

|                                          |                                            |
|------------------------------------------|--------------------------------------------|
| SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO |                                            |
| RAD: 11-53469- -7                        | FECHA: 2013-02-19 18:03:56                 |
| DEP: 2020 DIRECCION DE NUEVAS CREACIONES | EVE: 378 FASE NACIONAL INCLUIDO CAPITULO I |
| TRA: 12 PCT-PATENTE MODELO DE UTILIDAD   | FOLIOS: 6                                  |
| CAPITULOS I Y II                         |                                            |
| ACT: 519 PRESENTACION                    |                                            |

DIRECCIÓN DE NUEVAS CREACIONES

2020  
Bogotá, D.C.,

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Asunto: Radicación: 11-53469- -7  
Trámite: 12  
Evento: 378  
Actuación: 519  
Oficio: 3377  
Folios: 6

|                                     |   |            |   |                               |   |
|-------------------------------------|---|------------|---|-------------------------------|---|
| Patente de Invención                |   |            |   | Patente de Modelo de Utilidad | X |
| Vía Nacional                        |   |            |   |                               |   |
| Vía PCT (Fase Nacional)             | X | Capítulo I | X | Capítulo II                   |   |
| No. Solicitud Internacional         |   |            |   |                               |   |
| Fecha de Presentación Internacional |   |            |   |                               |   |

Como resultado del Examen de Fondo realizado, con fundamento en el artículo 85 y en concordancia con el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

|                   |        |               |                 |
|-------------------|--------|---------------|-----------------|
| Descripción:      | Folios | 8 a 26 y 32   | 02/Mayo/2011    |
| Reivindicaciones: | Folios | 27 a 31       | 02/Mayo/2011    |
| Dibujos:          | Folios | 33 a 41       | 02/Mayo/2011    |
| Prioridad         |        | US 12/250,593 | 14/Octubre/2008 |

2. Objeto de la invención

En el presente documento se aplicará lo establecido en la Circular Única en su Título X, con respecto a que cuando la solicitud contenga más de diez (10) reivindicaciones y no se haya pagado la tasa complementaria, sólo se estudiarán las cubiertas por la tasa pagada al momento de realizar el examen de patentabilidad consagrado en el artículo 45 de la Decisión 486.

Título de la solicitud: “Recipiente para administrar una sustancia nutritiva” (Fl. 1).

El problema planteado en esta solicitud consiste lograr un recipiente en cuya abertura se disponga de un sello y un cierre o tapa, los cuales garantizan su hermeticidad, al evitar el contacto de su contenido con la atmósfera. En dicho sello, se adhiere una sustancia

nutritiva la cual se desprenderá gradualmente al estar en contacto con el producto contenido en el recipiente.

Para resolver este problema técnico, en la solicitud en estudio se proponen diferentes modalidades de un recipiente en cuya abertura se adhiere un sello y un cierre. Dicho sello tiene dos o tres capas, en las cuales se dispone una sustancia nutritiva, al cual se combinará con el contenido del recipiente, en el momento de su consumo.

El objeto de la presente Solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): B65D81/32.

### 3. De la Solicitud de Patente

#### Reivindicaciones (Art 30 D 486, Art 22 PCT)

El capítulo reivindicatorio no es claro porque:

- 1- En el capítulo reivindicatorio se incluye la *“sustancia nutritiva”*, la cual es un elemento ajeno a la invención. Mencionar que ésta puede adherirse a ciertas características estructurales del producto, hace referencia a la forma de utilización del mismo, lo cual no es materia patentable para un modelo de utilidad. Según el artículo 81 de la Decisión 486, un modelo de utilidad se define mediante *“toda nueva forma, configuración o disposición de elementos, de algún artefacto, herramienta, instrumento, mecanismo u otro objeto”* por lo que aspectos diferentes a las características estructurales (tangibles) del producto, no son objeto de protección. La *“sustancia nutritiva”* y la forma como se utiliza el producto al adherirla en el mismo, están incluidas específicamente en las reivindicaciones 3, 4, 13 y 14 y en las expresiones *“...en donde una sustancia nutritiva está adherida a la mencionada primera capa y en donde el mencionado sello impide el contacto entre la mencionada sustancia nutritiva y el contenido del mencionado recipiente hasta tanto el mencionado sello no sea alterado; ...”* (reivindicación 1), *“...y en donde una capa del sello laminado dispuesta centralmente comprende la mencionada sustancia nutritiva.”* (reivindicación 5), *“en donde una capa dispuesta centralmente del sello laminado comprende una sustancia nutritiva y en donde el mencionado sello laminado impide el contacto entre la mencionada sustancia nutritiva y el contenido del mencionado recipiente hasta tanto el mencionado sello no sea alterado;...”* (reivindicación 15b). De acuerdo con lo anterior, se sugiere eliminar las reivindicaciones y las expresiones citadas del capítulo reivindicatorio. .
- 2- Se incluyen efectos, ventajas, resultados a alcanzar o la forma cómo funciona el producto y sus características, lo cual no es objeto de protección, ya que no son características constructivas (tangibles) del recipiente. De acuerdo con lo anterior, se sugiere eliminar las reivindicaciones 2, 10, 11 y 12 y las expresiones *“...adaptado para proporcionar un sello hermético a través de la mencionada abertura”* (reivindicaciones 1 (b), 15 (b)), *“...para ayudar al usuario a remover la mencionada segunda capa de sello de la mencionada primera capa de sello.”* (reivindicación 9).
- 3- Para dar claridad a las reivindicaciones, es muy importante que todas las características incluidas en el capítulo reivindicatorio estén acompañadas con su correspondiente número de referencia, tal como está expuesto en la descripción. Esto ayuda a identificar fácilmente cada característica en los dibujos. Dicho número debe ir encerrado entre paréntesis y guardar concordancia con lo presentado en la descripción y en los dibujos. Se sugiere al solicitante incluir los números de referencia de cada una de las características mencionadas en el capítulo reivindicatorio.

- 4- El preámbulo de las reivindicaciones, tanto independientes como dependientes, generalmente coincide con el título de la invención. Se sugiere hacer las correcciones correspondientes.
- 5- Las reivindicaciones 18 a 20 se refieren al método de conformación del recipiente, lo cual no es objeto de patente de modelo de utilidad. Como se mencionó anteriormente, vía modelo de utilidad, solo se protegen las características estructurales del producto reclamado. Por lo cual, se sugiere eliminar las reivindicaciones citadas.
- 6- Las expresiones “por lo menos dos capas” (reivindicación 1) y “por lo menos tres capas” (reivindicación 15), son imprecisas al no definir un rango concreto de capas del sello laminado. Por lo cual, no permiten distinguir la invención del estado de la técnica. Se sugiere replantear estas expresiones definiendo un rango concreto, por ejemplo, “el sello puede contener 2 o 3 capas”.

El capítulo reivindicatorio no es conciso porque:

La reivindicación 10 menciona que “...cuando la mencionada segunda capa es removida del mencionado recipiente, la mencionada primera capa permanece adherida al mencionado recipiente.”, lo cual es equivalente a lo reclamado en la reivindicación 1 que describe que una primera capa esta “...adherida permanentemente a un reborde...” y “...una segunda capa que está acoplada de forma liberable a la mencionada primera capa...”.

De igual manera, la reivindicación 16 menciona características reclamadas en las reivindicaciones 6 a 8, 10 y 11. Así como también la reivindicación 5, contiene características incluidas en la reivindicación 15.

De acuerdo con lo anterior, se sugiere al solicitante que al replantear el capítulo reivindicatorio, tenga en cuenta que éste debe ser conciso, con el fin de que cumpla con los parámetros establecidos en el artículo 30 de la Decisión 486.

#### Descripción (Art 28 D 486)

Al igual que en las reivindicaciones, los números de referencia deben ir entre paréntesis. Se sugiere al solicitante hacer la corrección correspondiente.

#### 4. Determinación del Estado de la Técnica

El estado de la técnica se determinó con base en la fecha de presentación de la solicitud de prioridad: 14 de octubre de 2008 y se encontraron los siguientes documentos que anticipan la solicitud y son los más cercanos a su objeto:

| Item | Documento       | Título                      | Fecha de Publicación |
|------|-----------------|-----------------------------|----------------------|
| D1   | US 6'209.718    | 'Two compartment package'   | 03/Abril/2001        |
| D2   | US 2008/0023349 | 'Internal drink mix system' | 31/Enero/2008        |

El documento D1 <sup>1</sup> divulga un recipiente que en su parte superior contiene una abertura (12), la cual está cubierta por un sello conformado con por lo menos dos capas (Figs. 2 y 6), también contiene un cierre que se coloca sobre dicha abertura (12) (Figs. 7 y 8).

El documento D1 <sup>2</sup> divulga un recipiente que en su parte superior contiene una abertura (12), la cual está cubierta por un sello conformado con por lo menos dos capas (Figs. 2 y 6), también contiene un cierre que se coloca sobre dicha abertura (12) (Figs. 7 y 8).

1 <http://www.google.com/patents?id=HIEFAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false>

2 <http://www.google.com/patents?id=XnenAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false>

5. Examen de Patentabilidad (Art 14 D486)

El examen de patentabilidad mostrado a continuación, se realizó teniendo en cuenta las objeciones presentadas en el numeral 3 de este documento.

Novedad (Art 16 D486)

La reivindicación 1 consiste en “un aparato para administrar una sustancia nutritiva que se caracteriza por: a. un cuerpo de recipiente que tiene (i) una base en un extremo del mismo, (ii) una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y (iii) una cámara definida por el mencionado cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la mencionada abertura de la porción superior, b. un sello laminado que tiene por lo menos dos capas, el cual sello laminado está adherido a través de la mencionada abertura de la porción superior y adaptado para proporcionar un sello hermético a través de la mencionada abertura, en donde el sello laminado comprende: (i) una primera capa adherida permanentemente a un reborde que define la abertura en la mencionada porción superior del recipiente, y (ii) una segunda capa que está acoplada de forma liberable a la mencionada primera capa, en donde una sustancia nutritiva está adherida a la mencionada primera capa y en donde el mencionado sello impide el contacto entre la mencionada sustancia nutritiva y el contenido del mencionado recipiente hasta tanto el mencionado sello no sea alterado; y c. un cierre acoplado de forma removible a la mencionada porción superior” (Fl. 27).

Comparación de las características técnicas esenciales, con las del Estado de la Técnica:

| Características esenciales                                                                                                                                                                                                                                                                                                                                     | D1                                                                                                                                                                                                                                                                                                                                                                                                                        | D2                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recipiente caracterizado por                                                                                                                                                                                                                                                                                                                                   | Recipiente caracterizado por                                                                                                                                                                                                                                                                                                                                                                                              | Recipiente caracterizado por                                                                                                                                                                                                                                                                                                                                                                                |
| Un cuerpo de recipiente que tiene una base en un extremo del mismo, una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y una cámara definida por el cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la apertura de la porción superior.       | Un cuerpo de recipiente (10 A) que tiene una base en un extremo del mismo, una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y una cámara definida por el cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la apertura de la porción superior (Fig. 1).                                                  | Un cuerpo de recipiente (30) que tiene una base en un extremo del mismo, una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y una cámara definida por el cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la apertura de la porción superior (Fig. 1).                                      |
| Un sello laminado que tiene por lo menos dos capas, el cual sello laminado está adherido a través de la abertura de la porción superior. Una primera capa adherida permanentemente a un reborde que define la abertura en la mencionada porción superior del recipiente, y una segunda capa que está acoplada de forma liberable a la mencionada primera capa. | Un sello laminado que tiene por lo menos dos capas (26) y (28), el cual sello laminado está adherido a través de la apertura de la porción superior. Una primera capa (28) adherida permanentemente a un reborde que define la abertura en la mencionada porción superior del recipiente, y una segunda capa (26) que está acoplada de forma liberable a la mencionada primera capa (28) (Fig. 6; col 4, líneas 53 a 55). | Un sello laminado que tiene por lo menos dos capas (40) y (50), el cual sello laminado está adherido a través de la apertura de la porción superior. Una primera capa (50) adherida permanentemente a un reborde que define la abertura en la mencionada porción superior del recipiente, y una segunda capa (40) que está acoplada de forma liberable a la mencionada primera capa (Fig. 1, Párr. [0020]). |
| Un cierre acoplado de forma removible a la porción superior.                                                                                                                                                                                                                                                                                                   | Un cierre (60) acoplado de forma removible a la porción superior (Figs. 7 y 8; Col. 4, líneas 45 y 46).                                                                                                                                                                                                                                                                                                                   | Un cierre (20) acoplado de forma removible a la porción superior (Fig. 1, Párr. [0020]).                                                                                                                                                                                                                                                                                                                    |

De acuerdo con la tabla anterior, las características esenciales expuestas en la reivindicación 1 habían sido divulgadas previamente en los documentos D1 y D2. En consecuencia, la reivindicación 1 no es nueva.

