



US 20110163102A1

(19) **United States**

(12) **Patent Application Publication**
Haynie

(10) **Pub. No.: US 2011/0163102 A1**

(43) **Pub. Date: Jul. 7, 2011**

(54) **COMPARTMENT INSERT FOR THREADED RECEPTACLE**

(52) **U.S. Cl. 220/521; 220/259.4**

(76) **Inventor: David Brock Haynie, Palo Alto, CA (US)**

(57) **ABSTRACT**

(21) **Appl. No.: 12/985,320**

(22) **Filed: Jan. 5, 2011**

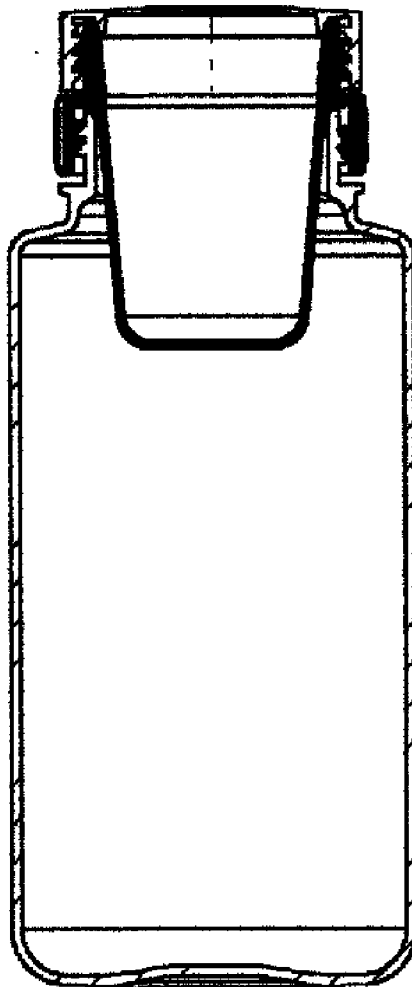
A compartment insert to be used in conjunction with a receptacle, such as a water bottle, that when inserted between and coupled with, the receptacle and its cover or lid, creates an enclosed, water-tight inner chamber that protrudes into the receptacle itself, and is suitable for storing contents of various types (e.g. personal items, snacks, drink mix, pills, electronics) and for various purposes (e.g. accessibility, convenience, consolidation of loose items, concealment, protection from elements, protection from physical wear). A user of the invention is able to open the receptacle and access its contents by removing the compartment insert while leaving the lid intact on the compartment insert and its contents remain sealed. The contents inside the compartment insert can be accessed by removing the lid while leaving the compartment insert attached to the receptacle, sealing its contents inside.

Related U.S. Application Data

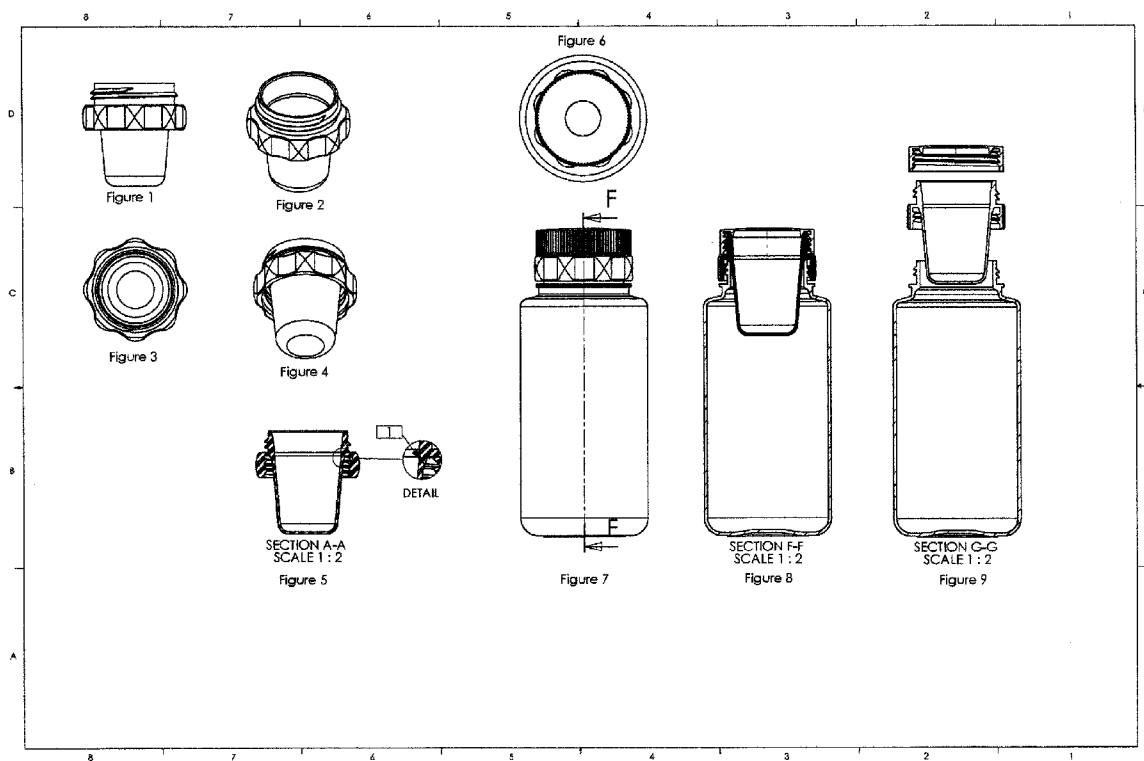
(60) **Provisional application No. 61/292,475, filed on Jan. 5, 2010.**

