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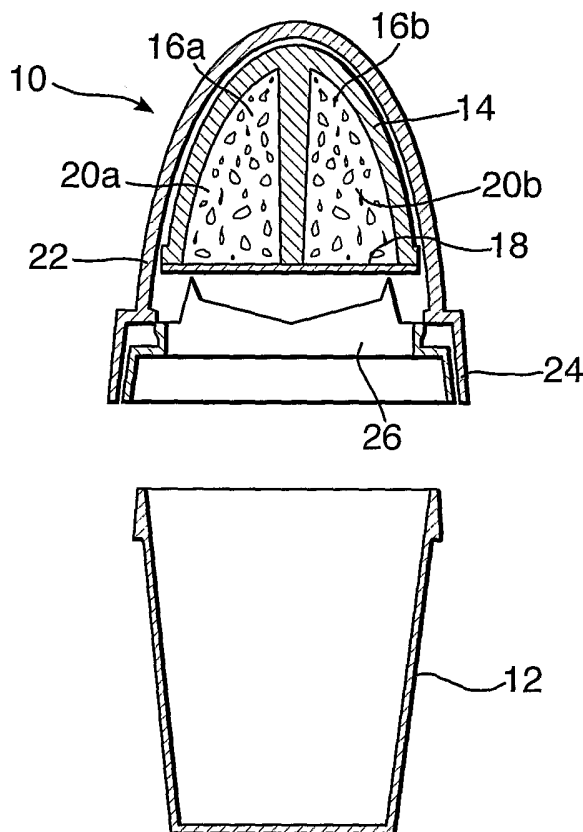
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(54) Title: BEVERAGE MIXING AND DISPENSING DEVICE



(57) Abstract: The invention provides a beverage mixing and dispensing device 10 comprising an open-bottomed first container 14, subdivided into a plurality of chambers 16a and 16b, each of the chambers containing a component 20a, 20b of a mixed beverage to be formed and each of the chambers being provided with a foil 18 sealing the bottom opening thereof; and an open-bottomed housing 22 at least partially surrounding the first container 14 and being provided with portions 24 extending beyond the plane of the foil seals 18, at least some of the portions being associated with foil piercing means 26 extending into areas below the foil seals 18, the container 14 and the foil piercing means 26 being displaceable relative to each other, the arrangement being such that upon displacement of the multi-chambered container 14 and the foil piercing means 26 relative to each other, the foils 18 sealing a plurality of the chambers 16a, 16b are pierced and the contents 20a, 20b of the chambers fall into and are mixed together in a receiving container 12 positioned therebelow.

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A BEVERAGE MIXING AND DISPENSING DEVICE

The present invention relates to the preparation of beverages. More particularly, the invention provides a device holding a plurality of separate components which can be released into a drinking cup to form a desired beverage.

In the prior art there are known containers which separately store one or more components of a beverage, salad, baby feed, hair dye or medicine, and allow the user to mix the stored components with each other and/or together with a carrier liquid such as water, carbonated water, milk, fruit juice, an alcoholic solution or the like. This arrangement is particularly advantageous where least one or more of the various components degrades, discolors or loses freshness shortly after mixing.

People traveling or participating in picnics also find great convenience in having all the ingredients needed to prepare a beverage ready for consumption. The compartmentalized components may contain all that is needed to complete the desired beverage, for example an alcoholic drink such as a cocktail. Where cold and/or hot water is expected to be available at or near the site of consumption the device may contain only the remaining ingredients, for example coffee, sugar or another sweetener, tea, milk or a substitute.

The prior art is voluminous, but it is believed that the following review of recent US patents provides a good picture of the work which has been carried out in this field.

In US Patent no. 6,244,433 B1 Vieu discloses a device for storing three components and for mixing and dispensing the mixture. The device is rather complex and may require glass vessels to safely hold the components of a hair die.

Castillo claims a wide variety of storage devices in US Patents 6,263,923 B1 and 6,412,526 B2 all associated with a bottle screw cap. In most embodiments preparing the beverage requires opening the screw cap, removing adhesive sealing tape and manually manipulating the containers to empty their contents into the bottle, with the attendant probability of spillage.

In US Patent no. 6,302,268 Michaeli discloses a salad container which has an insert chamber to hold salad dressing. The indent seal is of doubtful

effectiveness and there is no protection against or external indication of premature activation.

The storing devices disclosed by Moscovitzin US Patents 6,527,110 B2 and 6,533,113 B2 refer to the addition of a single component to a liquid stored in a screw cap bottle.

US Patent no. 6,708,735 B1 to Kenihan discloses a lid closure holding a confection to be dispensed into a milk shake. For use the consumer twists a small central cap to tear a sealing layer along a tear line. Then the consumer removes the central cap and needs to remove a portion of a sealing layer from the inner portion of the lid closure.