Por su parte, el documento D1 menciona una lengüeta (121) acoplada a la segunda capa (40) (Fig. 1, Párr. [0020]), por lo cual, la reivindicación 9 no contiene características novedosas.

La reivindicación 15 consiste en “Un aparato para administrar una sustancia nutritiva que comprende: a. un cuerpo del recipiente que tiene (i) una base en un extremo del mismo, (ii) una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y (iii) una cámara definida por el mencionado cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la mencionada abertura de la porción superior, b. un sello laminado que tiene por lo menos tres capas, el cual sello laminado está adherido a través de la mencionada abertura, en donde una capa dispuesta centralmente del sello laminado comprende una sustancia nutritiva y en donde el mencionado sello laminado impide el contacto entre la mencionada sustancia nutritiva y el contenido del mencionado recipiente hasta tanto el mencionado sello no sea alterado; y c. un cierre acoplado de forma removible a la mencionada porción superior”. (Fl. 29)

Comparación de las características técnicas esenciales, con las del Estado de la Técnica:

| Características esenciales                                                                                                                                                                                                                                                                                                                               | D1                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recipiente caracterizado por                                                                                                                                                                                                                                                                                                                             | Recipiente caracterizado por                                                                                                                                                                                                                                                                                                                                      |
| Un cuerpo de recipiente que tiene una base en un extremo del mismo, una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y una cámara definida por el cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la apertura de la porción superior. | Un cuerpo de recipiente que tiene una base en un extremo del mismo, una porción superior adaptada para recibir de forma removible un cierre, la cual porción superior define una abertura en su interior, y una cámara definida por el cuerpo del recipiente, la cual cámara se encuentra en comunicación fluida con la apertura de la porción superior (Fig. 1). |
| Un sello laminado que tiene por lo menos tres capas, el cual sello laminado está adherido a través de la abertura de la porción superior.                                                                                                                                                                                                                | Un sello laminado que tiene por lo menos tres capas (24), (26) y (28), el cual sello laminado está adherido a través de la abertura de la porción superior (Fig. 2; Col. 3, líneas 33 a 38).                                                                                                                                                                      |
| Un cierre acoplado de forma removible a la mencionada porción superior.                                                                                                                                                                                                                                                                                  | Un cierre acoplado de forma removible a la mencionada porción superior (Figs. 7 y 8; Col. 4, líneas 45 y 46).                                                                                                                                                                                                                                                     |

De acuerdo con la tabla anterior, las características esenciales expuestas en la reivindicación 15 habrían sido divulgadas previamente en el documento D1. En consecuencia, la reivindicación 15 no es nueva.

Cabe agregar, que los orificios en la primera capa y en la capa central (reivindicación 16) son características que podrían ser novedosas.

6. Conclusión

Los requisitos de patentabilidad de la presente solicitud están afectados así:

| Ítem | Documento       | Reivindicaciones afectadas | Requisito que afecta |
|------|-----------------|----------------------------|----------------------|
| D1   | US 6'209.718    | 1 a 15                     | Novedad              |
| D2   | US 2008/0023349 | 1 a 14                     | Novedad              |

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de treinta (30) contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Se invita al solicitante se sirva indicar, si así lo considera, su renuncia al término faltante de treinta (30) para dar respuesta a este requerimiento y presentarla por escrito.

Finalmente, se le recuerda al solicitante que si como respuesta a este requerimiento llegara a modificar el capítulo reivindicatorio y éste contenga más de diez (10) reivindicaciones, no pagará la tasa de modificación voluntaria pero sí la correspondiente al pago por reivindicación adicional.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No. 10 de 2001.



**JOSÉ LUIS SALAZAR LÓPEZ**  
Director de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista, de fecha 2013-02-26

Elaboró: Monica Andrea Gutierrez Almonacid  
Revisó: Rosa Patricia Tellez Chavarro



US006209718B1

(12) **United States Patent**  
**Mollstam et al.**

(10) **Patent No.:** **US 6,209,718 B1**  
(45) **Date of Patent:** **Apr. 3, 2001**

(54) **TWO-COMPARTMENT PACKAGE**

(76) Inventors: **Bo Mollstam**, 6213 Angus Dr., Suite D,  
Raleigh, NC (US) 27613; **Ivan A. Casas**, 6213 Angus Dr., Suite D,  
Raleigh, NC (US) 27613

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/598,792**

(22) Filed: **Jun. 21, 2000**

**Related U.S. Application Data**

(62) Division of application No. 08/949,465, filed on Oct. 14,  
1997, now Pat. No. 6,105,760.

(51) **Int. Cl.<sup>7</sup>** ..... **B65D 25/08**

(52) **U.S. Cl.** ..... **206/222; 229/103.1**

(58) **Field of Search** ..... 206/219, 222;  
229/103.1; 220/705, 710; 221/81

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

3,326,363 \* 6/1967 Bennett et al. .... 206/219

3,779,372 \* 12/1973 De Lloret ..... 220/705  
4,074,827 \* 2/1978 Labe, III .  
4,785,931 \* 11/1988 Weir et al. .... 206/222  
4,874,618 \* 10/1989 Seaborne et al. .  
5,035,320 \* 7/1991 Pione ..... 206/222  
5,290,574 3/1994 Jamieson et al. .  
5,370,222 \* 12/1994 Steigerwald et al. .... 206/222  
5,419,429 \* 5/1995 Zimmerman et al. .... 206/222

\* cited by examiner

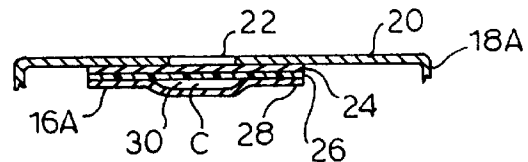
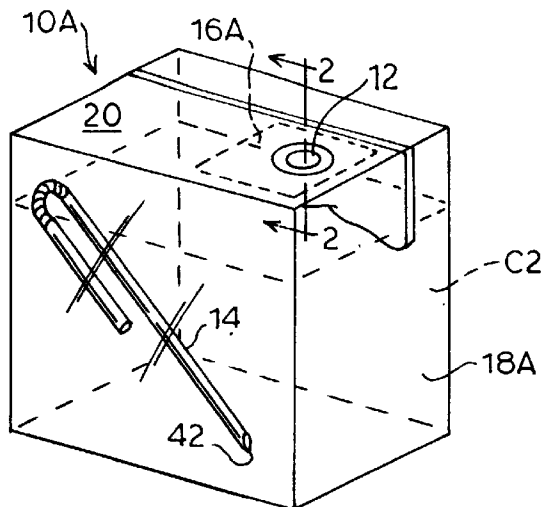
*Primary Examiner*—David T. Fidei

(74) *Attorney, Agent, or Firm*—Lynn E. Barber

(57) **ABSTRACT**

A two-part container in which a first component for a first  
component and having an upper and a lower layer is  
mounted either within or outside a second compartment, for  
a second component, at the location of a port on the second  
compartment. Cutting means are provided for cutting both  
the upper and lower layer and through the port, to release the  
first component into the second compartment.

