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(71) **Applicant** (for all designated States except US): **IGLOO PRODUCTS CORP.** [US/US], 777 Igloo Road, Katy, TX 77494 (US).

(72) **Inventor; and**

(75) **Inventor/Applicant** (for US only): **VAUGHN, James** [US/US], 908 Victoria Lakes Dr., Katy, TX 77493 (US).

(74) **Agents:** **PHILLIPS, Jeffrey, J.** et al, **HOWREY LLP**, 11111 Louisiana, 25th Floor, Houston, TX 77002 (US).

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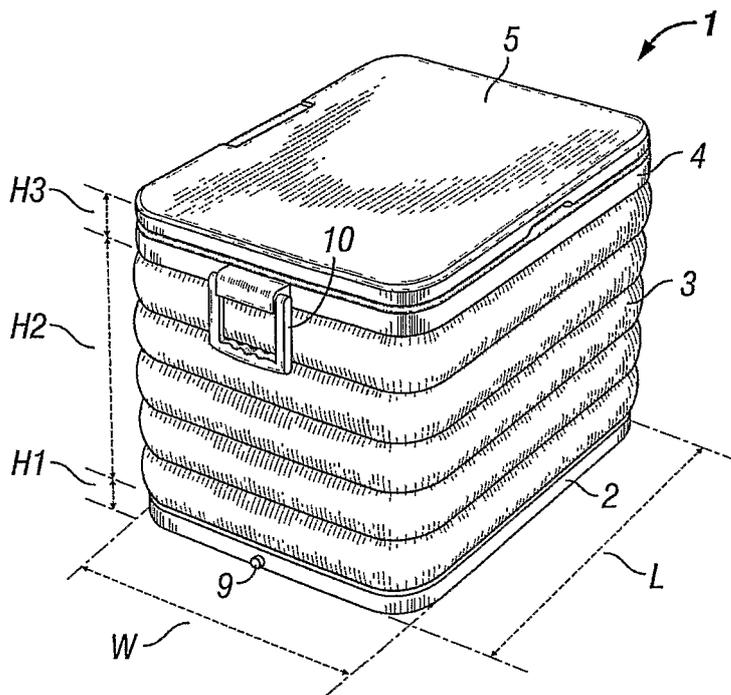
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(54) **Title:** INFLATABLE COOLER



(57) **Abstract:** An inflatable cooler is provided having a rigid base, an upper frame, and an inflatable body having at least one fluid chamber connected to the base and to the upper frame. The inflatable body and the at least one fluid chamber is comprised of a flexible material. The cooler has an inflated state in which the at least one fluid chamber is filled with a fluid such as air, thereby increasing the height of the cooler and forming a semi-rigid body structure useful for transporting food and beverages. The cooler has a deflated state in which the at least one fluid chamber is not filled, thereby providing a compact structure conducive for efficient storage and relatively inexpensive shipping.

WO 2007/016092 A2

- 1 -

## INFLATABLE COOLER

## RELATED APPLICATIONS

[0001] This non-provisional application claims priority to U.S. Provisional Patent Application No. 60/702,538 entitled "Inflatable Cooler" filed on July 26, 2005, which is hereby incorporated by reference in its entirety.

## FIELD OF THE INVENTION

[0002] The present invention relates generally to an insulated container such as a cooler or ice chest, and more specifically, to a cooler that can be inflated for use and deflated for shipment and/or storage. More particularly, the present invention relates to a cooler having a rigid base, a rigid top, and an inflatable body that can hold items while inflated, but wherein the inflatable body can be deflated when not in use to require less storage space.

## BACKGROUND OF THE INVENTION

[0003] Insulated containers such as coolers, sometimes referred to as ice chests, have been used for many years to transport food and beverages between locations while keeping the contents at a desired temperature. Typically, the insulated coolers are used to carry cold items such as soda, beer, sandwiches, ice cream, fish, meat, and so on, surrounded by ice or refreezeable cold packs, for example. Alternatively, the insulated coolers can be used to transport hot items such as casseroles, lasagna, vegetables, and so on.

