A chamber member for containing a flavored powder or cereal for attaching to a container containing spring water or milk respectively in a manner for mixing the ingredients. The chamber member is molded to define a port extending therein and having a threaded cylindrical wall for threadedly receiving a threaded neck of the container. The chamber member has a portion which is integral with the cylindrical wall and sealingly closes an inner end of the port. The chamber member has a score line formed into and extending partially around the portion thereby defining a breakaway disc having an unscored hinge portion. The breakaway disc is slanted relative to the port cylindrical wall to allow initial contact by the neck with the breakaway disc at a location opposite the unscored hinge portion as the neck is threadedly advanced in the port to allow mixing of the ingredients. Instructions are provided for mixing the ingredients, including instructions on how to locate a suitable container.
CONTAINER ATTACHABLE TO ANOTHER
CONTAINER FOR MIXING INGREDIENTS

[0001] This application is a continuation-in-part of co-pending U.S. patent application Ser. No. 11/167,437, filed Jun. 27, 2005, the disclosure of which is incorporated herein by reference.

[0002] The present invention relates generally to bottles or containers or chamber members. More particularly, the present invention relates to containers/chamber members which allow ingredients to be mixed to form a product, which is then dispensed from a container opening or otherwise suitably used. For example, such a container/chamber member may be used to allow a customer to mix ingredients such as peroxide/activator and dye to form a hair coloring and then dispense the hair coloring through an opening in the container.

[0003] An example of a current container system for mixing and dispensing hair coloring is one which contains in two bottles the dye and peroxide/activator respectively. To use, a customer opens both bottles and pours the dye from one bottle into the bottle containing the peroxide/activator. He or she then recaps the peroxide bottle, shakes it to mix the ingredients, then pours the mixed hair coloring onto his or her hair.

[0004] An example of such a container system is found in U.S. Pat. No. 7,066,323 to Reisman. Referring to FIG. 6 thereof, Reisman discloses upper and lower interlocking containers formed of synthetic plastic resin (col. 2, lines 51 and 52) for mixing ingredients contained therein respectively. The upper bottle has a threaded inner cylindrical wall for threadedly receiving a threaded neck of the lower container. The inner end of the opening is closed by a disk which is mechanically attached (col. 3, lines 63 and 64) to the cylindrical wall. A continuous circular notch or score resides at the intersection of the disk and the cylindrical wall (col. 3, last 3 lines). It is disclosed that the score can also be non-continuous (col. 6, line 57). A seal is affixed to the end of the neck and a pull tab portion thereof allows it to be removed (col. 3, lines 4 to 7). The lower container neck also has a cap which is removed prior to insertion of the neck into the cylindrical wall. As seen in FIG. 6 and also in FIG. 2 of Reisman, by screwing the neck into the cylindrical wall, the disc is broken away to allow mixing of the ingredients contained therein respectively. Also a seal cutter on the disk comes into contact with a seal on the outer end of the neck of the second container (col. 4, lines 17 and 18). The upper container has an upper opening in the form of a threaded neck through which the mixed ingredients may be drank or removed. Since the upper and lower containers are described as “substantially similar” (col. 3, lines 24 to 28, and col. 4, lines 11 to 15), it may be asserted that the cap removed from the bottom container neck also fits the upper container upper opening. As seen in FIG. 12 of Reisman, the volumetric size of the containers can be varied depending on their contents (col. 6, lines 37 to 43).

[0005] Seal 32 in FIG. 3 of Reisman, like disc 52 of FIG. 6 of Reisman, also is mechanically affixed to the cylindrical wall so as to cover the opening and is deformed upon entrance of the neck into contact therewith. Seal 32 is disclosed (col. 6, line 60, to col. 7, line 6) as being mechanically attached by a “thin cellophane, aluminum, paper or plastic seal” and that it may be mechanically attached by glue or heat sealing.

[0006] More examples of mixing and dispensing containers may be found in U.S. Pat. Nos. 6,065,641; 3,443,726; 5,071,034; 4,693,366; and 4,936,445, which are discussed in parent U.S. patent application Ser. No. 11/167,437. Additional examples of mixing and dispensing containers may be found in U.S. Pat. Nos. 2,631,521; 3,347,410; 3,349,966; 3,548,562; 3,610,586; 3,809,289; 4,067,440; 4,177,938; 4,244,467; 4,271,982; 4,638,927; 4,682,689; 4,785,931; 4,823,946; 5,152,965; 5,277,303; 5,405,051; 5,411,295; 5,514,394; 5,884,759 (reissued as Re38,607); 5,890,596; 6,068,396; 6,073,803; 6,135,275; 6,247,586; 6,543,645; 6,609,634; 6,634,821; 6,910,573; 6,935,493; and U.S. patent applications 2002/0104766 (issued as U.S. Pat. No. 7,156,227); 2002/0130126; and 2002/0150658.

[0007] As discussed in greater detail hereinafter, it is considered to be desirable that one of the containers/chamber members be a standard item which one can purchase off the shelf—an item which may or may not be sold independently by another marketer.

