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(54) PRESSURE POINT FOOD CONTAINER, STORAGE, AND MIXING SYSTEM

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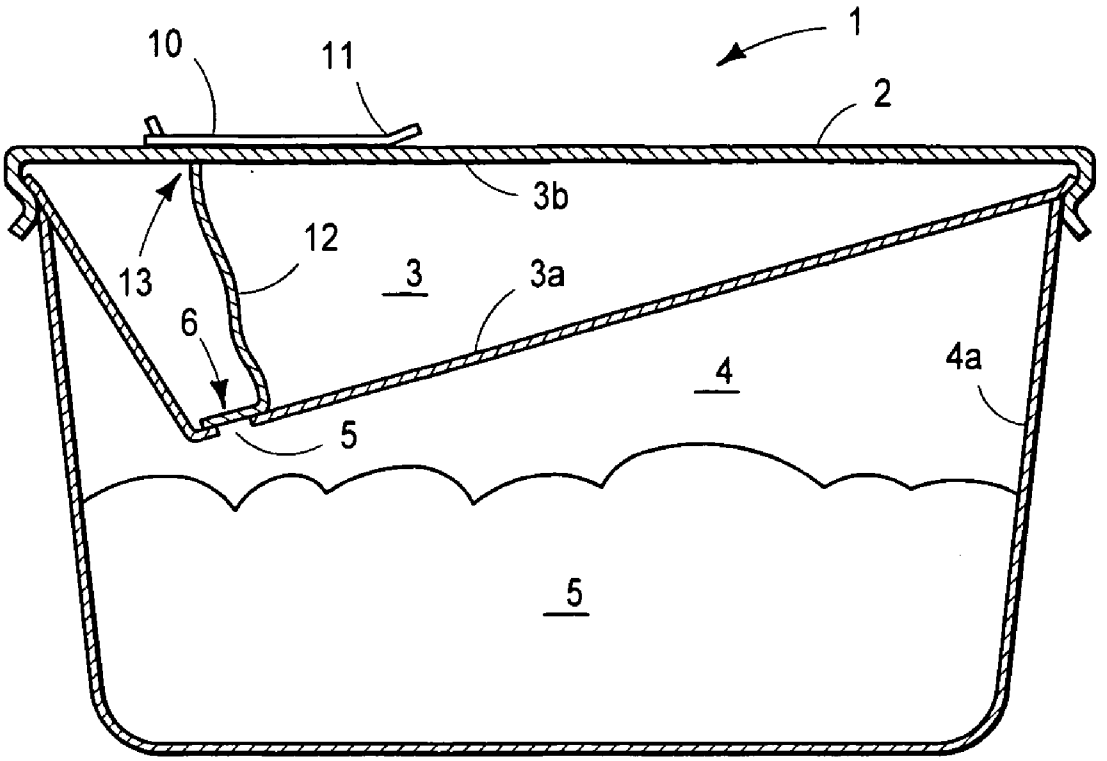
(57) **ABSTRACT**

Closure systems for food containers, and methods for mixing foods in portable containers is disclosed, using new apparatus for closing portable containers to store and transport foods, and new processes for mixing those foods prior to final or on-site dispensing and use, in which the food mixing takes place within the container, generally prior to its opening, as chambers or compartments within a container are opened to other chambers or compartments within the same container by transmission of pressure or tension from the exterior of the container, to one or more points, lines, or channels in one or more walls of chambers within the container, thereby opening one or more channels between such chambers through which food, fluids, or materials may travel.



