



US 20060248918A1

(19) **United States**

(12) **Patent Application Publication**
Robertson

(10) **Pub. No.: US 2006/0248918 A1**

(43) **Pub. Date: Nov. 9, 2006**

(54) **COOLER WITH CONTAINER POCKETS
AND COLD PLATE**

(60) Provisional application No. 60/716,269, filed on Sep.
12, 2005.

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Publication Classification

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(51) **Int. Cl.**

A47F 3/04 (2006.01)

F25D 3/08 (2006.01)

(52) **U.S. Cl.** **62/457.5; 62/246**

(57)

ABSTRACT

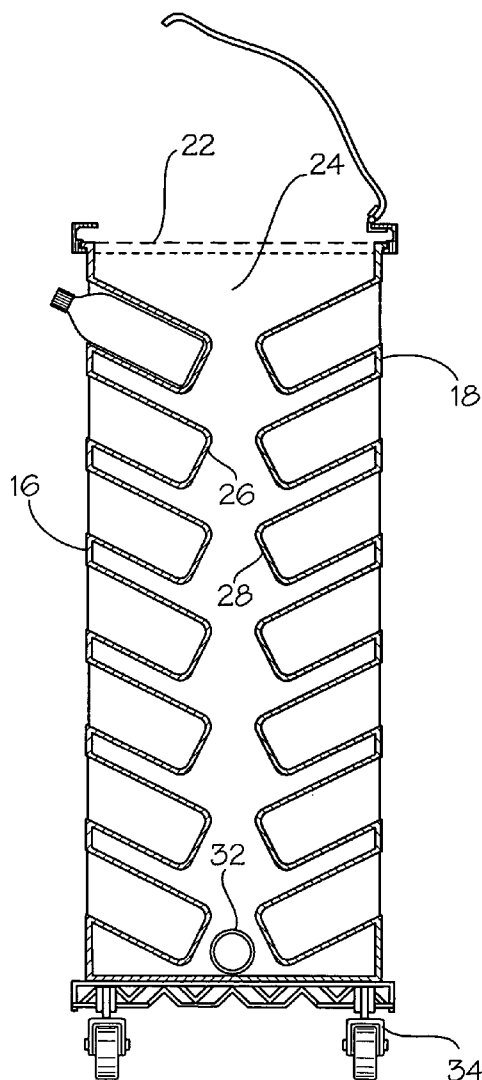
A transportable cooler comprises a bottom panel having lateral and transverse edge portions and a plurality of upright panels attached thereto and extending upward therefrom forming a vessel with an interior. The plurality of upright panels includes a front panel having a front surface and plurality of pockets extending from the front surface to the interior of the vessel. A cold plate disposed in the interior cools each pocket, directly or indirectly, to chill a beverage container inserted in the pocket.

(21) Appl. No.: **11/480,725**

(22) Filed: **Jul. 3, 2006**

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/047,031,
filed on Jan. 31, 2005.