A basic difficulty with most prior art devices lies in the sealing of the components in separate plastic containers. If the container is basically open, as for example seen on the title page of the 6,412,526 B2 patent, the seal is ineffective because closure on the shoulder against the container provides a poor seal. A detent sealed container, for example the salad container seen in US 6,302,268 B1, is also not leak-proof. If however the plastic container is sealed, and rupture is to occur by breaking the container along weakening lines, considerable force may be needed to open the container, to the inconvenience of the user.

It is therefore one of the objects of the present invention to obviate the disadvantages of prior art multi-component storage containers and to provide a container which is easy to use and yet is well sealed by a foil.

It is a further object of the present invention to provide such container in a compact form for ease of refrigeration, marketing and transport.

Yet a further aim of the invention is to provide a container protected against accidental release of the components, and to provide a clear externally visible indication of prior discharge of the separately-stored item.

The present invention achieves the above objects by providing a beverage mixing and dispensing device comprising:

a) an open-bottomed first container, subdivided into a plurality of chambers, each of said chambers containing a component of a mixed beverage to be formed and each of said chambers being provided with a foil sealing the bottom opening thereof; and

- b) an open-bottomed housing at least partially surrounding said first container and being provided with portions extending beyond the plane of said foil seals, at least some of said portions being associated with foil piercing means extending into areas below said foil seals, said container and said foil piercing means being displaceable relative to each other, the arrangement being such that upon displacement of said multi-chambered container and said foil piercing means relative to each other, the foils sealing a plurality of said chambers are pierced and the contents of said chambers fall into and are mixed together in a receiving container positioned therebelow.

In a preferred embodiment of the present invention there is provided a beverage mixing and dispensing device wherein all of the components of the mixed beverage to be formed are contained in said plurality of chambers, and wherein at least one of said chambers contains an alcoholic liquid beverage component and wherein all of the components of the mixed beverage to be formed are contained in said plurality of chambers, and wherein at least one of said chambers contains an alcoholic liquid beverage component.

In a further preferred embodiment all of the components of the mixed beverage to be formed are contained in said plurality of chambers.

In yet a further embodiment a beverage mixing and dispensing device said receiving container is sized to override said open-bottomed housing thereby enabling the unitary compact packaging of said device and the container into which the beverage is mixed.

In another embodiment beverage mixing and dispensing device wherein the foils sealing the plurality of said chambers are all simultaneously pierced upon displacement of said multi-chambered container and said foil-piercing means relative to each other.

In a further embodiment the beverage mixing and dispensing device compatible dry components are stored in a first of said chambers and a liquid component is stored in at least one further chamber. Also, a liquid alcoholic component may be stored in more than one chamber of said container.

In another embodiment said chambers are slidably mounted in said open-bottomed housing and means are provided for preventing unintended premature contact between said chambers and said foil-piercing means.

In a practical example, means for preventing undesired sliding of said chambers relative to said housing is a detent, said chambers being provided with a central upper projection extending above said housing, and wherein firm downward hand pressure on said central upper projection overcomes the resistance of said detent and causes downward displacement of said chambers to bring said chambers into contact with said foil-piercing means.

In a most preferred embodiment of the present invention there is provided a beverage mixing and dispensing device wherein said chambers are integral with said open-bottomed housing which can be flexibly supported over said receiving container and wherein hand pressure on said open-bottomed housing causes downward displacement of said integral chambers to cause said foil to make contact with said foil piercing means to release said beverage components into said receiving container.

In another preferred embodiment of the beverage mixing and dispensing device said displacement is a rotational displacement and said foil-piercing means are at least a pair of pre-tensioned blades said foil-piercing means comprises a plurality of radially spaced-apart pre-tensioned blades, said blades resting on a plurality of radially spaced rigid segments, means being provided to rotate said blades relative to said rigid segments so that said blades are positioned adjacent to gaps between said segments, allowing said blades to spring upwards to pierce said foils and so to release the contents of said chambers into a receiving container.

In U.S. Patent no. 6,152,296 Shih describes and claims an additive holder for a PET bottle, the device having an internal screw thread to match the external screw thread of the bottle. A central upper projection can be pressed down by hand so that the lower membrane of the storage compartment is cut by sharp edges of a toothed neck. No detent is provided to prevent accidental downward motion of the storage unit and thus cause premature release of the stored contents.

In contradistinction thereto, the present invention is a self-contained device independent of any bottle screw cap closure. Provision is made for the storage and

release of a plurality of food components, which mix with any fluid in a cup-like container which also serves to protect the device from accidental premature activation. At the time of use the cup which has protected the device previously may be used for drinking the beverage now formed.