[0004] Coolers have typically been made of solid materials, such as injection molded plastic or insulated "soft sided" materials. These hard-sided coolers maintain their shape, whether or not the coolers are used or stored. The relatively large size of these coolers has resulted in the need for excessive storage space, as the coolers occupy their full volume even when not in use.

[0005] Various attempts have been made to address this storage space issue, including soft-sided foldable and collapsible coolers, which are described in U.S. Application No. 11/155,113, filed June 16, 2005, which is incorporated by reference in its entirety herein.

[0006] Another problem associated with the uncollapsible hard-sided cooler is that when manufactured in a foreign locale (e.g. Asia), shipping costs may prove cost prohibitive because shipping costs are often based on volume. Thus, it is desirable to provide a cooler having a large

- 2 -

volume/capacity when in use, but a small volume for shipping to reduce shipping costs. Such a cooler could also reduce the shipping costs associated with shipping the cooler to customers.

[0007] Various inflatable coolers have also been suggested in the past. Most had very limited special applications or were complex and would be difficult to manufacture. Further, inflatable coolers currently being manufactured are typically intended for use as flotation devices.

[0008] U.S. Patent No. 4,085,785 (issued April 25, 1978) describes an inflated chamber that serves to insulate a heavy gauge plastic liner that fits inside the inflated chamber.

[0009] U.S. Patent No. 4,809,352 (issued February 28, 1989) describes a cooler having an inflatable body and an inflatable lid, but also having supports which must be removed and separately folded for storage.

[0010] U.S. Patent No. 6,123,217 (issued September 26, 2000) describes an inflatable cooler for use with a standard size beverage container, such as a beer keg. The inflatable body of the cooler is designed to abut against the beverage container, thereby providing the cooler its structural support.

[0011] While these cooler products are inflatable, each may not provide the versatility and simplicity that is requested by consumers. There still exists a need for an inflatable cooler that can retain its shape when inflated without separate support members, and that can be deflated and stored in an efficient, compact manner. The inflatable cooler should be adapted to be relatively robust and not prone to puncture. Further, it is desirable to provide a cooler that is capable of being inflated at remote locations where electrical power is not readily available. It is desirable to provide a cooler with a small volume for shipping and storage, but with a large capacity/volume for use.

#### SUMMARY OF THE INVENTION

[0012] An inflatable insulated container such as a cooler/ice chest is provided having a rigid base, an upper frame, and an inflatable body having an upper end and a lower end, the lower end sealingly engaged to the rigid base and the upper end sealingly engaged to the upper frame. The cooler also may include either a hinged lid or a removable lid connected to the upper frame. The inflatable cooler has an inflated state, wherein the rigid base, upper frame, and inflatable body define a cavity, in the inflated state, the inflatable body is semi-rigid and structurally capable of

- 3 -

transporting items such as food, beverages, and ice. In the deflated state, the rigid base is connectable to the upper frame in order to minimize storage and shipping volume.

### **DESCRIPTION OF THE FIGURES**

[ooi3] The following figures form part of the present specification and are included to further demonstrate certain aspects of the present invention. The invention may be better understood by reference to one or more of these figures in combination with the detailed description of specific embodiments presented herein.

[ooi4] Figure 1 shows a perspective view of an embodiment of the present disclosure of a cooler 1 having a rectangular cross section in an inflated state (lid closed).

[ooi5] Figure 2 shows a perspective view of an embodiment of the present disclosure of a cooler 1 having a rectangular cross section in an inflated state (lid open).

[ooi6] Figure 3 shows a perspective view of an embodiment of the present disclosure of a cooler 1 having a rectangular cross section in an inflated state (lid closed, transparent sides).

[ooi7] Figures 4A-4E show an embodiment of the present disclosure of a cooler 1 as it is deflated/collapsed, ultimately reaching a substantially uninflated state (Figure 4E) suitable for shipping

### **DETAILED DESCRIPTION OF PRESENT INVENTION**

[ooi8] The present invention is directed to making an inflatable cooler that is the functional and practical equivalent of a classic "hard-sided" cooler, with the added benefit of compact storage and reduced costs of shipping.

