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(54) DUAL CHAMBER DISPENSER WITH DUAL POSITION DISPENSING CAP

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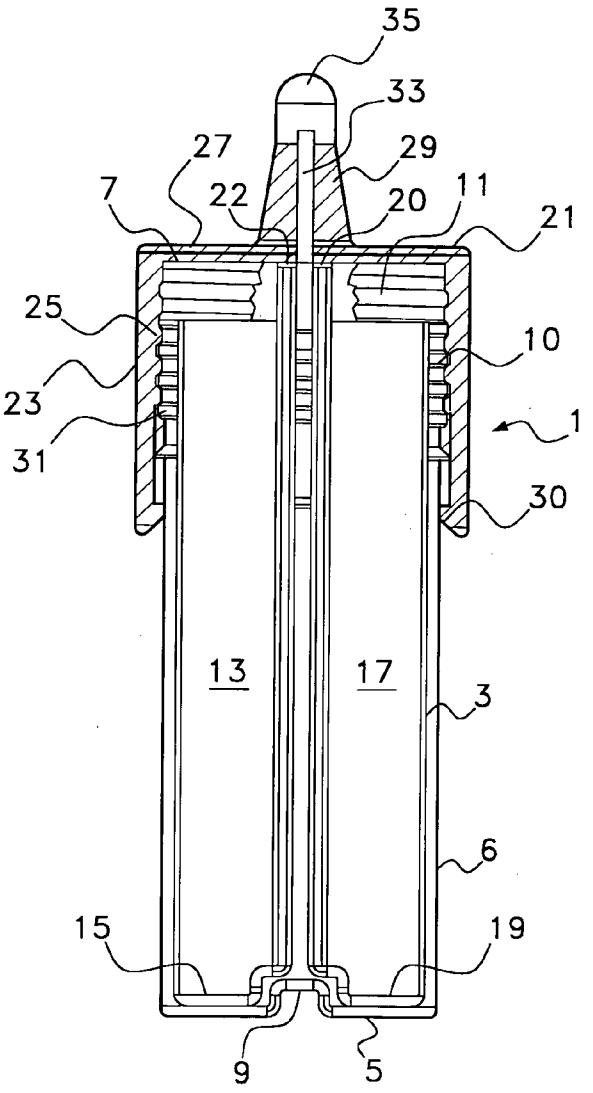
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(57) ABSTRACT

The present invention is directed to a multiple chamber dispenser with a dual position dispensing cap. The dispenser container has a circular top, a bottom, an outer wall structure and a plurality of chambers within the outer wall structure, e.g. two chambers. The dispenser container circular top has threading and has an upper stop and a lower stop located on an outside surface of the circular top. The chambers are separated by at least one divider wall that extents to the circular top of the dispense container. A cap is connected to the dispensing container and has at least one dispensing orifice, centrally located in preferred embodiments. The cap has a side wall structure with threading on its inside, and has a fist position, being a lower position on the dispenser container, and also being a closed position, and has a second position, being a higher position on the dispenser container, and also being an open position for dispensing.