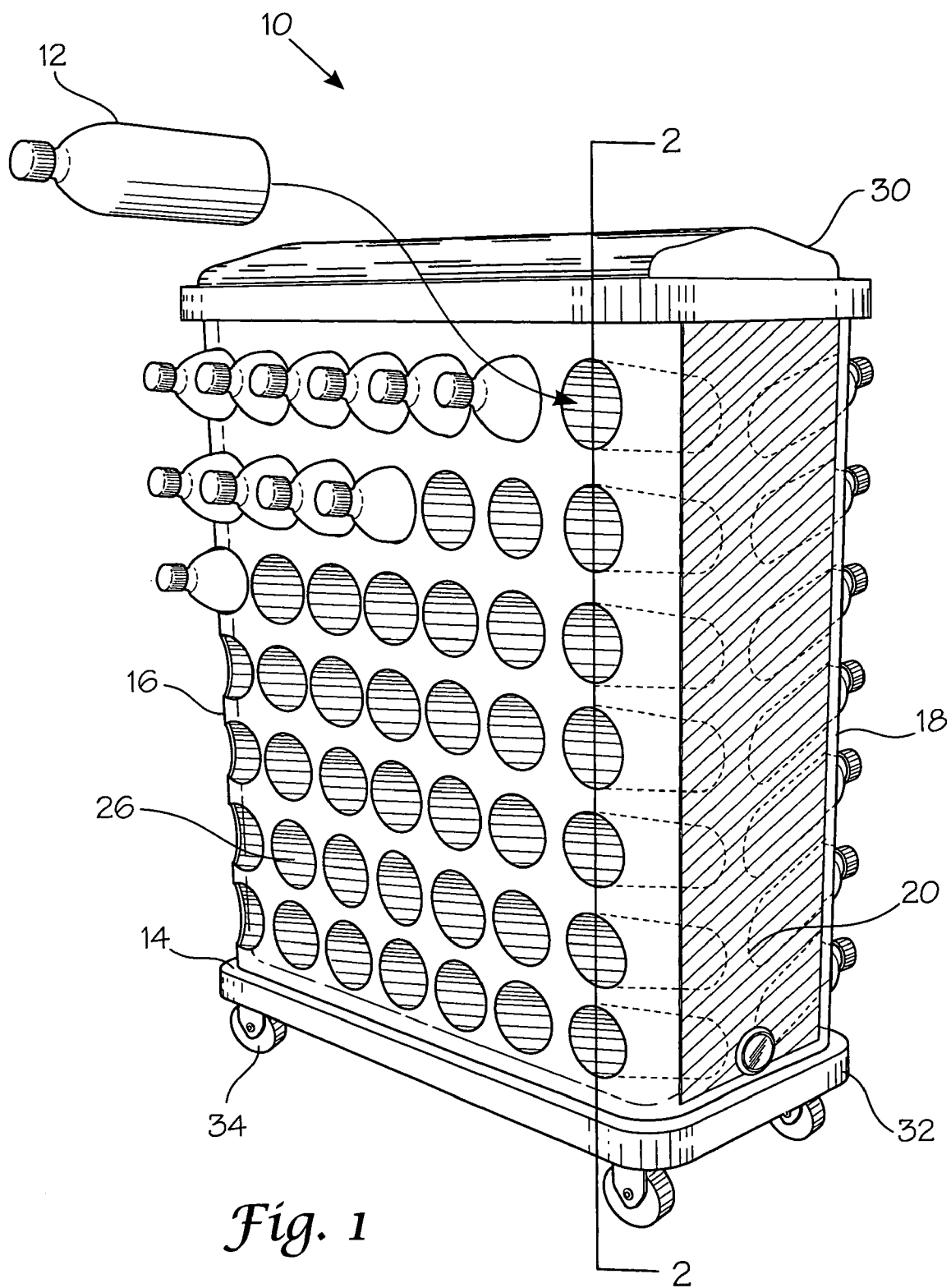


Fig. 1

