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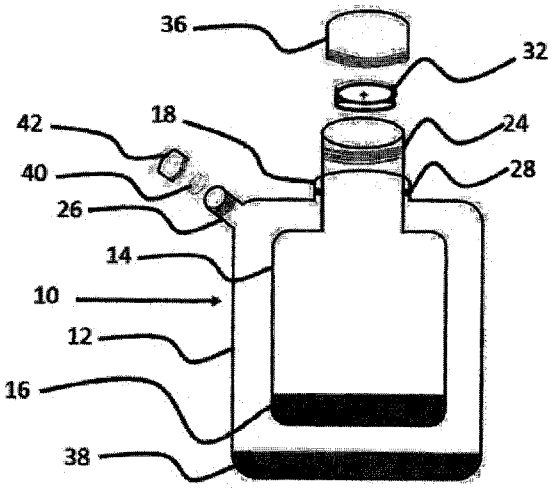
— *of inventorship (Rule 4.17(iv))*

(54) **Title:** REUSABLE MULTIPLE PARTITION CONTAINER WITH EVACUATION MEANS

FIG. 7



(57) **Abstract:** A low cost container for reducing oxidation, as well as moisture migration and greatly delaying spoilage of fruits, vegetables, prepared foods, spices and other foodstufs as well as protecting hardgoods. An inner partition of pliable material having a resealable opening is located within an outer partition of pliable material. The fruits, vegetables, spices, prepared foods or other foodstuffs are placed within the inner partition through the resealable opening. Between the inner partition and outer partition, gaseous and/or liquid matter is provided such that when compressive force is applied to the outer partition, the inner partition evenly conforms to the shape of its contents, evacuating air and excess liquid therein. Valves may be incorporated and connected to the respective partitions to control the flow of the gaseous and/or liquid contents into or out of each respective partition.

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REUSABLE MULTIPLE PARTITION CONTAINER WITH EVACUATION MEANS

Field of the Invention

The present invention relates generally to containers for storage of fruits, vegetables, foodstuffs and other items that provides for the evacuation of oxidizing air from the container; and, more specifically, to an improved low cost reusable storage container where the air within the container is evacuated by manual means without the need for vacuum pumps or other bulky and expensive air evacuation devices.

Background of the Invention

There are many known methods and devices that attempt to preserve fruits, vegetables, spices and other foodstuffs, and delay spoilage. These methods are also applicable to preserving and protecting other nonperishable items.

One such method known in the prior art is to wrap a cucumber in plastic wrap, although successful, the plastic wrap is not reusable and results in environmental pollution. Another method of the prior art is the use of

sealable plastic containers which are somewhat effective at preventing some items from drying out, but do not preventing the oxidizing effect of air which is actually trapped within the plastic container and do not prevent moisture migration from the stored item within the container, often resulting in significant moisture on the inside of the container. Similarly zipper closure bags of the prior art also trap oxidizing air around the item contained within and allow moisture migration from the stored item and are typically not reused therefor posing an environmental pollutant. Sealing plastic containers, and zipper closure bags can be observed in conjunction with their use in attempting to delay spoilage of avocados. Ripe avocados placed in the refrigerator, spoil in about 7 days.

Another known method of preserving and delaying spoilage of fruits, vegetables and other foodstuffs is the use of vacuum packaging. Known vacuum packaging devices are bulky and depend upon an electrically driven or a burdensome hand vacuum pump. Additionally, vacuum packaging devices are unable to entirely evacuate all air from within a vacuum package container.

Accordingly, it is the object of the present invention to provide an improved storage container that

is inexpensive, reusable, expels air from around the contents utilizing a uniform force surrounding the contents, resulting in less localized pressure damage and more consistent results, is manually operated and does not require a separate vacuum device to function.

Accordingly, it is the object of the present invention to provide an improved storage conainer that is inexpensive, reusable, expels air from around the contents utilizing a uniform force surrounding the contents, resulting in more consistent results, is manually operated and does not require a separate vacuum device to function.

Summary of the Invention

The objects of the present invention are attained by a reusable multiple partition container that is designed to allow manual compressive force upon an outer partition to compress one or more inner partitions, thereby evacuating air surrounding the contents of the one or more inner partitions evenly to reduce or eliminate the oxidizing effect of air surrounding the contents of an inner partition.

The inner and outer partitions are formed of pliable material such as paper, silicone, plastic or other

pliable material. The inner and outer partition are connected together buy any known means in the prior art, such that compressive force upon the outer partition causes the contents of the outer partition, which can be gaseous and/or liquid, to provide even and compressive force upon the inner partition, thereby evacuating air and excess liquid surrounding the contents of the inner partition, and conforming the shape of the inner partition to its contents. A resealable opening, such as a zip closure, or other sealing closure known in the prior art, is provided to allow items to be placed within the inner partition.

In a first embodiment of the reusable multiple partition container an inner partition of pliable material is positioned inside an outer partition of pliable material. Preferably, the inner partiation is of greater pliability than the outer partition. The space between the outer partition and inner partition contains some gaseous and/or liquid material. A resealable opening is provide in connection with the inner partition so that items my be placed therein. In operation, one or more items are placed within the inner partition through the resealable opening. The resealable opening is partially sealed. Compressive force is applied to the

outer partition, causing air and excess liquid surrounding items contained in the inner partition to be evacuated. The resealable opening is then manipulated to a fully sealed poition while maintaining compressive force upon the outer partition.