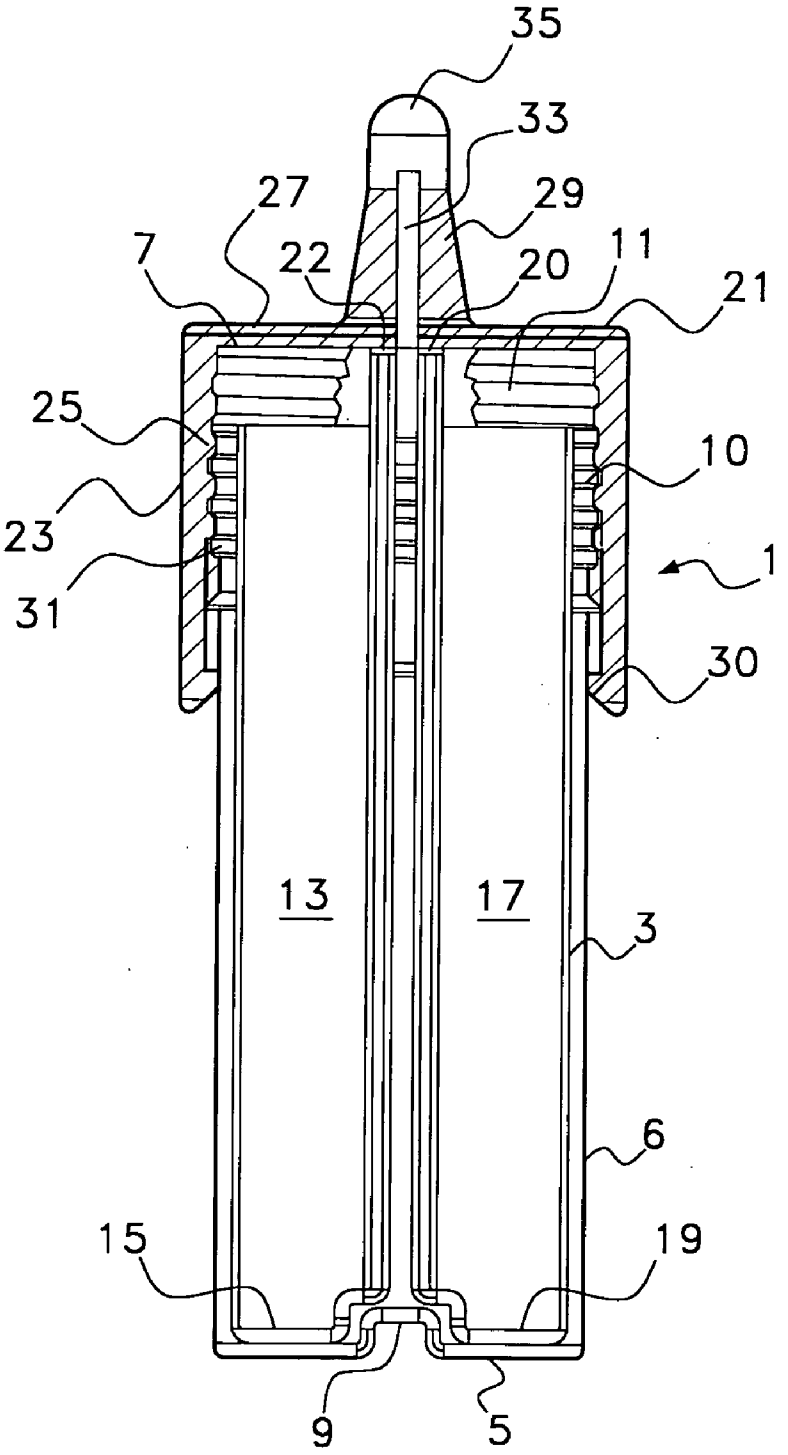


Fig. 1

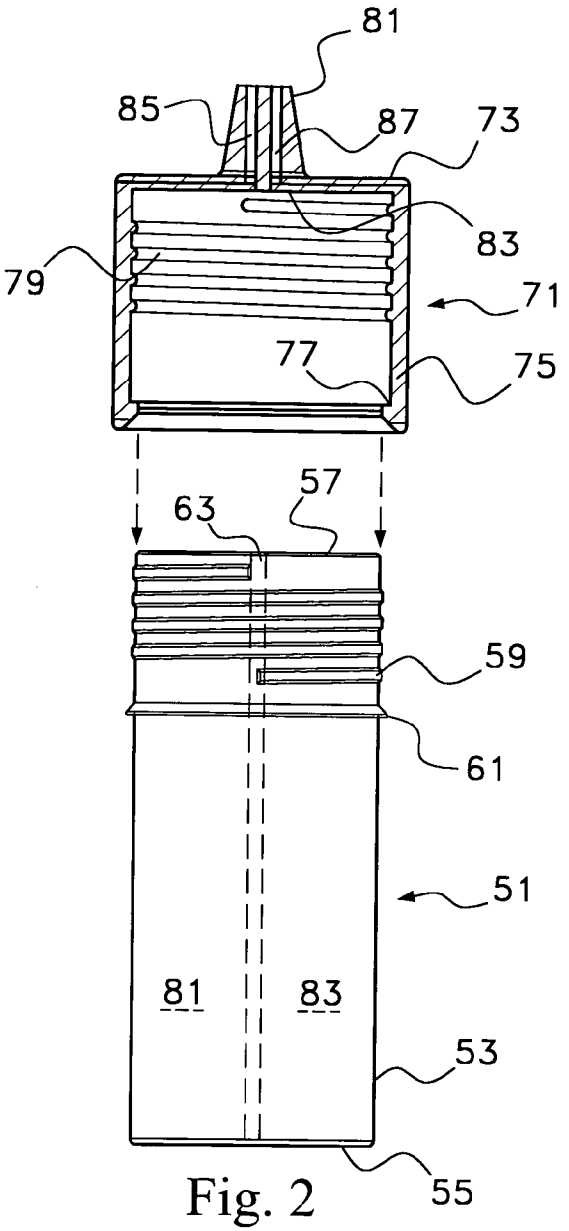


Fig. 2

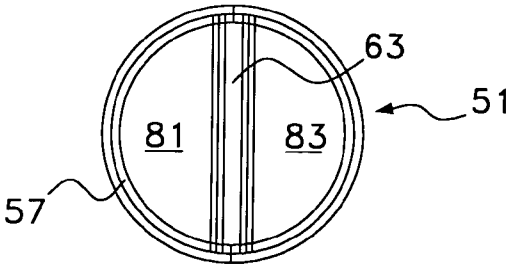


Fig. 3

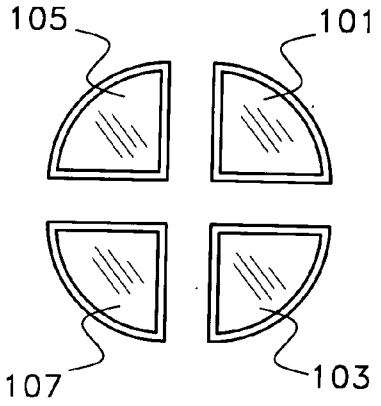


Fig. 4

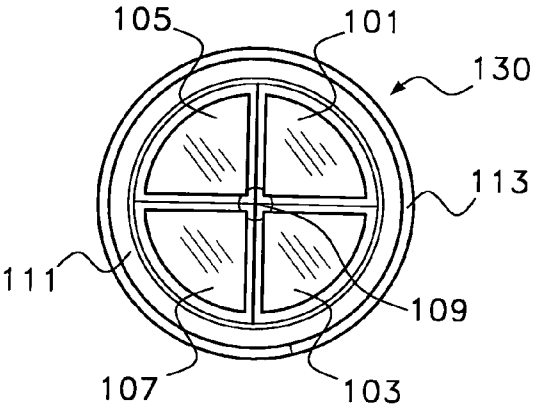


Fig. 5

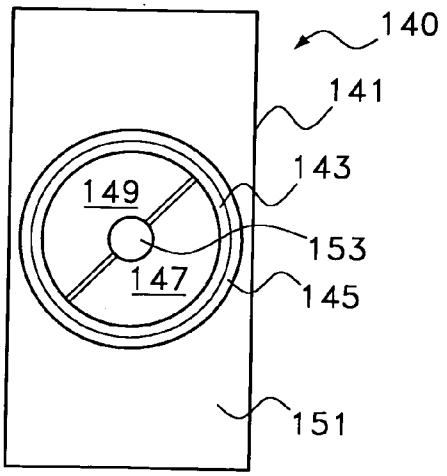


Fig. 6

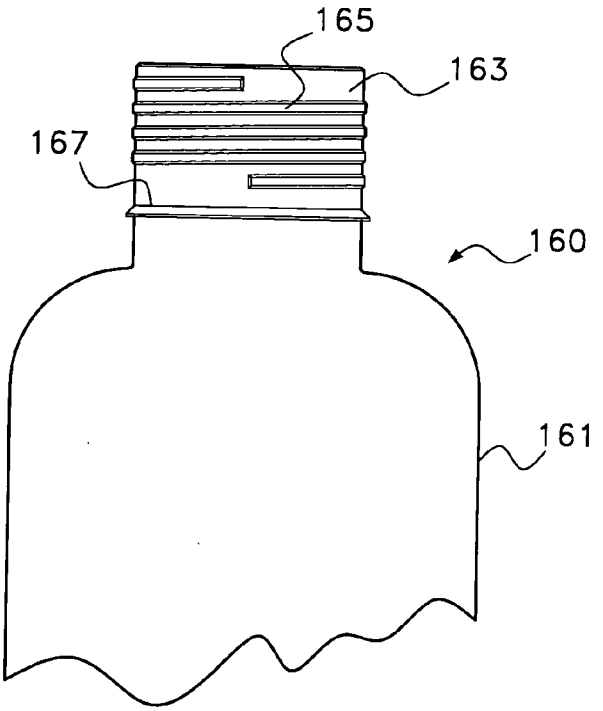


Fig. 7

DUAL CHAMBER DISPENSER WITH DUAL POSITION DISPENSING CAP

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to dispensing, and, more particularly, to devices for simultaneous dispensing of plural, diverse flowable materials from separate chambers. The present invention is a dispenser container with plural chambers that are separated, and a unique cap that, when closed, seals the separate chambers from one another, and seals a dispensing orifice that is located on the cap. These devices may have two or more than two chambers, and have diverse uses, including, among others, for pharmaceutical products, cosmetic and beauty aides, hair dyes, colorants and paints, teeth whiteners, etc.