[ooi9] Illustrative embodiments of the invention are described below as they might be employed in the use of designs for inflatable insulated containers, coolers, or ice chests. As used herein, cooler shall mean cooler, ice chest, insulated container, etc. In the interest of clarity, not all features of an actual implementation are described in this specification. It will of course be appreciated that in the development of any such actual embodiment, numerous implementation-specific decisions must be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which will vary from one implementation to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the art having the benefit of this disclosure.

- 4 -

[0020] Further aspects and advantages of the various embodiments of the invention will become apparent from consideration of the following description and drawings. While articles are described in terms of "comprising" various components (interpreted as meaning "including, but not limited to") the articles can also "consist essentially of" or "consist of" the various components and steps, such terminology should be interpreted as defining essentially closed-member groups.

[0021] An embodiment of the present disclosure as shown in Figures 1-3 includes an inflatable cooler 1 comprising a rigid lower base tray 2, an inflatable body 3 having at least one side, a rigid upper frame 4, and a lid 5 defining an interior space or cavity 6. The solid lower base tray 2 may be injection molded in rigid plastic, such as polypropylene, which acts to protect the inflatable body 3 from abrasion or puncture. In another embodiment, the lower base tray 2 may be constructed of a semi-rigid heavy walled vinyl material. In yet another embodiment, the inflatable body 3 may be designed with an integral inflatable floor or just an integral layer of material sufficient to create a watertight seal.

[0022] The lower base tray 2 may also include at least one plug 9 to be used to drain the interior of cooler 1. Alternatively, the inflatable cooler body 3 may be equipped with a drain plug (not shown) to allow liquid contents of cooler 1 to be drained away.

[0023] The lid 5 of the cooler 1 may be a traditional blow-molded unit housed in a rigid plastic upper frame 4, that may be somewhat smaller in dimension to the lower base tray 2. The lid 5 may be hinged or separable from the upper frame, and one or more lifting handles 10 may be molded features in the upper frame 4. The material of construction for the lower base tray 2, upper frame 4, and lid 5 is not limited to plastic; any other type of rigid material, such as aluminum for example, could be utilized as would be realized by one of ordinary skill in the art having the benefit of this disclosure.

[0024] Figures 1 and 3 illustrate an embodiment of the present invention with a hinged lid in the closed position. Figure 2 illustrates an embodiment of the present invention with a hinged lid in the open position.

[0025] The inflatable body 3 may be permanently joined to the lower base tray 2 and upper frame 4 by means of adhesives, heat seam sealing, ultrasonic welding, thermo-bonding, plastic welding, or any other means for ensuring the integrity and air tight seal of the cooler during use.

- 5 -

The inflatable body 3 may be formed of puncture resistant, heavy-gauge PVC vinyl or of another suitable air tight, flexible material such as vulcanized rubber or polyester reinforced plastic fabric. The inflatable body material may be in the range of 10 to 55 mm, or even heavier gauges to improve puncture and abrasion resistance.

[0026] The inflatable body 3 may comprise one or more chambers for receiving fluid such as air or water, although multiple chambers maybe used to improve rigidity of the inflatable body 3, as would be realized by one of ordinary skill in the art having the benefit of this disclosure. The multiple chambers may be inflated using one or more inlet connectors or valves welded to inflatable body 3. Various types of inflation valves may be used, including but not limited to simple plug-type plastic valves (intended to be inflated by mouth or by air pump) and Schrader valve designs as used in automotive tires. The one or more valves may be glued instead of welded to ensure an air tight seal. Each chamber may be designed to be isolated with a dedicated valve for inflation. Alternatively, multiple chambers may be linked in series, either directly or with a check valve therebetween, and could accordingly be inflated using a single valve. The inflatable body 3 and the chambers may be constructed as puncture resistant as may be desired, with welded or glued seams to ensure integrity and an air tight seal. The compartments as described above have been used previously in air mattresses, for example, as described at [http://www.aerobed-aero-bed.com/\\_wsn/page3.html](http://www.aerobed-aero-bed.com/_wsn/page3.html) (Exhibit A) and in U.S. Patent No. 6,643,875, both of which are incorporated by reference herein in their entireties.