[0008] FIG. 19 of U.S. patent application publication 2006/0237095 to Johns et al (now U.S. Pat. No. 7,308,915) discloses an upper bottle with a dispensing port on its top end and a mixing port on its bottom end for receiving a standard or conventional threaded spout of a lower bottle, which also utilizes a conventional bottle cap, for mixing ingredients in the bottles respectively (col. 8, lines 53 to 58). The dispensing port may be closed by a threaded cap or by a cap press fit thereon and sealed with a removable strip (col. 8, lines 19 to 27, of the patent). References herein being to the patent, the ingredients may include cereals or any other form of a consumable ingredient substance or solution which may be mixed to form a reconstituted beverage, shake, food product or the like (col. 8, lines 4 to 8). It is stated (col. 8, lines 14 to 16 and lines 41 to 43) that the shape and volumetric size of each of the bottles may vary depending on the products being packaged and marketed. When the bottle neck is installed into the mixing port, a seal from the upper bottle is broken to allow the ingredients to be mixed (Abstract and see FIGS. 7, 11, and 17 of Johns et al). A docking connector is provided so that the ingredients “can be marketed and sold together as a complete package if so desired” (col. 9, lines 3 to 8).

[0009] The seal is described as a hermetic seal which is applied to a flange surface with adhesive and made of any material known to be used in food or beverage packaging seals and having a series of intersecting perforations, indentations, or embossed lines or pre-stressed seams to assist its breaking into “slices” (col. 9, lines 23 and 24 and lines 38 to 46).

[0010] U.S. Pat. No. 6,814,229 to Seckler (issued from U.S. patent application publication 2003/0205548) discloses a bottle adapter having an internal threaded portion that engages threads on a bottle neck and has an opening closed by fragile seal (or alternatively a removable and replaceable seal) which is engagable by the neck to remove the seal to allow mixing of contents in the bottle and adapter respectively. The seal may be attached by an adhesive or alternatively formed from the same material that forms the internal threaded portion. The adapter has an externally threaded upper opening for application of a drinking assembly such as a baby bottle cap and nipple. The composition to be mixed includes a water-mixable drink preparation such as a beverage mix.

[0011] U.S. Pat. No. 5,731,291 contains a discussion of two-chamber vials for drugs wherein two chambers are separated from each other in a water-tight manner by a septum, including what are referred to as the “Univial” and “Add-
vantage” and “Smart Dose” systems of Abbott Laboratories and SmithKline Beecham and IVAC Medical Systems respectively, and refer the reader to U.S. Pat. Nos. 4,258,845; 4,871,354; 5,335,773; 5,336,180; 5,350,372; 5,385,546; 5,398,850; and 5,398,851. The Add-vantage system uses a standard glass vial with a standard stopper. This is then encased in a plastic shell. As understood, in use, the plastic shell cap is removed, the lower shell, containing the vial, screws into a female fitment on the IV bag. This fitment contains a hollow needle (like a syringe needle) which punctures the rubber stopper and allows mixing. The components are sold separately and combined at the time of use, for example, an IV bag of saline solution from Baxter combined at time of use with an Add-vantage bottle containing penicillin produced by Wyeth. The Univial system is also understood to also use a plug, which is forced out of a sealed position at the narrow portion of an hourglass container and into a wider portion of the container to allow mixing.

[0012] U.S. Pat. No. 3,404,811 to Cerni discloses a container for maintaining in upper and lower plastic receptacles liquids wherein the receptacles have a screw threaded connection (a threaded neck on the upper receptacle which threadedly engages a threaded opening in the lower receptacle) may be manipulated to contine the liquids, and the upper receptacle also has a closable opening. A fragile closure element or seal is seated on an internal shoulder at the opening inner end. The element is a disc of metal, plastic, rubber, or the like. The neck has a more or less sharpened end edge portion to pierce or break the closure element when the receptacles are screwed together beyond a predetermined limit. To hold the receptacles against such rotation to cause breakage of the seal when the receptacles are initially assembled a removable spacer element is positioned between the receptacles in engagement with end faces.

[0013] U.S. Pat. No. 5,647,481 to Hundermark et al discloses first and second containers for containing first and second components to be mixed together prior to use, the first container including a dispensing nozzle sealed by a cap when not in use. The first container also includes a bottom port sealed by a removable plug from the interior thereof. To mix the components together, a user unscrews a cap from the second container and screws the neck of the second container into a threaded boss of a skirt secured to the bottom of the first container for forcing a top portion of the neck of the second container into the bottom port of the first container for frictional engagement therewith and for forcing the plug out of the port into the interior of the first container. The joined containers can then be shaken to mix the components together and then dispensed through the dispensing nozzle.

[0014] The provision of a separate seal and the requirement for its attachment undeniably creates complications in and increases cost of the manufacturing process and reduces integrity of the seal.

[0015] In today’s hectic world, it is considered desirable to be able to conveniently mix and drink or eat two or more ingredients while “on the run,” without awkwardness and spillage and the like. For example, it may be desired to purchase and flavor ordinary spring water and drink it as one is headed for a meeting, without having to first go home to mix it in one’s kitchen. From a marketing standpoint, it may be considered desirable to sell the flavoring ingredient separately from the spring water so that the flavoring ingredient may be used with a standard spring water bottle sold by another marketer. On the other hand, a marketer may desire to sell both the flavoring ingredient and the spring water, either as a unit in a convenient package or separately.