[0003] 2. Information Disclosure Statement

[0004] The following patents represent the state of the art relating to duel dispensing containers and caps:

[0005] U.S. Pat. No. 6,550,647 describes a multi-chamber bottle that can be made by a blowing process for separately holding different products, requiring only a single closure. The bottle may, for example, have two chambers with openings which are disposed inside the neck of the bottle. One of the openings is disposed coaxially with the neck. This allows a closure to be screwed or snapped onto the neck that is provided with a thread or a snap bead. In the process, the attachment penetrates the opening in a sealing manner. This creates two channels, which lead from the chambers to the outlet openings. The outlet openings can be closed with a cap.

[0006] U.S. Pat. No. 6,544,213 B1 describes a present invention that is directed to a dual compartment, mixing and dispensing device suitable for the containment of two separate pharmaceutical components that mixable, upon breaking of a seal that separates the components, to provide an instantly mixed dose of medication. The medication can be administered to a patient through an aperture located at one end of the device. The device is characteriz4ed as two chambers connected by a flexible, sealed orifice, wherein the two components are separated. Flexing of the device at the orifice breaks the seal and allows mixing of the components to prepare the dose. Thereafter, an end-portion of the device can be opened for oral administration of the dose.

[0007] U.S. Pat. No. 6,481,571 B1 describes dual component container systems that are provided for separately storing at least two liquids, which are intermixed within the system prior to dispensing. Two or more containers having mixing openings are provided wherein the mixing openings are sealed by sealing members. The sealed openings of the containers are interconnected by one or more connecting elements, thereby forming a sealed conduit interposed between containers and wherein at least one of the sealing members is connected to the connecting element by a releasable clamping joint. Systems of the present invention are designed such that relative movement of the two containers causes the sealing members to open or be removed, whereby fluids form the two or more containers may intermix via the open conduit formed by the connecting element.

[0008] U.S. Pat. No. 6,283,316 describes a present invention that is an orifice reducer for a two or more compartment container having a single neck finish. The reducer comprises a plate having two or more apertures, an upper surface, a lower surface, and an outer edge. The two or more apertures are positioned to align with the two or more chambers of the container. The apertures may be of different sizes to allow for the proper dispensing of the different phases of product contained within each compartment of the container.

[0009] U.S. Pat. No. 5,873,494 describes a dispensing structure that is provided for a container which has first and second storage chambers and first and second discharge openings each separately communicating with one of the first and second storage compartments, respectively. The dispensing structure includes a body for extending from the container. The body has a peripheral wall that defines first and second discharge conduits for communicating with the first and second discharge openings, respectively. The dispensing structure also includes a first and second dispensing conduits mounted in the body peripheral wall for tilting movement between (1) a dispensing position in which the first and second dispensing conduits are in fluid communication with the first and second discharge conduits, respectively, and (2) a non-dispensing position. The first and second conduits include, respectively, first and second sealing plugs therein for occluding flow from the first and second discharge conduits, respectively, when the first and second dispensing conduits are in the closed position and for permitting flow from the first and second discharge conduits when the first and second dispensing conduits are in the open position.

[0010] U.S. Pat. No. 5,811,060 describes a new flask for two products, that includes a general flask body having a neck; a vessel housed inside the neck of the general flask body and having a weakened part; the neck of the flask body including a thread, and a flange at an upper part of the neck; a cap which screws onto an outside of the neck, the cap including a thread which is complementary to the thread on the neck, a flange which is complementary to the flange on the neck, a wall defining a hole, and a vertical projection which emerges from an inside of the cap, in the form of a short cylinder with extremely short edges, the length of the cylindrical vertical projection facilitates cutting of the weakened part of the vessel, when the cap is screwed down; and a cover hinged to the cap and made from the same material as the cap, for fully sealing a top of the cap by pressure, the hinged cover of the cap having a central projection at the lower part thereof corresponding to the hole and of similar dimensions as the hole in the cap, such that the hinged cover forms an airtight seal with the hole.