As an additional improvement to the first embodiment of the present invention, an evacuation control valve, which may be as simple as a one way valve and/or a sealing cap is incorporated. With the addition of an evacuation control valve, resealable seal may be fully sealed before the evacuation procedure, furter facilitating the evacuation procedure.

In a second embodiment of the reusable multiple partition container an inner partition of pliable material is positioned inside an outer partition of pliable material. Preferably, the inner partiation is of greater pliability than the outer partition. The space between the outer partition and the inner partition contains some gaseous and/or liquid material. A resealable opening is provide in connection with the inner partition so that items my be placed therein. An opening is provided in connection to the outer partition so that the amount of gaseous and/or liquid material can be adjusted before the evacuation procedure, and the

gaseous and/or liquid material may be removed after the evacuation procedure. A control valve and or a sealing cap to regulate the flow of the gaseous and/or liquid material in and out of the outer partition may be incorporated. In operation, one or more items are placed within the inner partition through the resealable opening. The resealable opening is partially sealed. Compressive force is applied to the outer partition, causing air and excess liquid surrounding items contained in the inner partition to be evacuated. The resealable opening is then manipulated to a fully sealed poition while maintaining compressive force upon the outer partition.

As an additional improvement to the second embodiment of the present invention, an evacuation control valve, which may be as simple as a one way valve or a sealing cap is incorporated. With the addition of a evacuation control valve, resealable seal may be fully sealed before the evacuation procedure, furter facilitating the evacuation procedure.

In a third embodiment of the reusable multiple partition container an inner partition of pliable material is positioned inside an outer partition of pliable material. Preferably, the inner partiation is of

greater pliability than the outer partition. The space between the outer partition contains some gaseous and/or liquid material. A resealable opening is provide in connection with the inner partition so that items my be placed therein. A resealable opening is provided in the outer partition, so that the inner partition may be removed from the outer partition. In assembled form, an evacuation opening of the inner partitioning is positioned through an aperture traversing the outer partition and is sealed by the surface of the aperture of the outer partition, an o-ring or other means known in the prior art. An opening is provided in connection to the outer partition so that the amount of gaseous and/or liquid material can be adjusted before the evacuation procedure, and the gaseous or liquid material may be removed after the evacuation procedure. A control valve and/or a sealing cap to regulate the flow of the gaseous or liquid material in and out of the outer partition may be incorporated. In operation, one or more items are placed within the inner partition through the resealable opening. Compressive force is applied to the outer partition, causing air and excess liquid surrounding items contained in the inner partition to be evacuated.

An evacuation control valve connected to the evacuation opening, which may be as simple as a one way valve and/or a sealing cap is incorporated. In the third embodiment of the present invention, after the evacuation procedure is completed, the resealable seal of the outer partition may be opened so that the inner partition may be removed from the outer partition.

In contrast to just refrigeration, or the use of plastic containers and zipper closure bags, as described in the background of the invention, employing any of the embodiments of the present invention to preserve ripe avacadoes has been found to delay spoilage for up to 6 weeks under refrigeration. Through his research, the inventor has found no system or product that can keep a ripe avocado from spoiling for 6 weeks. And as each avocado requires about 60 gallons of water to produce, discarding spoiled avocados ultimately wastes precious water, which problem is addressed by this invention

Other objects, advantages and novel features of the present invention will become apparent from the following drawings and detailed description of the preferred embodiments.

Brief Description of the Drawings

FIG. **1** is a perspective view of the first embodiment of the present invention.

FIG. **2** is a plan view of the first embodiment of the present invention.

FIG. **3** is a plan view of the first embodiment of the present invention incorporating an optional evacuation air control valve in connection with an inner container where air is expelled.

FIG. **4** is a plan view of the second embodiment of the present invention.

FIG. **5** is a plan view of the second embodiment of the present invention incorporating an optional evacuation air control valve in connection with an inner container where air is expelled.

FIG. **6** is a plan view of another example of the second embodiment of the present invention incorporating an optional evacuation air control valve in connection with an inner container where air is expelled, and incorporating separate resealable seals for the inner and outer containers.

FIG. **7** is a plan view of the third embodiment of the present invention where the inner container is removable from the outer container.

FIG. **8** is a plan view of the outer container of the third embodiment of the present invention.

FIG. **9** is a plan view of the inner container of the third embodiment of the present invention.