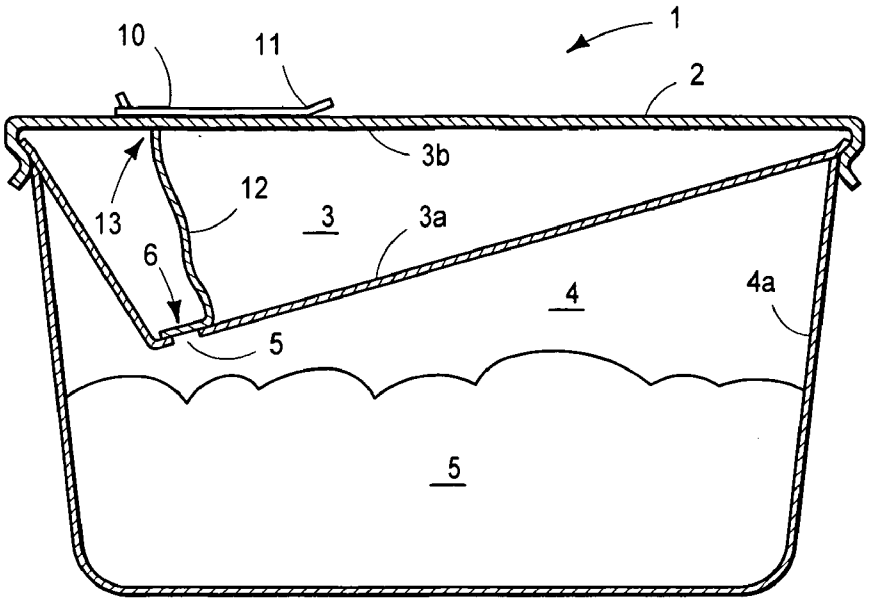


FIG. 1

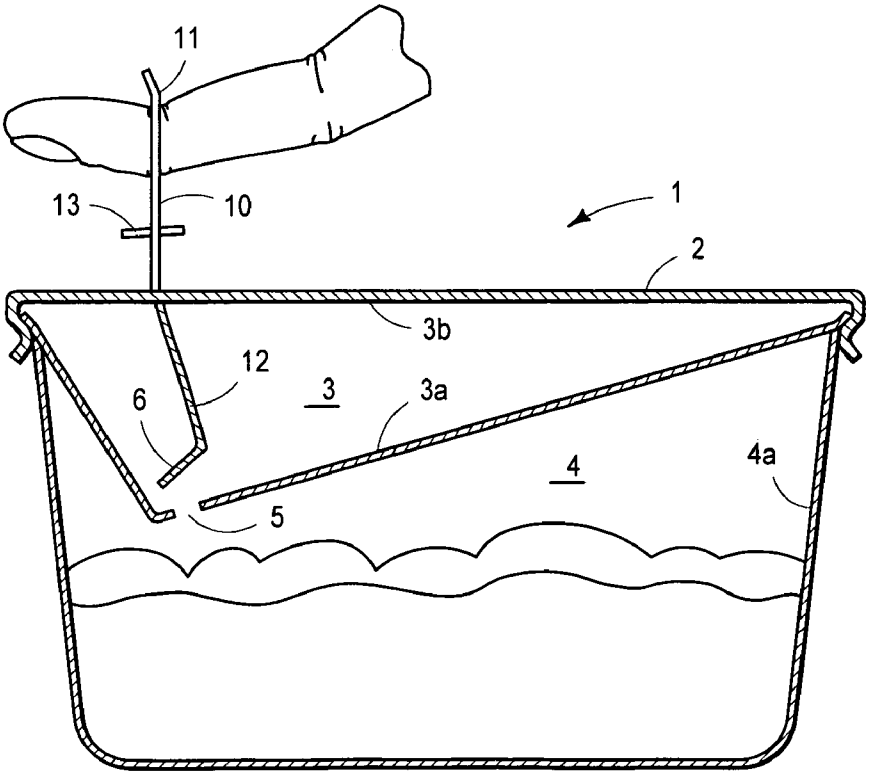


FIG. 2

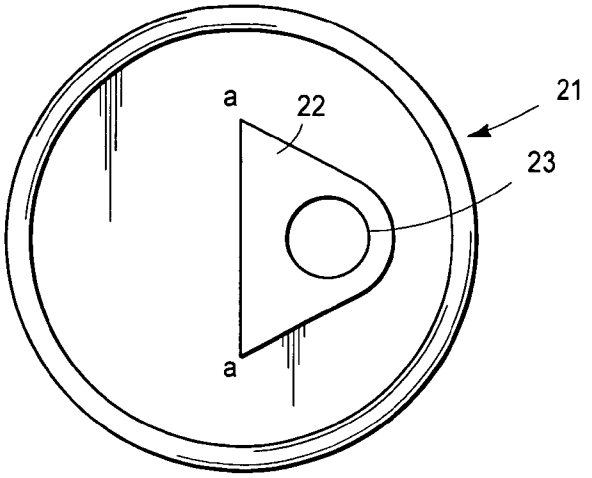


FIG. 3

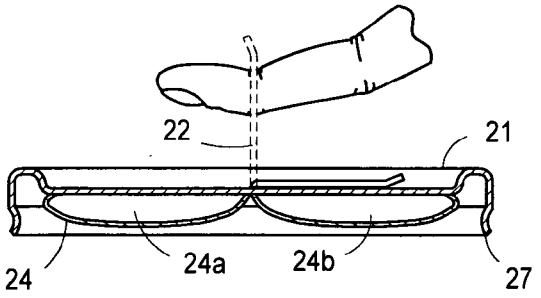


FIG. 4

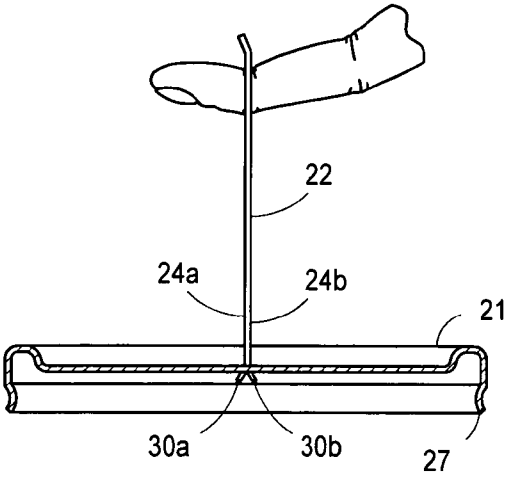


FIG. 7

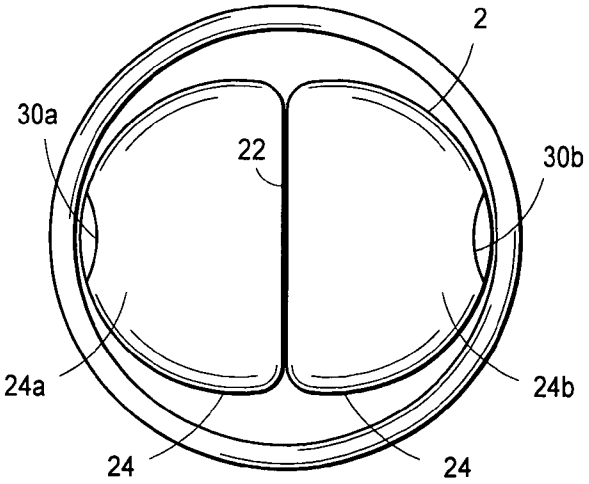


FIG. 5

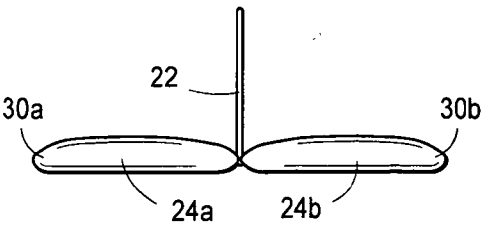


FIG. 6

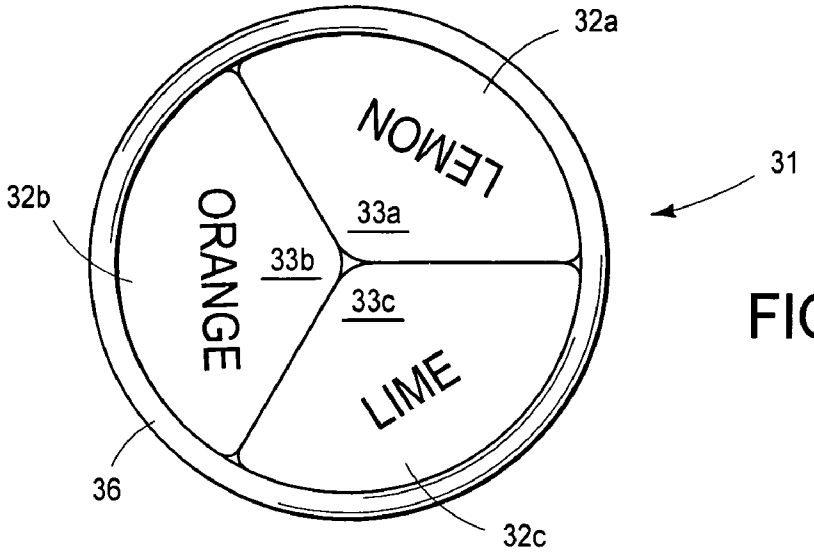

32a
LEMON
31
32b
ORANGE
33a
33b
33c
LIME
36
32c

FIG. 8

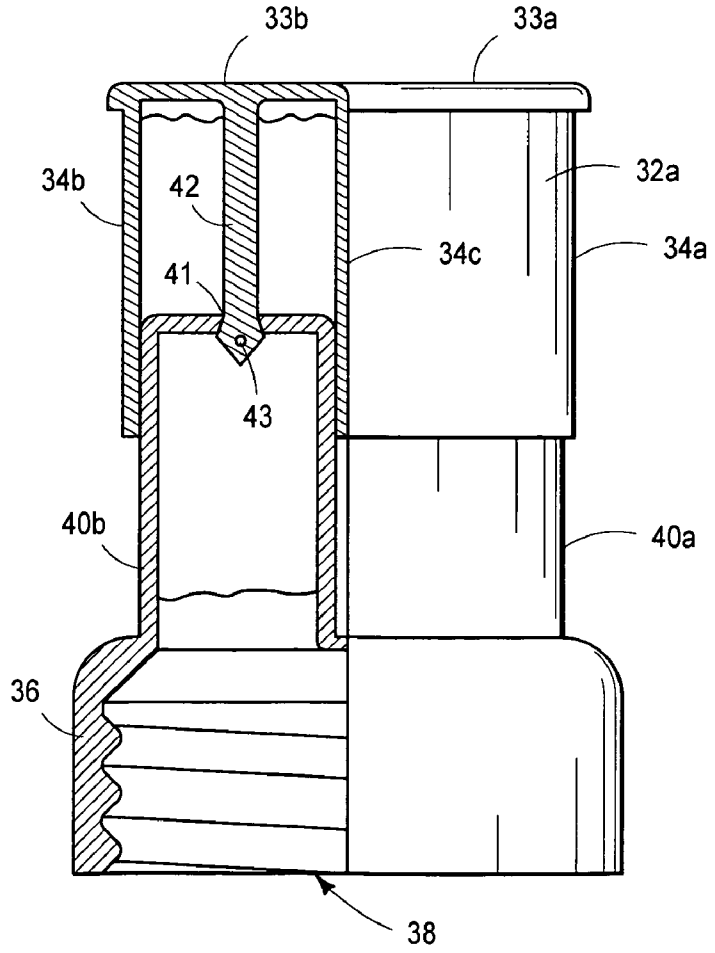

33b
33a
34b
42
32a
34c
34a
41
43
40b
40a
36
38

FIG. 9

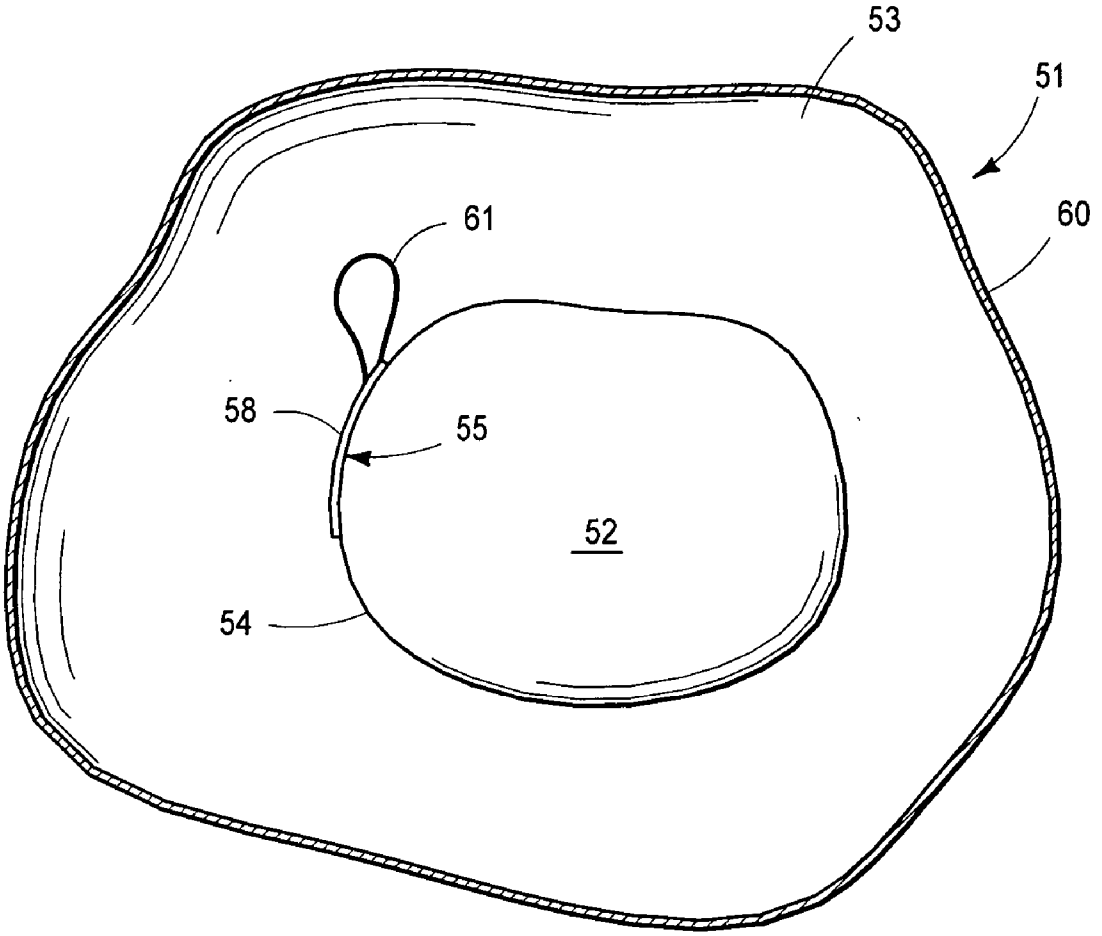


FIG. 10

PRESSURE POINT FOOD CONTAINER, STORAGE, AND MIXING SYSTEM

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to closure systems for food containers, and methods for mixing foods in portable containers. More particularly, the present invention relates to a new apparatus and process for closing portable containers, for storing and transporting foods, and mixing those foods prior to final or on-site dispensing and use. The food mixing, like the storage and transport, takes place within the container, generally prior to its opening, as chambers within the container are opened to other chambers within the same container. The food mixing operation may utilize a variety of apparatus, but in each apparatus a user, from the exterior of the container, transmits pressure or tension to one or more points, lines, or channels in one or more walls of chambers within the container. The user thereby opens one or more channels between such chambers through which food, fluids, or other materials may travel. In some apparatus, chambers may be created from flexible or frangible material such that, with the application of further pressure or tension, a user may forcefully eject the contents of a chamber or chambers, and even meter and mix foods held within the container. The present invention may be extended to uses outside the food industries to store, transport, and mix drugs, paints, chemicals, and other materials prior to final dispensing and use.

BACKGROUND ART OF THE INVENTION

[0002] Mixing of food in portable containers is not new. Processed foods, having relatively long shelf life when kept separate from other foods, have a greatly reduced shelf life when they are mixed with water or other fluids, or combined with fresh foods which have not been so treated. Consumers of food products may be called upon, or find it desirable, to store or transport their food, or eat it at a location remote from its preparation. Thus, from before the time the "picnic" was invented, people have wished to carry different kinds of foods separated from one another, and join or mix them at a location away from their point of origin. Examples of this reduction of shelf life include (i) powdered foods, for which shelf life is reduced when combined with water or other fluids to "reconstitute" them, (ii) concentrates, for which shelf life is reduced when combined with water or other fluids to dilute them, and (iii) pasturized foods, for which shelf life is reduced when combined with other foods which have not been so treated.

[0003] As a result, a variety of methods and apparatus have been developed to assist the storage and transport of foods separate from one another, and later mixing or dispensing of such foods prior to consumption. These apparatus include simple cups with tops, to more elaborate multi-chamber devices. These earlier inventions are generally directed to the mixture of two foods having different consistencies from separate containers in which the foods reside and are transported, and to the mixture of two foods in a special-purpose mixing container which is not used to transport the foods themselves. In some cases, containers designed to store or transport food and, at the same time, hold a tool useful for consuming the food within the container might be adapted to hold two kinds of foods for later mixing, or mixing after transporting. Current technology provides for hermetically sealing foods, for insulating them during storage or transport, for mixing them in chambers within containers by opening one chamber to the other after the container has been opened first, for mixing by rupturing frangible diaphrams or membranes between chambers, and by opening plugged channels between threaded chambers by "unscrewing" the chambers one from the next.

[0004] In attempting to provide containers for transporting foods (including beverages) and mixing foods at a place and time convenient to the consumer of such foods, others have devised various apparatus. Such apparatus within the prior art include:

[0005] U.S. Pat. No. 4,387,809 to Botzler, which discloses a multi-compartment stirrer device, with exterior tear-away or perforated sealable tabs affixed atop each compartment emptying slot, for food dispensing foods or additives to a beverage.

[0006] U.S. Pat. No. 4,480,926 to Lattery, which discloses a powdered food product mixing device, having a motor and rotatable shafts extending into the interior of the container, for mixing powdered food product with liquid.

[0007] U.S. Pat. No. 5,433,328 to Baron et al., which discloses an apparatus adapted to fit between a tubular container of a baby bottle and a nipple end cap, for storing a quantity of food material, with a release mechanism threadably coupled to an upper end of a baby bottle, for mixing such food material with the contents of the baby bottle.

[0008] U.S. Pat. No. 6,079,405 to Justo, which discloses an apparatus for housing and producing a final liquid comestible product (liquid baby formula) upon combination of initial (unmixed) liquid comestibles (powdered baby formula and water) residing in upper and lower chambers within the apparatus.