It will thus be realized that the novel device of the present invention serves to

- a) avert the danger of spillage, as there is no manual manipulation of the contents;
- b) enable the preparation of multi-component beverages, for example cocktails;
- c) protect the separate components by providing a lower foil, thus extending the shelf life of the device; and
- d) provide a device that is compact and can be safely transported without fear of premature release of the chamber contents. The compact dimensions of the device are particularly helpful for items normally refrigerated.

The invention will now be described in connection with certain preferred embodiments with reference to the following illustrative figures so that it may be more fully understood.

With specific reference now to the figures in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the invention. In this regard, no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental understanding of the invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.

In the drawings:

FIG. 1 is a sectional elevation view of a preferred embodiment of the device according to the invention;

FIG. 2 is a sectional elevation view of an embodiment wherein the container overrides the upper (external) side of the housing;

FIG. 3 is a sectional elevation view of an embodiment where the foils are all simultaneously pierced;

FIG. 4 is a sectional elevation view of an embodiment wherein the chambers are slidably mounted in the outer housing;

FIG. 5 is an elevational view, partially sectioned, of the same embodiment mounted on a cup container;

FIG. 6 is an elevational view of the same embodiment during discharge of the beverage components;

FIG. 7 is a sectional elevation view of an embodiment wherein the components are directly stored in the outer housing;

FIG. 8 is a sectional elevation view of an embodiment similar to that seen in FIG. 6;

FIG. 9 is a sectional elevation view of an embodiment including a detent;

FIG. 9b is a sectioned detail view of said detent.

FIG. 10a is a sectional elevational view of a further preferred embodiment of the device according to the invention.

FIG 10b is a bottom view of the device of figure 10a.

FIG 11a is a sectional elevational view of the device of figure 10 during discharge of the beverage contents and,

FIG 11b is a bottom view of the device of figure 11a.

There is seen in FIG. 1 a beverage mixing and dispensing device 10, ready for assembly onto a drinking cup 12.

An inverted open-bottomed first container 14 serves as a housing for a plurality of chambers 16, also where designated 16a, 16b, 16c etc. Each chamber 16 contains a component 20 of a mixed beverage to be formed. All the chambers 16 are closed by a foil 18 which seals the chamber bottom opening, which not only prevents premature spillage but also serves to protect the aroma of the component 20.

Preferably all of the needed components 20a, 20b, 20c etc of the mixed beverage to be formed are contained in said plurality of chambers 16. For example, if the device 10 is intended to produce a cocktail, one of said chambers 16a contains an alcoholic liquid beverage component, while other compartments 16b, 16c (not seen) will contain ingredients such as rum, egg-white, lemon juice, syrup, bitters, or fruit juice, or whatever is required for the particular beverage to be

formed. However where the carrier liquid is water, this can be omitted as cold and hot water are likely to be available at the site of consumption.

An open-bottomed housing 22 at least partially surrounds said first container 14. In the shown embodiment the housing 22 is substantially half egg-shaped.

The housing 22 is provided with extending portions 24 beyond the plane of the foil 18. The portions 24 support a foil piercing unit 26 extending into areas below the foil 18. When the open-bottomed housing 10 sits on the drinking cup 12, as seen in FIG. 3, hand pressure applied to the top of the housing 22 causes downward movement of both the first container 14 and the housing 22. However the foil piercing unit 26 is rigidly supported by drinking cup 12 in a manner preventing downward movement thereof. Consequently the foil piercing unit 26 cuts the foil 18 sealing the components 20, similar to the embodiment seen in FIG.8. The components 20 fall into and are mixed together in a receiving container such as the drinking cup 12, positioned there below.

With regard to the rest of the figures, similar reference numerals have been used to identify similar parts.

Referring now to FIG. 2, there is seen a second preferred beverage mixing and dispensing device 30.

The receiving container 28 is sized to override the upper (external) side of the open-bottomed housing 22. This arrangement allows the unitary compact packaging of the device. A further advantage is that the inside of container 28 and the housing 22 are kept clean thereby during storage and transport.

FIG. 3 illustrates a beverage mixing and dispensing device 32 wherein the foils 18 sealing the plurality of the chambers 16 are all simultaneously pierced upon downward movement of the multi-chambered container onto the foil-piercing unit 34.

The foil-piercing unit 34 seen comprises a ring-like element 36 with multiple cutting blades 38 spaced around the upper edge of the element 36. The blades 38 are integral with the element 36, and are positioned to correspond to the chambers 16 to be opened.

Turning now to FIGS. 4, 5 and 6 there is seen a further embodiment of a beverage mixing and dispensing device 40.

The chambers 42 are slidably mounted in the open-bottomed housing 44, which housing rigidly supports the foil-piercing unit 46.

A removable protective cover 48 is advantageously installed over the housing 44 for preventing unintended premature contact between the chambers 42 and the foil-piercing unit 46.

Before consumption the user applies hand pressure to the central upper projection 60 to release the components 20a, 20b into the receiving container, cup 12.