**14 Claims, 4 Drawing Sheets**



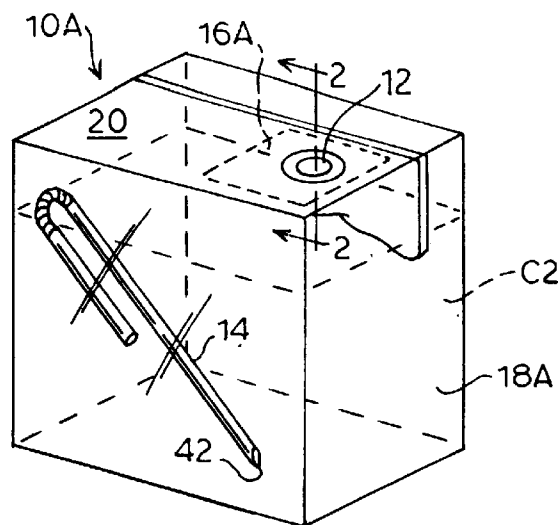


FIG. 1

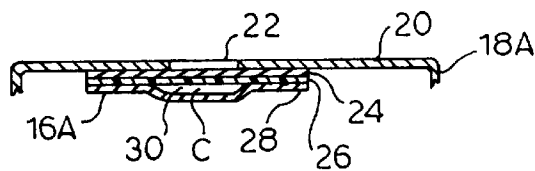


FIG. 2

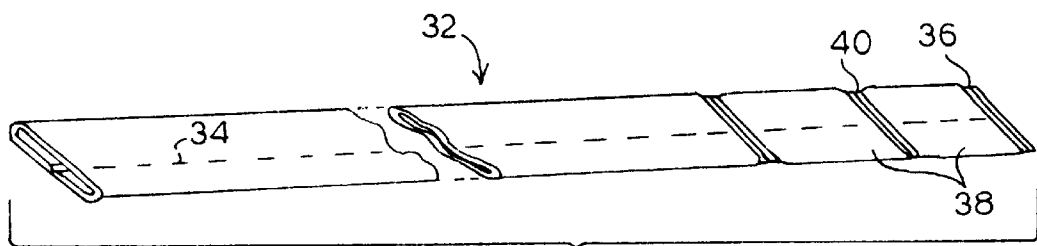


FIG. 3

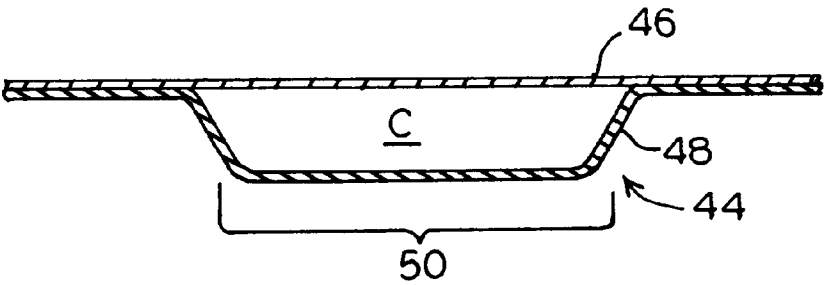


FIG. 4

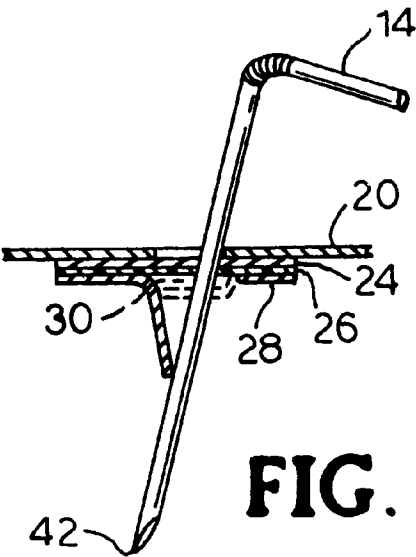


FIG. 5

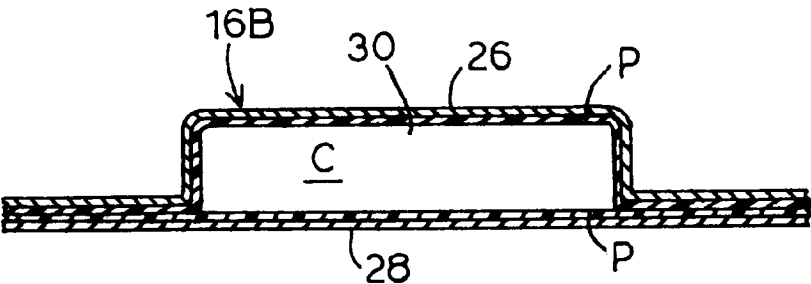


FIG. 6

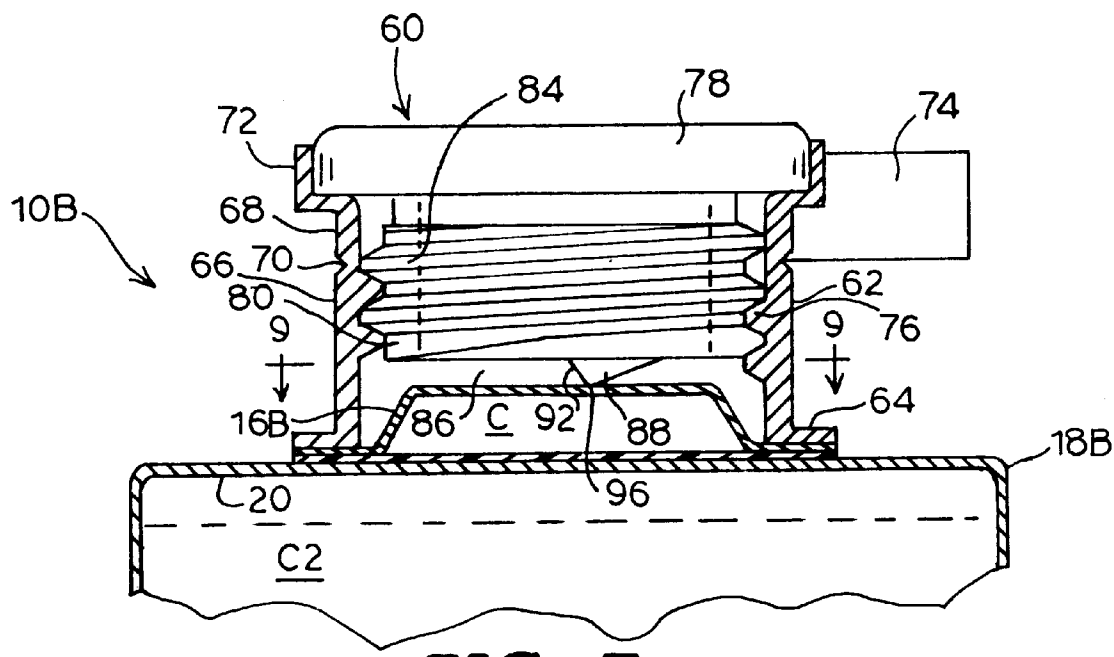


FIG. 7

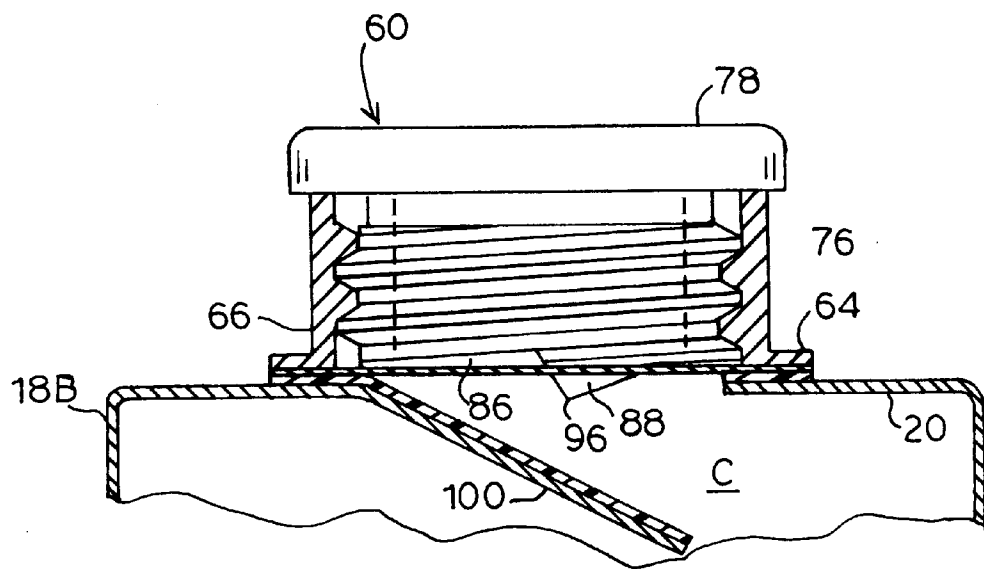


FIG. 8

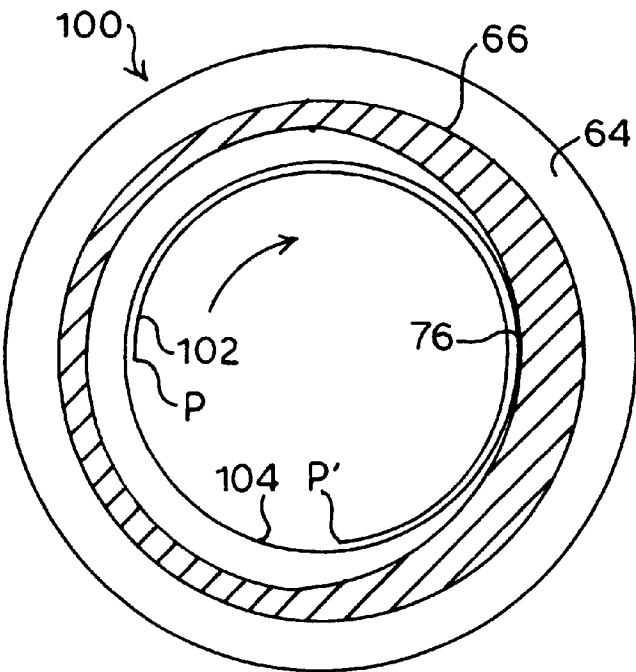


FIG. 9

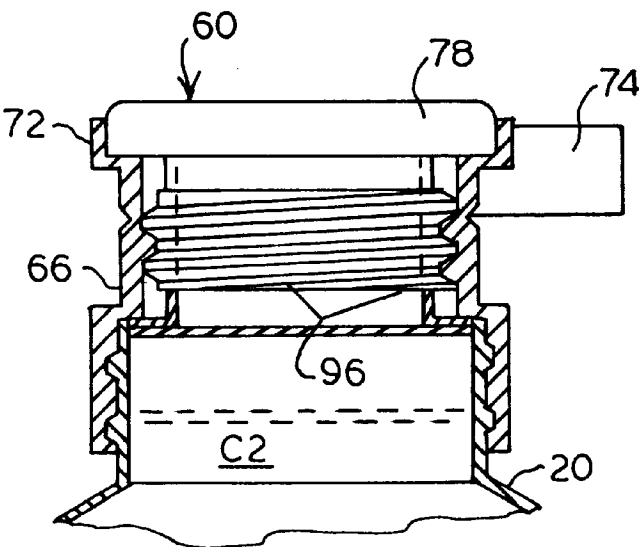


FIG. 10

1

**TWO-COMPARTMENT PACKAGE****CROSS-REFERENCE TO RELATED APPLICATIONS**

This is a divisional application of Ser. No. 08/949,465, filed Oct. 14, 1997. U.S. Pat. No. 6,105,760.

**BACKGROUND OF THE INVENTION****1. Field of the Invention**

This invention relates to packages, and in particular, pertains to packages having two compartments to keep two components separate until use.

**2. Description of the Related Art**

Many different types of packages have been designed to enable product components to be kept separate until use and, in some cases, to allow one component to remain sterile until use of the product. In one type of two-compartment package, a stopper or other means is placed in the hole between the two compartments. For example, the two-compartment container of Halm (U.S. Pat. No. 5,417,321) comprises a one-piece container having two compartments assembled one upon another interlinked by a stoppered opening.

Other two-compartment packages utilize a perforating unit to allow the two previously separated components to mix. See, for example, the patents of Goncalves (U.S. Pat. No. 5,170,888 which has a glass defining a first compartment, which is provided with a neck upon which is mounted a bottle defining a second compartment, with a membrane between the two compartments, which is perforated when a perforating unit is displaced relative to the glass, and U.S. Pat. No. 4,757,916 which has two units separated by a cover perforatable as a result of the manipulation of a mixing perforator.

The two-part container of Wiegner (U.S. Pat. No. 4,103,772) has a frangible partition of coated aluminum foil dividing the compartments and a piercing member mounted on a resilient portion transversely directed toward the partition. In the patent of White (U.S. Pat. No. 4,637,934) rigid penetrating means are used to penetrate a compartment closing diaphragm to allow nursing liquid to flow from the compartment to a communicating, attached nipple.

Two compartment packages have also been previously developed which have an opening device attached to the top of the package and are provided with a screw cap and a cylinder jacket shaped supporting ring. The cylinder jacket shaped supporting ring is attached to the top of the package by means of a fixing flange externally surrounding the opening disc, is provided on its inner surface with a raised thread and surrounds the external thread of the screw cap formed from plastics material. A cutter is integrally molded onto the free edge of the screw cap, and is provided with a front cutting edge which passes at an angle through the free edge.

For such products as two-part epoxy glues, two compartments are needed to keep the products from reacting, as in the patent of Wilkinson et al. (U.S. Pat. No. 4,786,279).

The dispenser of Renault (U.S. Pat. No. 5,564,600) has two compartments separated by a sealing member sealed against a seat, so that movement of one of the containers relative to the other causes the sealing member to move away from the seat and form an annular passage between the sealing member and the seat.

There remains a need to have two-compartment packages which keep a first component separate from a liquid component until use, so that the first component does not become

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wetted until just before use, that keep at least one of the components sterile until just before use, and in which the two components may be easily mixed just before use. For example, there is a need for such containers for the separate packaging of dried microbial cultures which are to be added to a food, liquid nutrition, medicine, or beverage product just before consumption, for the separate packaging of carbonation tablets from a liquid until just before consumption, and for separate packaging of vitamins or other unstable components before addition to a beverage, liquid nutrition, medicine or beverage before consumption.

It is therefore an object of the invention to provide a two-compartment container that keeps a first component, which may be moisture sensitive, from a second component, preferably a liquid, until a selected time before use.

Other objects and advantages will be more fully apparent from the following disclosure and appended claims.

**SUMMARY OF THE INVENTION**

The invention herein is a two-part container in which a first compartment for a first component which has an upper and a lower layer. The first compartment is mounted either within or outside a second compartment, for a second component, at the location of a port on the second compartment. Cutting means are provided for cutting both the upper and lower layer and through the port, to release the first component into the second compartment.

Other objects and features of the inventions will be more fully apparent from the following disclosure and appended claims.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a perspective view of a second compartment that may be utilized with the invention herein.

FIG. 2 is a cut-away view of the top of a second compartment according to the first embodiment of the invention showing an internal first compartment.

FIG. 3 is a perspective view of a partly finished tube that may be used to form the first compartment of the invention.

FIG. 4 is a cross-sectional view of a blister-pack first compartment.

FIG. 5 is a cut-away view of the top of a second compartment of the first invention having a blister-pack first compartment that has been cut open by a straw. The dashed lines show the location of the unopened blister-pack.

FIG. 6 is a cross-sectional view of a preferred first compartment for use in the second embodiment of the invention.

FIG. 7 is a partial fragmentary lateral view and partial longitudinal section of the screw-cap cutting arrangement and plug of the second embodiment of the invention herein.

FIG. 8 is a view like that in FIG. 7, wherein after removal of the spacing ring, the screw cap is screwed down far enough in the direction of the inside of the package so that not only is the cut made along a periphery over approximately 270° in the opening disc, but also the opening disc is folded down in a flap-like manner.

FIG. 9 is a plan view of the cut, but not folded down or bent up top, together with the seating part.

FIG. 10 is a cross-sectional view of the second embodiment utilized with a second compartment that has a bottle-neck.

**DETAILED DESCRIPTION OF THE INVENTION AND PREFERRED EMBODIMENTS THEREOF**

The present invention provides a two-compartment container primarily designed for addition of a moisture-sensitive

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first component, located in a first compartment, to a liquid located in a second compartment, just prior to consumption of the liquid. In each embodiment herein, both the first component and the liquid are entirely separate from each other from the time of filling of the two compartments and assembly of the package, until the first compartment is manually punctured or cut as provided in the particular embodiment. During assembly of each embodiment, the first component is packaged in a separate container prior to assembly of the two-compartment container. The separate container for the first component, when assembled together with the second compartment, becomes the first compartment of the container. The second compartment has at least a portion of its top which is cuttable with a cutter, as described below.

In a first embodiment herein, the invention is an improvement in a cardboard, bottle, liquid enteral nutritional bag, or other beverage container **10A**, for example, for milk, juice, water and other liquid products, that has a port **12** that is puncturable by a sturdy plastic straw **14** as is known in the art. As added by the invention herein, there is a separate packet forming a first compartment **16** for a separate first component, that is positioned immediately inside the container **10A** beneath the port **12** during manufacture of the container **10A**.

As shown in FIG. 1, the second compartment **18A**, which is of a size to hold a selected second component **C2**, and which forms the bulk of the container **10A** in the first embodiment, has a top **20** with the port **12** located toward one end of the top **20**. The port **12** is preferably similar to those known in the art and is formed by a hole **22** in the cardboard layer forming the top, beneath which is a thin, cuttable foil layer **24**.