[0027] By "inflatable" or "inflated," it is to be understood that the one or more chambers can be at least partially filled with a fluid, such as air or water, in order to provide the cooler with the volume and rigidity necessary for the effective containment and transportation of goods. By "deflated," it is to be understood that the one or more chambers are at least mostly evacuated of the fluid. Air is a preferred fluid because of its excellent thermal insulation properties, although other gases may be utilized. Liquids such as water are also useful because they can be easily chilled prior to being pumped into the inflatable body. Means for inflating the inflatable body 3 includes an air compressor, electric pump, foot pump, hand pump, a portable cigarette lighter-powered pump, or a CO<sub>2</sub> cartridge inflation tool (commonly used for inflating bicycle tires).

[0028] The length and width of inflatable cooler 1 is maintained and defined by the rigid lower base toy 2 and the rigid upper frame 4. When inflated (i.e. substantially filled with a fluid such

- 6 -

as air), as shown in Figures 1-3, the height of cooler 1 increases to form a semi-rigid body structure. Although the shape of the lower base 2 and upper frame 4 are rigid, it will be appreciated that the shape of the inflatable body 3 when inflated can be designed to embody many shapes. As illustrated in Figure 2, inflatable body 3 is shown by example having a ribbed exterior 7 with a smooth interior 8, which facilitates cleaning.

[0029] The cooler 1 can further comprise various additional features such as one or more external pockets (not shown) attached to the outside of the inflatable body 3, or internal partitions or pockets (not shown) attached to the inside of the inflatable body 3. Additional internal and external features (such as pockets) may be permanently attached to inflatable body 3, or may be detachable by means of snaps, zippers, Velcro, or any other means as would be realized by one of ordinary skill in the art having the benefit of this disclosure. Also, in some embodiments, cooler 1 is provided with drain 9, located on lower base tray 2 in Figure 1.

[0030] Many variations in size and shape of a product constructed this way would be possible. For example, the number of sides can generally be any number, such as 1, 3, 4, 5, 6, and so on. Embodiments of the present disclosure having one side can be round (cylindrical) or oval in cross section. Embodiments having three sides can be triangular in cross section (such as right triangular, isosceles, scalene). Embodiments having four sides can have various cross sections such as square, rectangular, trapezoidal, or other shapes.

[0031] The cooler 1 can be deflated to occupy a smaller overall volume than when it is in its inflated state. The inflated state is used when transporting goods such as food or beverages. The deflated state can be used when the cooler is not in use in order to conserve storage space. Because the plastic upper frame 4 would be somewhat smaller in dimension to the lower base tray 2, the upper frame 4 can be easily designed to have a snapping engagement, for example, with the lower base tray when cooler 1 is in the deflated state. It will be appreciated that other means are available for retaining the upper frame 4 in lower base tray 2 during storage (i.e. deflated state), including one or more retention mechanisms, such as, for example, a hook and eye closure or a strap in combination with snaps. When deflated, the inflatable body 3 thus rests in the interior space created between the engaged lower base tray 2 and upper frame 4/lid 5.

[0032] When deflated (as shown in Figure 4E), upper frame 4 collapses into the lower base tray 2 to minimize its size for storage and for shipping, which reduces shipping costs. Figure 4E

- 7 -

shows the cooler 1 of Figure 4A in a fully deflated state. Figures 4B-4D show cooler 1 in partially deflated states. As can be seen, the upper frame 4 along with the loose vinyl material of the deflated body 3 would naturally collapse down partially into the base tray 2.

[0033] The cooler may be designed such that the expanded state can generally be any desired volume. Larger internal volumes are preferred when the user needs to carry large quantities of materials, while smaller internal volumes are preferred when the user needs to carry smaller quantities of materials. For both larger and smaller coolers, the compact external volume remains an important feature of the present invention for shipping costs and storage. For example, with reference to Figure 1, a rectangular cooler of the present invention having a length (L) of 36 inches, a width (W) of 24 inches, a lower base height (H1) of two inches, an inflated body height (H2) of 20 inches, and an upper tray/lid height (H3) of two inches would occupy for shipping and storage purposes a volume of approximately 12 cubic feet ( $L \times W \times (H1 + H2 + H3)$ ). With reference to Figure 4, the same rectangular cooler in its deflated compact state would occupy for shipping and storage purposes a volume of approximately 2 cubic feet ( $L \times W \times (H1 + H3)$ ) - an 86% reduction in storage volume.