Detailed Description of the Preferred Embodiments

A first embodiment of the present invention will now be described with reference to **FIGS. 1** through **3.**

The reusable multiple partition container **10** shown in **FIGS. 1** through **3** comprises an inner partition **14** which is composed of pliable material, such as plastic or silicone, an outer partition **12** which is composed of pliable material, such as plastic or silicone. The inner partition **14** is positioned inside of and secured to the outer partition **12.** The space between the outer partition **12** and inner partition **14** contains some gaseous and/or liquid material. A resealable opening **16** is provide in connection with the inner partition so that items my be placed therein. And an optional evacuation control valve **22** connected to inner partition **14** may be incorporated, as shown in **FIG. 3.**

In operation of the device shown in **FIGS. 1** through **3,** one or more items are placed within the inner

partition **14** through the resealable opening **16**. The resealable opening **16** is then partially sealed. Compressive force is applied to the outer partition **12**, causing air and excess liquid surrounding items contained in the inner partition **14** to be evacuated. The resealable opening **16** is then manipulated to a fully sealed poition while maintaining compressive force upon the outer partition **12**. With the addition of the evacuation control valve **22**, shown in **FIG. 3**, resealable seal **16** may be fully sealed before the evacuation procedure, furter facilitating the evacuation procedure.

A second embodiment of the present invention will now be described with reference to **FIGS. 4** through **6**.

The reusable multiple partition container **10** shown in **FIGS. 4** through **6** comprises an inner partition **14** which is composed of pliable material, such as plastic or silicone, an outer partition **12** which is composed of pliable material, such as plastic or silicone. The inner partition **14** is positioned inside of and secured to the outer partition **12**. The space between the outer partition **12** and inner partition **14** contains some gaseous and/or liquid material. A resealable opening **16** is provide in connection with the inner partition **14** so that items my be placed therein. An opening **18** is provided in

connection to the outer partition **12** so that the amount of gaseous and/or liquid material can be adjusted before the evacuation procedure, and the gaseous and/or liquid material may be removed after the evacuation procedure. A control valve **30** and/or a sealing cap **20** to regulate the flow of the gaseous and/or liquid material in and out of the outer partition is provided. And an optional evacuation control valve **22** connected to inner partition **14** may be incorporated, as shown in **FIG. 5.**

In operation of the device shown in **FIGS. 4** and **5,** one or more items are placed within the inner partition **14** through the resealable opening **16.** The resealable opening **16** is then partially sealed. Compressive force is applied to the outer partition **12,** causing air and excess liquid surrounding items contained in the inner partition **14** to be evacuated. The resealable opening **16** is then manipulated to a fully sealed position while maintaining compressive force upon the outer partition **12.** With the addition of the evacuation control valve **22,** shown in **FIG. 5,** resealable seal **16** may be fully sealed before the evacuation procedure, furter facilitating the evacuation procedure.

FIG. 6. Illustrates an alternate configuration of the device shown in **FIG. 5.** In **FIG. 6** an opening **34** is

connected to inner partition **14**. Upon opening **34**, a control valve **32** and/or a sealing cap **36** is located, functioning in place of the evacuation control **22** of **FIG. 5**. Also depicted in **FIG 6**. Is the addition of a resealable opening **38** in connection to outer partition **10**.

A third embodiment of the present invention will now be described with reference to **FIGS. 7** through **9**.

The reusable multiple partition container **10** shown in **FIGS. 7** through **9** comprises an inner partition **14** which is composed of pliable material, such as plastic or silicone, an outer partition **12** which is composed of pliable material, such as plastic or silicone. The inner partition **14** is positioned inside of and removably secured to the outer partition **12** by a neck **24** formed on inner partition **14** that is placed through an opening **18** formed in the outer partition and sealed by an o-ring **28**. The outer partition **12** has a resealable opening **38**, through which inner partition **14** can pass. The space between the outer partition **12** and inner partition **14** contains some gaseous and/or liquid material. A resealable opening **16** is provided in connection with the inner partition so that items my be placed therein.

In operation of the device shown in **FIGS. 7** through **9,** one or more items are placed within the inner partition **14** through the resealable opening **16.** The resealable opening **16** is then sealed. Inner partition **14** is placed through resealable opening **38** of outer partition **12** and neck **24** of inner partition **14** is secured through opening **18** of outer partition **12** and sealed by o-ring **28** The resealable opening **38** is sealed; the control valve **40** and/or cap **42** of outer patition **12** may then be manipulated to allow adjustmet of the gaseous and or liquid matter contained between the inner partition **14** and the outer partition **12.** Compressive force is applied to the outer partition **12,** causing air and excess liquid surrounding items contained in the inner partition **14** to be controlably evacuated through opening **18,** by control valve **32** and/or sealing cap **36.** Inner partition **14** is then removed from the outer partition **12** through resealable opening **38.**

What is claimed is:

1. A reusable multiple partition container comprising: an inner partition constructed of pliable material, having a resealable opening at a first end and an outer partition surrounding and secured to said inner partition at said first end of said inner partition, matter contained between said inner partition and said outer partition, compressive force applied to said outer partition causes the matter between said inner partition and said outer partition to exert compressive force upon the inner partition conforming the shape of said inner partition to that of any item contained within said inner partition by expelling air from said inner partition.
2. The reusable multiple partition container according to claim **1** further comprising: an evacuation valve connected to said inner partition through which air is expelled from said inner partition.
3. The reusable multiple partition container according to claim **1** further comprising: a sealable opening connected to said outer partition

through which said matter may be added and removed.

4. The reusable multiple partition container according to claim 2 further comprising: a sealable opening connected to said outer partition through which said matter may be added and removed.