Referring now to FIG. 7, there is depicted an embodiment wherein the chambers 64 are integral with the open-bottomed housing. The arrangement is advantageous as being able to hold a larger quantity of the components 20a, 20b and reducing manufacturing costs.

In operation the device functions in a manner similar to that specified with reference to FIG. 1. The foil piercing unit is flexibly supported by the housing over the receiving container. Hand pressure on the housing 66 causes downward displacement of the housing and integral chambers 64. Thus foil 18 makes contact with the foil piercing unit 26 and releases the beverage components 20a, 20b into the receiving container, cup 12.

In FIG. 8 there is seen a beverage mixing and dispensing device 50 wherein compatible dry components 52 are stored in a first of the chambers 16a and a liquid alcoholic component 54 is stored in two further chambers 16b, 16c (16c not being visible). The beverage formed in this example is a cocktail.

Turning now to FIG. 9 shows an embodiment 56 wherein the means for preventing undesired sliding of the open-bottomed first container 14 containing chambers 16 relative to the housing 44 is a detent 58a, 58b, seen enlarged in FIG. 9b. The chambers 16 are provided with a central upper projection 60 extending above the housing 44. Firm downward hand pressure on the central upper projection 60, overcomes the resistance of the detent 58a, 58b and causes downward displacement of the chambers 16 to bring the foil 18 into contact with the foil-piercing unit 46, causing gravity release of the beverage components into the receiving container, cup 12.

Turning now to FIG. 10a there is seen a beverage mixing and dispensing device 68 wherein the displacement required to discharge the contents 70 is a rotational displacement. A central vertically-oriented shaft 72 is revolvably mounted in the device 68. The foil-piercing means are four pre-tensioned blades 74, which are connected at their inner extremity to the shaft 72. The blades 74 are urged to swing upwards, but are temporarily prevented from doing so because they rest on a rigid segment 76 of a lower plate 78. As seen clearly in FIG. 10b, each of the four blades 74 is restrained by a rigid segment 76, each segment 76 occupying about 45 degrees of the lower plate. The number of blades required will of course vary with the number of compartments 16 to be opened, which in the present example is four.

In FIG. 11a and FIG. 11b there is seen the same embodiment 68 as shown in the previous figure. However it will be seen that there has been a rotational displacement of the blades 74, due to a consumer having turned the upper control knob 80 in one hand, while gripping the remainder of the device 68 in the remaining hand. The result of such action is to rotate the shaft 72 and the blades 74 attached to said shaft relative to the rigid segments 76 so that the blades 74 are now positioned adjacent to gaps 82 between the segments 76. Release of the blades 74 allows them to immediately spring upwards to pierce the foils seen in the gap 82 and so to release the contents 70 of the chambers 16 into the receiving container cup 12. seen in FIG.1.

It will be evident to those skilled in the art that the invention is not limited to the details of the foregoing illustrative embodiments and that the present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

WHAT IS CLAIMED IS:

1. A beverage mixing and dispensing device comprising:
 - a) an open-bottomed first container, subdivided into a plurality of chambers, each of said chambers containing a component of a mixed beverage to be formed and each of said chambers being provided with a foil sealing the bottom opening thereof; and
 - b) an open-bottomed housing at least partially surrounding said first container and being provided with portions extending beyond the plane of said foil seals, at least some of said portions being associated with foil piercing means extending into areas below said foil seals, said container and said foil piercing means being displaceable relative to each other, the arrangement being such that upon displacement of said multi-chambered container and said foil piercing means relative to each other, the foils sealing a plurality of said chambers are pierced and the contents of said chambers fall into and are mixed together in a receiving container positioned therebelow.
2. A beverage mixing and dispensing device according to claim 1 wherein all of the components of the mixed beverage to be formed are contained in said plurality of chambers.
3. A beverage mixing and dispensing device according to claim 1 wherein at least one of said chambers contains an alcoholic liquid beverage component.
4. A beverage mixing and dispensing device according to claim 1 wherein said receiving container is sized to override said open-bottomed housing thereby enabling the unitary compact packaging of said device and the container into which the beverage is mixed.
5. A beverage mixing and dispensing device according to claim 1 wherein the foils sealing the plurality of said chambers are all simultaneously pierced upon displacement of said multi-chambered container and said foil-piercing means relative to each other.
6. A beverage mixing and dispensing device according to claim 1 wherein compatible dry components are stored in a first of said