[0034] The advantage of this new approach to an inflatable cooler is that it is economical to manufacture and durable enough to substitute for a traditional hard-sided cooler. This cooler is easy to carry and transport, and has all of the same features and benefits of traditional coolers. Further, cooler of the present invention has the added benefit of being able to reduce its size to make it easier to store than hard-sided equivalents. This reduced size also makes shipping economical as illustrated above.

[0035] All of the articles disclosed and claimed herein can be made and executed without undue experimentation in light of the present disclosure. While the articles of this invention have been described in terms of preferred embodiments, it will be apparent to those of skill in the art that variations may be applied to the articles described herein without departing from the concept and scope of the invention. All such similar substitutes and modifications apparent to those skilled in the art are deemed to be within the scope and concept of the invention.

CLAIMS:

1. An inflatable cooler comprising:  
a rigid base;  
an upper frame; and  
an inflatable body having an upper end and a lower end, the lower end sealingly engaged  
to the rigid base and the upper end sealingly engaged to the upper frame;
2. The cooler of claim 1, further comprising a lid hingedly connected to the upper frame.
3. The cooler of claim 1, further comprising a lid removably connectable to the upper frame.
4. The cooler of claim 1, wherein the cooler has an inflated state, wherein the rigid base, upper frame, and inflatable body define a cavity.
5. The cooler of claim 4, wherein the inflatable body in the inflated state is at least semi-rigid.
6. The cooler of claim 4, wherein the cooler is structurally capable of transporting food, beverages, and ice when the inflatable body is in the inflated state.
7. The cooler of claim 1, wherein the cooler has a deflated state, wherein the rigid base is connectable to the upper frame.
8. The cooler of claim 1, wherein the inflatable body comprises a flexible material defining at least one fluid chamber.
9. The cooler of claim 8, wherein the flexible material comprises a polymer.
10. The cooler of claim 8, wherein the at least one fluid chamber is filled with air to inflate the inflatable body.
11. The cooler of claim 8, wherein the at least one fluid chamber is filled with water to inflate the inflatable body.
12. A method for using an inflatable cooler, comprising:

- 9 -

providing an inflatable cooler comprising a rigid base, an upper frame, and an inflatable body having an upper end and a lower end, the lower end sealingly engaged to the rigid base and the upper end sealingly engaged to the upper frame;  
filling the inflatable body with a fluid to create an inflated cooler; and  
storing items in the inflated cooler.

13. The method of claim 12, wherein the items are selected from food, beverages, ice, or combinations thereof.

14. A method for storing an inflatable cooler, comprising:

providing an inflatable cooler comprising a rigid base, an upper frame, and an inflatable body in its inflated state having an upper end and a lower end, the lower end sealingly engaged to the rigid base and the upper end sealingly engaged to the upper frame;

removing fluid from the inflatable body to create a deflated cooler; and  
storing the deflated cooler.

15. The method of claim 14, wherein the rigid base is connectable to the upper frame when the inflatable cooler is deflated;

16. A method for shipping an inflatable cooler, comprising:

manufacturing an inflatable cooler comprising a rigid base, an upper frame, and an inflatable body having an upper end and a lower end, the lower end sealingly engaged to the rigid base and the upper end sealingly engaged to the upper frame, wherein the rigid base is connectable to the upper frame when the inflatable cooler is in its deflated state; and  
shipping the inflatable cooler in its deflated state.