[0016] For another example, it may be desired to eat cereal mixed with milk while “on the run,” again without awkwardness and spillage and the like. It is considered to be desirable to be able to utilize a standard bottle of milk for this purpose, which may again be sold separately, even by different marketers, or as a unit or separately by the same marketer.

[0017] Accordingly, it is an object of the present invention to provide a convenient system for mixing ingredients for eating or drinking while “on the run,” without awkwardness or spillage or the like.

[0018] It is another object of the present invention to provide a chamber member containing one ingredient wherein the other ingredient may be obtained from a standard container which is purchased as part of a package or which is purchased separately.

[0019] It is a further object of the present invention to provide such a container system which is simple and foolproof to manipulate.

[0020] It is yet another object of the present invention to provide such a container system wherein at least one of the containers/chamber members may be made cost effectively on standard plastic molding machinery.

[0021] It is still another object of the present invention to provide such a container system wherein the seal may be broken effectively to remain attached so that it does not undesirably float freely in the chamber member.

[0022] In order to provide such a container system, in accordance with the present invention, a chamber member is provided which has a threaded port extending into the chamber member and whose inner end is sealed, the seal being molded integrally with the chamber member to provide greater seal integrity as well as to minimize manufacturing costs. In order to effect effective breaking of the disc so that it remains attached so that it does not float freely in the chamber member, the seal has a score line extending partially around the seal thereby defining a breakaway disc having an unscored hinge portion, the disc being slanted relative to the cylindrical wall of the bore to allow initial contact by a container neck with the disc at a location opposite the unscored hinge portion as the neck is threaded advanced in the port. Instructions are provided for connecting the chamber member to a standard container having a threaded neck sized to fit the threaded port.

[0023] The above and other objects, features, and advantages of the present invention will be apparent in the following detailed description of the preferred embodiment, when read in conjunction with the appended drawings wherein the same reference numerals depict the same or similar parts throughout the several views.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0024] FIG. 1 is a side elevation view of a container system, illustrated in condition for sale to a customer, including an upper chamber which embodies the present invention.

[0025] FIG. 2 is a sectional exploded view of the upper and a lower chamber for the container.

[0026] FIG. 3 is a partial exploded enlarged view, partly elevational and partly sectional, illustrating the interface between the chambers.
FIG. 4 is a detail view of threads for the chambers.

FIG. 5 is a partial schematic view illustrating the chambers in position for sale of the container, inactivated, to customers.

FIG. 6 is a partial view similar to that of FIG. 5 illustrating the container after activation thereof.

FIGS. 7 and 8 are schematic illustrations of alternative embodiments of the container system.

FIG. 9 is a sectional view of the container taken along lines 9-9 of FIG. 3.

FIG. 10 is a side elevational view of a container usable in the container system of the present invention.

FIG. 11 is a side elevational view, partly in section, of a chamber member which embodies the present invention for attachment to the container of FIG. 10.

FIG. 12 is a side elevation view of the container of FIG. 10 with the chamber member of FIG. 11 attached.

FIG. 13 is a detail sectional view illustrating the attaching of the container of FIG. 10 to the chamber member of FIG. 11.

FIG. 14 is a view taken along lines 14-14 of FIG. 13.

FIG. 15 is a detail sectional view illustrating the container of FIG. 10 attached to the chamber member of FIG. 11 for mixing of ingredients therein.

FIG. 16 is a side schematic view illustrating an alternative container member attached to an alternative chamber member for mixing of ingredients therein in accordance with the alternative embodiment of FIGS. 10 to 15.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

FIGS. 1 to 9 disclose a two-part container system as disclosed in my parent application Ser. No. 11/167,437, including a molded upper chamber member 12 having a threaded port 40 which has a seal molded integrally therewith. Thereafter, FIGS. 10 to 16 disclose a chamber member, which is also molded and has a threaded port 40 which has a seal molded integrally therewith, for use with a standard container.

Referring to FIGS. 1 to 6 and 9, there is shown generally at 10 a container in the form or appearance of a bottle having a pair of upper and lower chamber members 12 and 14 each containing a liquid (or other suitable material), illustrated at 16 and 18 respectively, to be mixed and the resultant mixture dispensed through outlet 20 in the upper end of upper chamber member 12. For example, the liquids 16 and 18 may be peroxide/activator and dye respectively which, when mixed, form a hair Coloring to be dispensed (poured or accessed) through opening 20 onto a customer's hair. The outlet 20 is conventionally in the form of a neck 22 having external threads, illustrated at 24, which threadedly receive an internally threaded screw cap 26, which is desirably of a construction which allows it to be applied inexpensively by standard capping machinery, for closing thereof. However, the outlet 20 may be closed by any other suitable closure, such as, but not limited to, a plug, snap cap, membrane, or metal lid.

In accordance with the present invention, it is not required that the mixture be dispensed from the container. Thus, there are applications of the present invention which do not require dispensing, for example, heating or cooling packs or light sticks.