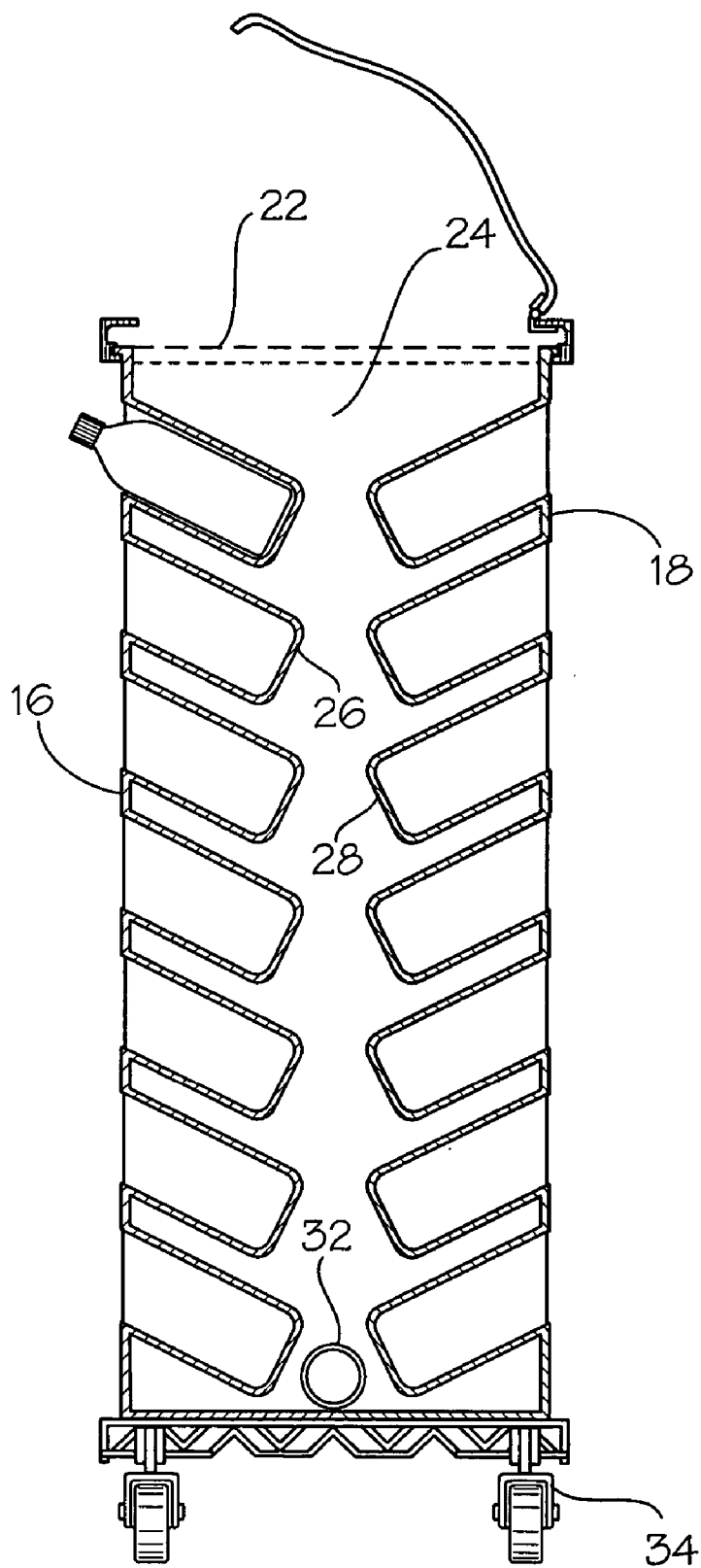


Fig. 2

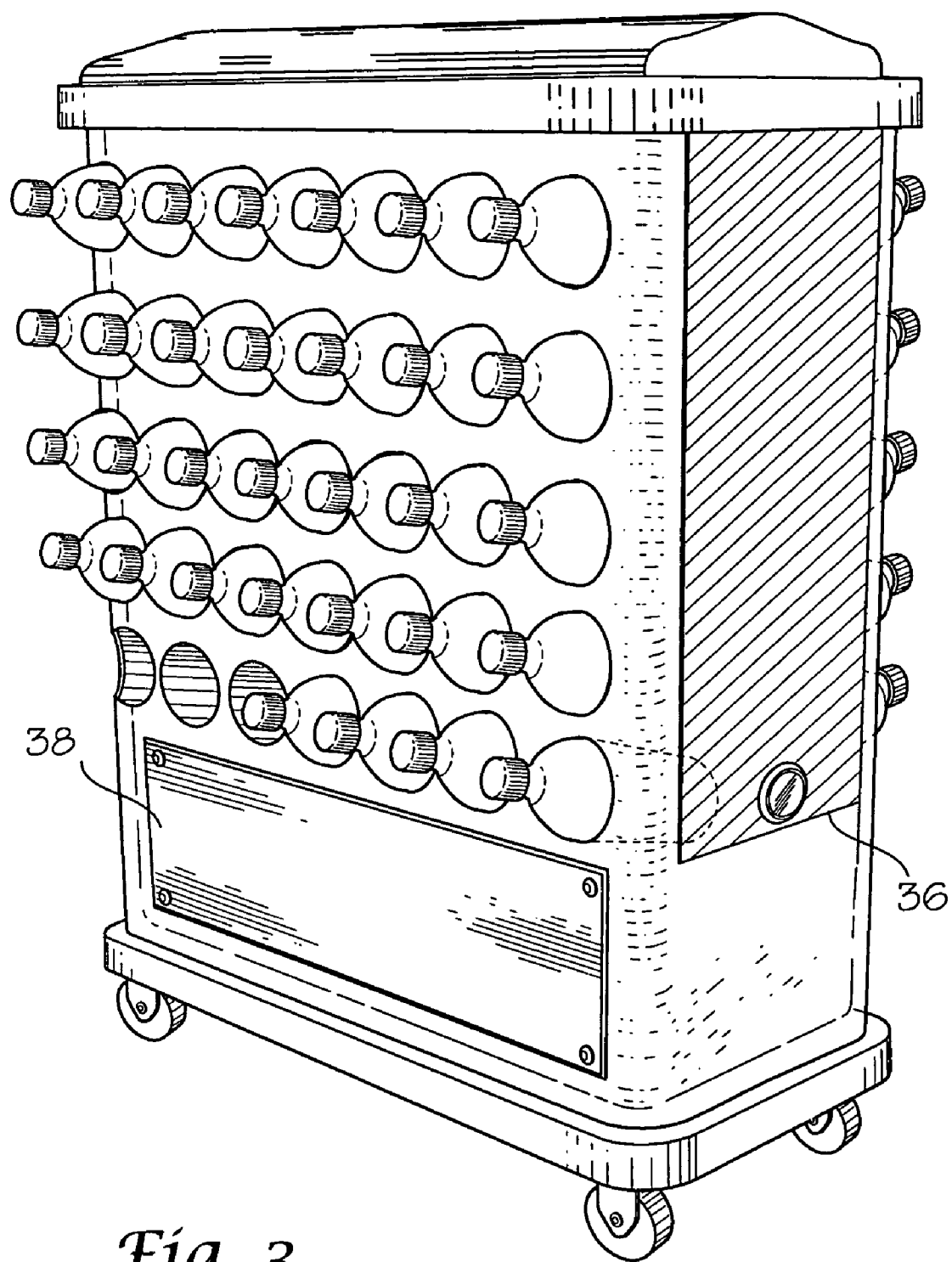