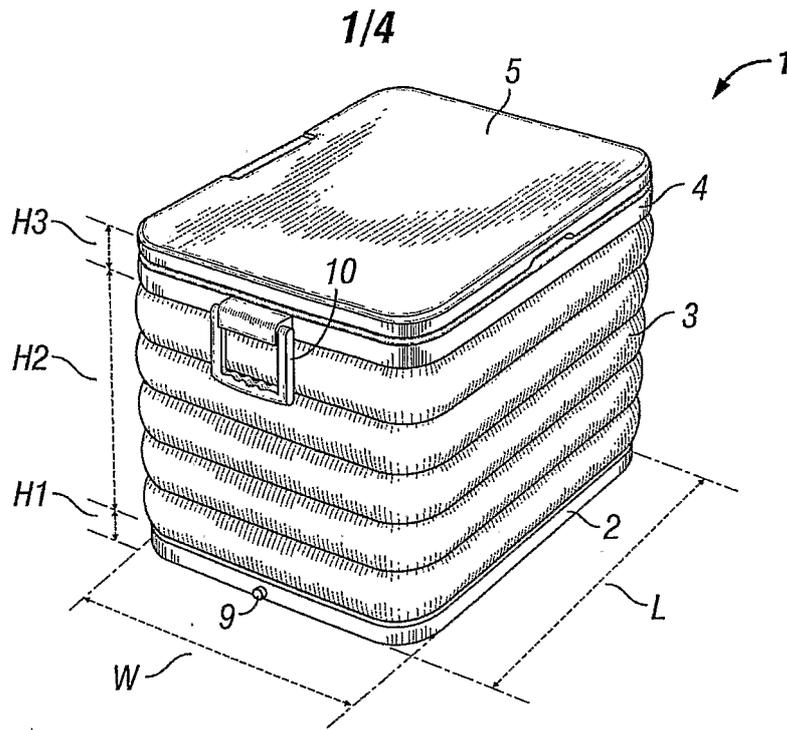


FIG. 1

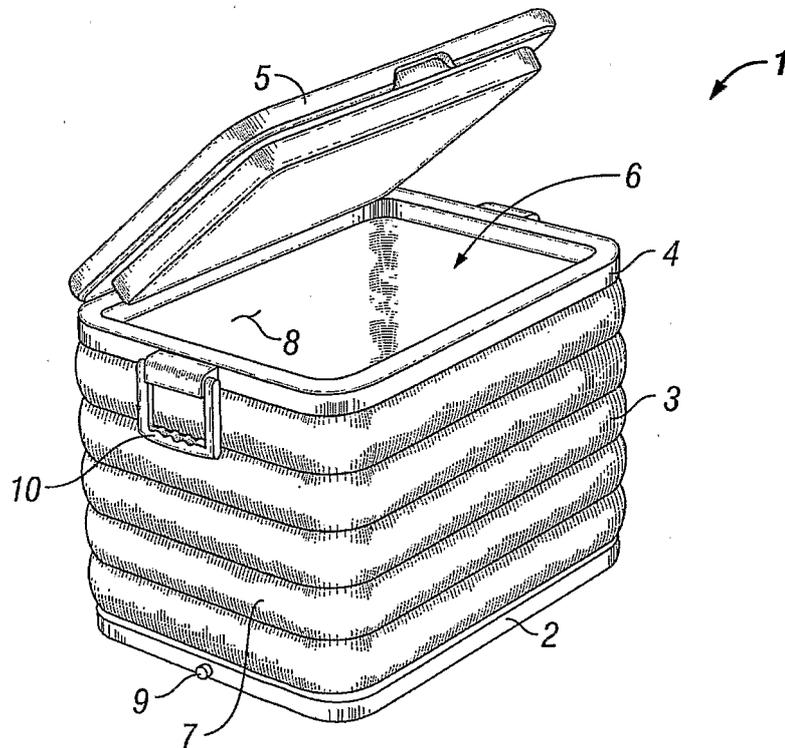


FIG. 2

2/4

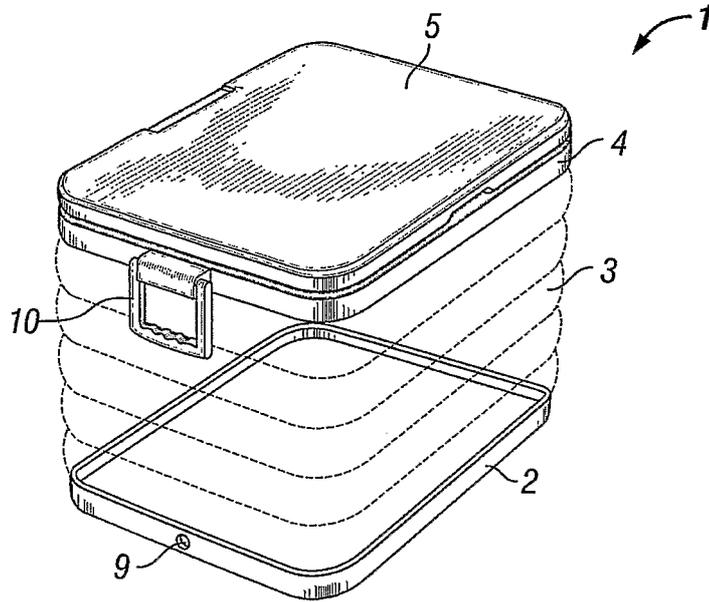