First compartment **16A** is positioned beneath the foil layer **24** immediately inside the second compartment from the port **12**. As shown in more detail in FIG. 2, the first compartment **16A** comprises an upper layer **26**, a lower layer **28**, and a cavity **30** between the upper layer **26** and lower layer **28** for holding the first component **C**. The first compartment **16A** is preferably made of foil, and most preferably of foil having a plastic layer on one surface such as a polyethylene laminated aluminum foil, for example, Catalog No. PETP12 of Danisco (Allborg, Denmark). The foil is preferably formed into a long tube **32**, as shown in FIG. 3, and a long seal **34** is formed along the long edge by means known in the art. For example, for plastic-coated foil, the application of heat along the long edges seals the edges together to form the tube **32**. One end of the tube **32**, designated the first end **36** of the tube is sealed as shown in FIG. 3, and the selected first component **C** is added in a measured amount to the still open end of the tube so that the first component goes into the first end. When the measured amount has been added to the tube at the first end **36**, a sealing means, such as a heat sealer is used to seal off the first end from the remainder of the tube, forming a sealed packet **38**. The filling and sealing process is repeated to form a long tube of sealed packets each of which packets contains the measured amount of the first component. It is important that the width of the sealed area **40** between packets be sufficient so that the tube can later be cut along the center of the sealed area **40** without releasing the contents of the packet on either side of the seal, and so that the packets remain sealed after being severed from the tube. Prior to severing of the packets from the tube, the tube may be rolled or otherwise packed for storage and/or shipment to the point of assembly of the container **10A**.

At the point of assembly, as the second compartment **18A** is being assembled, the tube **32** of sealed packets **38** feeds

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into the assembly process so that the packets are severed one at a time from the tube, beginning at one end of the tube, along the seal area holding them to the tube, and one packet **38** is positioned beneath the thin, puncturable foil layer **24**, and then sealed in place as shown in FIG. 2. Again, the means of sealing may be by glue, heat sealing or any other means known in the art.

During use of this embodiment of the invention, a user takes a straw **14** or other puncturing drinking instrument, which is preferably provided by the manufacturer and sharply pushes the pointed, puncturing end of the straw **42** through the foil layer **24**, and then continues the pressure until the straw has cut through both layers **26**, **28** of the first compartment **10**. The cutting of the lower layer of the packet causes the first component **C** to be released from the first compartment **10** into the liquid packaged in the second compartment **18A**. The user can gently shake the container **10A** to enhance mixing; however, the natural movement created by lowering the straw into the container **10A** and drinking through the straw generally is sufficient for the mixing desired.

An alternative first compartment **16A** is a blister-pack **44**, as shown in FIGS. 4-5. Blister packs typically have a flat surface sheet **46** sealed to a second sheet **48** around the edges of a molded pocket **50**. For use in the first embodiment of the invention, the blister-packs are preferably made of the plastic-coated foil, and a single pocket **50** in a second sheet **48**, in which pocket the first component is sealed, is sealed below the foil layer **24**. Most preferably, the second sheet **48** is easily releasable from the flat surface sheet around about  $\frac{3}{4}$  of the concave area, so that downward pressure causes the second sheet to form a flap that is pushed downward away from the port, but is still held to the inside of the top of the package as shown in FIG. 5. Thus, puncturing of the foil layer **24** by the cutter, which in this embodiment is preferably straw **14**, punctures the flat surface sheet **46** and then either punctures, or pushes against, pocket **50**. Methods of forming blister-packs, including blister-packs where one of the layers is easily releasable from part of the other layer, are well-known in the art.

In a second embodiment of the invention herein, the first compartment **16B** is positioned outside the second compartment **18B** of the container **10B**. The second embodiment utilizes a previously developed screw cap/cutting arrangement which is described in more detail below.

First compartment **16B** is positioned between the screw cap/cutting arrangement **60** and the second compartment **18B** of the container **10B** in this embodiment. First compartment **16B** is positioned immediately outside the second compartment at the desired location of opening of the container **10B**, preferably over a port **12**, by means known in the art, such as glue or heat sealing. As shown in more detail in FIG. 6, the first compartment **16B** comprises upper layer **26**, lower layer **28**, and cavity **30** between the upper layer **26** and lower layer **28** for holding the first component **C**. In this embodiment, which is particularly useful for more bulky first components, upper layer **26**, is preferably bowed upward as shown in FIG. 67 so that cavity **30** is sufficiently large to hold a larger first component. First compartment **16B** is preferably made of foil, and most preferably of foil having a plastic layer on one surface as discussed above with respect to the first embodiment, which is preferably made by the blister-pack method discussed above, except that second sheet **48** is on top and the flat surface sheet **46** faces downward. With the use of the plug **86** described below there is no need to have the two layers of the blister-pack be easily releasable from each other; however, both the plug and release features may be combined.

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Plastic supporting ring 62, which is circularly symmetrical with respect to the central axis of the screw cap/cutting arrangement 60 at the lower edge thereof for welding, during assembly of the completed container 10B, by means of a fixing flange 64, to the top of the second compartment 18B of the package. The supporting ring 62 is composed of seating part 66 and spacing ring 68 which are both separated from one another by a predetermined breakage line 70 running parallel to the top of the package. The spacing ring 68 is provided on its upper part with a radially outwardly extending supporting flange 72 and a tear flap 74 molded onto the ring 68 so that it is graspable by a user of the container 10B and its contents. The inner surface of seating part 66 of the supporting ring 62 has a raised thread 76 which extends completely around the ring 62.

The prior screw cap that is used in this embodiment of the invention comprises a radially larger rotating part 78 and a hollow threaded portion 80 radially smaller than the rotating part 78. The threaded projection 80 is configured as a hollow cylinder 82 with a noticeably smaller radius than the rotating part 78. An external thread 84 of the hollow threaded portion 80 fits during rotary engagement into the annular ring formed by the raised thread 76, and the external periphery of the rotating part 78 fits into the supporting flange 72 and comes to rest on this flat horizontal ring.

There is a cutter 88 located on the free edge 90 of the screw cap, which has a straight front cutting edge 92. The front end 94 of the front cutting edge 92 is preferably configured in the shape of a point 96 (FIGS. 7-8) for cutting the material of which the top 20 of the second compartment is made, after the upper and lower layers are cut.

In the second embodiment of the invention herein, there is provided a novel central plug 86, attached to the lower surface of the radially larger rotating part 78 and extending downward in the hollow threaded portion 80 so that when the screw cap is turned to lower the cutter, the plug 86 moves downward toward the second compartment 18B on which the screw cap is mounted. Because plug 86 is attached, for example, by glue, to the central part of the upper layer 26 of the first compartment 16B, when the cutter cuts through first compartment 16B, the central portion of the upper layer 26 (which may be the pocket 50 of the second sheet 48) is held on the plug 86 and does not drop into the liquid second component C2.

The screw cap/cutting arrangement is positioned immediately over a single first compartment 16B as shown in FIG. 7 so that when the cap is screwed downward its full extent, as described in detail below, the contents of the first compartment 16B are released into the second compartment 18B. The severing of the top 20 of the package is done at the outer periphery of an opening circular disc 100 so that there is a cut along line 102 over an angle of 270° (about ¾ of the way around the disc. FIG. 9 shows the cut but not bent up or folded away opening disc 100 shown with seating part 66 surrounding the opening disc 100, with the fixing flange 64. The innermost surface of the raised thread 76 is shown as a circle 104 and on this circle 104 lies the cutter which is not visible in FIG. 9, as the screw cap is not screwed in in the representation shown in that figure.

FIG. 7 shows the opening device before the initial opening, when the front end 94 or point of the cutter 88 has not yet engaged with the top of the package. This is achieved by the axial length of the hollow cylindrical threaded projection 80 being set at the height of the supporting ring 62. Strong pressing in of the front end 94 of the cutter 88 is not possible at this stage because the radially larger rotating

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part 78 is held in the supporting flange 72 of the supporting ring 62. An analogous view of the opening device and a first compartment modified for use on a bottle-neck is shown in FIG. 10.

To enable a first component to be added to a second component, the user grips the flap 74 and tears the spacing ring 68 along the circular predetermined breakage line 70. This allows the screw cap to be further rotated clockwise so that the threaded projection 80 with the cutter 88 is moved downward along a line perpendicular to the top surface of the package towards the top of the package. The point or front end of the cutter 88 first penetrates and cuts a complete circle in both the upper and lower layers 26, 28, and then penetrates the top of the package, for example at the point designated P in FIG. 9. When the screw cap is rotated further in a clockwise direction, the front cutting edge 92 runs along the circular periphery of the opening disc 100 along the three-quarter circle as far as the point designated P'. Along this circular path between points P and P', the front cutting edge 92 penetrates deeper and deeper into the top 20, so that the uppermost, furthest back portion of front cutting edge 92 stops cutting at point P'. If the cap is rotated further, the front cutting edge 92 does not perform any further cutting as it has dipped inside the package below the plane of the top. Rather, the adjacent thread as shown in fragmentary manner in FIG. 9 ensures that the opening disc 100 is bent and at least partially folded away into an acute angle.

As the screw cap is rotated, the plug 86, to which the severed central area of the upper layer 26 is attached, presses on the partially severed lower layer 28 which is attached to the opening circular disc 100, pushing them into the second container 10B as shown in FIG. 10. This allows the first component C to drop out of the first compartment 16B when the plug 86 is withdrawn by unscrewing the cap, through the hole formed by the partially removed, bent back opening disc 100, and into the second compartment 18B.

The screw cap can then be unscrewed to open the container 10B for access to the contents thereof.

The first embodiment of the invention is particularly useful for adding unstable and/or sterile components to a beverage, liquid enteral nutrition or medicine, for example, adding vitamins or beneficial gastrointestinal microorganisms, such as *Lactobacillus reuteri*, to fruit juice, milk, water, medicine, and the like. The second embodiment may also be used for the same purposes, particularly where the volume of liquid in the second compartment is greater than for a single serving. Additional uses include for addition of tablets that form carbonation upon the addition to liquid for creation of carbonated beverages just prior to drinking or for medicinal use.

While the invention has been described with reference to specific embodiments, it will be appreciated that numerous variations, modifications, and embodiments are possible, and accordingly, all such variations, modifications, and embodiments are to be regarded as being within the spirit and scope of the invention.

What is claimed is:

1. A two-compartment container, for addition of a first component to a liquid second component, comprising:

- (a) a first compartment containing a first component, said first compartment having an upper layer above the first component and a lower layer below the first component, said first compartment being made of a cuttable material;
- (b) a straw-shaped cutter having a pointed end for cutting the upper layer and the lower layer; and

- (c) a second compartment containing the second component, and having a top that is cuttable with the cutter;
- wherein said first compartment is attached to the second compartment so that cutting of the top with the cutter also cuts a portion of the upper layer and a portion of the lower layer, releasing the first component into the second compartment for addition to the second component, wherein the first component and the second component are completely separated from each other until the cutter is used to manually cut both the upper layer and the lower layer.
2. The container according to claim 1, wherein there is a port on the top for cutting with the cutter, and wherein the first compartment is located within the second compartment immediately inside the second compartment from the port.
3. The container according to claim 1, wherein the first compartment is located outside the second compartment on the top of the second compartment.
4. A method of forming a two-part container, comprising:
- (a) providing a first compartment containing a first component, said first compartment having an upper layer above the first component and a lower layer below the first component, said first compartment being made of a cuttable material;
- (b) providing a straw-shaped cutter having a pointed end for cutting the upper layer and the lower layer;
- (c) providing a second compartment larger than said first compartment and containing a second component, and having a top that is cuttable with said cutter; and
- (d) attaching the first compartment to the second compartment so that when said top is cut with said cutter so that the second component can be removed from the port, the upper layer and the lower layer are also cut with the cutter, wherein the first component and the

- second component are completely separated from each other until the cutter is used to manually cut both the upper layer and the lower layer.
5. The method according to claim 6, wherein there is a port on the top for cutting with the cutter, and wherein the first compartment is located within the second compartment immediately inside the second compartment from the port.
6. The method according to claim 4 wherein the first compartment is located outside the second compartment on the top of the second compartment.
7. The container according to claim 1, wherein the first component is selected from the group consisting of vitamins, tablets and beneficial gastrointestinal microorganisms.
8. The container according to claim 7, wherein the first component comprises *Lactobacillus reuteri*.
9. The container according to claim 1, wherein the second component is selected from the group consisting of fruit juice, milk, water and liquid medicine.
10. The container according to claim 9, wherein the first component comprises *Lactobacillus reuteri*.
11. The method according to claim 4, wherein the first component is selected from the group consisting of vitamins, tablets and beneficial gastrointestinal microorganisms.
12. The method according to claim 11, wherein the first component comprises *Lactobacillus reuteri*.
13. The method according to claim 4, wherein the second component is selected from the group consisting of fruit juice, milk, water and liquid medicine.
14. The method according to claim 13, wherein the first component comprises *Lactobacillus reuteri*.