Fig. 3

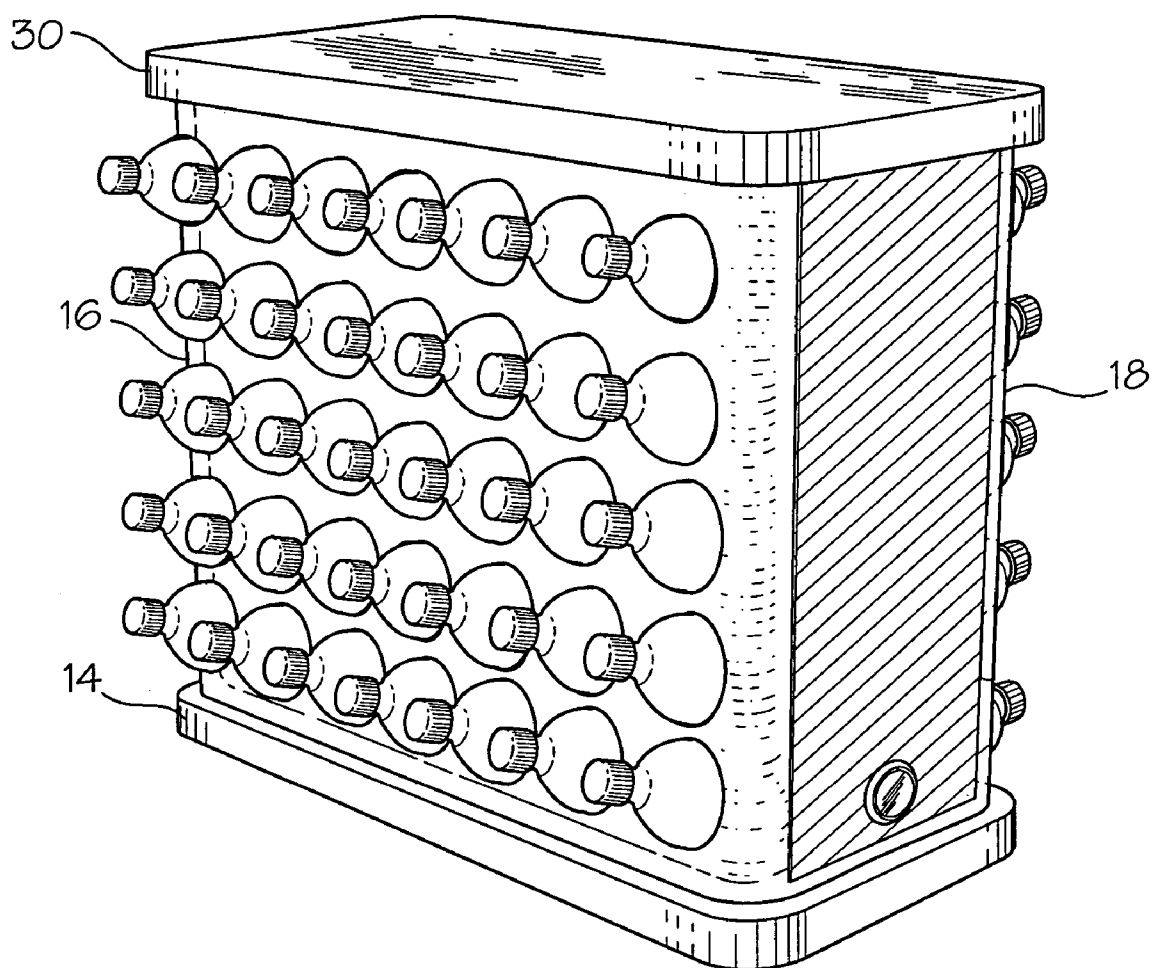