FIG. 3

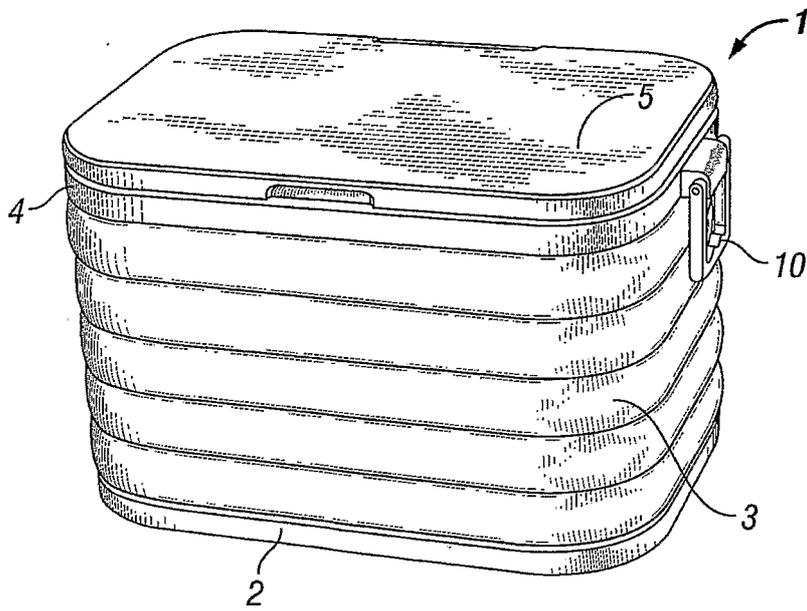


FIG. 4A

3/4

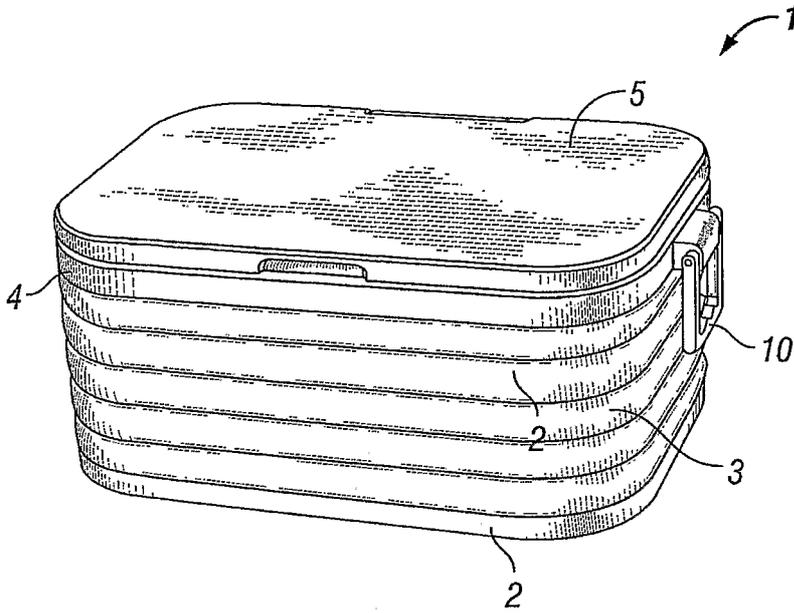


FIG. 4B