- chambers and a liquid component is stored in at least one further chamber.
7. A beverage mixing and dispensing device according to claim 1 wherein a liquid alcoholic component is stored in more than one chamber of said container.
 8. A beverage mixing and dispensing device according to claim 1 wherein said chambers are slidably mounted in said open-bottomed housing and means are provided for preventing unintended premature contact between said chambers and said foil-piercing means.
 9. A beverage mixing and dispensing device according to claim 8 wherein said means for preventing undesired sliding of said chambers relative to said housing is a detent said chambers being provided with a central upper projection extending above said housing, and wherein firm downward hand pressure on said central upper projection overcomes the resistance of said detent and causes downward displacement of said chambers to bring said chambers into contact with said foil-piercing means.
 10. A beverage mixing and dispensing device according to claim 1 wherein said chambers are integral with said open-bottomed housing which can be flexibly supported over said receiving container and wherein hand pressure on said open-bottomed housing causes downward displacement of said integral chambers to cause said foil to make contact with said foil piercing means to release said beverage components into said receiving container.
 11. A beverage mixing and dispensing device according to claim 1 wherein said displacement is a rotational displacement.
 12. A beverage mixing and dispensing device according to claim 11 wherein said foil-piercing means are at least a pair of pre-tensioned blades.
 13. A beverage mixing and dispensing device according to claim 12 wherein said foil-piercing means comprises a plurality of radially spaced-apart pre-tensioned blades, said blades resting on a plurality

of radially-spaced rigid segments, means being provided to rotate said blades relative to said rigid segments so that said blades are positioned adjacent to gaps between said segments, allowing said blades to spring upwards to pierce said foils and so to release the contents of said chambers into a receiving container.

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Fig.1.

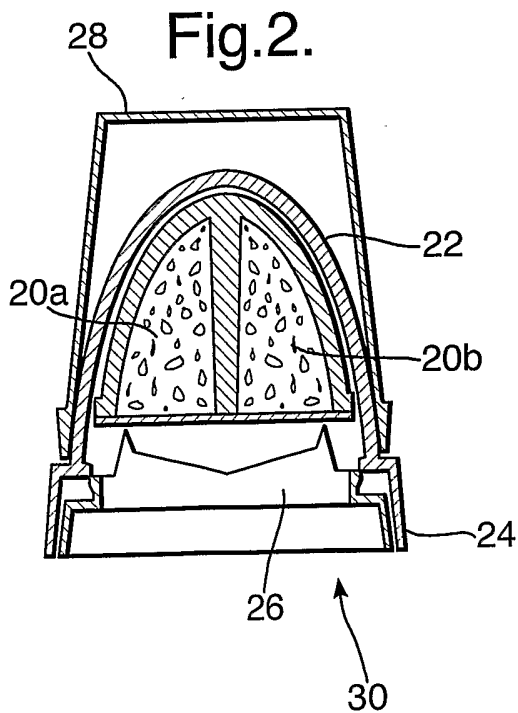
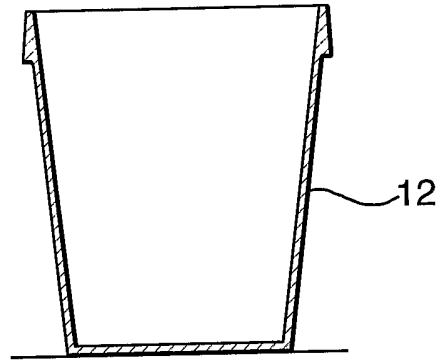
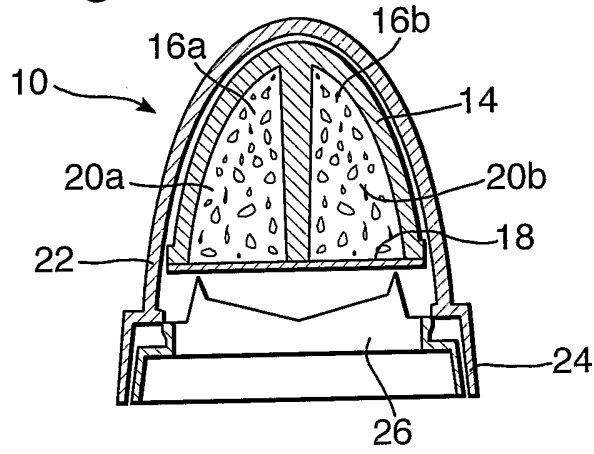
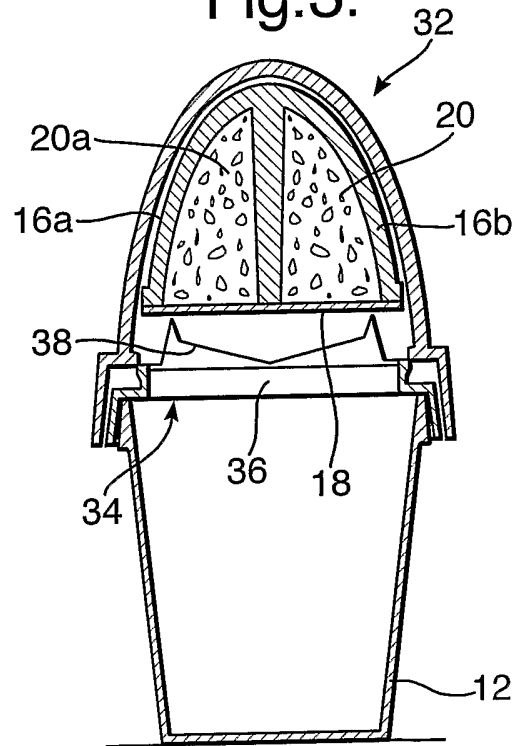


Fig.3.