\* \* \* \* \*



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(19) **United States**(12) **Patent Application Publication****Balazik**(10) **Pub. No.: US 2008/0023349 A1**(43) **Pub. Date: Jan. 31, 2008**(54) **INTERNAL DRINK MIX SYSTEM****Publication Classification**(76) Inventor: **Ronald Frank Balazik**, Alexandria, VA  
(US)(51) **Int. Cl.**  
**B65D 25/08** (2006.01)(52) **U.S. Cl.** ..... **206/222**

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**DIEDERIKS & WHITE LA, PLC****#301****12471 Dillingham Square****Woodbridge, VA 22192 (US)**(57) **ABSTRACT**

A drink mix system is provided for mixing one or more additives with liquid in a container. An additive holder is provided having an end wall that attaches to the end wall of a standard screw-off bottle cap. Inner and outer walls define one or more additive holding spaces that are sealed off from the liquid with one or more removable seals. Additive holding spaces may be in the form of concentric cylindrical holding spaces, wedge-shaped holding spaces, or stacked holding spaces. Additives may comprise vitamins, flavorings or colorings, and may be in a liquid, powder, solid or gel form. When desired, a user removes the seal(s) and selectively mixes one or more additives with the liquid in the bottle. This results in an inexpensive drink mix system that can utilize standard bottle caps and allows a user to selectively flavor a beverage.

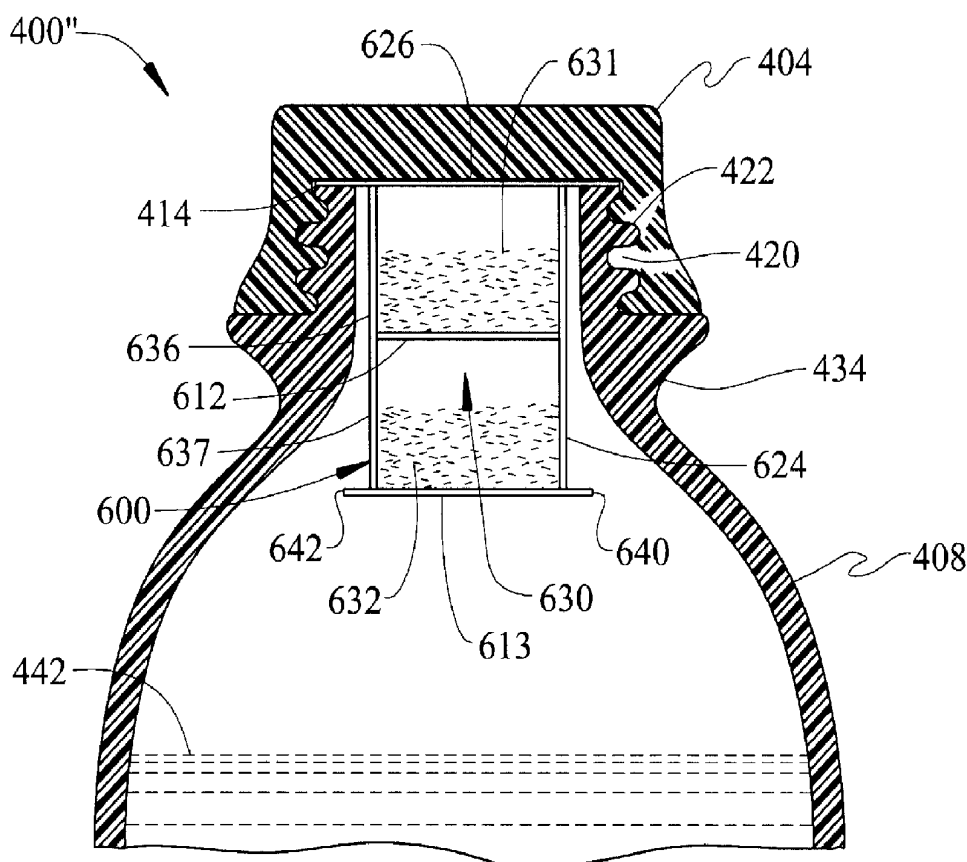
(21) Appl. No.: **11/866,676**(22) Filed: **Oct. 3, 2007****Related U.S. Application Data**(63) Continuation-in-part of application No. 11/196,420,  
filed on Aug. 4, 2005.(60) Provisional application No. 60/850,380, filed on Oct.  
10, 2006.