[0011] U.S. Pat. No. 5,765,725 describes a dual compartment squeezable dispensing container that alternatively selectively dispenses independently tow separate fluid components at a selected speed and in a selected direction that includes a container portion, a cap portion, and selection apparatus. The container portion has two separate compartments and contains the two separate fluid components. The cap portion is replaceably and securingly attached to the hollow container. And, the selection apparatus is associated with the cap portion and alternatively selectively dispenses independently the two separate fluid components at the selected speed and in the selected direction.

[0012] U.S. Pat. No. 5,758,786 describes a container that is divided into multiple compartments by a series of verti-

cally extending partitions radiating from the central axis of the container. A nipple is attached to a collar which in turn, is attachable to the mouth of the container. The nipple includes a base portion having an aperture radially offset from the central axis of the nipple and which is adapted to register with only one of the compartments depending upon the relative angular orientation of the nipple and the collar. a series of L-shaped slots is provided on the collar with the slots being evenly spaced about the periphery of the collar and with the number thereof corresponding to the number of internal compartments in the container. The inside surface of the nipple sidewall carries a like number of projections evenly spaced about the inside periphery thereof and adapted to engage corresponding L-shaped slots on the collar. To change the angular orientation of the nipple and collar, the nipple is counter-rotated to unlock and disengage the projections from the slots. The nipple may then be rotated to a new relative angular position relative to the collar, and locked relative to the collar by causing the projections to engage the slots in the new orientation. Each time the relative angular orientation of the nipple is changed relative to the collar, the aperture in the base portion registers with a different vertical compartment, thereby allowing the fluid only in that compartment to be discharged through the nipple.

[0013] U.S. Pat. No. 5,573,143 describes multi-chamber containers with a dispenser/doser portion that are blow molded as a single integral piece. Each chamber can then be fitted with dip tubes with a dip tube fitment forming a seal in the transition of the container body to the dispenser/doser portion. The dividing webs in the container which form the container into multiple chambers are continued up into and through the dispenser/doser portion. The webs of the container body are of a thickness so that they flex upon a compression force being applied to the container walls. This compression force flows liquid in each chamber of the container body up through the dip tubes and into the dispenser/doser portion.

[0014] U.S. Pat. No. 5,154,917 describes a mouthrinse product that comprises a multi-compartment bottle with liquids of different colors stored in the compartments, the combined stream of the liquids dispensed from the bottle combining to form a liquid admixture of yet another color.

[0015] U.S. Pat. No. 4,903,828 describes a bottle closure cap for two-component packages that is formed with a collar extending form the bottom of a cup-shaped cap which has a bottle screw-on thread on the inner wall of the cup. The collar connects via a thread which is directed opposite the bottle-screw-on-thread, to a beaker which can be brought over projections seated on an outer side of its beaker cylindrical wall into a non-rotatable but axially displaceable coupling engagement with the inner wall of the bottle neck. A front end of the collar comes into form-locked engagement by an annular groove on the bottom of the beaker.

[0016] U.S. Pat. No. 4,875,577 describes a multichamber container with no compressed gas therein comprises an outer container and an inner container for pourable substances which are to be kept separate. The substances may be combined inside the container for the purpose of extracting a mixture of substances. The inner container has an open end which is connected to an inner side of a cap with positive locking, in a non-rotatable and axially detachable manner, and has at least one projection on the outside wall. The outer container is connected to the rotatable cap by means of a snap connection and has at least one projection on the inside wall. The projectins of both containers are formed in such a manner that they intercommunicate for combining the substances by rotation of the cap. The inner container is axially detachable form the cap.

[0017] U.S. Pat. No. 4,793,475 describes closure caps for binary packaging systems comprising an active ingredient concentrate component and a dilutent component, which allow the user to admix the two components without coming in contact with either of them or with the resulting mixture.

[0018] U.S. Pat. No. 3,729,553 describes a packaged effervescent composition comprising a package having two compartments for storage of ingredients of said effervescent composition from which the ingredients are adapted to be dispensed simultaneously and proportionately for reaction with each other, the first compartment containing a solution of an effervescing producing reactant and the second compartment containing a complementary solution of an effervescing releasing reactant suitable for releasing the effervescence of the first compartment upon reaction with the effervescing producing reactant.

[0019] Notwithstanding the prior art, the present invention is neither taught nor rendered obvious thereby.