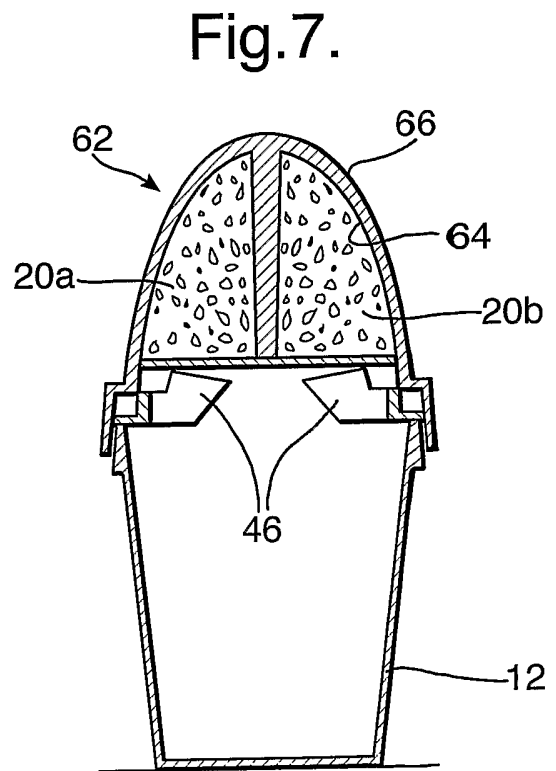
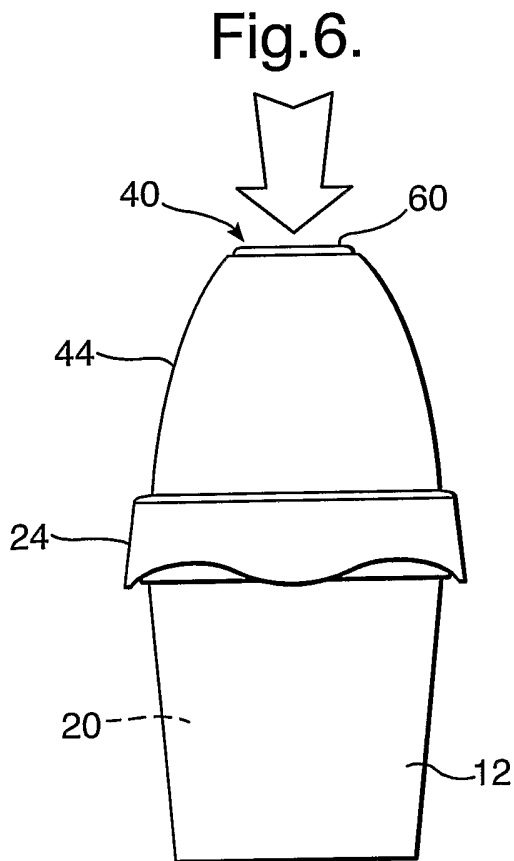
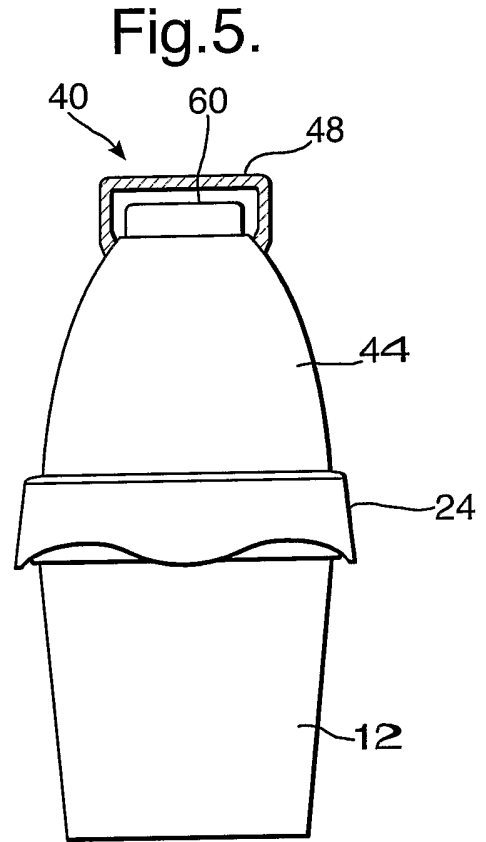
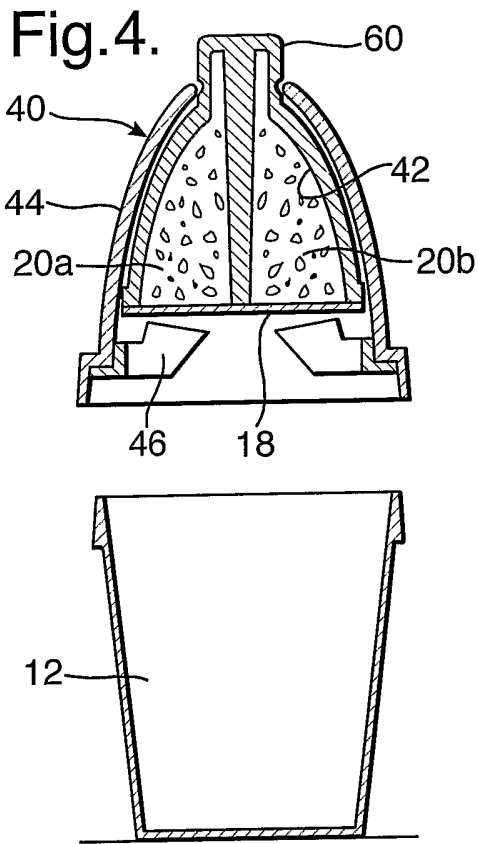