FIG. 1

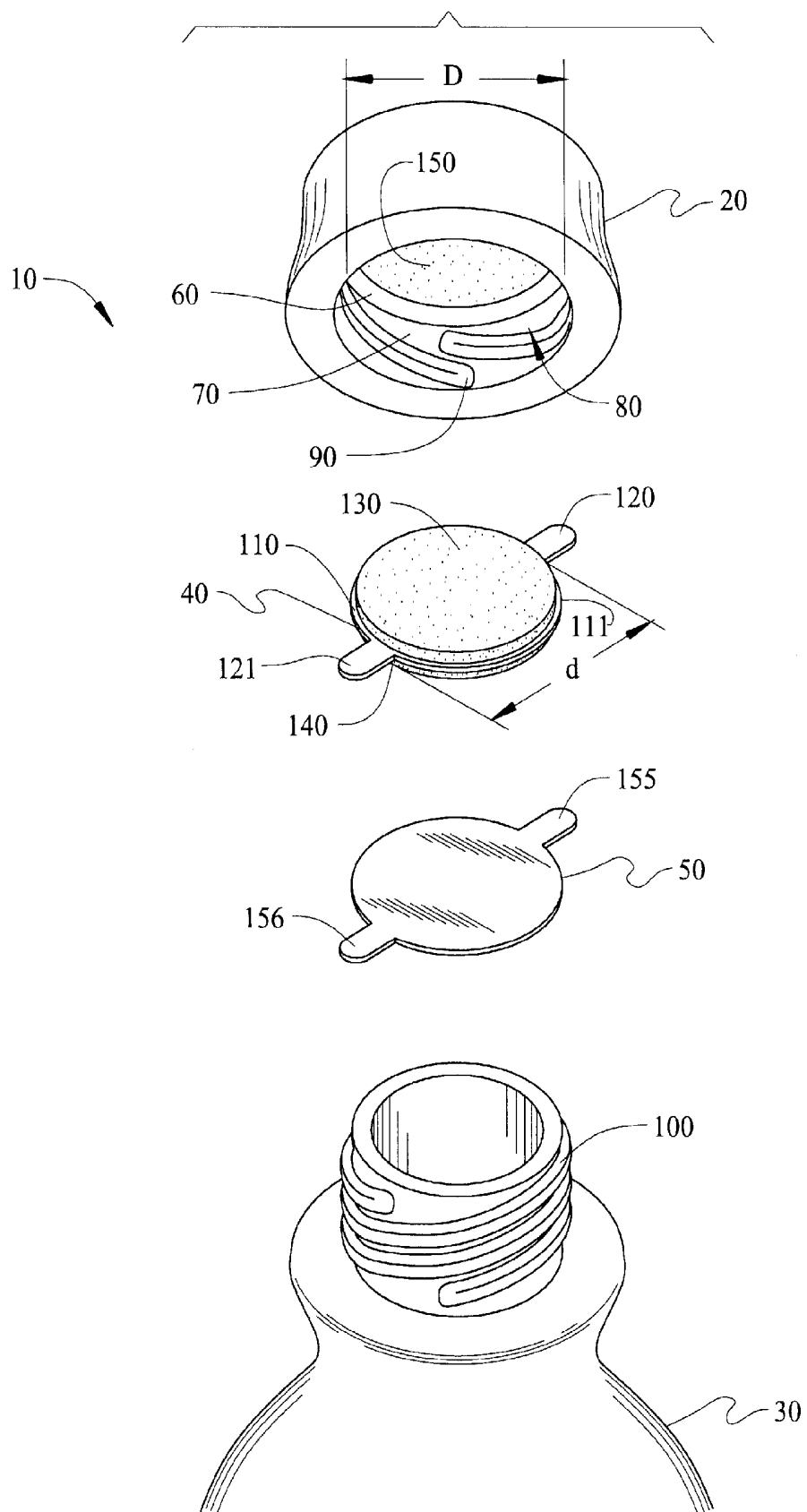


FIG. 2

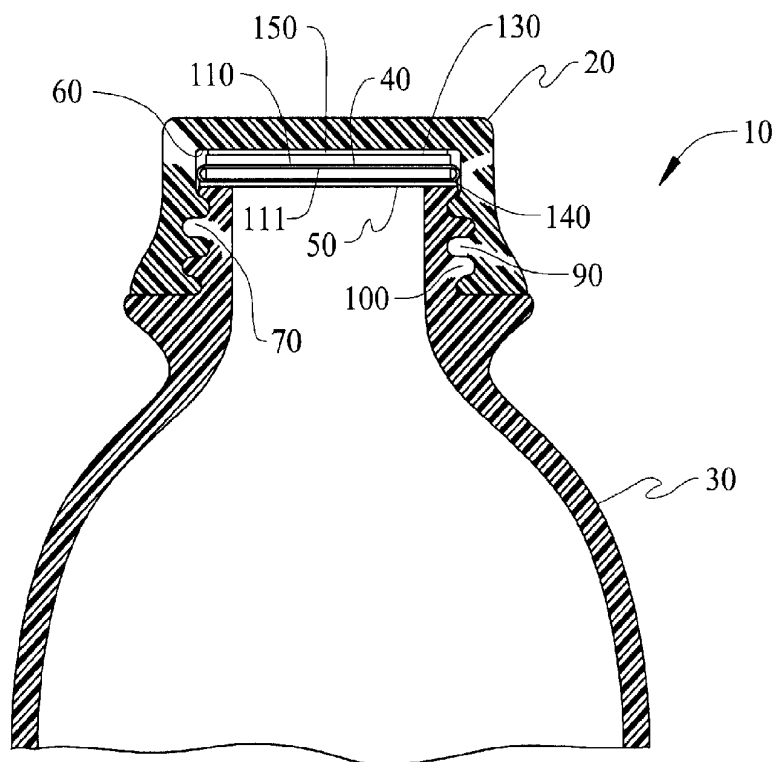


FIG. 3

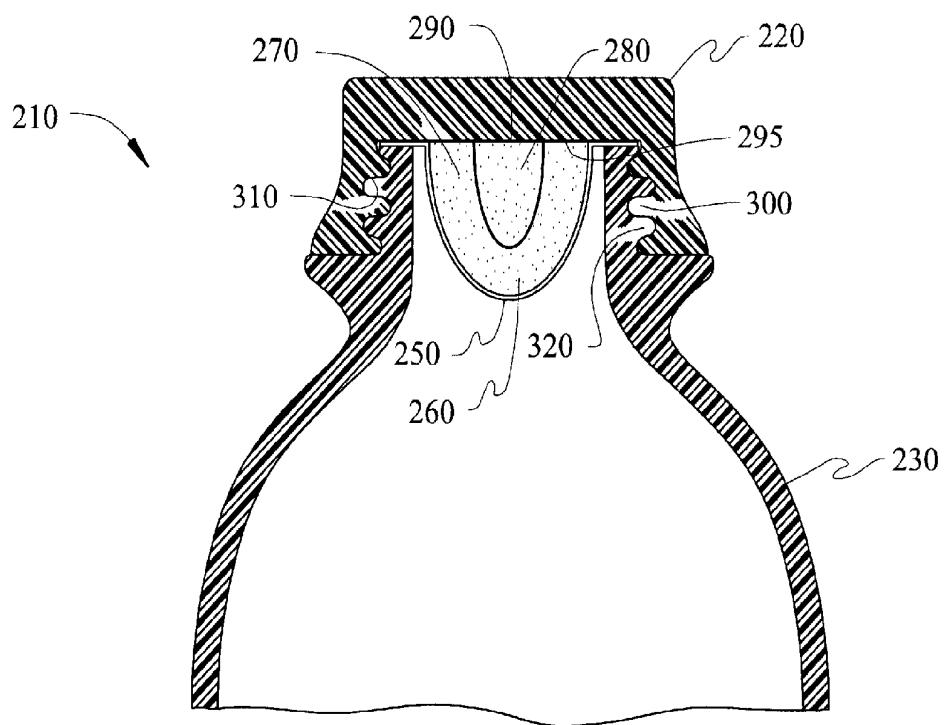


FIG. 4

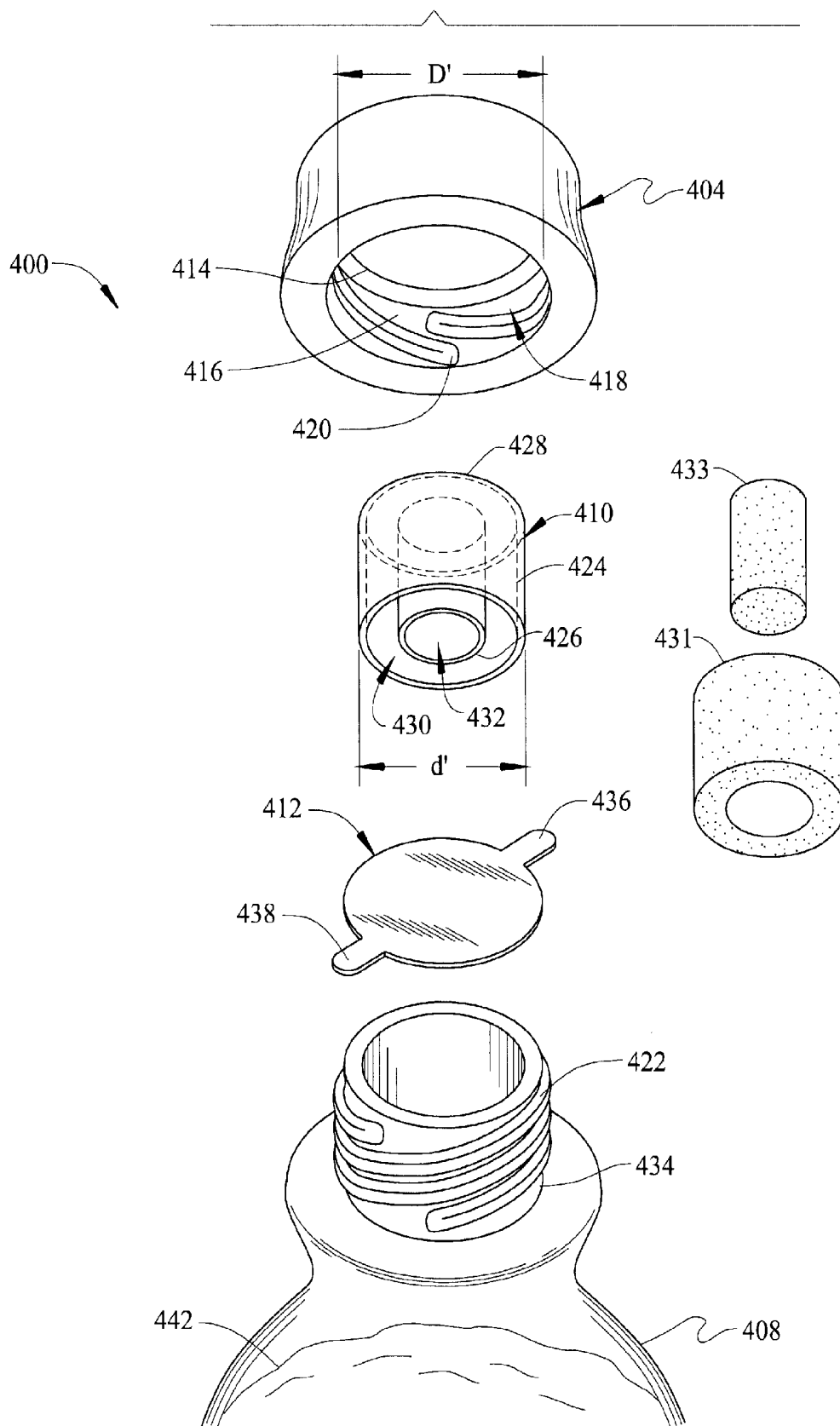


FIG. 5

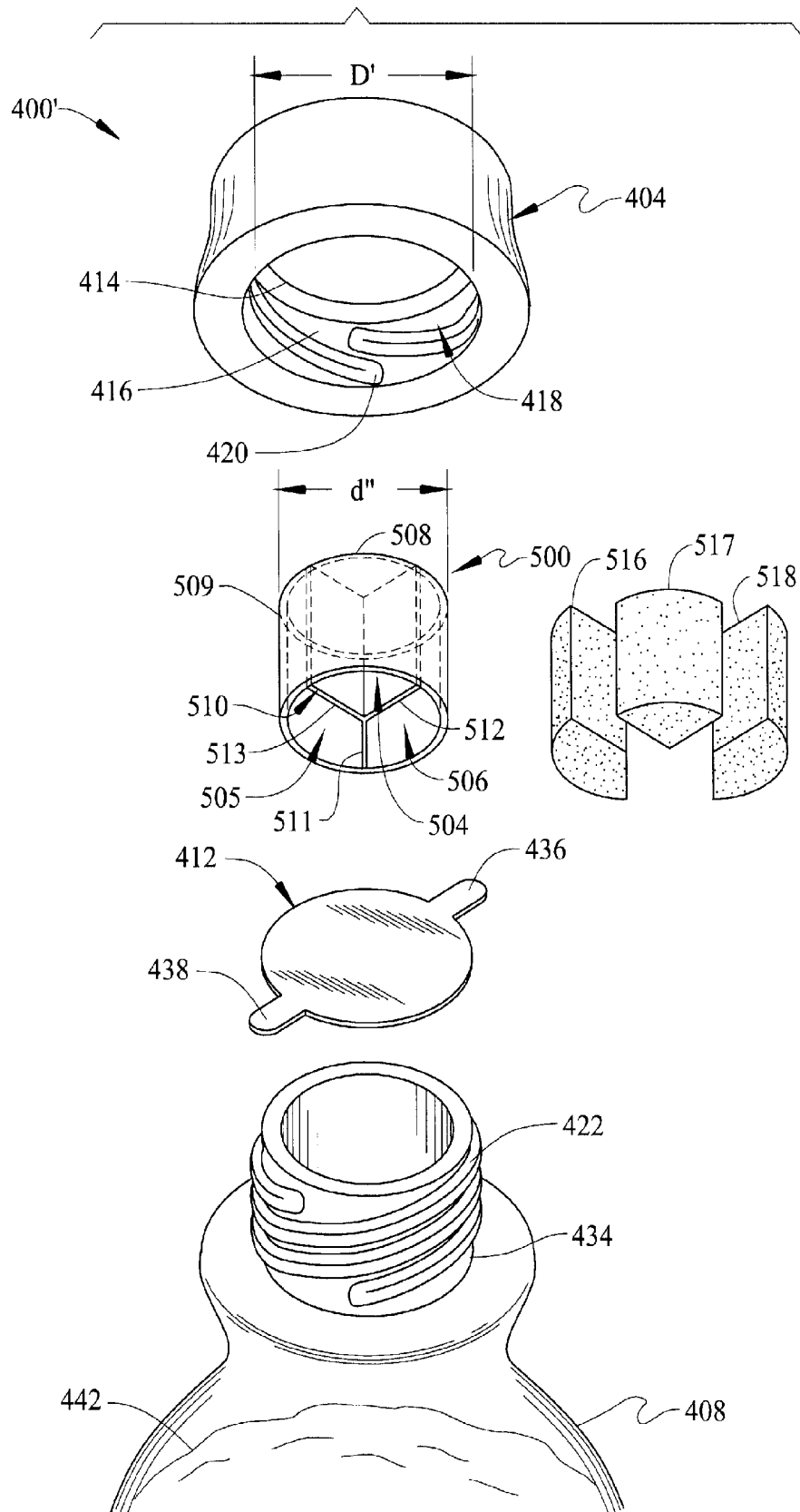


FIG. 6

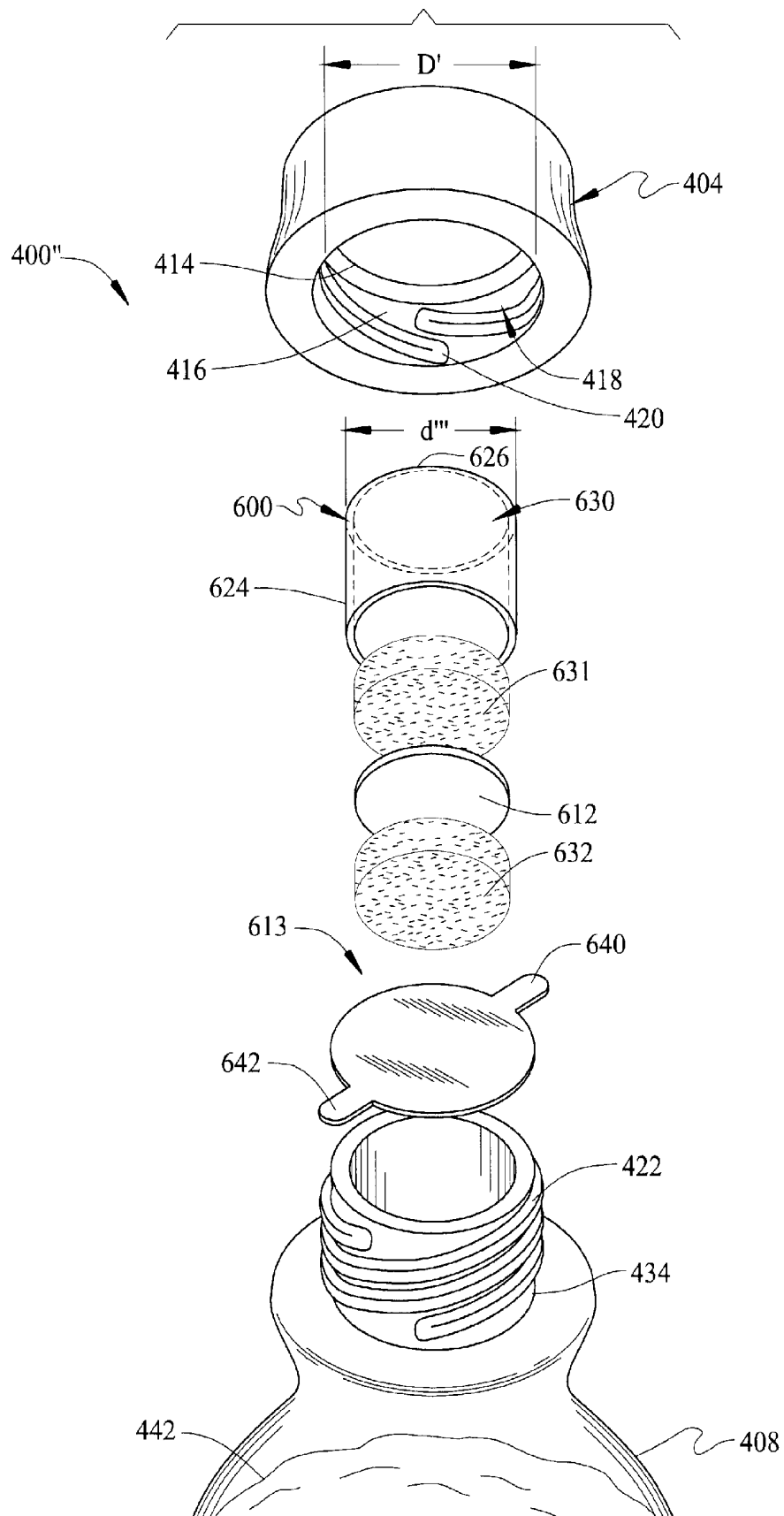
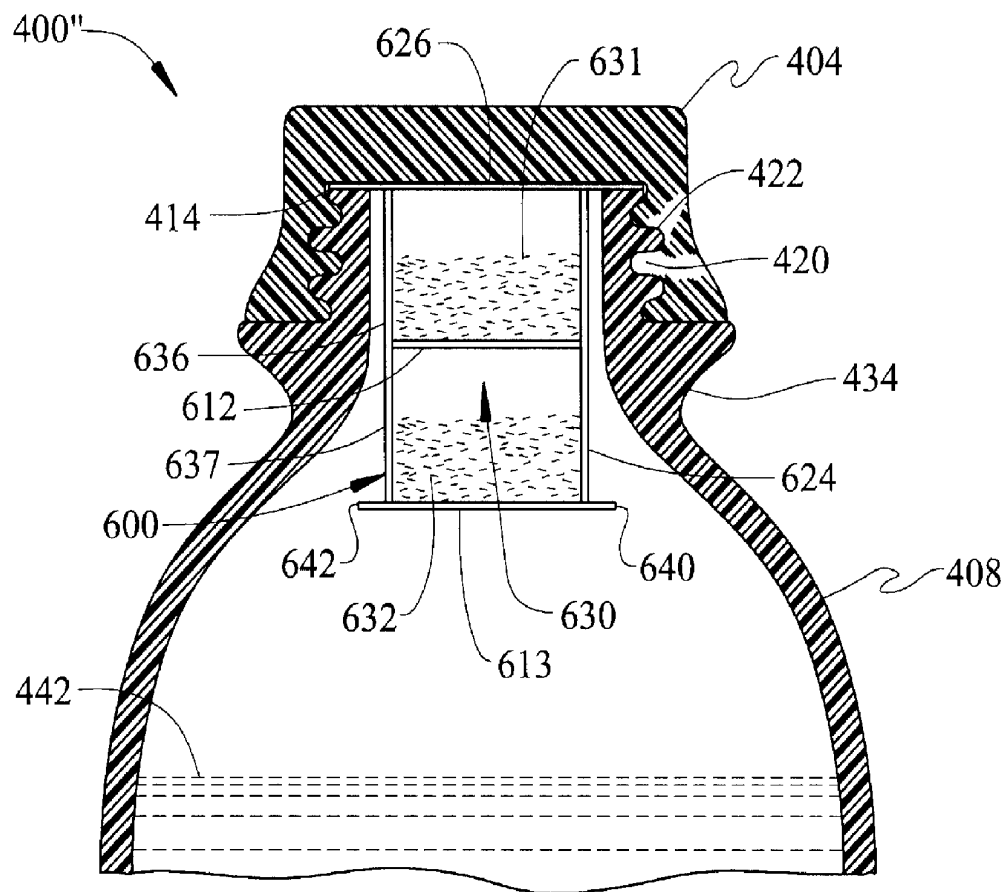


