly attached to the secondary-body bottom wall and forms a secondary-body upper opening. A secondary-body projection is sealingly attached to the secondary-body bottom wall. The secondary-body projection includes a secondary-body-projection perimeter wall surrounding the access passage and sealingly attached to the secondary-body bottom wall. The secondary-body-projection perimeter wall forms a secondary-body access conduit. An activation body is slidably disposed in the secondary-body access conduit and has a resting position and an activated position. The activation body is biased toward the resting position from the activated position. The activation body has an activation projection extending therefrom toward the main body. The activation projection is configured to displace the sealing plug into the open position when activation body is in the activated position. In the illustrated embodiment, an inner end of the activation projection abuts a lower end surface of the sealing plug to urge the sealing plug into the open position.

[0005] In certain embodiments of the bottle, the main-body cap may be configured with threads to threadedly engage the main-body perimeter wall.

[0006] In certain embodiments of the bottle, the bottle may comprise a lower skirt extending downwardly and forming the lower portion of the main body below the main-body bottom wall, the lower skirt forming a main-body recess sealingly engageable with the secondary body, the main-body recess accepting at least 90 percent of a height of the secondary body when the secondary body is engaged with the lower skirt.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0007] The following detailed description will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the disclosed matter, there are shown in the drawings various embodiments, including embodiments which may be presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown. In the drawings:

[0008] FIG. 1 is a right upper perspective view of an example of a bottle according to the present disclosure;

[0009] FIG. 2 is an upper perspective view of an example the bottle of FIG. 1, with the bottle depicted in an inverted position;

[0010] FIG. 3 is an exploded front upper perspective view of the bottle of FIG. 1;

[0011] FIG. 4 is right upper perspective sectional view of the bottle of FIG. 1, taken along the line 4-4 in FIG. 1;

[0012] FIG. 5 is a sectional view of the bottle of FIG. 1 taken along the line 5-5 of FIG. 1, with the bottle shown in a pre-activation configuration and an upright orientation;

[0013] FIG. 6 is a sectional view of the bottle of FIG. 1 taken along the line 5-5 of FIG. 1, with the bottle shown in an activated configuration and an inverted orientation; and

[0014] FIG. 7 is a partial sectional view of the bottle of FIG. 1 taken along the line 7-7 in FIG. 6.

DETAILED DESCRIPTION

[0015] Certain terminology is used in the following description for convenience only and is not limiting. The words “right,” “left,” “lower,” and “upper” designate directions in the drawings to which reference is made. The words “inner” and “outer” refer to directions toward and away from, respectively, the geometric center of the bottle and designated parts thereof. Unless specifically set forth herein, the terms “a,” “an,” and “the” are not limited to one element but instead should be read as meaning “at least one.” As used herein, the terms “proximal” and “distal” are relative terms referring to locations or elements that are closer to (proximal) or farther from (distal) with respect to other elements. Throughout the application, two volumes or locations in “fluid communication” are volumes or locations that are connected such that a fluid may pass from one of the volumes or locations to the other. Although a powder is not a fluid, in the disclosed bottle, certain elements in “fluid communication” with one another may be used to allow movement of powder from one location to another in a manner analogous to the movement of a fluid and in particular in a manner analogous to a liquid.

[0016] The terminology defined herein includes the words noted above, derivatives thereof, and words of similar import.

[0017] In one aspect, FIG. 1 is a right upper perspective view of a bottle 10 according to the present disclosure; and FIG. 2 is an upper perspective view of the bottle 10 depicted in an inverted position. The bottle 10 is suitable for separately storing a powder and a liquid and for selectively mixing the powder into the liquid. FIG. 3 is an exploded front upper perspective view of the bottle 10; and FIG. 4 is a right upper perspective sectional view of the bottle 10. FIGS. 5 and 6 are sectional views of the bottle 10 taken along the line 5-5 of FIG. 1, with FIG. 5 showing the bottle in a pre-activation configuration and an upright orientation, while FIG. 6 shows the bottle in an activated configuration in an inverted orientation. FIG. 7 is a sectional view as described further below.