[0009] U.S. Pat. No. 6,596,328 B1 to Bezek et al., which discloses a consumables container with multi-functional cap.

[0010] U.S. Pat. No. 6,652,134 B2 to Lloyd, which discloses a portable beverage delivery system for preparing and delivering a multi-component beverage in which separate chambers house first and second beverage elements, which elements are mixed by rupture of a frangible wall between the chambers.

[0011] In the arena of baby bottles for holding formula particularly, a wide variety of portable containers have been developed for mixing formula with water to produce ready to eat formula.

[0012] While the inventions disclosed in these prior patents fulfill their respective objectives, these prior patents do not describe or suggest combination of foods prior to opening the container by application of pressure or tension which is transmitted to the container interior to one or more points, lines, or channels in one or-more walls of chambers within the container, thereby opening one or more channels between such chambers through which food, liquids, gels, or solids may travel. No apparatus in the prior art has been designed to store and/or transport a number of foods in separate chambers within a single container and, with the application of that pressure or tension, easily combine food in liquid form (or food suspended in liquid) with solid foods, and so allow mixing of such foods prior to opening the

(storing and transporting) container. No apparatus in the prior art has been designed to allow easy combination of foods in a portable container before opening the container merely by the application of tension, generally by pulling a tab or ring. No apparatus in the prior art has been designed to combine two or more foods in liquid form, separated during transit, to solid foods or liquid foods, in equal amounts, or in amounts controlled by the size of the chambers in which the foods reside, or in amounts the user may control as she controls the amount of pressure or tension exerted to the exterior of the container. No apparatus in the prior art has been designed which allows a user to forcefully eject one or more foods into one or more other foods in a sealed container, or allows a user to agitate foods in a sealed container once foods are combined, to fully mix such foods according to the wishes of the user, all prior to opening the container, thereby limiting or eliminating loss of food from the container (and consequent mess) as is the case of mixing in an open container. And, finally, no method in the prior art has been devised which accomplishes any of these desirable results in a single, portable, container, with or without multiple chambers. The present invention, on the other hand, accomplishes all of these functions, in a portable container in which the user may store and transport separated materials, and in which the user has control of the mixing or despensing of foods or other materials within the container prior to opening.

[0013] By utilizing the features of various embodiments of the present invention, and other features set forth below, one can accomplish all these tasks, thereby allowing foods to be (1) prepared for consumption separatly from other foods or liquids which accelerate degradation of the foods when they are combined, (2) packaged in a single, portable (and often sterile) container, (3) sealed in the container, (4) transported to a location and at a time convenient or desirable to the user, (5) combined or dispensed in a sealed container to allow easy mixing, or mixing in measured or desirable amounts, all without losing foods to the environment outside the container and then, finally, (6) accessed after opening the container, so that a user may consume the now mixed foods (or other materials) in a freshly-mixed condition.

DISCLOSURE OF INVENTION

SUMMARY OF THE INVENTION

[0014] In its simplest form, the present invention comprises apparatus in the form of a portable container for mixing solid foods, or solid foods and fluids, or solid foods with foods suspended in liquids, without first opening the container. The mixing is accomplished by means of an opening feature which, when manipulated from the exterior of the container prior to opening, transmits pressure or tension to one or more points, lines, or channels in one or more walls of separate chambers within the container. Upon such manipulation, the user thereby opens one or more channels between such chambers, through which food, or food and liquid, may travel, thereby mixing the contents of such separate chambers. The points, areas, lines, or channels, as with the remainder of the container of the present invention, are formed at the time of manufacture of the container, prior to assembly of the foods which are to be contained, or stored, or transported, or consumed, and prior to the filling and sealing of the compartments of the container.

[0015] A first preferred embodiment of this invention comprises a container for storing and transporting foods, the container having at least two, but perhaps more, separate first and second compartments. The compartments are separated from one another by a common wall, or by the separate walls of each compartment, and each compartment is closed and sealed, either individually or with a common closure (the apparatus opening feature, or "Closure"). Before closure, the interior of each compartment, and its contents may be sterilized. After closure and sealing with the Closure, the interior of each compartment of the container is, by use of the Closure, hermetically sealed away from the environment outside the container, and hermetically sealed away from the interior of each other compartment.