Publication Classification

(51) **Int. Cl.**
B65D 51/28 (2006.01)
B65D 51/18 (2006.01)



SECTION F-F
SCALE 1 : 2



COMPARTMENT INSERT FOR THREADED RECEPTACLE

CROSS-REFERENCE TO RELATED APPLICATIONS: Provisional Application 61292475

FEDERALLY SPONSORED RESEARCH: None

SEQUENCE LISTING: None

BACKGROUND

[0001] 1. Field of Invention

[0002] The convergence of several societal and recreational trends has created the need for a compartment insert in reusable water bottles. These trends include an increased focus on healthy lifestyles, an increased awareness of the environmental impact of everyday decisions, a renewed interest in outdoor recreation, a movement toward lighter weight and multi-use functionality in outdoor equipment, and an escalation in the use of electronic devices in outdoor settings (exposed to the elements). Health and lifestyle trends among other things have led more people to consume water as opposed to carbonated soft drinks, and in response to an explosion in discarded plastic water bottles, reusable bottles have become popular in many urban settings beyond the traditional outdoor uses of camping, hiking, etc. Also just as more people are heading into the outdoors in pursuit of outdoor recreation in the form of hiking, backpacking, camping, etc., they are taking an increased number of electronic devices such as digital cameras, cell phones, GPS receivers, two-way radios, LED headlamps, etc.—all of which would be corrupted by exposure to water contamination from dirt, or damage from possible impact creating a need for accompanying water-proof protective cases. Yet, at the same time, technological advances have pushed consumers to try to reduce the weight and volume of equipment required for any given excursion, as they try to go faster and lighter than before—one way that this is being done is by creating equipment with more than one use (trekking poles that double as tent poles, sleeping pads that double as chairs, etc). The compartment insert for water bottles meets the needs of each of these trends.

[0003] 2. Prior Art

[0004] Several compartments for bottle lids have been developed in the past. The majority of these are designed for the specific purpose of keeping two substances separate from one another and then providing a way to conveniently mix the two through a mechanical opening or perforation of the separating wall, such as the two part vessel U.S. Pat. No. 7,584,842. Shih's additive holder for PET bottles, U.S. Pat. No. 6,152,296 and Hsu's U.S. Pat. No. 6,138,821 offers similar functionality.

[0005] Additionally, many of these lid-related compartment patents have emphasized the storage and disbursement of pills or medications with some novel features and functionality—Bender does this in U.S. Pat. No. 3,446,179 with a timer dispenser as does Muza in U.S. Pat. No. 5,397,017 with a dispenser.

[0006] Theodore Esau patented a receptacle cap for pills and other articles (U.S. Pat. No. 7,055,709) that threads onto existing two-liter soda bottles or disposable water bottles and provides a compartment above the top of the bottle, by extending the entire lid assembly vertically in a stacking process.

[0007] Other accessories for water bottles, such as this have been patented before, such as Goldfarb's bottle lantern attach-

ment, U.S. Pat. No. 6,086,216. He also notes that dual purpose outdoor equipment/products are well known and offers U.S. Pat. No. 4,954,075 as an example, which includes a camp stove/lantern combination that allows for a portable cooking stove to be used as an illumination device.

[0008] So while a number of related items have been patented in the past, they have not been able provide the simple yet necessary functionality that this compartment insert would provide. It is important that the compartment be contained within the neck or main body of the water bottle or other container so as to not increase the space required when space is at a premium in a backpack for example.