FIG. 7



## INTERNAL DRINK MIX SYSTEM

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application represents a continuation-in-part of U.S. patent application Ser. No. 11/196,420 entitled "Drink Mix System", filed Aug. 4, 2005 and claims the benefit of U.S. Provisional Patent Application Ser. No. 60/850,380, filed Oct. 10, 2006.

### BACKGROUND OF THE INVENTION

#### [0002] 1. Field of the Invention

[0003] The present invention pertains to the art of drink mix systems and, more specifically, to an additive mixing system for screw-cap containers including additive holders that allow additives to be selectively added to a liquid by a user. The invention may be utilized to customize soft drinks, juices, bottled water, alcoholic beverages and other marketed drinks.

#### [0004] 2. Discussion of the Prior Art

[0005] Billions of beverage containers are sold throughout the world every year. Generally, they are limited to only one flavor per container, and the total range of flavors available from bottlers is quite limited when compared with the vast quantities sold and the many millions of consumers involved. Thus far, few simple, inexpensive options exist that allow consumers the freedom to enhance or multiply flavors for satisfying individual tastes without utilizing specialized beverage containers or caps.

[0006] Virtually all conventional beverage bottles now marketed have a narrow threaded neck adapted to mate with a threaded, small diameter cap. Thus, consumers who wish to add their own flavoring to a beverage (e.g., lemon concentrate to bottled water) must remove the cap and insert their additive through the narrow bottle opening—a procedure that can be inefficient, untidy and inconvenient.

[0007] One system's approach that has been explored for introducing additives within a closed container is to package the additives within storage cells incorporated into specifically designed caps. For example, U.S. Pat. Nos. 6,170,654 and 6,561,232 disclose caps shaped to include storage areas that release additives into a beverage or liquid upon opening of the cap, but do not allow a user to choose a range of additives or the quantity to be added. In other systems (e.g., U.S. Pat. No. 6,372,270, Japanese Patent Document No. 2003/072822 and World Patent Document No. 2004/060766), an additive also is housed in a storage area of a cap such that a user can mix the additive with a liquid. However, these systems require specifically constructed containers and caps, thereby increasing container size, complexity and manufacturing costs.

[0008] As a consequence of the system limitations cited above, there remains a need in the art for an additive mixing system that is inexpensive to manufacture, allows a user to easily introduce several additives to a liquid and can utilize standard beverage bottles and caps.

### SUMMARY OF THE INVENTION

[0009] The present invention is directed to a drink mix system including a standard threaded container cap having

an additive holder attached thereto. One or more seals are provided to secure different flavoring additives within the holder to prevent liquid in the container from contacting the additives until so desired by a user. The seals preferably include tabs to aid in removal and can be easily perforated by a user. The additive holder preferably include inner and outer concentric holding spaces, wedge shaped holding spaces or stacked holding spaces.

[0010] When a user wishes to introduce an additive to a contained liquid, he/she simply removes the cap from the container, selectively removes or perforates one or more seals of the additive holder, dispenses one or more additives into the liquid, replaces the cap on the container and shakes the container to dissolve the additive within the liquid.

[0011] Additives can constitute vitamins, flavorings, coloring, or any other desired additive, and may be in the form of powders, liquids, syrups or gels that dissolve easily in liquid. This results in an inexpensive drink mix system that allows a user to selectively add one or more additives to a beverage container, either at once or sequentially. Moreover, the adaptability of the invention to standardized bottle and cap designs allows for the alternative production and introduction of new flavors or flavor sequences not provided by the beverage industry.

[0012] Additional objects, features and advantages of the present invention will become more readily apparent from the following detailed description of a preferred embodiment when taken in conjunction with the drawings wherein like reference numerals refer to corresponding parts in the several views.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a perspective exploded view of a first embodiment of the drink mix system of the present invention;

[0014] FIG. 2 is a cross-sectional side view of the embodiment of FIG. 1;

[0015] FIG. 3 is a cross-sectional side view of a second embodiment of the present invention;

[0016] FIG. 4 is a perspective exploded view of a third embodiment of the present invention;

[0017] FIG. 5 is a perspective exploded view of a fourth embodiment of the present invention;

[0018] FIG. 6 is a perspective exploded view of a fifth embodiment of the present invention; and

[0019] FIG. 7 is a cross-sectional view of the fifth embodiment shown in FIG. 6.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] With initial reference to FIG. 1, a drink mix system 10 includes a bottle cap 20 used to close a bottle 30, an additive holder or disk 40 and a seal 50. Cap 20 includes an end wall 60 and a side wall 70 which collectively define an inner portion 80. Cap 20 can be any cap having threads 90 that extend from side wall 70 and are adapted to mate with threads 100 on bottle 30. Preferably, cap 20 and bottle 30 have standard structures and shapes; thus allowing bottles and caps currently on the market to be used with little or no

modification in conjunction with the present invention. Disk 40 includes first and second sides 110 and 111, and preferably also includes first and second diametrically opposed tabs 120 and 121. Disk 40 is formed from cardboard, plastic, foam or any other thin flexible material capable of supporting a beverage or drink additive. A first drink additive 130 is coated on first side 110 of disk 40. Preferably, for a greater range of additives, a second drink additive 140 is coated on second side 111 of disk 40. Optionally, an additional (third) drink additive, or layer of additive 150 is coated on end wall 60 of cap 20. Additional drink additive 150 is used by itself in drink mix system 10, or is used in combination with disk 40. Likewise, disk 40 is used by itself in drink mix system 10 or is used in combination with additional drink additive 150. Drink additives 130, 140 and 150 may be any type and combination of desired additives, such as vitamins, flavorings, colorings, etc. In one example, additive 130 includes a lemon flavoring while additive 140 includes a lime flavoring. Preferably, disk 40 is formed by depositing a fluid or semi-fluid amount of additive 130 on first side 110 and hardening the additive by drying, microwaving, cooling, radiant heat, etc. When desired, second additive 140 is then deposited on second side 111 and hardened. Likewise, additional drink additive 150 is formed by depositing a fluid or semi-fluid amount of the additive onto end wall 60 of cap 20 and hardening. In the case where disk 40 is made of an absorbent foam or sponge-like material, additives 130 and 140 are impregnated within disk 40 or deposited on the surface thereof. Seal 50, which is adapted to seal off disk 40 and end wall 60 of cap 20 from any liquid contained within bottle 30, is manufactured from plastic, foil, or any other flexible material impermeable to liquids.

[0021] FIGS. 1 and 2 will now be referenced with respect to the way drink mix system 10 is assembled and used. The outer diameter  $d$  of disk 40 is such that when disk 40 is placed into inner portion 80 of cap 20, disk 40 is self-retained within cap 20. In one example, as shown in FIG. 1, an outer diameter  $d$  of disk 40, when first and second tabs 120, 121 are folded, is substantially the same as the inner diameter  $D$  of cap 20 such that disk 40 fits snugly within inner portion 80. Although not shown, it is also contemplated that first and/or second tabs 120 and 121 can be left to extend from disk 40 such that the outermost diameter of disk 40 plus the length of the extended first and/or second tabs 120, 121 is substantially the same as the inner diameter  $D$  of cap 20, such that first and/or second tabs 120 and 121 aid in retaining disk 40 within cap 20. In this manner, disk 40 can either have its first and/or second tabs 120, 121 folded to fit within a smaller diameter cap, or can have its first and/or second tabs 120, 121 extended so as to fit within a larger diameter cap. In the case where disk 40 is formed of a foam or sponge-type material, outer diameter  $d$  of disk 40 is formed slightly greater than inner diameter  $D$  of cap 20 so that disk 40 can be slightly compressed to fit within inner portion 80, and once within inner portion 80, will expand to hold itself in place. Once disk 40 is housed within inner portion 80, seal 50 is placed over disk 40 such that disk 40 is sandwiched between end wall 60 and seal 50. Cap 20 is then screwed onto bottle 30. Seal 50 prevents any liquid contained within bottle 30 from coming into contact with disk 40, and thus with additives 130 and 140. Of course, when additional drink additive 150 is utilized in drink mix system 10, seal 50 also prevents liquid from contacting additional drink additive 150.

[0022] When a user wishes to drink from bottle 30, the user unscrews cap 20 from bottle 30 and decides to add one or more of additives 130, 140 and 150 to a liquid within bottle 30. In the case where the user desires to add all of the additives to the liquid, he/she simply removes seal 50 from cap 20, preferably with the assistance of first and second tabs 155 and 156, and replaces cap 20 on bottle 30. The second additive 140 is now exposed to the liquid within bottle 30 and the user can shake bottle 30 to dissolve a desired amount of second additive 140 into the liquid. Once the desired amount of second additive 140 has been dissolved, the user removes cap 20 from bottle 30 and flips disk 40 over such that first additive 130 is now exposed to the liquid in bottle 30. Preferably, first and second tabs 120 and 121 can be utilized to aid a user in flipping disk 40. Next, the user replaces cap 20 on bottle 30 and shakes bottle 30 to dissolve a desired amount of first additive 130 in the liquid. The user can then remove cap 20 from bottle 30 for a third time, remove disk 40 from cap 20, and replace cap 20 on bottle 30. This allows additional drink additive 150 to be exposed to the liquid in bottle 30. Finally, the user can shake bottle 30 to dissolve a desired amount of additional drink additive 150 in the liquid. Of course, if a user does not wish to add a particular additive to the liquid, the mixing step associated with that particular additive can be skipped. For example, if a particular cap 20 includes only disk 40 having a first additive 130 which is lemon flavored and a second additive 140 which is lime flavored, a user can choose to dissolve only the lime flavored additive in the liquid within bottle 30. In another example, if a particular cap includes a cherry flavored additional drink additive 150, a user can choose to add or ignore the cherry flavored additive. Drink mix system 10 therefore allows a user to flavor a bottled beverage to his or her particular tastes, or to enjoy a sequence of several different flavors while proceeding to consume a beverage.