[0016] Each compartment may have a single volume, or one or more of the compartments may have individual volumes within separate chambers open to the remainder of the compartments. Each compartment may be filled with a combination of food and inert gas, such as nitrogen, to retard spoilage and decomposition. A first compartment (or at least one compartment) of the first preferred embodiment, resides on top of, above, or over, the second compartment (or other compartments), and there is in such embodiment a preformed channel between the first compartment and other compartments near the lowest point of the first compartment (the "Channel").

[0017] Different foods are placed within separate compartments of the container in the first embodiment, and sealed within each compartment, for subsequent storage and transport. The foods within the container, in this embodiment, primarily include at least one liquid (with or without food additives) in the first compartment, and at least one solid food in the second or other compartments. The opening of the Channel between the first compartment and other compartments therefore allows a liquid (or a liquid with food additive) to travel through the Channel, thereby allowing such liquid, in response to the urging of gravity, to fall into the other compartments containing the solid food.

[0018] Prior to the opening of the first compartment (or compartments) to other compartments in the first embodiment of the present invention, generally at the time the container is manufactured, the Channel is closed by a first frangible or pealable seal (the "First Seal"). The First Seal is situated over or within the mouth of the Channel during manufacture of the container, and is designed to be broken away from such position during the food mixing operation, thereby opening the Channel between the previously closed and sealed compartments.

[0019] Means for opening the first compartment to the other compartments is supplied in the first embodiment, generally by way of a tab or ring outside the sealed container, connected to the First Seal by a tape, wire, string, lever, or other means for transmitting tension from the tab or ring to the First Seal (the "Tension Means"). The Tension Means generally is formed to pass through the first compartment, thereby providing tension in the proper direction to separate the First Seal from the Channel (however, the Tension Means may also pass between compartments, so that it does not pass through any individual compartment).

[0020] As the Tension Means generally passes through the first compartment in the first embodiment, a second seal (the "Second Seal") is situated around the Tension Means as it

passes out of the first compartment, either through a second wall of that compartment or through some other portion of the Closure. The end of the Tension Means may be formed into a tab or ring, or the Tension Means may be firmly attached to a tab or ring, or other device by which the user may pull on the Tension Means. The Tension Means is also firmly attached at its other end to the First Seal. The Second Seal may be firmly attached to the Tension Means, with a frangible connection to the wall of the compartment (or to another part of the Closure). Alternatively, the Second Seal may be firmly attached to the wall or Closure, and simply close snugly around the Tension Means, so that the Tension Means may slip through the Second Seal as the user pulls on the Tension Means tab or ring.

[0021] In operation of the first preferred embodiment, then, the user pulls on the Tension Means tab or ring, and the tension so created by the user is transmitted by the Tension Means to the First Seal, thereby applying force to that seal to break it away from its position over or in the mouth of the Channel, thereby further allowing liquid to flow by gravity from the first compartment to the other compartments. As the Tension Means moves in response to the tension created by the user, the Second Seal also breaks away from the wall of the first compartment (or another portion of the Closure), or the Tension Means moves through the Second Seal if the Second Seal is designed to allow such movement. As a result, at least one fluid (with or without food additives) contained within the first compartment flows out of the first compartment, and into at least one other compartment, thereby combining the fluid of the first compartment with the solid already residing in at least one other compartment of the container. After a desired amount of fluid flows from the first compartment to another compartment, the user may then open the container, or first shake the container and then open it, or open it and manually mix the contents of the container, and thereafter consume (or otherwise use) the mixed foods.

[0022] In a second embodiment of the present invention, the foods primarily include at least one liquid, but oftentimes two liquids (again, with or without additives) sealed in a compartment, generally formed as a flexible pouch (the "Pouch") situated within a main compartment of a container (the "Main Compartment"). The Pouch may have one or more separate parts (or "Lobes"), and in one preferred embodiment has at least two Lobes (a "First Lobe" and a "Second Lobe"), and the Main Compartment may have within it two or more chambers. The food or foods within the Main Compartment of the second embodiment may be liquid or solid depending on the use desired, and the Main Compartment is closed and sealed at the time of food preparation with a closure (the "Lid") which seals the food intended for the Main Compartment, the First Lobe (with its first liquid) and the Second Lobe (with its second liquid) all within the Main Compartment.

[0023] After closure and sealing with the Lid, the interior of the Main Compartment of the container of the second embodiment is, by use of the Lid, hermetically sealed away from the environment outside the container, and the interior and its contents may be maintained in sterile condition if required). After closure, the first fluid is also hermetically sealed within the First Lobe of the Pouch, away from the interior of each other compartment (i.e., the interior of the Main Compartment and the interior of the Second Lobe of the Pouch), and the second liquid is hermetically sealed within the Second Lobe, again away for the interior of each other compartment. As with other embodiments of the present invention, each compartment may be filled with a combination of food (or fluid with additive) and inert gas, such as nitrogen, to retard spoilage and decomposition. The First and Second Lobes of the Pouch of the second embodiment reside on top of, above, or over, the contents of the Main Compartment (or compartments). The Lobes of the Pouch are generally formed from a flexible polyvinyl material, approximately two millimeters (2 mil) in thickness (although the thickness may vary).

[0024] The Lobes of the Pouch are formed with a frangible area or line, which area or line is designed to rupture when the Lobes are manipulated, thereby causing a rise in pressure in the fluid within the Lobes. The rise in pressure necessary to cause such rupture is predetermined, and designed to be incorporated into the second embodiment upon manufacture, but in all cases the frangible area or line will rupture before any other part of the Lobes of the Pouch rupture. The frangible area or line may be located at the periphery of the Lobes, or it may be located anywhere else in the flexible material forming the Lobes found to be desirable for spreading the contents of the lobes over or into the contents of the Main Compartment. In one version of the second preferred embodiment, each Lobe of the Pouch is formed from two polyfilm sheets, the Lobes being sealed around their perimeters by application of heat after being filled with their fluid and other contents, and attached to a pull-tab.

[0025] Different foods are placed within each compartment of the container of the second embodiment, and sealed within each compartment, for subsequent storage and transport. The foods within the container, in this embodiment, primarily include at least one liquid (with or without food additives) in the Lobe or Lobes of the Pouch, and at least one either solid or liquid food, or a combination of both solid and liquid foods, in the Main Compartment. Each Lobe may contain the same or dissimilar liquids. For example, Edible oil may be placed in one Lobe, and vinegar may be placed in the other Lobe, thereby producing a salad dressing for lettuce residing in the Main Compartment. The opening of the Pouch at the frangible portions of its Lobes therefore allows a liquid (or a liquid with food additive) to travel through the opening created by pressure at the frangible portion, thereby allowing such liquid, in response to the pressure so applied, to fall into the Main Compartment containing the other foods. Thus, using again the example of a salad with dressing, mixed greens or vegetables in the Main Compartment may be dressed immediately prior to use as a mixed salad, after storage or transport by the user. The user may thereby preserve the fresh character of the newly-dressed greens or vegetables, and the salad may therefore be consumed even after considerable time, or after traveling considerable distance, without any discernable wilting and prior to any decomposition of its ingredients.

[0026] Prior to the breaking of the frangible portion (or portions) of the Pouch, and consequent release of liquids from its Lobes to the Main Compartment, the Pouch is situated near the underside of the Lid (when the container is oriented Lid-side up) in one version of the second embodiment, and preferably secured to the Lid by releaseable adhesive. This placement and fastening allows the Lobes to peel off the Lid when tension is applied by a user. The

securing of the Lobes of the Pouch of the Lid also allows the "nesting" or stacking of Lids prior to filling the Main Compartment, as nested Lids may be efficiently stored to save space prior to use.

[0027] The Lid is further provided with an opening, generally in the shape of a line, but in some embodiments in the shape of a break, slot, or hole (the Opening) through which may pass a means for manipulating the Pouch to create pressure within its Lobes. The Opening may be as simple as a slit or hole, formed in the Lid, through which a portion of the Pouch may pass, or the opening may in addition have a seal situated within or around it to keep liquids within the Main Compartment. The seal, when used, is also situated around the Pouch as its extends through the Lid (during operation of the invention immediately prior to consumption of the contents of the container).

[0028] Means for applying tension to the Pouch through the Opening in the Lid is supplied, generally by way of a tab or ring outside the sealed container, connected to the Lobes of the Pouch by a paper or plastic tape (the "Tension Means"). The Tension Means generally passes through the Opening in the Lid, thereby allowing a user to exert tension on the Lobes of the Pouch. The end of the Tension Means may be formed into a tab or ring, or the Tension Means may be firmly attached to a tab or ring, or other device by which the user may pull on the Tension Means. By pulling on the Tension Means, therefore, a user may thereby release fluids from the Lobes through the frangible areas (when broken open as explained below). A seal in or around the Opening, if employed, also then surrounds the Tension Means, and may be firmly attached to the Tension Means, with a frangible connection to the Lid, so that the seal separates from the Lid and moves with the Tension Means during operation as set forth below. Alternatively, the seal may be firmly attached to the Lid in or near the Opening, and simply close tightly around the Tension Means, so that the Tension Means may slip through the seal as the user pulls on the tab or ring.