SUMMARY

[0009] In a first manifestation the invention is, in combination, a receptacle (bottle), cover (lid), and a compartment insert to be placed between the receptacle and the cover. The receptacle has a coupling (threads, for example), and an opening from an exterior to an interior. The opening permits fluid to pass between the fluid receptacle interior and exterior. The cover has a coupling co-operative with the fluid receptacle coupling, and prevents fluid from passing between fluid receptacle interior and exterior when coupled to the fluid receptacle coupling in a closing coupled relation. The cover is further removable entirely from the fluid receptacle coupling, to open the fluid receptacle opening. The compartment insert removably holds a first composition adjacent the fluid receptacle and separates the fluid receptacle coupling from the cover coupling. The compartment insert has a divider wall that enters into the neck of the receptacle and may extend into the body of the receptacle, and a first coupling affixed to the divider wall and co-operative with the fluid receptacle coupling. The divider wall is cooperative with the fluid receptacle to prevent fluid from passing between fluid receptacle interior and exterior when the compartment insert first coupling is coupled to the fluid receptacle coupling in a closing coupled relation. The first coupling is further removable entirely from the fluid receptacle coupling to separate divider wall from fluid receptacle and thereby open the receptacle opening. A second coupling is affixed to the divider wall and engages with the cover coupling in a closing coupled relation to form an enclosed chamber isolated from the receptacle and primarily encompassed within the neck or body of the receptacle, and at least partially releasing to open the enclosed chamber. (See FIGS. 6-10 for the compartment insert and its combination with a receptacle and lid)

[0010] In a second manifestation, the invention is a compartment insert that can be used between an existing, third party receptacle and its lid to cover and cooperate with the coupling on the opening of the receptacle in a manner that does not allow its contents to escape (but does not necessarily need to be packaged with the receptacle—third party receptacles would work). The compartment insert has a vertical rim extending up from the inner compartment wall with a coupling on the outside of it (threads) that is equal in diameter and other features to the coupling of the receptacle, thus allowing the original receptacle lid to cooperate with the coupling in a manner that a sealed compartment is created between the receptacle and its original cover. In order to minimize the overall vertical height and space occupied by the combined bottle, compartment insert, and lid, the compartment extends into and is housed primarily within the neck of the receptacle (as opposed to extending primarily above the receptacle) but may extend into the body of the receptacle until it reaches the

bottom. The coupling threads on the compartment insert that engage with the receptacle are in the inside of a lip that completely surrounds the compartment, forming a ring that extends outwardly from and surrounds the compartment. (See FIGS. 1-5 for compartment insert and FIGS. 6-9 for its interaction with receptacle and lid)

[0011] In a third manifestation, the compartment insert may also be combined with a cover (lid), of any diameter lesser than or equal to the diameter of the compartment opening, essentially forming a compartment and lid. This cover may or may not be attached to the compartment. (See FIGS. 10-12)

[0012] The compartment insert may be made from opaque or transparent materials. The compartment (or cup portion) and outer rim which forms a coupling with the first receptacle may be made from different materials or the same material.

[0013] The outermost surface of the outer ring (with the inner coupling that engages with the receptacle opening), may have a diameter that extends beyond the diameter of the original lid (that is associated with the bottle or container in question), in all or part, so as to be more prominent to a person's hand when handling the receptacle with compartment insert and lid, allowing the user to receive tactile feedback as to which coupling is being disengaged (e.g. which threads are being loosened and whether the receptacle is being opened or the compartment insert).

[0014] The compartment insert may have graded measurement marks visible on the inside or outside of it to allow it to double as a measuring cup.

[0015] The bottom of the compartment may be flat, or otherwise balanced so as to allow the compartment to stand up vertically when separated from the receptacle and placed on a flat surface.

[0016] The compartment insert may come with a divider that fits tightly inside the compartment that is permanent or removable and forms any number of smaller open chambers. There may also be an insert within the compartment that seals off separately from the compartment insert with its own lid and is removable. The compartment insert is fully functional with or without the divider or sealed divider in place.

[0017] The compartment insert may come with or include protective foam shaped to fit tightly within the chamber, such that when portions of the foam are removed that correspond to the size and shape of objects to be inserted (such as a cell phone or GPS unit), that the inserted object is prevented from rattling against the side of the compartment insert.

[0018] Any number of third party products may be packaged or combined in forms or containers that fit within the compartment insert. For example, granola bars may be made round or first aid kits shaped to fill the compartment such that it fits efficiently within the compartment insert. These products may be combined with the compartment insert or function independently.