5. A reusable multiple partition container comprising: an inner partition constructed of pliable material, having a resealable opening at a first end and having another sealable opening at its other end through a necked off segment, an outer partition, constructed of pliable material having a resealable opening at a first end, through which said inner partition is inserted and removed and an aperture at its other end through which said necked off segment of said inner partition passes and is secured, matter is contained between said inner partition and said outer partition, compressive force that is applied to said outer partition causes said matter between said inner partition and said outer partition to exert compressive force upon the inner partition conforming the shape of said inner partition to

that of any item contained within said inner partition and expelling air through said another sealable opening of said inner partition.

6. The reusable multiple partition container according to claim 5 further comprising: a sealable opening connected to said outer partition through which said matter may be added and removed.

FIG. 1

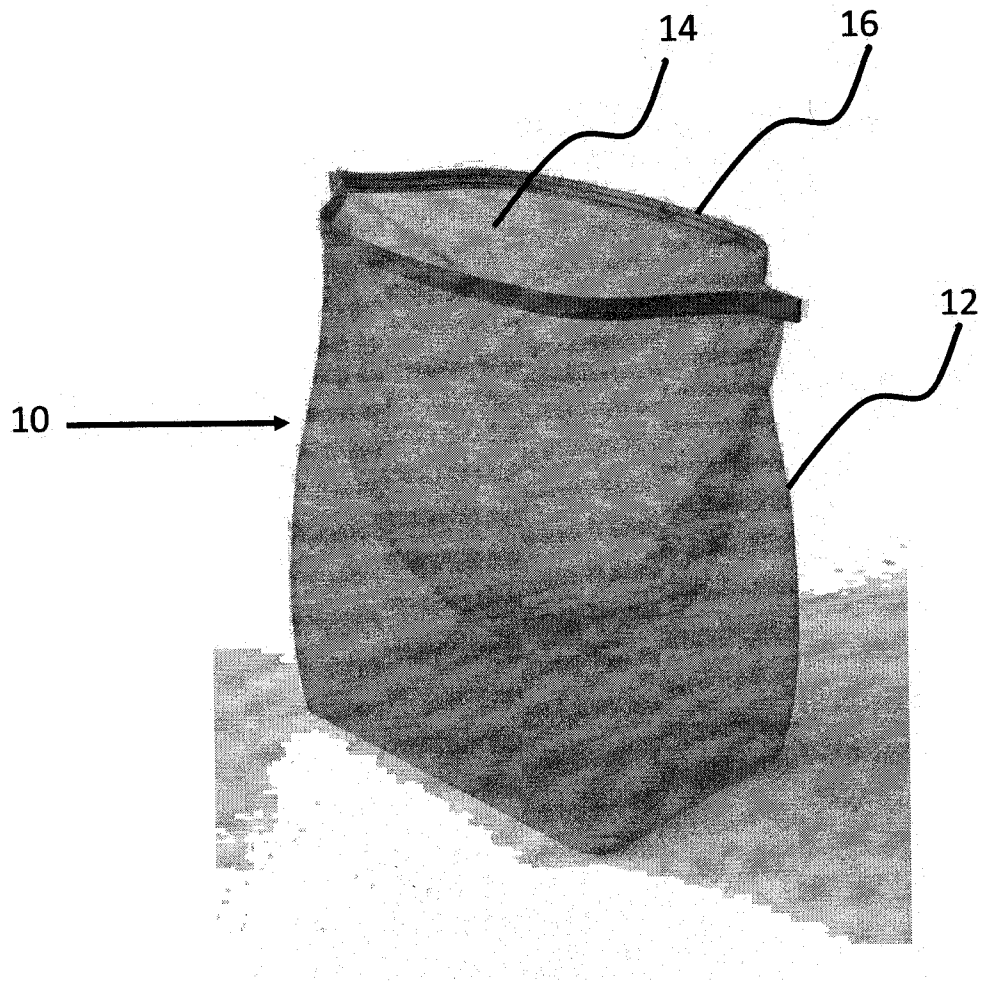


FIG. 2

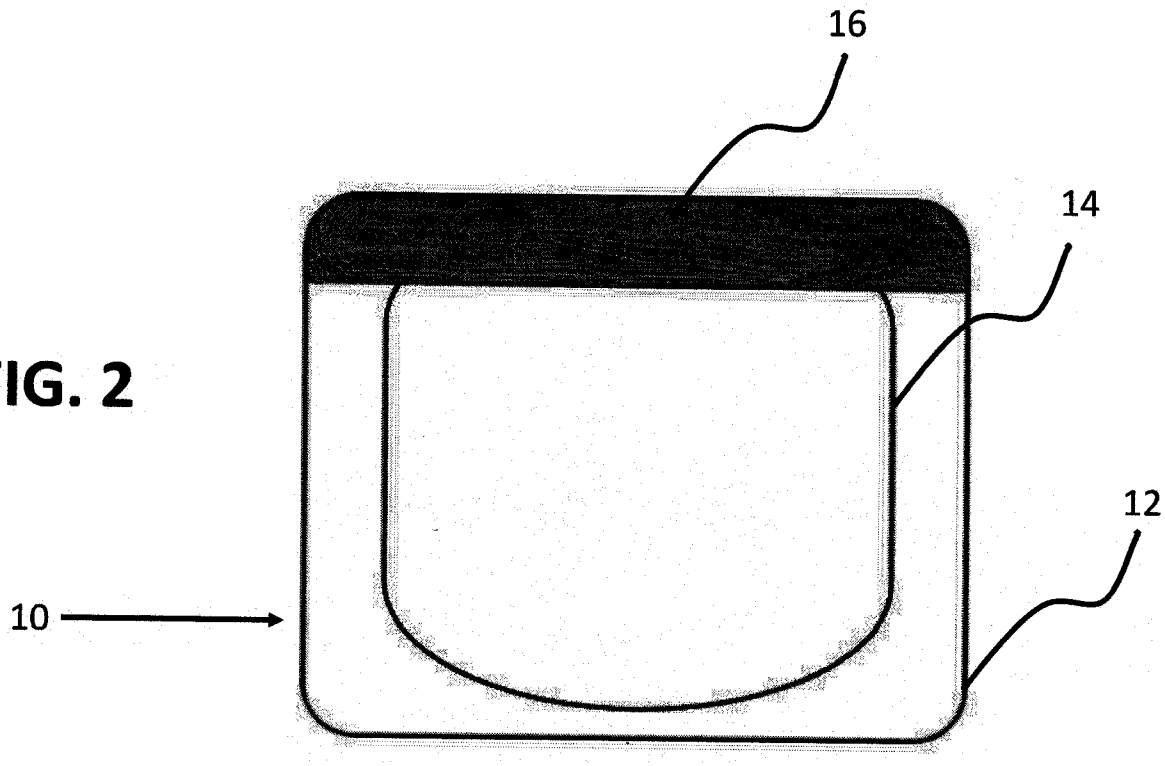


FIG. 3

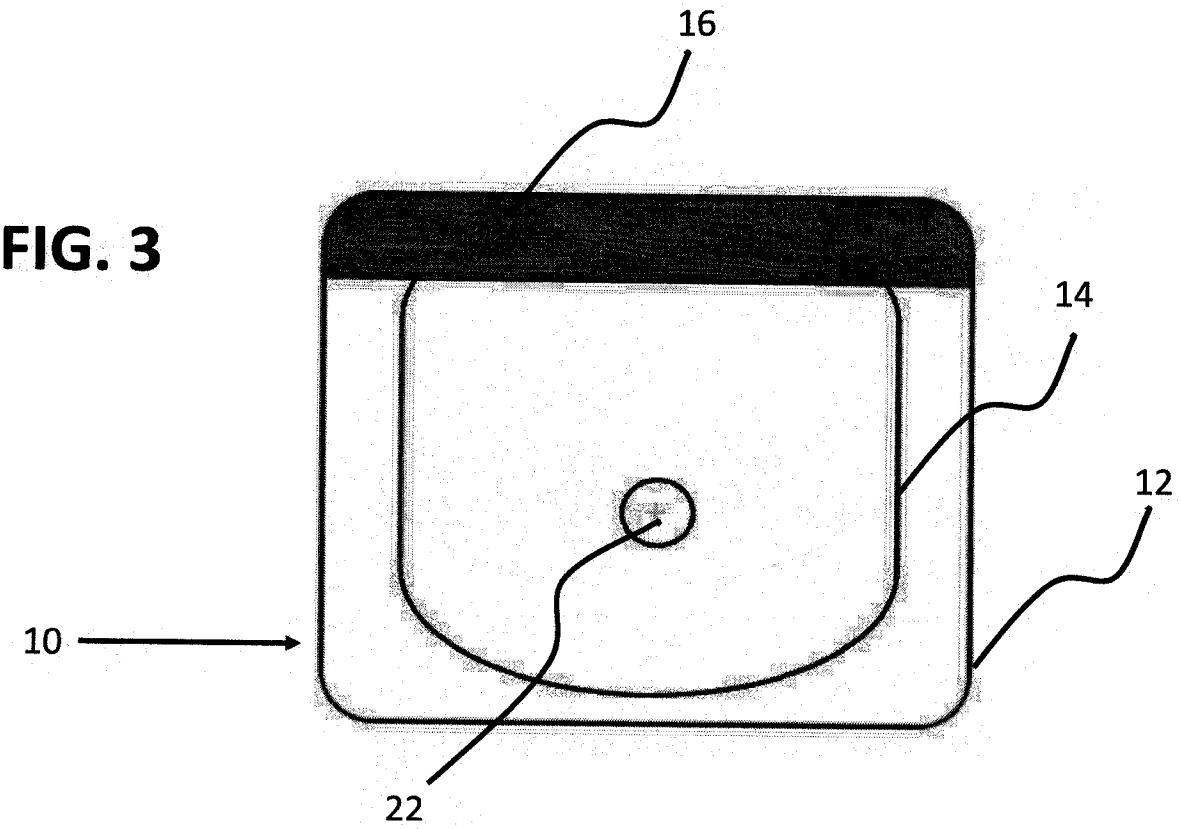


FIG. 4

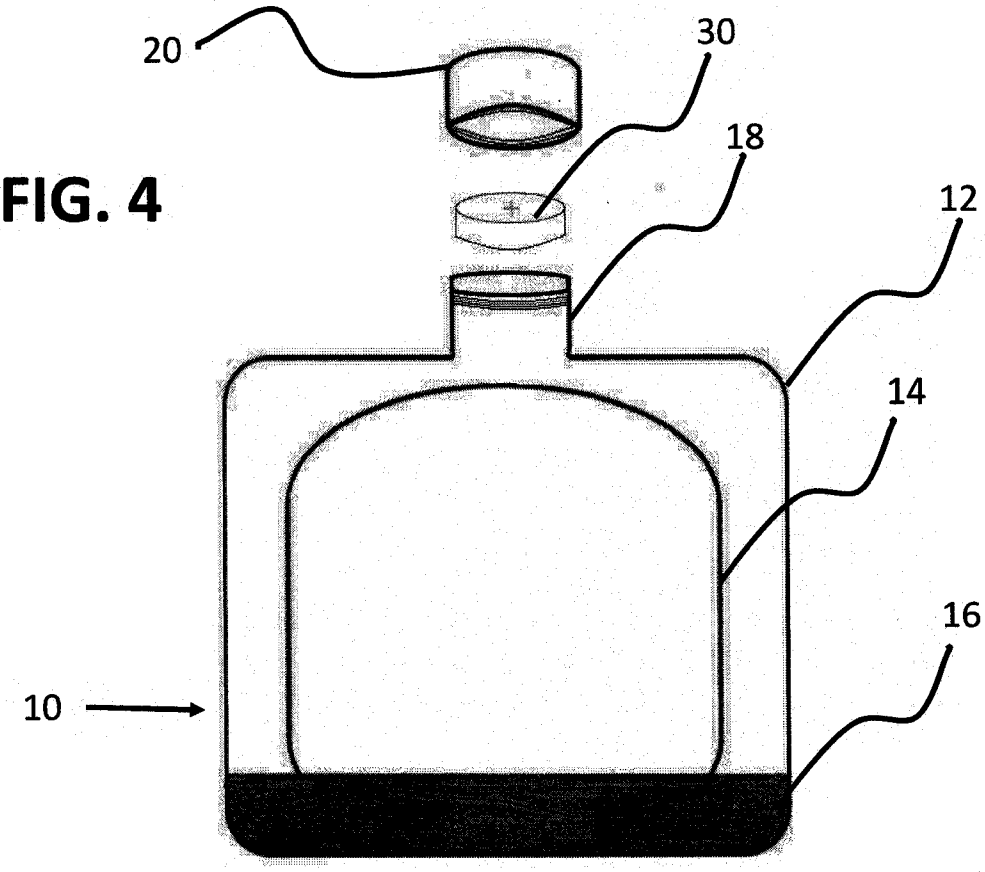


FIG. 5

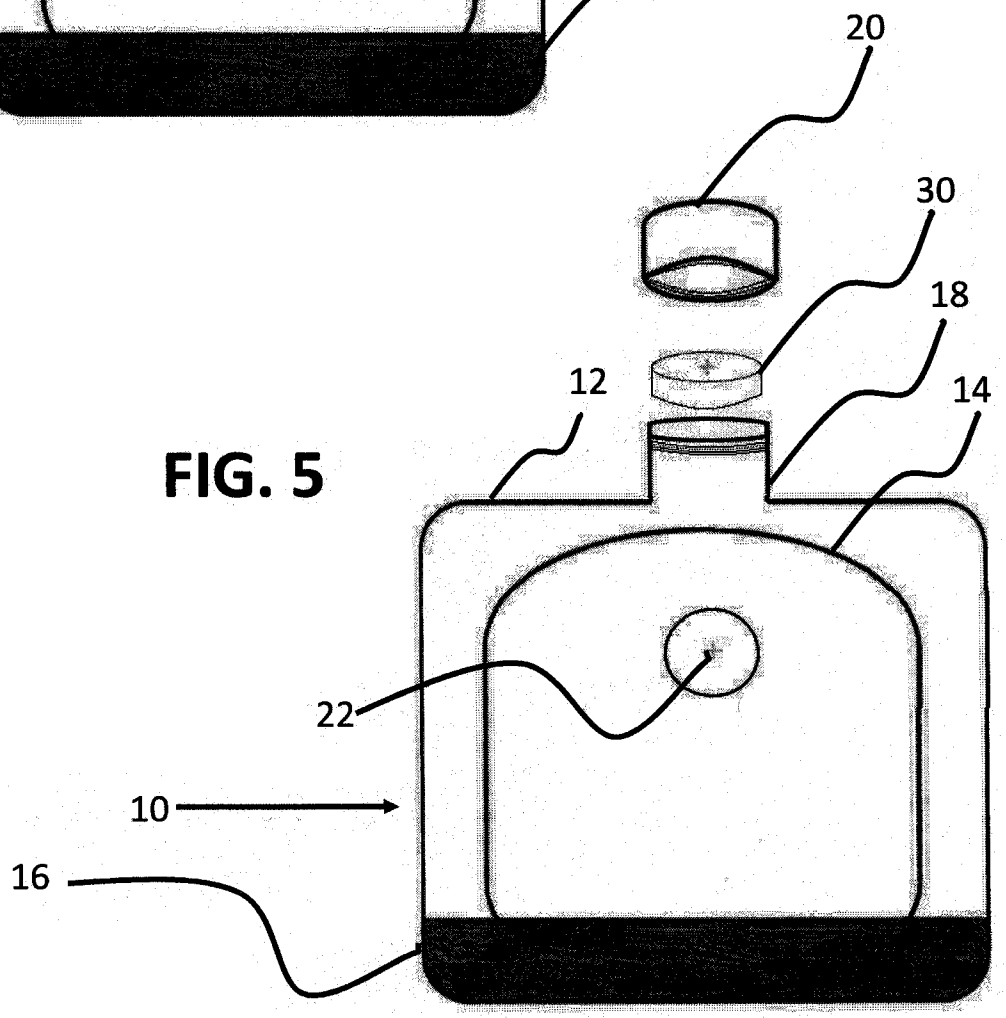


FIG. 6

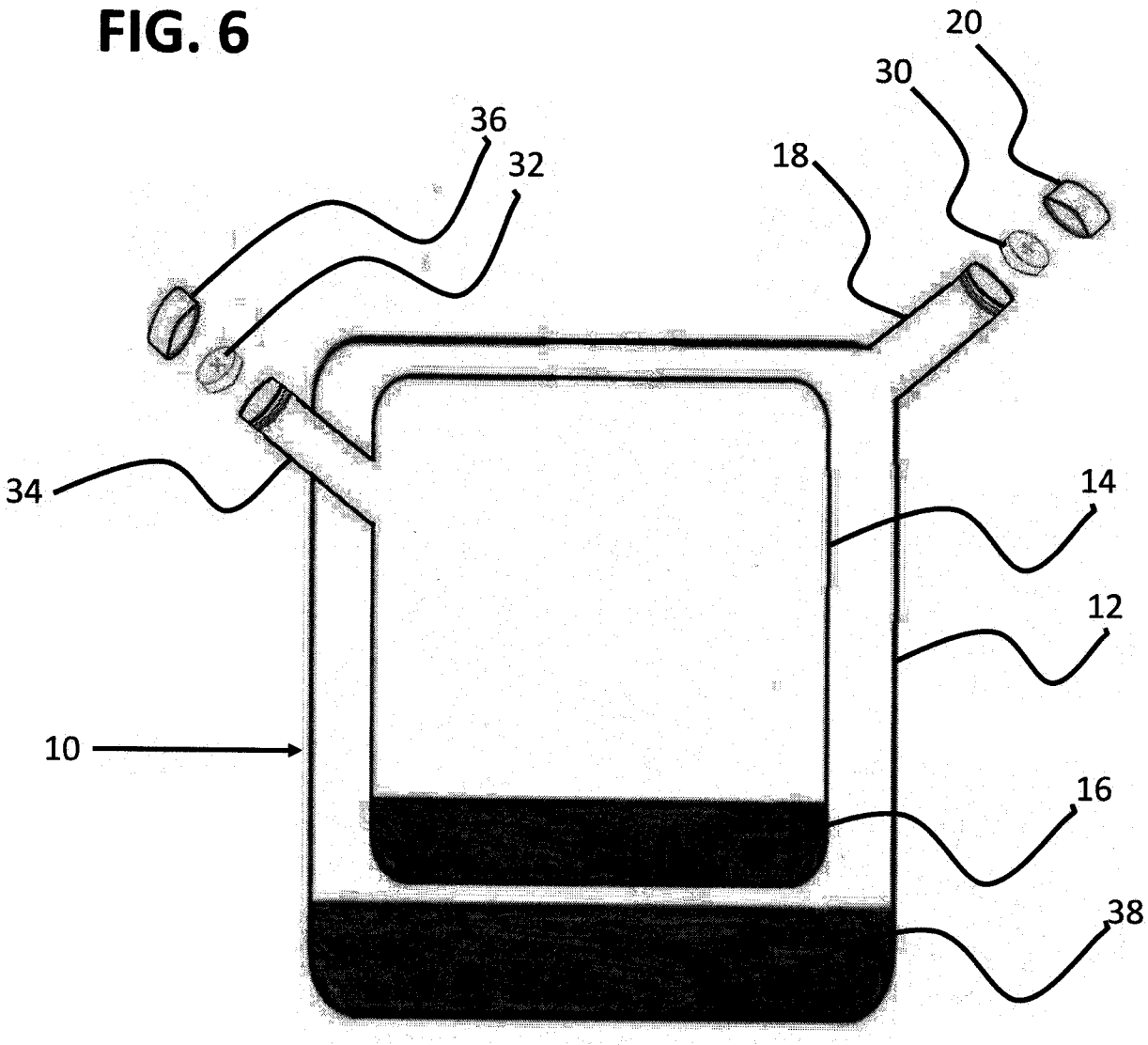


FIG. 8

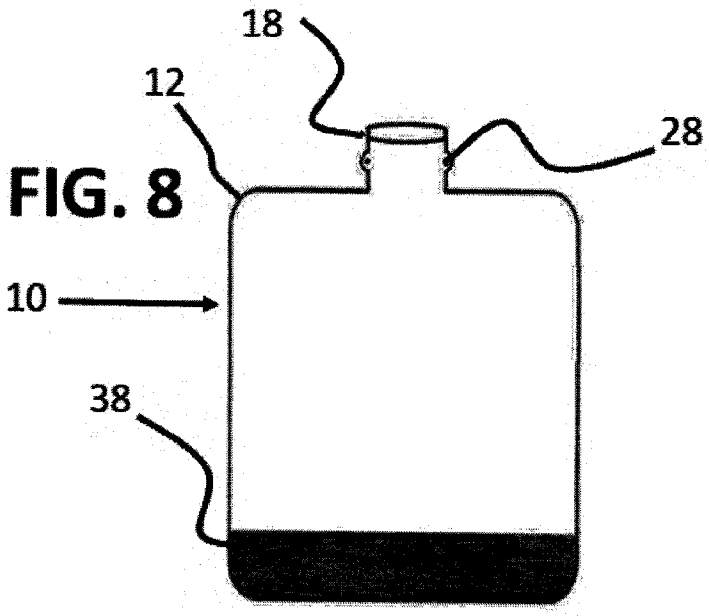
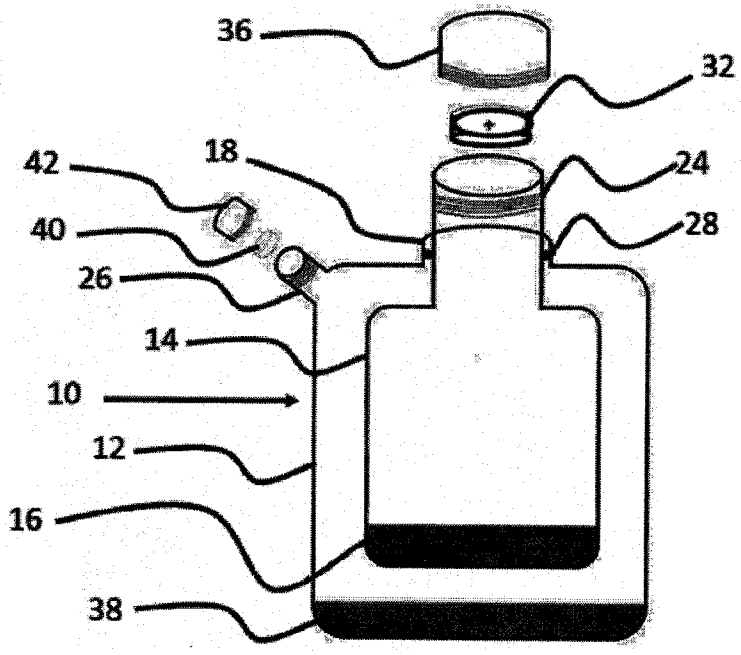


FIG. 7