SUMMARY OF THE INVENTION

[0020] The present invention is directed to a multiple chamber dispenser with a dual position dispensing cap. The invention includes a dispenser container that may have any a shape and be made of any functional material, and has a corresponding cap.

[0021] The dispenser container has a circular top, a bottom, an outer wall structure and a plurality of chambers within the outer wall structure. In one preferred embodiment, there are two separate chambers, and the device is used for two distinct flowable materials.

[0022] The dispenser container circular top has threading and has an upper stop and a lower stop located on an outside surface of the circular top. The plurality of chambers are side-by-side. By this is meant that they are adjacent in a vertical plane, or are at least arranged so that they have tops or effluent ports that are side-by-side. These chambers are separated by at least one divider wall that extents to the circular top of the dispense container.

[0023] A cap is connected to the dispensing container and has at least one dispensing orifice, centrally located in preferred embodiments. The cap has a side wall structure with threading on its inside that corresponds to the circular top threading, and the cap is capable of screwing onto the. circular top past the upper stop so as to be non-removable from the dispensing container. The cap has a first position, being a lower position on the dispenser container, and also being a closed position, and has a second position, being a higher position on the dispenser container, and also being an open position for dispensing. The cap and dispenser container are cooperative, wherein when the cap is in the first position, the at least one dispensing orifice is closed so as to prevent content flow therethrough, and the plurality of chambers are isolated and sealed from one another and sealed from dispensing; and, wherein when the cap is in the

second position, at least one dispensing orifice is open so as to permit content flow therethrough, and the plurality of chambers are not sealed from one another and are not sealed from dispensing. Thus, when the cap is rotated from the first position to the second position, and the dispenser container is inverted, content from each of the plurality of chambers may simultaneously be dispensed therefrom and through the dispensing orifice(s).

[0024] In other embodiments, when the cap is in the second position, a top cap would prevent content flow through orifice. This would enable a user to move the cap to its second position, shake the container for mixing the contents of the chamber with one another, and then remove the top cap for dispensing.

[0025] In some embodiments, the present invention multiple chamber dispenser cap first position is a position wherein the cap rests against the lower stop, and the second position is a position wherein the cap rests against the upper stop. The upper stop and lower stop may be protrusions, ridges, flanges, lips or any one mechanism that will prevent further screwing or unscrewing. In some embodiments, the lower stop is a top surface of at least one of the circular top and of the plurality of chambers.

[0026] The present invention multiple chamber dispenser chambers may be integrally formed with and made a permanent part of the dispenser container. Alternatively, the plurality of chambers may be cartridges or other independent members that are insertable into and removable from the dispenser container.

[0027] The dispenser container may have any shape, as long as the top is circular so as to permit the threading and unthreading of the cap. In some preferred embodiments, the dispenser container is a circular shaped container, while in others, the dispenser container is non-circular in shape. The dispenser container may be made of any available material, and may be a rigid container or a squeeze dispenser container.

[0028] In some preferred embodiments, at least one dispensing, orifice is located in a center area of the cap, and the plurality of chambers have a common area of connection in a center area, and the common area of connection includes sealing means to seal the at least one dispensing orifice when the cap is in its first position. However, if the downward rotation of the orifice and the closing area of the chambers are arranged to coincide when the cap is in the closed position, both the dispensing orifice and the closing need not be centered.

[0029] The closing area that is contacted by the orifice, or its extension, may be a flat or other corresponding sealing surface, e.g., at the top of the chambers, or may be a post that has a sealing top that fits against the orifice. In one preferred embodiment, at least one dispensing orifice is located in a center area of the cap, and wherein the dispensing container includes a center post located below at least one dispensing orifice and adapted to seal the orifice by being pressed against it when the cap is in its closed position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030] The present invention should be more fully understood when the specification herein is taken in conjunction with the drawings appended hereto wherein:

[0031] **FIG. 1** illustrates a front, partially cut view of one embodiment of a present invention multiple chamber dispenser;

[0032] **FIG. 2** shows an alternative embodiment present invention dispenser, including the cap, in an exploded, partially cut side view, and **FIG. 3** shows a bottom view of the dispenser container of **FIG. 2**;

[0033] **FIG. 4** illustrates a top view of four complementary chambers used in a present invention dispenser container, and **FIG. 5** shows these inside a present invention container; and,

[0034] **FIGS. 6 and 7** illustrate top and front views of two different present invention dispenser containers that a non-circular in shape.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

[0035] **FIG. 1** illustrates a front, partially cut view of a present invention multiple chamber dispenser **1**. It includes a container **3** and a cap **21**. Container **3** has a bottom **5**, a circular outer side wall **6**, and an open circular top **7**. The bottom **5** has a central indentation **9** for holding the container **3** in place while filling and while threading cap **21** onto container **3**. Inside the container are two chambers **13** and **17**, that are removable and insertable cartridge-like members for holding separate, distinct flowable materials. Their bottoms, **15** and **19**, respectively, rest inside the container **3** so that their tops are aligned with the top edge of container **3**.