[0018] Referring to FIGS. 1 through 6, the bottle 10 comprises a main body 20. A main-body cap 30 is sealingly attachable to the main-body perimeter wall 26 to seal the main-body upper opening 28. The main body 20 may serve as a liquid storage compartment. The main-body cap 30 may include a conventional flip-top and spout, or another opening and closure mechanism. Thus the main body 20 may be filled with liquid via the main-body upper opening 28, and then the main-body upper opening 28 may be sealed using the main-body cap 30. The main body 20 has a main-body bottom wall 22 having a transfer passage 24 in the form of an opening extending therethrough. A main-body perimeter wall 26 is sealingly attached to the main-body bottom wall 22 and forms a main-body upper opening 28, so that the main-body bottom wall 22 and the main-body perimeter wall 26 together form an open-topped but otherwise liquid-tight bottle or vessel. The main-body bottom wall 22 and the main-body perimeter wall 26 may be sealingly attached by being integrally or monolithically formed. The main-body bottom wall 22, the main-body perimeter wall 26, and the main-body cap 30 together enclose a main-body volume 32. The transfer passage 24 links the main-body volume 32 to outside of the main body 20 and is in fluid communication between the main-body volume 32 and the space outside the main body 20, or in fluid communication with the secondary

body 70 when in place, as discussed below. As noted above, two volumes or locations in “fluid communication” are volumes or locations that are connected such that a fluid may pass from one of the volumes or locations to the other. Although a powder may or may not be strictly considered a fluid, in the disclosed bottle, elements in “fluid communication” with one another may be used to allow movement of powder from one location to another, and in particular from the secondary body 70 into the main-body volume 32 when the bottle is in an activated configuration.

[0019] A main-body projection 40 is sealingly attached to the main-body bottom wall 22. The main-body projection 40 includes a main-body-projection perimeter wall 42 surrounding the transfer passage 24 and sealingly attached to the main-body bottom wall 22. The main-body-projection perimeter wall 42 and the transfer passage 24 together form a main-body-projection conduit. The main-body-projection perimeter wall 42 comprises an outlet 46 linking an interior space 48 of the main-body-projection conduit to the main-body volume 32. A main-body-projection cap 50 is sealingly attachable to the main-body-projection perimeter wall 42. A seal such as an O-ring 51 (FIG. 5) may be provided to aid sealing between the main-body-projection cap 50 and the main-body-projection perimeter wall 42. A sealing body 60 comprises a sealing plug 62 disposed for movement with respect to the outlet 46. The sealing plug 62 is biased to a closed position 64 (FIG. 5) blocking the outlet 46 and is displaceable to an open position 66 (FIG. 6) un-blocking the outlet 46.

[0020] The secondary body 70 is configured to be sealingly attachable to the main body 20 to engage a lower portion 21 of the main body 20. The secondary body 70 has a secondary-body bottom wall 72 having an access passage 74 extending therethrough. A secondary-body perimeter wall 76 is sealingly attached to the secondary-body bottom wall 72 and forms a secondary-body upper opening 78. A secondary-body projection 80 (FIGS. 4 through 6) is sealingly attached to the secondary-body bottom wall 72. The secondary-body projection 80 includes a secondary-body-projection perimeter wall 82 surrounding the access passage 74 and sealingly attached to the secondary-body bottom wall 72. The secondary-body-projection perimeter wall 82 forms a secondary-body access conduit 84. Referring to FIGS. 5 and 6, an activation body 90 is slidably disposed in the secondary-body access conduit 84 and has a resting position 92 and an activated position 94. The activation body 90 is biased toward the resting position 92 from the activated position 94. The activation body 90 has an activation projection 100 extending therefrom toward the main body 20. The activation projection 100 is configured to displace the sealing plug 62 into the open position when activation body is in the activated position. The activation body 90 has an activation surface 96, which may be a surface of an activation button 97, which the user may urge inwardly to place the water bottle in the activated configuration. The activation button 97 may extend inwardly and may include a seal such as an O-ring 99 to aid sealing between the activation button 97 and the secondary-body access conduit 84.