Fig.8.

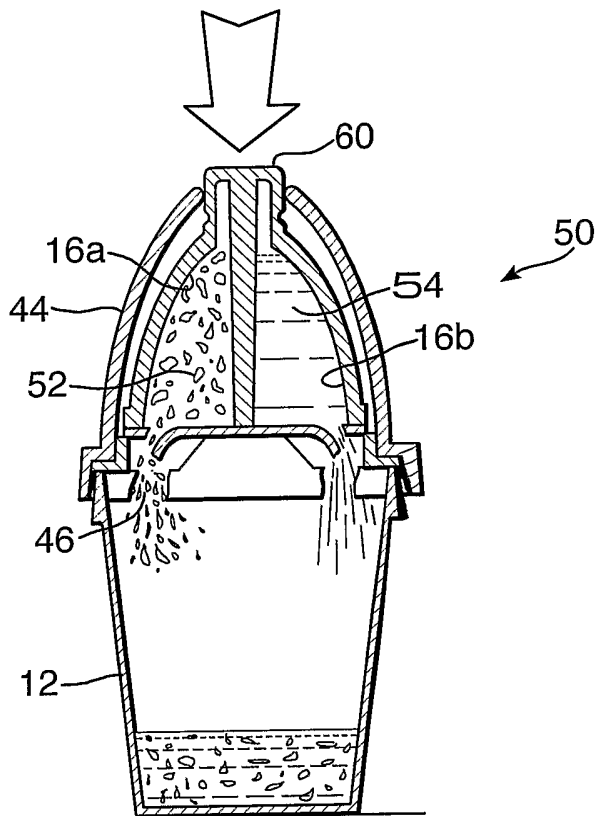


Fig.9a.

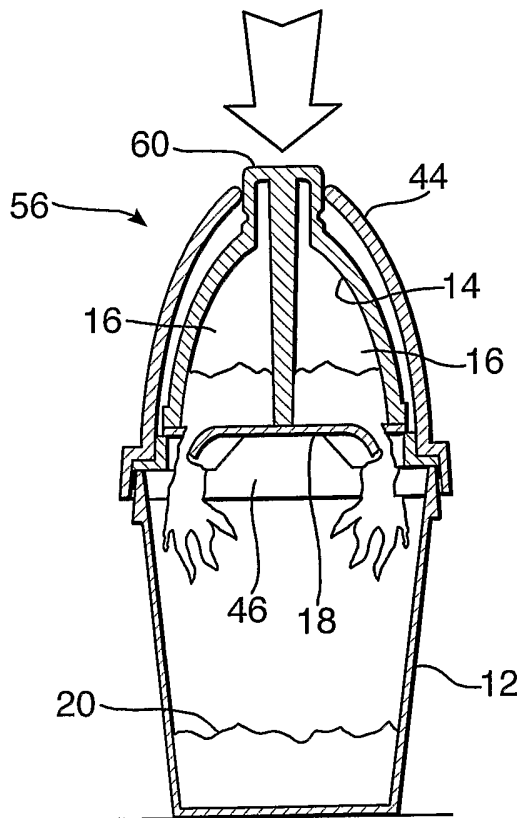


Fig.9b.