[0036] Cap **21** includes a side wall **23** with inside threads **25** that correspond to threads **10** on the outside of container **3**. Cap top **27** has a nozzle **29** with a dispensing orifice **33** and top cap **35**, as shown. Here, cap **21** is in its first, closed position and the cap **21** cannot be screwed down any further because the top of container **3** and the chamber tops act simultaneously as a lower stop (first stop). This closed position for cap **21**, as shown in **FIG. 1**, includes sealing by way of contact between the closing area created by edges **20** and **22** of chambers **13** and **17**, respectively, and the bottom of cap top **27** to isolate orifice **43** from chambers **13** and **17**, as shown.

[0037] When cap **21** is rotated, it will screw upwardly to separate the underside of cap **21** from chamber edges **20** and **22** and, when inverted, will permit fluid flow from both chamber **13** and **17**, simultaneously. Ledge **31** is located below threads **10** on the outside of container **3** and at as an upper stop when cap **21** is unscrewed to its second position (open position). Inwardly projecting cap ledge **30** rest against ledge **31** in the cap's second position.

[0038] Cap **21** and container **30** are manufactured separately and chambers **13** and **71** are filled and inserted in to container **3**, and then cap **21** is screwed down to force fit ledge **30** over ledge **31** to permanently attach cap **21** to container **3**. After cap **21** has been attached to container **3**, its range of movement is restricted to those areas between and to the upper and lower stops.

[0039] **FIG. 2** shows an alternative embodiment present invention dispenser, including the container **51** and the cap **71**, in an exploded, partially cut side view, and **FIG. 3** shows a bottom view of the dispenser container **51** of **FIG. 2**. These two Figures are taken together:

[0040] Container **51** includes a outer side wall **53** and bottom **55**, as well as an open circular top **57**, with outside threads **59**. Inside container **51** are two chambers **81** and **83** that extend to the top **57** and are divided by post **63**. Post **63** is the closing area where the bottom **83** of nozzle **81** will contact to seal dispensing orifices **85** and **87** and to isolate chambers **81** and **83** from one another when cap **71** is closed.

[0041] Cap **71** has a top **73**, side wall **75**, inside threads **79**, and stopping ridge **77** that functions as does cap **21** described above.

[0042] **FIG. 4** illustrates a top view of four complementary chambers **101**, **103**, **105**, and **107**, that are used in a present invention dispenser container **130** shown in **FIG. 5**. **FIG. 5** shows these inside present invention container **130**, and these two Figures are taken together. Chambers **101**, **103**, **105** and **107** are semi-cylindrical quadrants that together complete a circle. They are filled and inserted into container **130**, as shown. Outer wall **111** includes threading **113**, with stops (not shown) to receive a cap similar to those above. The underside of the cap would seal each chamber from all of the others when the cap is in the closed sealed first position.

[0043] **FIGS. 6 and 7** illustrate top and front views of two different present invention dispenser containers **140** and **160**, respectively, that a non-circular in shape. Referring to **FIG. 7**, container **140** has a rectangular top **151**, and rectangular, rather than circular shape. It has a front **141**, that is flat, and has a circular top neck **143**, with threads **145**. Inside the container **140** are chambers **147** and **149**, and orifice closing area post **153**.

[0044] **FIG. 7** shows an alternative embodiment present invention container **160**, with an oval-shaped footprint and flat side walls such as side wall **161**, and neck **163** with threads **165**.