[0029] The Tension Means is formed to pass through the Opening near the center of Lid in one version of the second embodiment of the present invention, thereby providing tension in the proper direction to create pressure within the Lobes of the Pouch as the Lobes are pulled through the Opening. At the same time, the tension transmitted by the Tension Means to the Pouch separates the Lobes from the underside of the Lid, and pulls the Lobes toward the center of the Lid. Of course, the Tension Means may, in the alternative, also pass through a line at one side of the Lid, with the result that the contents of a single Lobe will be forcefully ejected from the frangible portion of that Lobe as the frangible portion is pulled across the entire contents of the Main Compartment.

[0030] In operation, the user pulls on the tab or ring of the Lid, and the tension so created by the user is transmitted by the Tension Means to the Pouch, thereby applying force to its Lobes residing near the underside of the Lid, and preferably secured to the Lid by releasable adhesive. When such force is applied to the Lobes, they are urged toward the Opening in the Lid, and so the Lobes peel off of, or away from, the Lid, the releaseable adhesive securing the Lobes to the Lid giving way so the Lobes may separate from the Lid. By continued application of tension through the Tension Means, the user pulls the frangible portions of the Pouch toward the Opening, and the portions of the Lobes initially residing nearer the center of the Lid are pulled toward, and then partially through the Opening. As the Lobes are pulled through the Opening, the Lobes are also squeezed as they enter the Opening, thereby decreasing the volume within the Lobes of the Pouch. As liquids are largely incompressible, the decreasing volume increases pressure within the Lobes, while also stretching the material from which the Lobes are constructed, and particularly stretching the material at the frangible portions of the Lobes. Accordingly, by continued application of tension, the frangible portions of the Lobes break open at the predetermined break point pressure, thereby allowing fluids to exit the Lobes of the Pouch, and liquids within the Lobes begin to be released to the Main Compartment.

[0031] By continued application of tension, the user pulls additional material of the Pouch to and through the Opening in the Lid, thereby maintaining some pressure within its Lobes (less than the break point pressure), which pressure when maintained forcefully ejects the contents of the Lobes from the now-open frangible areas at the end of each Lobe distal from the Opening. As the user pulls additional material of the Pouch to and through the Opening in the Lid, the openings created at the frangible portions of the Lobes are also moved across the contents of the Main Compartment, as the frangible portions of the Lobes residing initially near the exterior wall of the Main Compartment are, in one version of the second embodiment, pulled toward the Opening at the center of the Lid (and in other versions of the second embodiment pulled from one side of the Main Compartment to the Opening near the other side of the Main Compartment.

[0032] In a third embodiment of the present invention, a container for storing, transporting, and mixing liquid foods or other fluids has at least two, but in most preferred embodiments more, separate compartments. In one version of the third preferred embodiment, a first, second, and third separate chambers, each have open lower ends, walls closing their upper ends, and at least three walls between their upper and lower ends. These three chambers may be termed hereafter the "Dispensing Chambers," and the walls at their upper ends may be termed the "Roof" of each Dispensing Chamber.

[0033] The Dispensing Chambers of one version of the third embodiment are, at the time of manufacture, situated as one or more caps over "bosses" extending from a fourth chamber, each of which boss has vertical walls, and an opening at their lower ends to a fourth chamber (the "Connecting Chamber"). The Connecting Chamber also has an open end, and means for fastening to other containers in or on that open end, generally by way of threads formed in a circular wall of the open end of the Connecting Chamber. The bosses of the Connecting Chamber are each also closed by a wall at their upper, or distal, end, except for passages which extends through those walls. At their lower, or proximal, end, the bosses are, as noted above, open to the Connecting Chamber, which is in turn open at its other (generally lower) side. The passages through the walls at the upper end of the bosses may be of any shape, and in a range of sizes, however in most preferred embodiments the passages are circular in shape and, in area, about one tenth the area of the wall through in which they are formed.

[0034] The Connecting Chamber has three bosses in one version of the third preferred embodiment, each of which boss has three walls, two of which walls are substantially flat, with the third wall substantially circular. Each such boss of the Connecting Chamber is formed to fit within the open end of each of the three Dispensing Chambers, and the three Dispensing Chambers are fitted over the Connecting Chamber during manufacture in most versions of the third preferred embodiment. The open ends of each of the three Dispensing Chambers are thereby closed during manufacture as the three bosses of the Connecting Chamber are fitted within the open ends of the three Dispensing Chambers. As a result of this manufacture, each of the three Dispensing Chambers is closed, thereby creating three compartments closed to the movement of liquids from their interior to the environment. The walls of the Dispensing Chambers in one version of the third embodiment may each slide around the walls of the three bosses of the Connecting Chamber to allow the interior of the walls of the Dispensing Chambers to slide along the exterior walls of the bosses of the Connecting Chamber. Thus, the volume within the three Dispensing Chambers may increase or decrease in volume.

[0035] Each of the walls of each Dispensing Chamber are designed to slide against one another in most versions of the third preferred embodiment, and are formed to fit closely together. Thus, two of three walls of each of three Dispensing Chamber may be formed substantially flat, with a common angle of 120 degrees between them, the third wall of each of the three Dispensing Chambers being generally circular in shape. The vertical walls of the bosses are generally of the same shape as the Dispensing Chambers, but slightly smaller, so that the Dispensing Chambers may fit over and slide snugly against the corresponding wall of the bosses. The three open ends of the three Dispensing Chambers in such preferred embodiment fit over, and are formed to receive, the three bosses of the Connecting Chamber as the three bosses fit within the three open ends of the three Dispensing Chambers. As the shape of each boss is substantially the shape of each other boss and, as noted above, each Dispensing Chamber is fitted one to the next, the three Dispensing Chambers fit together along their flat walls when the container is assembled. In such a configuration, the remaining (three) walls of the three Dispensing Chambers, i.e., the curved walls facing away from the center of the three Dispensing Chambers, create a generally circular shape around their exterior. Between each Dispensing Chamber and each boss may reside a seal, capable of preventing liquids from moving between the vertical walls of the bosses and the corresponding vertical walls of the Dispensing Chambers. In use, each of the three Dispensing Chambers acts largely independently from each other Dispensing Chamber, but each Dispensing Chamber is guided by the walls of the corresponding boss of the Connecting Chamber to which it is fitted.

[0036] Each of the three Dispensing Chambers are further lifted at the time of manufacture with a plunger, with a shaft, extending from the Roofs of the Dispensing Chambers axially through the Dispensing Chambers, to the walls at the closed upper ends of each the bosses of the Connecting Chamber, and through the passages formed in the closed upper ends of the bosses. While the plungers are not wide enough to close the passages throughout most of their length, the plungers are fitted at their ends with widened portions which act as stoppers when inserted into the passages in the closed ends of each of the bosses of the Connecting Chamber. Each of the three Dispensing Chambers may be further fitted at the time of manufacture with springs extending from the Roofs of the Dispensing Chambers to the closed end of each boss of the Connecting Chamber, or to stops situated within the volumes of the Dispensing Chambers.

[0037] At the time of manufacture, each of the stoppers of each of the plungers are inserted through the passages at the upper end of the bosses after each Dispensing Chamber is filled with a liquid. As the Dispensing Chambers may be spring loaded by the springs within them (or have other means to raise them as against the bosses, such as an "overrideable" locking feature), the Dispensing Chambers are raised until the stoppers at the end of each plunger fits up and into the passages in the tops of the bosses of the Connecting Chamber. The shafts of the plungers, with stoppers on their ends, are then maintained in the raised position by the springs (or other raising means) within the Dispensing Chambers, with a different liquid in each Dispensing Chamber. In such position, the stoppers at the ends of the plungers form liquid-tight seals with the passages in the tops of bosses of the Connecting Chamber, the stoppers acting to prevent fluids within the Dispensing Chambers from flowing through the passages and into the Connecting Chamber below.

[0038] The fluids within each Dispensing Chamber may be different one to the next, or they may be the same fluid but held in set, measured amounts (so that a user may mix such measured amounts in a dosage regimen, for instance). Where the fluids are different, they may consist of flavorings or syrups, or any other fluid containing food or non-food substance where controlled dosages of different fluids are desirable.

[0039] In use, a user wishing to dispense a metered amount of fluid into the Connecting Chamber of one version of the third embodiment, or wishing to dispense a particular fluid from the assortment of fluids residing in the Dispensing Chambers, applies force to the exterior of the Roof of the Dispensing Chamber holding the desired fluid. Such force acts to depress the appropriate Dispensing Chamber a desired distance to override the locking feature of the selected Dispensing Chamber, or works against and overcomes the spring loading of that chamber. Depressing such Dispensing Chamber thereby moves the shaft of the plunger of that Dispensing Chamber through the passage of the corresponding boss upon which such Dispensing Chamber resides, and so moves the corresponding stopper away from such passage, thereby opening such passage to the movement of fluid from the Dispensing Chamber to the boss below. At the same time, the volume of the activated Dispensing Chamber is reduced, thereby forcing the selected fluid through the passage in the upper end of the boss, and into the Connecting Chamber below. The actuated Dispensing Chamber may then be pulled back to re-engage the locking feature (or allowed to return to its original position by action of its spring), returning the shaft and stopper of the plunger to its original position, thereby sealing the passage through which the fluid passed from the actuated Dispensing Chamber into the Connecting Chamber. A container to which the Connecting Chamber is affixed may then be shaken to mix the fluid just delivered, another Dispensing Chamber activated in the same fashion to provide a different

fluid to the Connecting Chamber (and affixed container), and so multiple fluids can be metered singly or together to achieve the desired mixture of fluids in a single container.