The chamber members 12 and 14 are shown to each be cylindrical with a cylindrical vertical wall 28 and 30 respectively, a generally flat upper roof or ceiling portion 32 and 34 respectively, and a generally flat lower floor 36 and 38 respectively, the wall extending vertically between the respective roof and floor. The vertical wall 30 is desirably normal to the upper chamber roof 32 and the lower chamber floor 38, which are accordingly horizontal. The diameters of the walls 28 and 30 are desirably equal so as to provide the pleasing bottle appearance shown in FIG. 1 when the chamber members 12 and 14 are connected as discussed hereinafter. However, the chambers 12 and 14 may be of any other suitable size and shape.

The chamber members 12 and 14 may desirably be composed of molded plastic material which allows them to be cost effectively manufactured on standard plastic molding machinery, and the bottle 10 may be filled and assembled cost effectively, as discussed hereinafter, on generally standard packaging machinery. The small number of bottle parts also helps to keep the manufacturing cost low. The chambers 12 and 14 may however be fabricated from any other suitable materials, such as, for example, metal, glass, composite materials such as carbon fiber, or flexible materials such as flexible bags.

The lower chamber 14 has a cylindrical neck or spout or nozzle 42 which extends from its roof 34 and which is receivable in a cylindrical port or recess 40 in the upper chamber floor 36. It should however be understood that, alternatively, the neck may be on the upper chamber 12 while the port may be in the lower chamber 14. The port 40 is shown recessed into the upper chamber 12. However, in the event that drainage of the upper chamber 36 into the lower chamber 14 is desired or if otherwise desired, the port 40 may be located externally. The diameters of the neck 42 and the port 40 are substantially equal (the neck diameter being slightly less than the port diameter) to afford a desirably generally tight or snug slip or press or friction fit therewith which allows the chambers 14 and 16 to be held together prior to connecting the chambers as discussed hereinafter with respect to FIG. 6 but which allows manipulation of the chambers for such connection.

A thread, illustrated at 44, is molded or otherwise suitably provided on the port 40, and a mating thread, illustrated at 46, is molded or otherwise suitably provided on the neck 42 for threadedly connecting the chamber members 12 and 14, as seen in FIG. 6.

The inner end of the port 40 is sealingly closed by a frangible wall 48, i.e., the wall 48 has a frangible or breakaway disc 52 defined by a score line, illustrated at 50 in FIG. 9, or formed by other suitable means such as angling. In accordance with the present invention, the score line 50 does not extend entirely around the disc 52 thereby leaving a hinge portion, illustrated at 54, so that the disc can remain attached, as illustrated in FIG. 6, to prevent it from floating free in the chamber 12. The breakaway may be otherwise suitably constructed. For example, the score line may be extended entirely around the disc when it is desirable to break the disc completely loose from the port. The breakaway disc 52 is slanted slightly relative to the cylindrical wall 56 of the port 40 so that the wall 56 is desirably lowest or shortest at the point, illustrated at 58, opposite the hinge portion 54 thereby allowing initial contact with the disc 52 at the point 58 opposite the hinge portion 54 for effective breaking and lifting of the disc 52.

The neck 42 is molded to have an open terminal end, which is thereafter covered, to keep the chamber 14 sealed
until the time of activation, by a sealing but easily pierceable frangible membrane 60 such as, for example, plastic or aluminum foil. The membrane 60 is suitably attached to the neck 42 such as by an adhesive. A pointed member or knife or blade 62 is molded into the outer surface of the breakaway member 52 for piercing the seal 60 to allow the release of the fluid 18 from chamber 14 as the neck 42 is screwed into contact with the blade 62. If desired, the blade 62 may be a separate member suitably attached to the disc 52. The blade 62 is shown as a pointed member located at the position 50 but it may be otherwise suitably positioned and shaped, for example, it may extend a substantial distance around the circumference of the breakaway disc 52 to provide more effective tearing away of the membrane 60.

[0048] A bead ring 64 is molded around the outer surface of the port cylindrical wall 56 to seal the connection of the chambers 12 and 14 to prevent leakage.

[0049] Referring to FIG. 4, a plurality of ratchet members 66 are molded into the thread 44, and a plurality of mating ratchet members 68 are molded into the thread 46. Alternatively, the ratchet members 66 and 68 may be a moulded onto the port 40 and neck 42 respectively. The ratchet members 66 interlock with the ratchet members 68 to enforce one-way movement and thus to resist unscrewing or prevent unintentional unscrewing of the threaded connection. Thus, as the thread 46 is screwed relative to thread 44, the slanted engaging surfaces 70 and 72 thereof respectively allow the screwing to occur. However, the substantially squared surfaces 74 and 76 respectively thereof, which engage during attempted unscrewing, are provided to prevent unscrewing of the connection. Alternatively, the port lug or thread 46 may be suitably provided with a detent so that, when rotation is complete, the neck lug or thread 46 will snap into or beyond the detent to prevent accidental disassembly as well as to provide an indication that the chamber members have been completely screwed together.