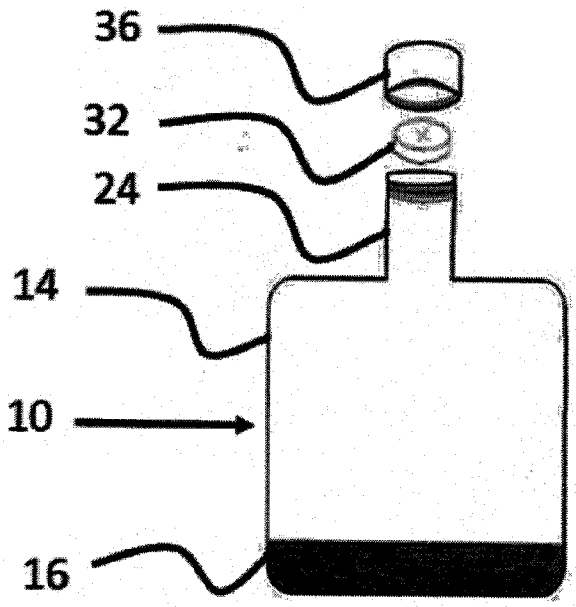


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2023/025074

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - INV. - B65D 77/04; B65D 51/16; B65D 47/32 (2023.01)
ADD. - B65D 33/01 (2023.01)

CPC - INV. - B65D 77/04; B65D 51/16; B65D 47/32 (2023.05)

ADD. - B65D 33/01 (2023.05)

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)
See Search History document

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

Electronic database consulted during the international search (name of database and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/0044113 A1 (TILMAN et al.) 21 February 2008 (21.02.2008) entire document	1-4
A	US 2016/0023834 A1 (DILIBERTO) 28 January 2016 (28.01.2016) entire document	1-6
A	US 2014/0305818 A1 (LEE) 16 October 2014 (16.10.2014) entire document	1-6
A	US 2014/0186496 A1 (KX TECHNOLOGIES, LLC) 03 July 2014 (03.07.2014) entire document	1-6

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 July 2023	AUG 28 2023
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