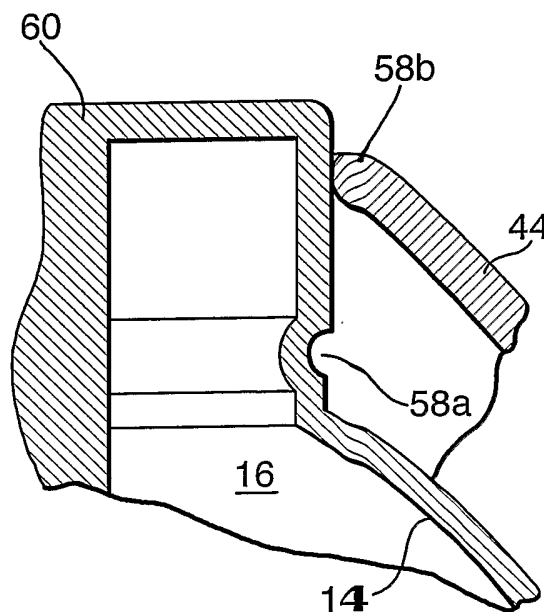


Fig.10a.

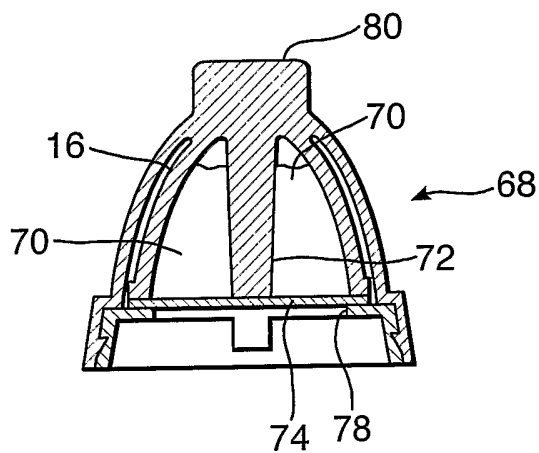


Fig.10b.

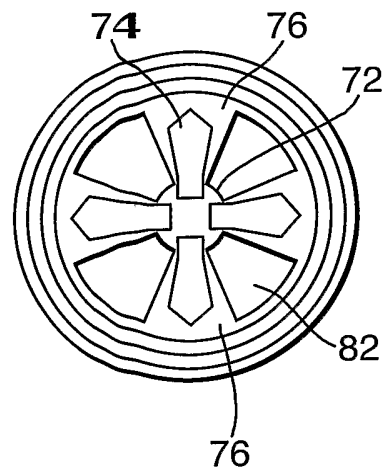


Fig.11a.

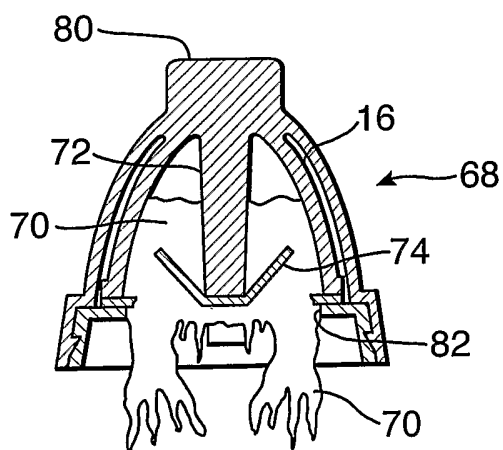
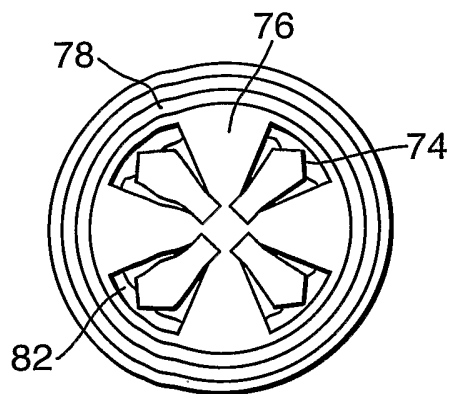


Fig.11b.



INTERNATIONAL SEARCH REPORT

International application No
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B65D51/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/089627 A1 (CHELLES GUSTAVO SENNA ET AL) 15 May 2003 (2003-05-15)	1-8, 10-12
Y	paragraph '0033! - paragraph '0040!; figure 5	9
Y	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 05, 31 May 1999 (1999-05-31) -& JP 11 029180 A (NISSHO CORP), 2 February 1999 (1999-02-02) paragraph '0011!; figure 1	9
X	US 2004/200742 A1 (CHO YOUNG KOOK) 14 October 2004 (2004-10-14) paragraph '0020! - paragraph '0026!; figures 3a,3b	1-8, 11, 12
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 Further documents are listed in the continuation of Box C. See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 2005/073103 A (CHO, YOUNG-KOOK) 11 August 2005 (2005-08-11) page 25, line 7 - page 26, line 22; figure 10 -----	1, 4, 5, 8, 11, 12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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