[0050] The chamber wall 28 extends below the port wall 56 a distance equal substantially to the height of the neck 42 so that the bottle 10 may be sold and kept prior to activation with substantially no space between the chamber walls 28 and 30, as seen in FIG. 5. The chamber 12 has a collapsible dished bottom wall 78 extending between the bottoms of the cylindrical port and chamber walls 56 and 28 respectively, i.e., the bottom wall 78 extends at an angle between the port and chamber walls 56 and 28 respectively which gives it the appearance of a dish and is adapted to be collapsible into a generally flat configuration as illustrated in FIG. 6. The dished wall 78 is desirable corrugated, as illustrated by corrugations 80, to provide such collapsibility and thus aid in pulldown when activating, as seen in FIG. 6. If desired, the bottoms of the chamber walls 56 and 28 may be in alignment horizontally, and the wall 78 (which need not then be collapsible or require pulldown) may accordingly be flat to provide a gap between the chambers prior to activation as a visual indication of integrity, i.e., that the bottle has not been activated.

[0051] Referring to FIGS. 1 and 5, there is shown the bottle 10 inactivated and packaged for sale. The two chamber members 12 and 14 may be filled and closed on conventional filling lines. At the end of the line the chamber member 14 will be mounted to the chamber member 12. The neck 42 of the lower chamber 14 is press or friction fit into the port 40 of the upper chamber 12 so that the neck thread 46 abuts the port thread 44, the upper end of the neck 42 is within the sealing bead 64, the upper end of the lower chamber cylindrical wall 30 engages the lower end of the upper chamber cylindrical wall 28 so that there is no gap therebetween, and the foil membrane 60 is just out of engagement with the blade 62. The threads are located in accordance with principles generally known to those of ordinary skill in the art to which the present invention pertains to prevent the blade 62 from engaging the membrane 60 prior to the act of screwing the neck 42 into the port 40. The slip fit is provided to hold the chamber members 12 and 14 together temporarily until label 82 is applied, as hereinbefore discussed, to securely hold them together until the time of activation.

The thusly assembled container 10 is shipped and ultimately sold to the end user with the fluids 16 and 18 remaining segregated and unmixed.

[0052] The container 10 may, if desired, be provided with a skirt to allow the container 10 to be free-standing. The skirt may be molded into the container 10 or may be a separate piece attached thereto.

[0053] When the chambers 12 and 14 are assembled (with the container 10 inactivated) at the time of manufacture, the chamber 12 should normally provide protection against accidental puncture of the membrane 60. In some cases such as for medical infusion products, it may be desirable to distribute the two chambers 12 and 14 separately. The thusly exposed membrane 60 may then be exposed to accidental puncture. In order to protect the exposed membrane 60, an overcap of plastic or other suitable material may be provided on the neck 42 to protectively cover the membrane 60. The neck 42 may be provided with threads or a lip to permit screwing or snapping of the overcap, which would be removed by the end user prior to assembly of the chambers 12 and 14.

[0054] Referring to FIG. 6, the bottle 10 is easily and quickly activated by a customer by twisting the lower chamber 14 relative to the upper chamber 12 to screw the neck 42 further into the port 40, as seen by the neck thread 46 being to the inside of the port thread 44 in FIG. 6. During this movement, the corrugated wall 78 is pulled down to the position shown in FIG. 6. This movement causes the foil membrane 60 to engage the blade 62 and thus become torn thereby allowing release of the fluid 18 from the lower chamber 14. This movement also causes the neck 42 to ram into the breakaway portion 52 initially near point 58 to break the portion 52 along score line 50 causing the breakaway portion 52 to swing upwardly thereby allowing release of the fluid 18 from the upper chamber 12. As soon as FIG. 6, the mere twisting of the lower chamber 14 relative to the upper chamber 12 thus effects the opening of the chambers to each other to easily and quickly allow the intermixing of the fluids 16 and 18 by the customer shaking the activated bottle 10, which mixture can then be poured through upper opening 20. The mating ratchet portions 66 and 68 on the threads 44 and 46 resist loosening or disconnection of the connection, and the seal 46 acts to prevent escape of the mixture from the bottle 10 except through opening 20.

[0055] After the bottle 10 is assembled as shown in FIG. 5, a label 82 is suitably placed about the bottle 10, as illustrated in FIG. 1, so that it is attached to both the lower and upper chambers 12 and 14 respectively to aid in holding the chambers 12 and 14 in the desired unactivated position during shipment and handling to thereby prevent accidental activation as well as to prevent separation of the chambers 12 and 14. The label 82 also serves as an indicator or evidence of whether the bottle 10 has been activated, i.e., if the label 80 is torn or broken, it indicates that the lower chamber 14 has been
twisted relative to the upper chamber 12 and that the bottle 10 may have been activated. The label is preferably scored or perforated, as illustrated at 84, along the intersection or junction of the chambers 12 and 14 to allow the teeing of the label 80 along the score line 84 (the offset upper and lower portions of the label 82 serving as an activation indicator) to facilitate activation and for a more pleasing activated bottle appearance. Arrows may be included on the parts of the label 80 on opposite sides of the score line 84 (or junction between chambers) which align when activated as a further indicator that the container 10 has become activated.