[0019] Operation

[0020] The compartment will couple tightly with the open receptacle, sealing its contents inside, and at the same time creating a second open receptacle (compartment or chamber) that extends into the first receptacle. A lid or cover will then be used to couple with the threads or coupling extending vertically from the compartment insert to close the second receptacle and form a smaller sealed compartment within the first receptacle and only protruding vertically above the first receptacle (bottle) sufficiently to allow for threads and space to engage with the lid.

[0021] A person using a receptacle (to get a drink for example) that has the compartment insert, may remove the compartment insert with lid attached to it, without having to disengage the lid from the compartment insert, and have full access to the receptacle opening.

[0022] The inserted compartment increases the functionality of receptacles (water bottles, for example) already in circulation, and enhances receptacles that are sold with it (receptacle and insert packaged together) from day one. There are several areas of application and use:

[0023] 1. It will allow users in to enclose and protect everyday personal effects (such as keys, cash, watches, cell phones, lip balm, personal ID, gym passes, feminine hygiene products, makeup, breath enhancers, gum, hair accessories, jewelry, toiletries, etc) in an easy to access, convenient compartment within an object (e.g. water bottle) that they would already be carrying, thereby reducing the number of loose objects that must be carried, while at the same time concealing the contents from observers.

[0024] 2. Water bottles (for example) are often allowed on desks found in work or school settings and could carry school and office supplies such as pens, pencils, paper clips, rulers, erasers, pencil sharpeners, art supplies, engineering tools, calculators, etc.

[0025] 3. It also provides a convenient, protective, water-tight and easily accessible compartment for outdoor use items—electronic devices (GPS, cell phones, cameras, batteries, headlamps, radios, etc), first aid kits, matches, rain gear, compass, knife, sunscreen, hand sanitizer, insect repellent, dish washing kit, soap, shampoo, etc.

[0026] 4. It provides a smash proof, water-tight, conveniently accessible (the water bottle is regularly accessed during hiking, for example) compartment for storing snacks (such as cookies, crackers, nuts, candy, gum, dried fruit, etc.), meals (prepared or dehydrated), or cooking ingredients (backcountry cooking, for example)—both liquids and solids. Examples of the types of things that might be stored would include spices, flour, salt and pepper, marinade, eggs, oil, syrup, peanut butter or jam, beverages of various types (milk, juice, alcohol, cream, coffee, tea, etc.) among other things.

[0027] 5. It is also useful for storing powders or additives to be consumed with or mixed with the water or other liquid inside the bottle—such as protein powder, powdered drink mix, hot chocolate powder, drink concentrate, instant oatmeal, dehydrated meals, concentrated soups, etc.

[0028] 6. Another use is for storing water purifying tablets such as iodine tablets or liquids that when added to water collected from an unpurified water source, will make the water safe to drink; having such water purification means available to each person carrying a water bottle and with them ensures that even if the group is split up or someone gets lost, they would be able to purify the water they find.

[0029] 7. Finally it offers the ability to keep things hot or cold without mixing the contents in the bottle with those in the compartment (for example ice in the bottle and a substance to be kept cold in the compartment or vice versa, and in a similar manner with hot items).

[0030] Thus, the insert provides several functions: a compartment for storing objects; a food or beverage container; an alternative to water tight protective cases (such as those made by Pelican) for small gadgets, supplies and equipment; and

additionally, when removed from the bottle, doubles as a cup for drinking, measuring, or mixing.

DRAWINGS

- [0031] FIG. 1—Perspective side view of compartment insert
- [0032] FIG. 2—Perspective side view tilted down to allow for visibility into the interior of the compartment
- [0033] FIG. 3—Top view looking down into open compartment insert (no lid)
- [0034] FIG. 4—Perspective side view tilted up to allow for visibility underneath and inside the coupling ring
- [0035] FIG. 5—Cross sectional of side view (FIG. 1) showing inner threads and angle at top for sealed closure. Detail 1 shows the angle required for sealed closure specifically.
- [0036] FIG. 6—Top view of compartment insert when used with a receptacle (in this case a water bottle) and a lid. This is the top view of FIG. 7.
- [0037] FIG. 7—Side view of insert compartment in use, placed between a receptacle and its lid
- [0038] FIG. 8—Cross section of side view (FIG. 7) of insert compartment in use showing interaction of couplings (threads) between the receptacle and compartment insert and the lid and compartment insert
- [0039] FIG. 9—Cross section of side view showing each of the three separate pieces (receptacle on bottom, compartment insert in middle, and lid above)