[0021] An outer surface of the secondary-body bottom wall 72 may have projections 73 to aid the user in tightening the loosening the secondary body 70 in the main-body recess 25. In the illustrated embodiment, referring to FIG. 5, a coil spring 120 is held in compression between the main-body-projection cap 50 and the sealing plug 62 in the pre-

activation configuration of the bottle 10, with the coil spring 120 exerting a restorative force urging the sealing plug 62 into the closed position 64. A coil spring 110 is held in compression between an inner surface of the secondary-body projection 80 and an inner surface of the activation body 90 in the pre-activation configuration of the bottle 10, with the coil spring 110 exerting a restorative force urging the activation body 90 into the pre-activation position. In the illustrated embodiment, referring to FIG. 6, the coil spring 120 is held in further compression between the main-body-projection cap 50 and the sealing plug 62 in the activated configuration of the bottle 10, with the coil spring 120 exerting a restorative force urging the sealing plug 62 from the open position 66, which is reached due to force exerted by the user on the into the closed position 64. Similarly, the coil spring 110 is held in further compression between the inner surface of the secondary-body projection 80 and the inner surface of the activation body 90 in activated configuration of the bottle 10, with the coil spring 120 exerting a restorative force urging the activation body 90 to return to the pre-activation position.

[0022] An axial stop—for example, a nut 104 as seen in FIGS. 4 through 6—may be axially secured to the activation projection 100 (and thus secured to the activation body 90). In the pre-activation configuration of the bottle 10, the nut 104 (or other axial stop such as a pin or other transversely extending body) may engage a surface such as an inner surface 81 of the secondary-body projection 80 to halt an outward axial motion of the activation body 90 caused by the coil spring 110, so that the activation surface 96 and the activation button 97 (where present) are placed in the desired location in the pre-activation configuration of the bottle 10.

[0023] The main-body cap 30 may be removable. The main-body cap 30 may be configured with threads 31 to threadedly engage threads 27 of the main-body perimeter wall 26. A seal such as an O-ring 33 may be provided to aid sealing between the main-body cap 30 and the main body 20.

[0024] In certain embodiments of the bottle 10, the bottle may comprise a lower skirt 23 extending downwardly and forming the lower portion 21 of the main body 20 below the main-body bottom wall 22, the lower skirt 23 forming a main-body recess 25 sealingly engageable with the secondary body 70, the main-body recess 25 accepting at least 90 percent of a height 71 (FIG. 3) of the secondary body 70 when the secondary body 70 is engaged with the lower skirt 23. The main-body recess 25 may include threads 29 for engaging compatible threads of the secondary body 70.

[0025] The components of the bottle 10 may be formed from suitable materials such as plastics and metal. The main body 20 and the secondary body 70 may be formed, for example, from injection-molded, extrusion blow-molded, otherwise molded, or machined plastics, or by metals, glasses, composites, or any other container forming materials known in the art, processed as noted in the art. The activation body 90 and the thereof may be formed from suitable materials such as those disclosed above, with the activation body 90 being formed of material of sufficient strength and stiffness to tolerate the loads experienced as the activation body 90 is advanced by the user against the force provided by the compression springs in the form of coil springs 110 and 120. The compression springs in the form of coil springs 110, 120 may be formed from metal or other

materials having strength, elasticity, and other properties appropriate to the application. The various O-rings 33, 51, 99 identified herein may be made from suitable materials, as may be known in the art, such as silicone rubber, neoprene, polyurethane, and the like. The main body 20, the secondary body 70, the O-rings 33, 51, 99, the main-body projection 40, the secondary-body projection 80, and any the other part of the bottle 10 coming in contact with the protein or the liquid may preferably be made from food-safe materials.