[0056] Referring to FIG. 7, there is illustrated generally at 100 a container, activated, in accordance with an alternative embodiment. The container 100 includes a lower chamber member 102 having an opening 104 for dispensing therefrom a mixture mixed in the container 100. The opening 104 may have a screw-style or other suitable closure 106. The container 100 also has a plurality (two shown) of ports 108, which may be similar to port 40, which receive the necks 110, which may be similar to necks 42, of upper chamber members 112. Thus, container 100 with a chamber member 102 having multiple ports 108 (located on the top, side, and/or top of the member 102) is provided to mix any number of liquids or other substances for dispensing of the mixed product out the opening 104.

[0057] Referring to FIG. 8, there is illustrated generally at 120 a combination of a disposable plastic container 122 and a disposable plastic chamber or bottle 138 containing milk, illustrated at 140, in accordance with an alternative embodiment. The milk may be UHT (ultra-high temperature) milk to thus eliminate the need for refrigerated storage. The bowl 122 has a bottom wall 124 and a circular side wall 126 extending upwardly therefrom to an upper opening, illustrated at 128. The bowl 122 may be otherwise suitably shaped such as with 4 side walls instead of the circular wall. The bowl 122 may alternatively have a spout so the cereal can be slurped from the bowl thus eliminating the need for a spoon and perhaps also a wrapper (i.e., less packaging components so that the product may be less expensive) and allows one-handed use, facilitating eating on-the-go. The bowl 122 contains cereal, illustrated at 130, and its upper opening 128 is covered with foil, illustrated at 132, or other suitable protective membrane or sheet. The bowl 122 has in its side wall 126 a port 134, which may be similar to port 40, which receives the neck 136, which may be similar to neck 42, of chamber member 138. This allows milk to be mixed with cereal and eaten while on-the-go by commuters, travelers, and students easily and quickly, without fear of spilling, by twisting the chamber member 138 to activate the container 120 and turning the container 120 on its side to allow the milk 140 to be mixed with the cereal 130, then removing the foil 132, then eating. The milk bottle 138 may remain in place to act as a handle for ease in handling. Soups, stews, and the like may similarly be provided for eating on-the-go, perhaps adapting technologies such as used for military rations.

[0058] In addition to hair coloring and breakfast cereals, examples of other uses for such a container include, but are not limited to, products such as fiberglass wherein an activator is added to and mixed with a resin prior to use (perhaps with the incorporation of a brush, roller, or other applicator in the container so that the resin can be activated, mixed, and applied without the need to remove product from the container for application), medical pharmaceutical products such as dry products requiring reconstitution with water prior to use or infusion therapies such as wherein an active compound is added to an IV bag, paint color mixing wherein a neutral base is mixed with a color or tint, heating or cooling packs, and light sticks.

[0059] Referring to FIG. 10, there is illustrated generally at 200 a standard PET bottle with a standard threaded neck 206 containing spring water, illustrated at 202, as is typically found in a grocery store. It should of course be understood that the container 200 may contain an other suitable ingredient. The bottle or container 200 has a generally upright molded clear plastic cylindrical (or otherwise suitably shaped) body 204 containing the water 202 and terminating upwardly in the threaded neck 206 (having thread 207), which defines an opening 208, with a stop ring 210, the opening closable with a typical internally threaded cap 212, as is typical for spring water bottles. A suitable label 214 is applied to identify the water 202 or other ingredient contained therein.

[0060] When used herein and in the claims, the term “standard,” with reference to a bottle or container, refers to one similar to the bottles or containers commonly available in stores for the particular ingredient (in this case, spring water), including being devoid of a threaded bore extending into the bottle or container. Thus, for reasons that will become apparent, the container 200 (when devoid of a threaded bore extending into the container, as is typical of spring water and other bottles) and the chamber member 220 hereinafter described have different shapes, i.e., they are not identical in shape.

[0061] Referring to FIG. 11, the chamber member 220 contains a flavored powder 222 to be mixed with the water 202 to make a beverage, or the chamber member may contain another suitable ingredient to be mixed with the first ingredient 202. The chamber member 220 is composed of molded clear plastic so that it may be cost effectively manufactured on standard plastic molding machinery (but may be molded of other suitable material), and the chamber member 220 may resultingly be filled and assembled cost effectively on generally standard packaging machinery. The resulting single molded piece (or small number of parts) also helps to keep the manufacturing cost low.

[0062] The chamber member 220 has a generally cylindrical body 224 containing the flavored powder 222 and terminating upwardly in a threaded neck 226 (having thread 228), which defines an opening 230, the opening 230 closable, like for bottle 200, with a cap, as will be discussed in greater detail hereinafter. When packaged to be sold, the opening 228 may have a suitable seal member 232 such as a foil or plastic membrane adhesively or otherwise suitably applied thereto to be pulled or otherwise suitably removed therefrom for use by the customer or may have a cap. It may, if needed, like bottle 200, have a stop ring (not shown).