[0023] Turning now to FIG. 3, there is shown a second embodiment of the present invention indicated at 210, including a bottle cap 220 adapted to close a bottle 230, a seal 250 and a nugget 260 having a first or outer additive layer 270 and optionally, a second or inner additive layer 280. Preferably, nugget 260 is bullet-shaped to aid in dissolution of nugget 260 in a liquid and includes an end wall 290. Seal 250 is placed over nugget 260 to sandwich nugget 260 between seal 250 and an end wall 295 of cap 220, with end wall 290 of nugget 260 abutting end wall 295. Seal 250 is preferably in the form of shrink wrap, but can be foil or any other flexible material impermeable to liquid. Just as discussed in accordance with the first embodiment, cap 220 can be any cap having threads 300 that extend from a side wall 310 and are adapted to mate with threads 320 on a bottle 230. Preferably, cap 220 and bottle 230 have standard shapes, thus allowing bottles and caps currently on the market to be used in conjunction with the present invention. Nugget 260 can be formed directly on cap 220 or can be separately formed and sealed to cap 220, preferably using a seal 250. When a user desires to dissolve nugget 260 in a liquid within bottle 230, he or she simply removes cap 220 from bottle 230, removes seal 250 from cap 220, replaces cap 220 on bottle 230 and shakes bottle 230 to dissolve nugget 260 within the liquid. Outer and inner additive layers 270 and 280 can comprise any type and combination of desired additives, such as vitamins, flavorings, colorings, etc. For example, outer additive layer 270 can include lemon flavoring while inner additive layer 280 can include lime

flavoring. An original flavoring in bottle 30 can be used as an additive so as to permit the user to intensify the original taste. For example, a bottle originally containing cherry soda could be fitted with additional cherry flavoring.

[0024] A third embodiment of the drink mix system of the present invention will now be discussed with reference to FIG. 4. Drink mix system 400 includes a bottle cap 404, used to close a bottle 408, an additive holder 410 and a seal 412. Cap 404 includes an end wall 414 and a side wall 416 collectively defining an inner portion 418. Cap 404 can be any cap having threads 420 that extend from side wall 416 and are adapted to mate with threads 422 on bottle 408. As with the first and second embodiments, cap 404 and bottle 408 preferably have standard structures and shapes.

[0025] Additive holder 410 includes an outer tube or wall 424, a concentric inner tube or wall 426 and a top wall 428 connected to both outer wall 424 and inner wall 426. A first additive holding space 430 is defined between top wall 428 and outer and inner walls 424 and 426 and is adapted to hold a variety of additives, such as additive 431. Likewise, a second additive holding space 432 is defined by inner wall 426 and is adapted to hold a variety of additives, such as additive 433. As with drink additives 130, 140 and 150 listed above, additives 431 and 433 may be any type and combination of desired additives, such as vitamins, flavorings, colorings, etc. For example, additive 431 may be lemon flavoring and additive 433 may be lime flavoring. Although shown in a solid form, it should be understood that additives 431 and 433 may be in any other useable form, such as a powder, gel, or liquid form, for example.

[0026] Additive holder 410 has a smaller diameter d' than the inner diameter D' of cap 404, and fits within inner portion 418 of cap 404. Top wall 428 of additive holder 410 abuts and is removable from or permanently fixed to end wall 414 of cap 404. The outer diameter of additive d' is such that threads 420 on cap 404 are unobstructed and can mate easily with threads 422 of bottle 408. Additionally, outer and inner walls 424 and 426 are preferably long enough to extend into at least the neck portion 434 of bottle 408, providing first and second additive holding spaces 430 and 432 with sufficient volume to hold a desired amount of additive. Additionally, the length of additive holder 410 preferably extends beyond cap sidewall 416 to aid a user in dispensing an additive stored therein without spillage. It should be understood that the number of additive holding spaces need not be limited to two as shown. Generally, the number of additive holding spaces is only limited by the inner diameter D' of cap 404.

[0027] Seal 412 preferably includes first and second tabs 436, 438 and is adapted to seal additive holding spaces 430, 432 of additive holder 410 to selectively contain additives therein. Seal 412 can be a conventional sealing material and may be pulled or scratched off, or alternatively pierced, in order to access additives within additive holder 410. Optionally, seal 412 can consist of separate sheets or seals (not shown), each sealing one of the additive holding spaces 430, 432.

[0028] When a user wishes to drink from bottle 408, he or she simply unscrews cap 404 from bottle 408 and decides when and if to add one or more additives to a liquid 442 within bottle 408. In the case where the user desired to add all of the additives to the liquid, he or she simply removes

seal 412 from additive holder 410, either by perforation of the seals or with the assistance of pull tabs 436, 438. If a user does not wish to add a particular additive to liquid 442, that particular additive can remain sealed within additive holder 410 or may be discarded. The desired additives are then added to liquid 442 to dissolve. Optionally, a user may close cap 404 and shake bottle 408 to aid in dissolution. Additives may be added all at once or in sequence over time. Drink mix system 400 therefore allows a user to flavor a bottled beverage to his or her particular tastes, or to enjoy a sequence of different flavors while proceeding to consume a beverage.

[0029] A fourth embodiment indicated at 400' will now be discussed with reference to FIG. 5. As with the third embodiment, drink mix system 400' utilizes a standard cap 404 and bottle 408. These elements have already been discussed previously, and will not be discussed in further detail. Instead, your attention is drawn to an additive holder 500, which includes first, second, and third additive holding spaces 504, 505 and 506. More specifically, additive holder 500 includes a top wall 508, an outer wall 509, and an inner dividing wall 510 having first, second and third sections 511, 512 and 513. As shown, first additive holding space 504 is defined by top wall 508, outer wall 509, and second and third sections 512 and 513; second additive holding space 505 is defined by top wall 508, outer wall 509 and first and third sections 511 and 513; and third additive holding space 506 is defined by top wall 508, outer wall 509, and first and second sections 511 and 512. Although shown as holding solid additive blocks 516, 517 and 518, it should be understood that any type of desired additive may be stored in additive holder 500. As with previous embodiments, additives 516-518 can comprise any combination of desired additives.

[0030] Additive holder 500 is adapted to fit within inner portion 418 of cap 404, wherein top wall 508 of additive holder 500 abuts and is removable from or permanently fixed to end wall 414 of cap 404. The outer diameter d" of additive holder 500 allows sufficient space so that threads 420 on cap 404 are unobstructed and can mate easily with threads 422 of bottle 408. Additionally, outer wall 509 and inner wall 510 are preferably long enough to extend into at least the neck portion 434 of bottle 408, providing a volume in first, second and third additive holding spaces 504-506 sufficient to hold a desired amount of additive. Additionally, the length of at least outer wall 509 preferably extends beyond cap sidewall 416 to aid a user in dispensing an additive stored therein without spillage. It should be understood that the number of additive holding spaces need not be limited to three as shown. Generally, the number of additive holding spaces is only limited by the inner diameter D' of cap 404.

[0031] In a manner similar to drink mix system 400, seal 412 is adapted to seal additive holding spaces 504-506 in drink mix system 400'. Optionally, seal 412 can consist of separate sheets or seals (not shown) each sealing one of additive holding spaces 504-506.

[0032] The function and operation of the additive holder 500 is generally the same as the function and operation of additive holder 410. That is, when a user wishes to drink from bottle 408, he or she simply unscrews cap 404 from bottle 408 and decides when and if to add one or more

additives to liquid **442** within bottle **408**. In the case where the user desired to add all of the additives to the liquid, he or she simply removes seal **412** from additive holder **500**, either by perforation of the seal or with the assistance of pull tabs **436**, **438**. If a user does not wish to add a particular additive to liquid **442**, that particular additive can remain sealed within additive holder **500** or may be discarded.

[0033] A fifth embodiment of the drink mix system of the present invention will now be discussed with reference to FIGS. 6 and 7. As with the third and fourth embodiments, drink mix system **400** utilizes a standard cap **404** and bottle **408**. These elements have already been discussed previously, and will not be discussed in further detail. Instead, your attention is drawn to an additive holder **600** including an outer tube or wall **624** and a top wall **626**, which define a first additive holding space **630** adapted to hold one or more additives, such as additives **631** and **632**. As with drink additives listed above, additives **631** and **632** may be any type and combination of desired additives, such as vitamins, flavorings, colorings, etc. Although shown in powdered form, it should be understood that additives **631** and **632** may be in any other useable form, such as a solid, gel, or liquid form.

[0034] As shown, additive holder **600** is adapted to fit within cap **404**, wherein top wall **626** of additive holder **600** abuts and is removable from or permanently fixed to end wall **414** of cap **604**. The outer diameter  $d''$  of additive holder **600** allows sufficient space so that threads **420** on cap **404** are unobstructed and can mate easily with threads **422** of bottle **408**. Additionally, outer wall **624** is preferably long enough to extend into at least the neck portion **434** of bottle **408**, providing a volume in additive holding space **630** sufficient to store a desired amount of additive. Furthermore, the length of additive holder **600** preferably extends beyond cap sidewall **416** to aid a user in dispensing an additive stored therein without spillage. It should be understood that the number of additive holding spaces need not be limited to two as shown.

[0035] A seal **612** provides a sealed barrier between a first portion **636** of additive holding space **630** and a second portion **637** of additive holding space **630**. Likewise, a seal **613** provides an impermeable barrier between liquid **442** in bottle **408** and the second portion **637**. Seals **612** and **613** can be made from any conventional sealing material and may be pulled or scratched off, or alternatively pierced, in order to access additives within additive holder **600**. Seals **612** and **613** may optionally include pull tabs, such as tabs **640** and **642**, to aid in removal of the seals.

[0036] When a user wishes to drink from bottle **408**, he or she simply unscrews cap **404** from bottle **408** and decides when and if to add one or more additives to liquid **442** within bottle **408**. More specifically, a user may remove or puncture seal **613**, thereby gaining access to additive **632**. The user may then mix a desired amount of additive **632** with liquid **442**, or discard all or some of the additive. Next, the user may then remove or puncture seal **612**, thereby gaining access to additive **631**, or leave seal **612** in place. When seal **612** is punctured or removed, the user may then add a desirable amount of additive **631** to liquid **442**.

[0037] Although described with reference to a preferred embodiment of the invention, it should be readily understood that various changes and/or modifications can be made

to the invention without departing from the spirit thereof. For instance, a fourth additive could be on seal **50** to supplement disk **40**. Furthermore, although shown as cylindrical, additive holders may be a different shape without departing from the invention. In general, the invention is only intended to be limited by the scope of the following claims.

I claim:

1. A drink mix system for mixing one or more additives into liquid held by a container comprising:

a cap including an end wall and a side wall which collectively define an inner portion, and threads extending from the side wall into the inner portion adapted to mate with threads formed on the container;

an additive holder including a top wall and an outer wall extending therefrom, the top wall and outer wall defining a first additive holding space, wherein the top wall is attached to the end wall of the cap;

a first additive removably stored in the first additive holding space; and

a removable first seal adapted to seal the first additive holding space.

2. The drink mix system of claim 1, wherein the first seal includes a tab to aid in removal of the first seal from the additive holder.

3. The drink mix system of claim 1, wherein the additive holder is permanently attached to the end wall of the cap.

4. The drink mix system of claim 1, wherein the outer wall of the additive holder is sized to extend into a neck portion of the container.

5. The drink mix system of claim 1, wherein the seal is easily perforated by a user to allow mixing of at least the first additive with the liquid in the container.

6. The drink mix system of claim 1, wherein the additive holder comprises a ridged or semi-ridged material.

7. The drink mix system of claim 1, wherein the container is a bottle.

8. The drink mix system of claim 1, wherein the first additive is selected from the group consisting of a vitamin, a flavoring, a coloring agent and a combination thereof.

9. The drink mix system of claim 1, wherein the first additive is in the form selected from the group consisting of a liquid, a solid, a powder, a gel and a combination thereof.

10. The drink mix system of claim 1, wherein the additive holder further comprises an inner wall defining a second additive holding space; and a second additive removably stored in the second additive holding space.

11. The drink mix system of claim 10, wherein the inner wall further defines a third additive holding space having a third additive removably stored therein.

12. The drink mix system of claim 10, wherein the first seal is adapted to seal the first and second additive holding spaces.

13. The drink mix system of claim 10, wherein the inner wall of the additive holder is sized to extend into a neck portion of the container.

14. The drink mix system of claim 10, wherein the first additive includes a lemon flavoring and the second additive includes a lime flavoring.

15. The drink mix system of claim 10, wherein both the outer and inner walls are cylindrical in shape.

**16.** The drink mix system of claim 10, wherein the outer and inner walls define wedge-shaped first and second additive holding spaces.

**17.** The drink mix system of claim 10, further comprising a removable second seal separating said first additive holding space from a second additive holding space.

**18.** The drink mix system of claim 10, wherein the second additive is selected from the group consisting of a vitamin, a flavoring, a coloring agent and a combination thereof.

**19.** The drink mix system of claim 10, wherein the second additive is in the form selected from the group consisting of a liquid, a solid, a powder, a gel and a combination thereof.

**20.** The drink mix system of claim 10, wherein the second seal includes a tab to aid in removal of the second seal from the additive holder.

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