[0045] Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

What is claimed is:

1. A multiple chamber dispenser with dual position dispensing cap, which comprises:

a.) a dispenser container having a circular top, a bottom, an outer wall structure and a plurality of chambers within said outer wall structure, said dispenser container circular top having threading and an upper stop and a lower stop located on an outside surface of said circular top, said plurality of chambers being side-by-side and being separated by at least one divider wall that extents to said circular top of said dispense container, and,

b.) a cap connected to said dispensing container and having at least one dispensing orifice, said cap having a side wall structure with threading on its inside that corresponds to said circular top threading, said cap being capable of screwing onto said circular top past said upper stop so as to be non-removable from said dispensing container, said cap having a fist position, being a position lower on the dispenser container and also being a closed position, and having a second position, being a position higher on the dispenser container and also being an open position for dispensing;

wherein when said cap is in said first position, said at least one dispensing orifice is closed so as to prevent content flow therethrough, and said plurality of chambers are isolated and sealed from one another and sealed from dispensing; and,

wherein when said cap is in said second position, said at least one dispensing orifice is open so as to permit content flow therethrough, and said plurality of chambers are not sealed from one another and are not sealed from dispensing; and,

wherein, when said cap is rotated from said first position to said second position, and said dispenser container is inverted, content from each of said plurality of chambers may simultaneously be dispensed therefrom and through said at least one dispensing orifice.

2. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said first position is a position wherein said cap rests against said lower stop, and said second position is a position wherein said cap rests against said upper stop.

3. The multiple chamber dispenser with dual position dispensing cap of claim 2 wherein said lower stop is a top surface of at least one of said circular top and of said plurality of chambers.

4. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said plurality of chambers are integrally formed with and are a permanent part of said dispenser container.

5. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said plurality of chambers are cartridges that are insertable into and removable from said dispenser container.

6. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said dispenser container is a circular shaped container.

7. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said dispenser container is non-circular in shape.

8. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said dispenser container is a squeeze dispenser container.

9. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said at least one dispensing orifice is located in a center area of said cap, and said plurality of chambers have a common area of connection in a center area, and said common area of connection includes sealing means to seal said at least one dispensing orifice when said cap is in its first position.

10. The multiple chamber dispenser with dual position dispensing cap of claim 1 wherein said at least one dispensing orifice is located in a center area of said cap, and wherein said dispensing container includes a center post located below said at least one dispensing orifice and adapted to seal said orifice by being pressed against it when said cap is in its closed position.

11. A dual chamber dispenser with dual position dispensing cap, which comprises:

a.) a dispenser container having a circular top, a bottom, an outer wall structure and two chambers within said

outer wall structure, said dispenser container circular top having threading and an upper stop and a lower stop located on an outside surface of said circular top, said two chambers being side-by-side and being separated by at least one divider wall that extents to said circular top of said dispense container, and,

b.) a cap connected to said dispensing container and having at least one dispensing orifice, said cap having a side wall structure with threading on its inside that corresponds to said circular top threading, said cap being capable of screwing onto said circular top past said upper stop so as to be non-removable from said dispensing container, said cap having a fist position, being a lower position on the dispenser container, and also being a closed position, and having a second position, being a higher position on the dispenser container, and also being an open position for dispensing;

wherein when said cap is in said first position, said at least one dispensing orifice is closed so as to prevent content flow therethrough, and said two chambers are isolated and sealed from one another and sealed from dispensing; and,

wherein when said cap is in said second position, said at least one dispensing orifice is open so as to permit content flow therethrough, and said plurality of chambers are not sealed from one another and are not sealed from dispensing; and,

wherein, when said cap is rotated from said first position to said second position, and said dispenser container is inverted, content from each of said two chambers may simultaneously be dispensed therefrom and through said at least one dispensing orifice.

12. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said first position is a position wherein said cap rests against said lower stop, and said second position is a position wherein said cap rests against said upper stop.

13. The dual chamber dispenser with dual position dispensing cap of claim 12 wherein said lower stop is a top surface of at least one of said circular top and of said plurality of chambers.

14. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said plurality of chambers are integrally formed with and are a permanent part of said dispenser container.

15. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said plurality of chambers are cartridges that are insertable into and removable from said dispenser container.

16. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said dispenser container is a circular shaped container.

17. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said dispenser container is non-circular in shape.

18. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said dispenser container is a squeeze dispenser container.

19. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said at least one dispensing orifice is located in a center area of said cap, and said plurality of chambers have a common area of connection in a center area, and said common area of connection includes sealing means to seal said at least one dispensing orifice when said cap is in its first position.

20. The dual chamber dispenser with dual position dispensing cap of claim 11 wherein said at least one dispensing orifice is located in a center area of said cap, and wherein said dispensing container includes a center post located below said at least one dispensing orifice and adapted to seal said orifice by being pressed against it when said cap is in its closed position.

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