[0040] In yet a fourth very simple preferred embodiment, this invention again comprises a container for storing and transporting foods, the container having at least two separate compartments. The compartments are separated from one another by the wall of the first compartment, as the first compartment (the inner compartment) resides within the second compartment (the outer compartment). Before closure, the interior of each compartment and its contents may be sterilized. Each compartment is closed and sealed individually. Thus, after closure and sealing, the interior of each compartment of the container is hermetically sealed away from the environment outside the container, and hermetically sealed away from the interior of each other compartment.

[0041] The inner compartment of the fourth preferred embodiment may have a single volume, or individual volumes within separate chambers. Each compartment of the container may be filled with a combination of food and inert gas, such as nitrogen, to retard spoilage and decomposition. The inner compartment resides within the outer compartment, and there is in the inner compartment of such embodiment a pre-formed channel between the inner compartment and outer compartment, formed in the wall of the inner compartment (the "Channel"). The wall of the inner compartment is generally rigid or semi-rigid in character, so that a sealing device may be used to seal the Channel, while the wall of the outer compartment is generally flexible enough that a user may and manipulate the sealing device of the inner container through the wall of the outer container. Of course, the container may include multiple inner compartments in other embodiments, each of such inner compartments containing a different food or combination of fluids and foods.

[0042] Different foods are placed within separate compartments of the container in the fourth embodiment, and sealed within each compartment, for subsequent storage and transport. The foods within the container, in this embodiment, primarily include at least one liquid (with or without food additives) in the inner compartment, and at least one solid food in the outer. The opening of the Channel between the inner compartment and the outer compartment therefore allows a liquid (or a liquid with food additive) to travel through the Channel, thereby allowing such liquid to travel into the outer compartment containing the solid food.

[0043] Prior to the opening of the inner compartment (or compartments) to outer compartment in the fourth embodiment of the present invention, generally at the time the container is manufactured, the Channel is closed by a first frangible or pealable seal (the "First Seal"). The First Seal is situated over or within the mouth of the Channel during manufacture of the container, and is designed to be broken away from such position during the food mixing operation, thereby opening the Channel between the previously closed and sealed compartments. Means for opening the inner compartment to the other compartments is supplied in the fourth embodiment, generally by way of a tab or lever outside the inner sealed container. Means for opening the outer compartment, to supply access to the contents of the outer compartment, is also supplied, generally by way of a plastic zipper. However, the flexible outer compartment may also be accessed by merely tearing the outer compartment open by hand.

[0044] In operation of the fourth preferred embodiment, then, the user moves the tab or lever residing on the inner compartment, thereby applying force to the seal of the inner compartment, thereby breaking it away from its position over or in the mouth of the Channel. The user's access to the tab or lever is through the flexible outer wall of the outer compartment, rather than directly. By moving the seal, the user allows fluids to flow from the inner compartment to the outer compartment. After a desired amount of fluid flows from the inner compartment to outer compartment, the user may then open the outer compartment of the container, or first shake the container and then open it, or open it and manually mix the contents of the container, and thereafter consume (or otherwise use) the mixed foods.

[0045] The more important features of the invention have thus been outlined, rather broadly, so that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. Additional features of specific embodiments of the invention will be described below. However, before explaining preferred embodiments of the invention in detail, it may be noted briefly that the present invention substantially departs from pre-existing apparatus and methods of the prior art, and in so doing provides the user with the highly desirable ability to store, transport, mix, and dispense foods and fluids at a location distant from their preparation, and at a time later than their preparation, using a variety of specific apparatus and methods. Each such apparatus and method set forth above is an example of the invention as a whole. However, the present invention is best considered as all aparatii and methods which allow a user to reach these goals by means of the application of pressure or tension from the exterior of such aparatii, prior to opening such aparatii to the exterior environment, which pressure or tension is transmitted to the interior of the apparatus.

[0046] Thus, other apparatus which is not specifically addressed in this disclosure may fall within the claims of this patent. As but one example of such other apparatus, a container may be provided for holding foods, within which container a plastic tube may be deployed so that it is situated over or within the food. The tube in such embodiment would contain another food, such as salad dressing, and extend through an aperture in the cover of the container or, in the best mode, have attached to it a pull tab or ring, or other gripping means by which a user could apply tension to the end of the plastic tube. Upon applying such tension, some of the plastic tube, or all of it, could be pulled up and through the cover aperture. The aperture would be of a dimension somewhat smaller than the exterior of the tube so that, when a portion of the tube is pulled through the aperture, pressure is increased within the tube. Such pressure would force the contents of the tube out the end of the tube, which end may be opening if the tube is of small cross-sectional dimension, or closed if the tube is of large dimension. In the case of a closed end to the plastic tube, the end may be closed with plastic having a thickness less than that of the rest of the tube, or a fold in the end of the tube, or other closure means which will allow the tube to open when pressure is increased within the tube. The container or its cover may additionally have an opening wider than the aperture, by which one who

fills the container may insert the tube into the container, and move the tube or pull tab, or connecting member between the tube and pull tab or ring, so that the tube is optimally positioned within the container for filling and subsequent use.

[0047] With the ability to open chambers within the apparatus as a whole prior to using, the user may mix solid and liquid foods, or fluid to fluid, and mix these things more efficiently and cleanly, and often with greater control over the mixing process. Such delayed mixing results in the desirable ability to keep materials fresher and more usable to a time and location chosen by a user, where earlier mixing of such materials may reduce freshness or usability.

OBJECTS OF THE INVENTION

[0048] A principal object of the present invention is to provide a variety of containers by which a user may store at least two separate materials separately within such containers, store such materials within such containers if desirable, and mix such materials within such containers.

[0049] A further principal object of the present invention is to provide a variety of containers for mixing foods prior to opening the containers, thereby reducing waste and mess.

[0050] A further principal object of the present invention is to provide a variety of containers by which materials which degrade when mixed may be stored and transported separately, and then mixed at a later time or at a remote location, to thereby keep such materials in undegraded condition.

[0051] A further principal object of the present invention is to provide a variety of containers by which foods may be stored and transported separately, and then mixed at a later time or at a remote location, to thereby keep such foods fresh.

[0052] A further principal object of the present invention is to provide mechanisms for opening separate compartments within containers to other compartments within those containers, prior to opening such containers.

BRIEF DESCRIPTION OF DRAWINGS

[0053] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate four embodiments of the present invention, and such drawings, together with the description set forth herein, serve to explain the principles of the invention.

[0054] **FIG. 1** is a cross-section drawing of one preferred container of the present invention, which shows two compartments, a channel between such compartments, and a closure for such channel consisting of a tension means attached to a tab or ring on one end, and attached to a seal at its other end. **FIG. 1** also shows a second seal which keeps materials within the container during storage or transport, but allows movement of the tension means during mixing of the contents of the compartments.

[0055] **FIG. 2** is a cross-section drawing of the container shown in **FIG. 1** in which a user is applying force to the tension means to thereby break the first seal, and so open the channel between compartments within the container.

[0056] **FIG. 3** top down view drawing of a lid with a pull tab, consistent with a second preferred embodiment of the present invention, wherein the lid may be affixed to a variety of containers of standard size or configuration.

[0057] **FIG. 4** is a cross section drawing of the lid of **FIG. 3** showing the pull tab appearing in **FIG. 3** and, on the other or under side of the lid, a pouch consisting of two lobes, within which two or more materials may be placed and stored before mixing.

[0058] **FIG. 5** is a top down view of the lid of **FIG. 3** showing the underside of the lid, and the pouch consisting of two lobes, within which two or more materials may be placed and stored before mixing.

[0059] **FIG. 6** is a side view of the pouch, with two lobes, which may be attached to the lid of **FIG. 3**, along with the tension means appearing in **FIG. 3** and **FIG. 4**.

[0060] **FIG. 7** is a side view of the lid appearing in **FIG. 3**, in which the pouch appearing in **FIG. 4** has been squeezed as it is drawn by the tension means appearing in **FIG. 6** through the opening through which the tension means extends upon manufacture.

[0061] **FIG. 8** is a top down view drawing of a measuring and dispensing apparatus, consistent with a third preferred embodiment of the present invention, wherein there separate caps, situated over bosses are arranged in close proximity to one another, and bear labels which indicate the contents in each of the caps.