DETAILED DESCRIPTION

- [0040] FIG. 1—Perspective side view of compartment insert. Invention is made of molded plastic and is one piece. Figure shows the threads on the outside of the upper extension. The upper extension should essentially replicate the top portion of whatever receptacle the compartment insert is designed to be used in conjunction with. Below the upper extension is the exterior of the outer coupling ring (with threads on the inside and not visible) showing one iteration of a design with a curved surface (the X's).
- [0041] FIG. 2—Perspective side view tilted down to allow for visibility into the interior of the compartment. There is a smooth surface on the interior of the compartment from the top to the bottom.
- [0042] FIG. 3—Top view looking down into open compartment insert (no lid). This drawing shows a design of the outer coupling ring in a wave shape (rising and falling curves) that is visible from above. The interior surface of the compartment is smooth all the way around.
- [0043] FIG. 4—Perspective side view tilted up to allow for visibility underneath and inside the coupling ring. The threads are on the inner surface of the outer ring, not on the “cup” or compartment wall itself.
- [0044] FIG. 5—Cross sectional of side view (FIG. 1) showing inner threads and angle at top for sealed closure. This shows the detail of the inside of the coupling ring and its connection with the main compartment or “cup”. Entire object is one solid continuous piece of plastic.
- [0045] FIG. 6—Top view of compartment insert when used with a receptacle (in this case a water bottle) and a lid. The compartment insert outer ring extends beyond the receptacle lid in places. It may be completely or only partially visible in this view, depending on the design used (if all or only part extends beyond the receptacle lid). This allows for a user to feel which piece (lid or compartment insert) is being turned

(loosened or tightened) without having to look. If opening the lid, then the user will have access to the contents of the compartment insert chamber, while the compartment insert remains attached to the receptacle (bottle) such that the receptacle’s contents are sealed inside. If opening the compartment insert, then the user will have access to the contents of the receptacle, while the lid remains attached to the top of the compartment insert in such a manner that it remains sealed.

[0046] FIG. 7—Side view of insert compartment in use, placed between a receptacle and its lid. The compartment insert is roughly the same height as the original lid. Also, ideally the texture/shape/design of the compartment insert is different than the original lid. In this view, the receptacle is not transparent, or the compartment insert would be visible inside the receptacle. The receptacle may or may not be packaged with the compartment insert (i.e. the receptacle could be part of the product, or it may be any third party created receptacle).

[0047] FIG. 8—Cross section of side view (FIG. 7) of insert compartment in use showing interaction of couplings (threads) between the receptacle and compartment insert and the lid and compartment insert. Also showing the manner in which the compartment insert protrudes into receptacle (length of protrusion may vary). This also shows the inside of the chamber—that it extends from the lid down into the neck of the receptacle and beyond. The thickness of the compartment insert is shown, but may be of varying thicknesses depending on type of material used and intended purpose. In most cases, the compartment insert will be made as thin and light weight as possible, while maintaining required strength and durability.

[0048] FIG. 9—Cross section of side view showing each of the three separate pieces (receptacle on bottom, compartment insert in middle, and lid above). When each of the components is placed together and the upper component turned in a clockwise direction, they become attached to one another in such a manner that they seal the contents of the two respective chambers (receptacle and compartment insert) inside. When turned counter clockwise, they detach, opening the respective chambers. This may be done by each component independently or simultaneously. The lid shown has threads that interact appropriately with the compartment insert, such that it seals to form a water tight chamber inside. This lid may be the lid that corresponds to a third party receptacle, or it may be a lid that accompanies the compartment insert. The lid may or may not be attached to the compartment insert or receptacle via a tether of some sort.

I claim:

1. A compartment insert comprising:
 - a. a cup-like primary compartment, and
 - b. a coupling on the upper end of the outer surface of the compartment that replicates the receptacle coupling in diameter, thickness, and thread dimensions, and
 - c. a protrusion that extends outwardly from the exterior surface of the compartment, below the coupling named in b above, and then downward such that it encircles the compartment itself and contains a second coupling on the inner surface of the downward protrusion that engages with the receptacle coupling.
2. A compartment insert, such that when engaged with the coupling of a receptacle:

- a. fully seals the receptacle, and
 - b. forms an interior chamber that extends downward into the neck of said receptacle, and
 - c. is situated such that the majority of the compartment's inner volume is below the top of the receptacle.
3. A compartment insert, such that when the compartment insert's coupling referred to in lb is engaged with the coupling of a receptacle's lid:

- a. forms a sealed compartment separate from that of the receptacle, and
- b. allows the receptacle to be accessed by removing the sealed compartment insert without removing the lid and opening the compartment insert itself.

* * * * *