[0026] In use, the bottle 10 may be employed as follows. The secondary body 70 may be detached from the main body 20 and placed in an upright position, as shown in FIGS. 3 and 5. A powder for mixing into a liquid to form a drink may be introduced into the secondary body 70. The secondary body 70 may then be sealingly attached to the main body 20; in the case of the illustrated embodiment, this is accomplished by screwing the secondary body 70 to secure it to the lower portion 21 of the main body 20, within the main-body recess 25 thereof. The bottle 10 may then be transported or stored while containing only the protein powder for later combination with a liquid. When the user is ready to introduce liquid into the bottle 10, the liquid may be introduced into the main-body volume 32 of the main body 20 by removing the main-body cap 30—for example, by unscrewing and removing the main-body cap 30. When the user is ready to combine the powder with the liquid to form a drink, the bottle 10 may be inverted into the inverted orientation, as shown in FIG. 6. The activation body 90 may be urged inwardly from the resting position 92 shown in FIG. 5 into the activated position 94 shown in FIG. 6. The activation projection 100 of the activation body 90, and in particular the inner end 102 thereof, abuts the lower end surface 63 of the sealing plug 62 and urges the sealing plug 62 into the open position 66. In the open position 66, the outlets 46 are unblocked, linking the interior space 48 that the projection conduit to the main-body volume 32. A seal such as an O-ring 65 may be provided to aid sealing between the sealing plug 62 and conduit formed by main-body-projection perimeter wall 42 and the transfer passage 24. This arrangement allows the protein powder to pass from the secondary body 70 into the main-body volume 32 the main body 20. Movement of the protein through the outlet or outlets 46 may be aided or encouraged by the user shaking the bottle 10; this may also aid mixing of the protein powder with the liquid.

[0027] It will be appreciated by those skilled in the art that changes could be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood, therefore, that this invention is not limited to the particular embodiment disclosed, but it is intended to cover modifications within the spirit and scope of the present invention as defined by the appended claims.

I claim:

1. A bottle for separately storing a powder and a liquid and for selectively mixing the powder into the liquid, the bottle comprising:

a main body having:

- a main-body bottom wall having a transfer passage extending therethrough;
- a main-body perimeter wall sealingly attached to the main-body bottom wall and forming a main-body upper opening;
- a main-body cap sealingly attachable to the main-body perimeter wall to seal the main-body upper opening,

wherein the main-body bottom wall, the main-body perimeter wall, and the main-body cap together enclose a main-body volume, and

wherein the transfer passage is in fluid communication from the main-body volume outside of the main body;

a main-body projection sealingly attached to the main-body bottom wall, the main-body projection including:

a main-body-projection perimeter wall surrounding the transfer passage and sealingly attached to the main-body bottom wall, the main-body-projection perimeter wall forming a main-body projection conduit, wherein the main-body-projection perimeter wall comprises an outlet linking an interior space of the main-body projection conduit to the main-body volume;

a main-body-projection cap sealingly attachable to the main-body-projection perimeter wall;

a sealing body comprising a sealing plug disposed for movement with respect to the outlet, the sealing plug being biased to a closed position blocking the outlet and being displaceable to an open position un-blocking the outlet;

a secondary body configured to be sealingly attachable to the main body to engage a lower portion of the main body, the secondary body having:

a secondary-body bottom wall having an access passage extending therethrough;

a secondary-body perimeter wall sealingly attached to the secondary-body bottom wall and forming a secondary-body upper opening; and

a secondary-body projection sealingly attached to the secondary-body bottom wall, the secondary-body projection including:

a secondary-body-projection perimeter wall surrounding the access passage and sealingly attached to the secondary-body bottom wall, the secondary-body-projection perimeter wall forming a secondary-body access conduit; and

an activation body slidably disposed in the secondary-body access conduit and having a resting position and an activated position, the activation body being biased toward the resting position from the activated position,

the activation body having an activation projection extending therefrom toward the main body, the activation projection being configured to displace the sealing plug into the open position when activation body is in the activated position.

2. The bottle of claim 1, wherein the main-body cap is configured to threadedly engage the main-body perimeter wall.

3. The bottle of claim 1, further comprising a lower skirt extending downwardly and forming the lower portion of the main body below the main-body bottom wall, the lower skirt forming a main-body recess sealingly engageable with the secondary body, with the main-body recess accepting at least a portion of a height of the secondary body when the secondary body is engaged with the lower skirt.

4. The bottle of claim 3, wherein the main-body recess accepts at least 90 percent of the height of the secondary body when the secondary body is engaged with the lower skirt.

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