[0062] **FIG. 9** is a mixed side view, with cross section cutout, drawing of the measuring and dispensing apparatus of **FIG. 8**, showing the exterior of one cap arranged over its corresponding boss on the right and, on the left, showing the interior of a second dispensing chamber under the cap, a connecting chamber below the dispensing chamber, a passage between the dispensing chamber and the connecting chamber, and a stopper at the end of the shaft of a plunger affixed axially in the dispensing chamber and extending through the passage.

[0063] **FIG. 10** is a side view drawing of the present invention, wherein an inner compartment is enclosed within an outer compartment, and a channel with closure is provided in the wall of the inner compartment for the flow of fluids from the inner compartment to the outer compartment when a user operates a closure over such channel.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

First Preferred Embodiment

[0064] Referring initially to **FIG. 1**, a first embodiment of the present invention is shown in cross section. In **FIG. 1 a** container **1** for storing and transporting foods is shown with a closure **2** is situated across top of container **1**. With closure **2** in place over top of container **1**, separate first compartment **3** and second compartment **4** are created in container **1**. Separate first compartment **3** may be created by compartment wall **3***a* and closure **2** or, in the alternative, separate first compartment **3** may be created by wall **3***a* and a second wall **3***b* (not shown) residing under closure **2**. Separate second compartment **4** may be created by container wall **4***a* and backside of wall **3***a* of separate first compartment **3**. Separate first compartment **3** and separate second compartment **4** are closed and sealed, generally after the interior of

each compartment is sterilized, and each compartment is filled with a substance, generally separately contained foods in combination with inert gas, such as nitrogen, to retard spoilage and decomposition.

[0065] Between first compartment **3** and second compartment **4** of **FIG. 1**, a pre-formed channel **5** is formed, generally near the lowest point of first compartment **3**. Channel **5** is closed by a first frangible or pealable first seal **6**, situated over or within the mouth of channel **5** during manufacture of container **1**. First seal **6** is designed to be broken away from its position over mouth of channel **5** during the food mixing operation, thereby opening channel **5** between previously closed and sealed first compartment **3** and second compartment **4**. The opening of channel **5** between first compartment **3** and second compartment **4** allows a fluid (or a fluid with food additive) to travel through channel **5**, thereby allowing the contents of first compartment **3** to fall into second compartment **4** in response to the urging of gravity.

[0066] Means for opening first compartment **3** to second compartment **4** appears in **FIG. 2** in the form of a tab or ring **10**, having a hole **11** removably affixed to the upper side of closure **2**. Tab **10** is connected to first seal **6** by a tape **12** transmitting tension from tab **10** to first seal **6**. Tape **12** is formed to pass through first compartment **3**, thereby providing tension in the proper direction to separate first seal **6** from channel **5**. A second seal **13** is situated around tape **12** as it passes out of an opening **14** in closure **2** from first compartment **3**. Second seal **13** may be firmly attached to tape **12**, with a frangible connection to wall **3***b* of first compartment **3** (or to closure **2** where first compartment **3** is created by wall **3***a* and closure **2**). Alternatively, second seal **13** may be firmly attached to wall **3***b* or closure **2**, and simply close snugly around tape **12**, so that tape **12** may slip through second seal **13** as the user pulls on tape **12** using tab **10**. The interior of each compartment may be sterilized and filled with food or other materials, and such food or other materials may be sterilized prior to such filling. After closure and sealing with closure **2**, the interior of each compartment of container **1** is, by use of the closure, hermetically sealed away from the environment outside the container, and hermetically sealed away from the interior of each other compartment.

[0067] Referring now to **FIG. 2**, a second cross section of the first preferred embodiment of **FIG. 1** is shown as it is operated by a user. **FIG. 2** shows all components of container **1** of **FIG. 1**, and in addition shows how a user may, in operation of the first preferred embodiment, pull on tab **10** using hole **11**, thereby breaking tab **10** away from closure **2** with the application of tension to tape **12**. The tension so created by the user is transmitted by tape **12** to first seal **6**, thereby applying force to first seal **6** to break it away from its position over the mouth of channel **5**, thereby further allowing fluid to flow by gravity from first compartment **3** to second compartment **4**. As tape **12** moves in response to the tension created by the user, second seal **13** also breaks away from wall **3***b* of first compartment **3** (or away from closure **2** when closure **2** is used to close first compartment **3**), or tape **12** moves through second seal **13** if second seal is designed to allow such movement. As a result, at least one fluid (with or without food additives) contained within first compartment **3** flows out of first compartment **3**, and into second compartment **4**, thereby combining the fluid of first compartment **3** with the solid already residing second compartment **4** of container **1**.

Second Preferred Embodiment

[0068] Referring now to **FIG. 3**, a second embodiment of the present invention is shown in a top down view drawing. In **FIG. 3**, lid **21** of the second embodiment also shows a pull tab **22**, with a hole or ring **23** extending through an opening a-a near the center of lid **21**. Lid **21** may be affixed to a variety of containers of standard size or configuration (not shown), and cover the main compartment of such containers (also not shown).

[0069] **FIG. 4** shows lid **21** of **FIG. 3** in cross section, with flexible pouch **24** affixed to the underside of lid **21**. Pouch **24** in **FIG. 4** has a first lobe **24***a* and a second lobe **24***b*, and each of these lobes are attached to pull tab **22** near the center of lid **21**. In **FIG. 4**, pull tab **22** has been moved to a vertical position extending from opening a-a near the center of lid **21**, having been previously deployed from its storage position against the top of lid **21**. Lid **21** is otherwise of standard configuration, having a lip **27** which may be engaged with the edge of the substantially vertical wall of a generally circular container (not shown). Foods or other fluids may be placed in pouch **24**, which is then sealed to contain the contents so placed. When lid **21** is then placed over the main compartment of a container of standard size or configuration (not shown), pouch **24** is situated under lid **21**, and within the main compartment of such container (also not shown).

[0070] **FIG. 5** shows the underside of lid **21** of **FIG. 3** and **FIG. 4**, and flexible pouch **24** removably affixed to the underside of lid **21**, with pouch **24** in this case having lobes **24***a* and **24***b*. Lobes **24***a* and **24***b*, residing on top of, above, or over, the contents of a main compartment (or compartments) of a standard container (not shown), are generally formed from a flexible polyvinyl material, approximately two millimeters (2 mil) in thickness. After closure and sealing with lid **21**, the interior of the main compartment of the container (not shown) over which the lid is placed is hermetically sealed away from the environment outside the container, and the interior and its contents may be maintained in sterile condition if required. After closure, a first fluid is also hermetically sealed within lobe **24***a* of pouch **24**, and a second fluid is hermetically sealed within lobe **24***b*. As with other embodiments of the present invention, each compartment may be filled with a combination of food (or fluid with additive) and inert gas, such as nitrogen, to retard spoilage and decomposition.

[0071] In **FIG. 5**, lobes **24***a* and **24***b* of pouch **24** are each formed with a frangible area or line **30***a* and **30***b*, which areas or lines are designed to rupture when lobes **24***a* and **24***b* are manipulated. Frangible areas or lines **30***a* and **30***b* will rupture before any other part of lobes **24***a* and **24***b* of pouch **24** ruptures. Frangible areas or lines **30***a* and **30***b* may be located at the periphery of lobes **24***a* and **24***b*, or they may be located anywhere else in the flexible material forming lobes **24***a* and **24***b* found to be desirable for spreading the contents of lobes **24***a* and **24***b* over or into the contents of the main compartment (not shown) below lid **21**. In **FIG. 5**, each of lobes **24***a* and **24***b* of pouch **24** is formed from two polyfilm sheets, and each are sealed around their perimeters by application of heat after being filled with their fluid and other contents, and attached to pull-tab **22**.

[0072] **FIG. 6** shows flexible pouch **24** in cross section as seen in **FIG. 4**, but separately from lid **21**, with first lobe **24***a* and second lobe **24***b*, and each of these lobes attached to pull tab **22**. During manufacture, lobes **24***a* and **24***b* of pouch **24** are filled fluids, and thereby expanded, and flexible pouch **24** is then affixed to the underside of lid **21** near its center of lid **21**. Pull tab **22** is inserted through opening a-a, and then pressed against the top of lid **21** for storage or transport.

[0073] **FIG. 7** shows lid **21** of **FIG. 3** in cross section as in **FIG. 4**. In **FIG. 7**, however, the user has manipulated flexible pouch **24** by pulling on pull tab **22**, thereby removing pouch **24** from the underside of lid **21**, lobes **24***a* and **24***b*, which are attached to pull tab **22**, have been drawn toward and partially through opening a-a. Lobe **24***a* and **24***b* of pouch **24** have each been subjected to pressure as much of each lobe was drawn toward and through opening a-a, and such pressure has resulted in rupture of frangible areas or lines **30***a* and **30***b*. As frangible areas or lines **30***a* and **30***b* are located at the periphery of lobes **24***a* and **24***b* in **FIG. 7**, the fluid contents of each lobe has been ejected from the distal ends of lobes **24***a* and **24***b* as each lobe was drawn to and partially through opening a-a, thereby spreading the contents of lobes **24***a* and **24***b* over or into the contents of the main compartment (not shown) below.