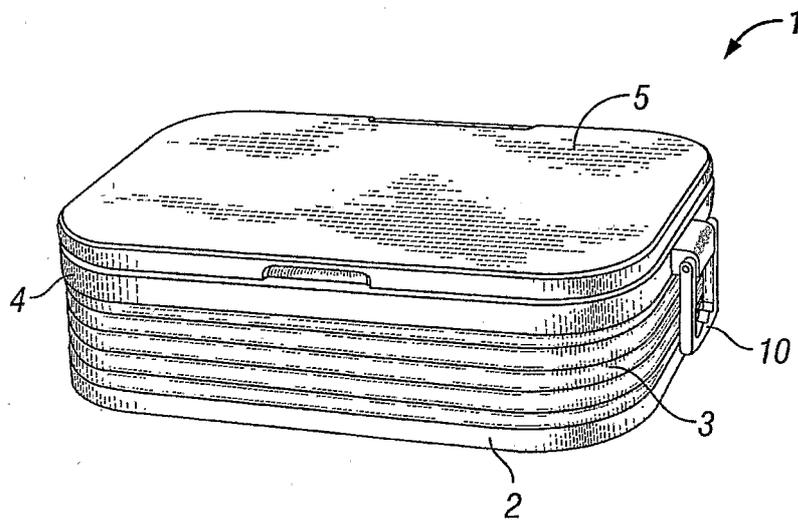


FIG. 4C

4/4

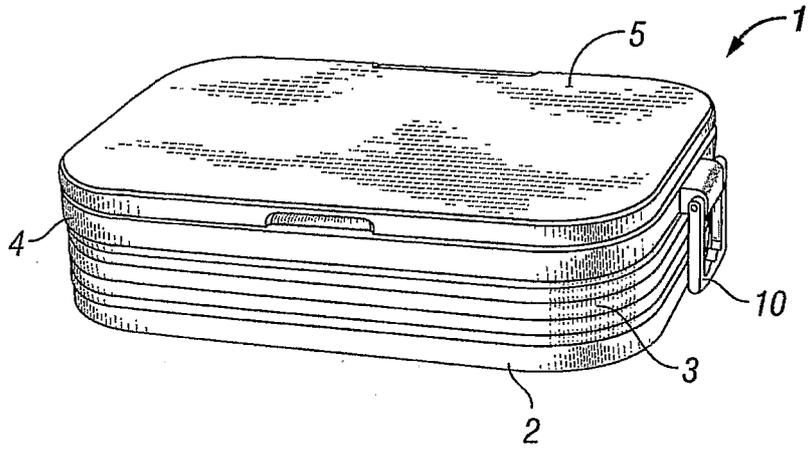


FIG. 4D

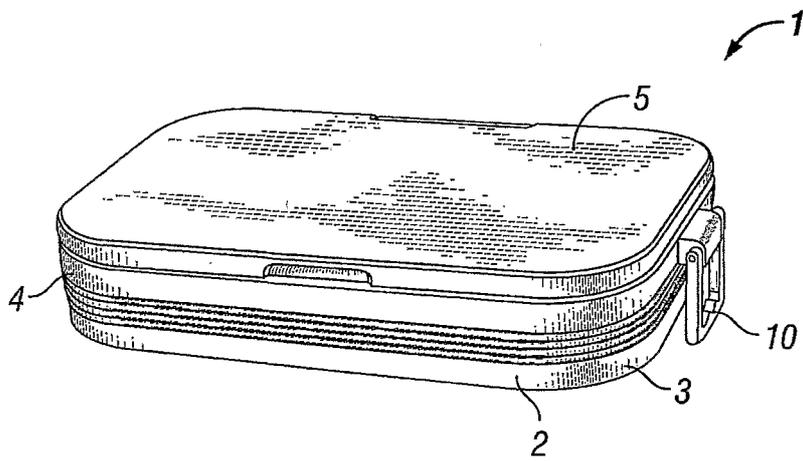


FIG. 4E