[0063] Referring to FIGS. 13 to 15 as well as FIG. 11, the chamber member has in its bottom a threaded port, illustrated at 234, (having a cylindrical wall 236 formed with threads 238) which extends upwardly into the body 224. The upper end of the port 234 is closed by a frangible wall 240 (serving as a breakable seal as hereinbefore discussed) which is molded integrally with the cylindrical wall to achieve good integrity as well as inexpensive manufacture. The port 234, cylindrical wall 236, thread 238, and seal 240, as applicable, are similar to the port 40, cylindrical wall 56, thread 44, and wall 48 respectively of chamber member 12.
The port thread 238 is sized to have the same size as the thread 207 on the desired standard bottle 200 so that the neck 206 of such a standard bottle with that thread size is threadedly receivable within the threaded port 234, as illustrated in FIGS. 12, 13, and 15, after removal of the cap 212 and seal member 232 or other closure for chamber member neck 226.

Similarly as discussed relative to the embodiment of FIGS. 1 to 6, the sealing wall 240 has a flangible or breakaway disc 250 defined by a score line, illustrated as 252, or formed by other suitable means such as angling. In accordance with the present invention, the score line 252 does not extend entirely around the disc 250 thereby leaving a hinge portion, illustrated at 254, so that the disc may remain attached, as illustrated in FIG. 15, to prevent it from floating free in the chamber 220. The breakaway disc 250 may be otherwise suitably constructed. For example, the score line 252 may be extended entirely around the disc when it is desirable to break the disc completely loose from the port. The breakaway disc 250 is slanted slightly, by a small angle illustrated at 256 in FIG. 13, relative to the cylindrical wall 236 of the port 234 so that the wall 236 is desirably lowest or shortest at the point, illustrated at 258, opposite the hinge portion 254 thereby allowing initial contact by the terminal end of the bottle neck 206 with the disc 250 at the point 258 opposite the hinge portion 254 for effective breaking and lifting of the disc 250, as illustrated at 270, as the neck 206 is screwed further upwardly, as illustrated at 260, to the position illustrated in FIG. 15. It should be understood that the wall 240 may be made frangible by other suitable means such as, for example, a series of radial score lines. With the seal 250 lifted up to open the inner end of the port 234 and with the neck tightly screwed into the port 234, the powder 222 may freely move through the neck 206 into the bottle 200, as illustrated in FIG. 15, and likewise the water 202 may freely move through the neck 206 into the bottle 230, thus allowing mixture of the powder 222 and water 202 to form a drinkable beverage.

The chamber member neck thread 228 is preferably sized to be the same size as the bottle neck thread 207 so that the chamber member neck 226 can accept the bottle neck cap 212, as illustrated in FIGS. 10 and 12, to thereby reduce manufacturing cost by not having to manufacture a separate cap for the chamber member 220 and providing the lower cost sealing member 232 instead. Thus, the chamber member dispensing opening or neck 226 can accept the water bottle cap 212 for re-closure of the assembled package.

The water bottle 200 and powder container 230 may be sold as a unit in a package or otherwise as suitable. Alternatively, the water bottle 200 and powder container 230 may be provided by different marketers at different locations in a store. In order to avoid confusion by the customer, the label 264 on the powder container 230 contains instructions, illustrated at 266, to the purchaser as to which bottles of water can be used with the container 230, i.e., the instructions will direct the customer to only those bottles of water whose neck threads 207 have the same size as the chamber member port thread 238, and the label 264 may also instruct the customer as to how to attach the bottle and chamber member to achieve the mixing of the ingredients. Such instructions may consist of or comprise instructions on locating a suitable container. It should of course be understood that such instructions may be provided otherwise such as, for example, on the packaging.

For “on-the-go” eating of cereal, the pouring of milk can be inconvenient and awkward and messy, i.e., spillage may occur. Referring to FIG. 16, in order to eliminate the requirement for pouring the milk, an “on-the-go” cereal assembly, shown generally at 300, is provided which utilizes a 2 to 3 ounce bottle 302 of milk 304 having a threaded neck 306 which is threadedly receivable in a threaded port 308 extending into a bowl 310 of cereal 312. The bowl may be formed of thermofoam similarly as other single serve containers on the market. Similar to the embodiment of FIGS. 10 to 15, the terminal end of the neck 306 is caused to break and lift a breakaway disc 314, which is similar to disc 250, to allow flow of milk 304 into the bowl of cereal, thus eliminating the requirement of “pouring” the milk. A suitable upper cover or lid 316 of foil or other suitable material is removable (or may only be partially removed) from an upper opening 320 to allow the eating of the cereal, which may, if desired, be “slurped” directly from the bowl with the lid partially open, without the need for a spoon. The port 308 is formed into a vertical or side wall 318 of the bowl 310 so that the bottle 302 can serve as a handle for the eating of the cereal 312 conveniently, and the assembly can be connected so as to minimize inconvenience and spillage and the like. With the bottle 302 serving as a handle, the cereal may be eaten one-handed on-the-go. The milk 304 may be UHT (ultra high temperature) to eliminate the need for refrigeration.

While two applications are illustrated herein for the embodiments of FIGS. 10 to 16, it should be understood that other suitable applications therefor may be envisioned.