Third Preferred Embodiment

[0074] Referring now to **FIG. 8**, a third embodiment of the present invention is shown in a top down view drawing. In **FIG. 8**, cap **31** is comprised of three separate compartments **32***a*, **32***b*, and **32***c* (also termed herein "dispensing chambers"). The dispensing chambers are bounded at their upper ends by end walls or roofs **33***a*, **33***b*, and **33***c* (as shown in **FIG. 9**), and each chamber **32***a*, **32***b*, and **32***c* has additional walls between their roofs and their open ends (not shown in **FIG. 8**). Each chamber **32***a*, **32***b*, and **32***c* is situated as one or more caps over "bosses" (not shown) extending from a fourth connecting chamber **36**.

[0075] Turning to **FIG. 9**, the third embodiment of the present invention shown in **FIG. 8** is shown side view, with one half of the embodiment shown in cross section. **FIG. 9** shows two of the three separate dispensing chambers **32***a*, **32***b*, and **32***c* found in **FIG. 8**, and chamber roofs **33***a*, **33***b*, and **33***c*. In addition, **FIG. 9** shows additional chamber walls **34***a*, **34***b*, and **34***c*, each of which walls engage with the corresponding walls of bosses **40***a* and **40***b* extending from connecting chamber **36**. Connecting chamber **36** has an open end **38**, and means for fastening connecting chamber **36** at its open end **38** to other vessels in or on that open end. Such means generally consists of threads formed in the generally cylindrical interior wall of the open end **38** of connecting chamber **36**.

[0076] In **FIG. 9**, bosses **40***a* and **40***b* of connecting chamber **36** are also closed by walls **37** at the upper, or distal, end of each boss, except for passages **41** which extends through each of walls **37**. Passages **41** through walls **37** at the upper end of bosses **40***a* and **40***b* may be of any shape. Each boss **40***a* and **40***b* of connecting chamber **36** is formed to fit within the open end of each dispensing chamber **32***a*, **32***b*, and **32***c*. Each dispensing chamber **32***a*, **32***b*, and **32***c* is thereby closed, thereby creating three compartments closed to the movement of liquids from their interior to the environment. As the interior of walls **34***a*, **34***b*, and **34***c* of dispensing chambers **32***a*, **32***b*, and **32***c* may slide along the exterior walls of bosses **40***a* and **40***b* of connecting chamber **36**, the volume within dispensing chambers **32***a*, **32***b*, and **32***c* may increase or decrease. In use, dispensing chambers **32***a*, **32***b*, and **32***c* act largely independently from each other, but each dispensing chamber is guided by the walls of the corresponding boss of the connecting chamber to which it is fitted.

[0077] Each dispensing chamber **32***a*, **32***b*, and **32***c* is fitted at the time of manufacture with plunger, with a shaft **42**, extending from roofs **33***a*, **33***b*, and **33***c* of dispensing chambers **32***a*, **32***b*, and **32***c* axially through the dispensing chambers, to walls **37** at the closed upper ends of each boss **40***a* and **40***b* of connecting chamber **36**, and through passages **41** formed in the walls **37** at the closed upper ends of bosses **40***a* and **40***b*. While the plungers are not wide enough to close passages **41** throughout most of the length of shafts **42**, the plungers are fitted at their ends with widened portions **43** which act as stoppers when inserted into passages **41**. When dispensing chambers **32***a*, **32***b*, and **32***c* are in raised position, stoppers **43** at the ends of shafts **42** form liquid-tight seals with passages **41**.

Fourth Preferred Embodiment

[0078] Referring now to **FIG. 10**, a fourth embodiment of the present invention is shown. In **FIG. 10**, a container **51** for storing and transporting foods is shown, the container having at least an inner compartment **52** and an outer compartment **53**. Inner compartment **52** is separated from outer compartment **53** by wall **54** of inner compartment **52**, as inner compartment **52** resides within outer compartment **53**. Inner compartment **52** and outer compartment **53** are each closed and sealed. Thus, after closure and sealing, the interior of each compartment of container **51** is hermetically sealed away from the environment outside the container, and hermetically sealed away from the interior of each other compartment. Inner compartment **52** resides within outer compartment **53**, and a pre-formed channel **55**, formed in wall **54** of inner compartment **52**, runs between inner compartment **52** and outer compartment **53**. Wall **54** of inner compartment **52** is generally rigid or semi-rigid in character, so that a sealing device **58** may be used to seal channel **55**. Wall **60** of outer compartment is generally flexible enough that a user may manipulate sealing device **58** of inner container **52** through wall **60** of outer compartment **53**. Channel **55** may be additionally closed by a first frangible or pealable seal (not shown) between wall **54** of inner compartment **52** and sealing device **58**. Means for opening **61** inner compartment **52** to outer compartment **53** may be supplied, generally by way of tab or lever **61**. Means for opening outer compartment **53** (not shown), to supply access to the contents of the outer compartment, may also be supplied.

[0079] In operation of the preferred embodiment of **FIG. 10**, a user moves tab or lever **61** affixed over channel **55**, thereby opening channel **55** between inner compartment **52** and outer compartment **53**. The user's access to tab or lever **61** is through the flexible outer wall **60** of outer compartment **53**, rather than directly. The opening of channel **55** thereafter allows the transfer of fluids from inner compartment **52** to outer compartment **53**, a process which may be facilitated if the user squeezes inner compartment **52**.

What is claimed is:

1. A container for storing materials comprising:

a first outer compartment having a flexible wall;

a second inner compartment having a substantially semi-rigid wall;

the second inner compartment residing within the first outer compartment;

the second inner compartment having a channel formed in the second inner container wall;

means for sealing the channel formed in the second inner container wall; and

means for opening the channel in the second inner container wall by opening the channel sealing means.

2. The container of claim 1, further comprising means for opening the flexible wall of the first outer container.

3. A container for storing materials comprising:

a first wall having an opening;

a second wall forming an open compartment having a volume;

the first wall adapted to fit tightly over the open compartment of the second wall, thereby creating a hermetically sealed space between the first wall and the second wall;

a closure residing between the first wall and the second wall, the closure having a channel, the channel having a mouth;

the first wall adapted to fit tightly over the closure, thereby creating a hermetically sealed space between the first wall and the closure upon sealing the mouth of the channel;

a first seal, adapted to seal the mouth of the channel, the first seal positioned over the mouth of the channel to thereby seal the channel;

means for transmitting tension to the first seal to break it away from the mouth of the channel, the means for transmitting tension to the first seal extending from the first seal, through the space between the first wall and the closure, and through the opening in the first wall, and to the exterior of the container; and

a second seal, residing over the opening in the first wall, the second seal adapted to fit snugly around the means for transmitting tension to the first seal, the second seal closing the opening in the first wall.

4. The container of claim 3, in which the second seal is firmly attached to the means for transmitting tension to the first seal, with frangible connection between the second seal and the first wall.

5. A lid for sealing a container comprising:

a substantially flat lid body having an opening therethrough, the lid body having a lip at its edge for engaging a container wall;

a pouch having at least one lobe formed from a thin sheet of material, the lobe having an interior and at least one frangible line in the thin sheet;

means for pulling the pouch through the opening in the lid body, thereby increasing pressure within the interior of the pouch; and

the means for pulling the pouch extends through the opening in the lid body, and is attached to the lobe along a line substantially distal from the frangible line in the thin sheet of the lobe.

6. The lid of claim 5, in which the pouch has two lobes, each lobe having an interior and at least one frangible line in the thin sheet of material, each lobe being attached to the means for pulling the pouch.

7. The lid of claim 5, in which the opening in the lid body is near the center of the lid body.

8. The lid of claim 5, in which the opening in the lid body is near one side of the lid body.

9. The lid of claim 5, in which the opening in the lid body is a narrow slit, and the means for pulling the pouch is a strip formed to fit within the slit.

10. The lid of claim 5, in which the pouch is removably affixed to the underside of the lid body, such that the pouch may break away from the underside of the body of the lid when tension is applied to the means for pulling the pouch.

11. A container for mixing materials comprising:

a dispensing chamber having sides and roof, and an opening at one end;

the dispensing chamber having a plunger consisting of a shaft, the shaft extending axially from the interior of the roof of the dispensing chamber, through its interior, and toward its opening;

the plunger shaft having a stopper near the end of the shaft;

a connecting chamber having on one side a boss extending therefrom, and on the other side an opening;

the boss of the connecting chamber having an opening in its distal end;

the boss of the connecting chamber having walls formed to closely engage with the opening of the dispensing chamber; and

the opening of the dispensing chamber residing over the end of the boss of the connecting chamber, the shaft of the dispensing chamber plunger extending through the opening of the boss of the connecting chamber.

12. The container of claim 11, in which the connecting chamber has a plurality of bosses, and a plurality of dispensing chambers engaged therewith.

13. The container of claim 11, further comprising means for removably affixing the connecting chamber to a vessel.

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