It should be understood that, while the present invention has been described in detail herein, the invention can be embodied otherwise without departing from the principles thereof. For example, the chamber member can be made in varied shapes and sizes and of varied materials. Such other embodiments are meant to come within the scope of the present invention as defined by the appended claims.

What is claimed is:

1. A chamber member for containing a first ingredient for attaching to a container containing a second ingredient in a manner for mixing the first and second ingredients, the chamber member molded to define a port extending into the chamber member and having a threaded cylindrical wall for threadedly receiving a threaded neck of the container, the chamber member having a portion which is integral with said cylindrical wall and which sealingly closes an inner end of said port, and the chamber member further having a score line formed into and extending partially around said portion thereby defining a breakaway disc having an unscored hinge portion, said breakaway disc being slanted relative to said port cylindrical wall to allow initial contact by said neck with said breakaway disc at a location opposite said unscored hinge portion as said neck is threadedly advanced in said port.

2. A chamber member according to claim 1 further comprising in combination therewith means providing instructions for attaching the chamber member to a container for mixing the ingredients.

3. A chamber member according to claim 1 further having at least one threaded neck defining a dispensing opening, said at least one threaded neck having a size to threadedly fit said threaded cylindrical wall, whereby a threaded cap threadedly receivable on the container neck is also threadedly receivable on said at least one chamber member neck.

4. A chamber member according to claim 1 comprising a single piece of molded plastic.
5. A chamber member containing a first ingredient for attaching to a container having a threaded neck which defines an opening and containing a second ingredient in a manner for mixing the first and second ingredients, the chamber member being molded to define a port extending into the chamber member and having a threaded cylindrical wall for threadedly receiving the threaded neck, the chamber member having a portion which is integral with said cylindrical wall and which sealingly closes an inner end of said port, said portion being formed to be frangible so as to break as the neck is threadedly advanced in said port to bear against said portion thereby to allow the first and second ingredients to pass between a container and the chamber member for mixing thereof, and means in combination with the chamber member providing instructions for attaching the chamber member to a container for mixing the ingredients.

6. A chamber member according to claim 5 wherein said instructions include instructions on how to locate a suitable container for use with the chamber member.

7. A chamber member according to claim 5 further having at least one threaded neck defining a dispensing opening, said at least one threaded neck having a size to threadedly fit said threaded cylindrical wall, whereby a threaded cap threadedly receivable on the container neck is also threadedly receivable on said at least one chamber member neck.

8. A chamber member according to claim 5 comprising molded plastic.

9. A chamber member according to claim 5 wherein the chamber member further has a score line formed into and extending partially around said portion thereby defining a breakaway disc having an unscored hinge portion, said breakaway disc being slanted relative to said port cylindrical wall to allow initial contact by said neck with said breakaway disc at a location opposite said unscored hinge portion as said neck is threadedly advanced in said port.

10. A chamber member according to claim 5 wherein the chamber member contains a powder for mixing with a liquid in the container for drinking the mixture thereof.

11. A chamber member according to claim 5 wherein the chamber member has at least one side wall, wherein the chamber member contains cereal for mixing with milk in the container for eating thereof, and wherein said port extends into said side wall, whereby to permit the container to serve as a handle.

12. In combination with a container which has a threaded neck defining an opening and which is devoid of a threaded port extending into said container, a chamber member attachable to said container in a manner to allow mixing of first and second ingredients in said chamber member and said container respectively, said chamber member being molded to define a port extending into said chamber member and having a threaded cylindrical wall integral therewith for threadedly receiving said threaded neck, said chamber member having a portion which is integral with said cylindrical wall and which sealingly closes an inner end of said chamber member port, said portion being formed to be frangible so as to break as said neck is threadedly advanced in said port to bear against said portion thereby to allow the ingredients to pass between said container and said chamber member for mixing thereof.

13. A chamber member according to claim 12 further comprising in combination therewith means providing instructions for attaching the chamber member to the container for mixing the ingredients.

14. A chamber member according to claim 12 further having at least one threaded neck defining a dispensing opening, said threaded container neck and said threaded chamber member neck having the same size, and a threaded cap which is threadedly receivable on both said threaded container neck and said threaded chamber member neck.

15. A chamber member according to claim 12 comprising molded plastic.

16. A chamber member according to claim 12 wherein the chamber member further has a score line formed into and extending partially around said portion thereby defining a breakaway disc having an unscored hinge portion, said breakaway disc being slanted relative to said port cylindrical wall to allow initial contact by said neck with said breakaway disc at a location opposite said unscored hinge portion as said neck is threadedly advanced in said port.

17. A chamber member according to claim 12 wherein the chamber member and the container contain powder and a liquid respectively for mixing for drinking the mixture thereof.

18. A chamber member according to claim 12 wherein the container is a bottle containing water.

19. A chamber member according to claim 12 wherein the chamber member has at least one side wall, wherein the chamber member contains cereal and the container contains milk for mixing with the cereal for eating thereof.

20. A chamber member according to claim 12 wherein the chamber member has at least one side wall, wherein the chamber member contains cereal and the container contains milk for mixing with the cereal for eating thereof, and wherein said port extends into said side wall thereby to effect orientation of the container to serve as a handle for holding the cereal mixed with milk while eating it.

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