Fig. 4

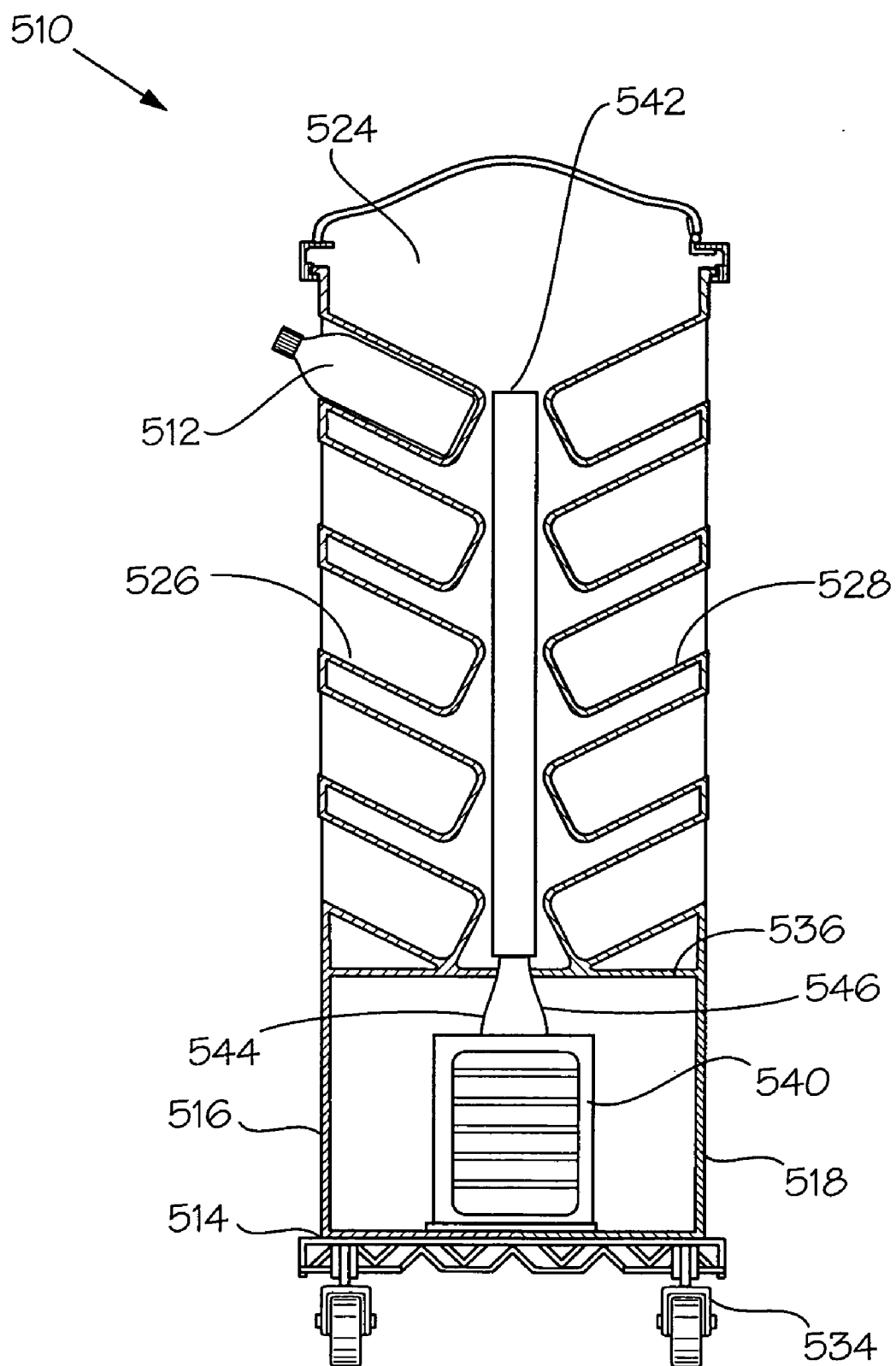


Fig. 5

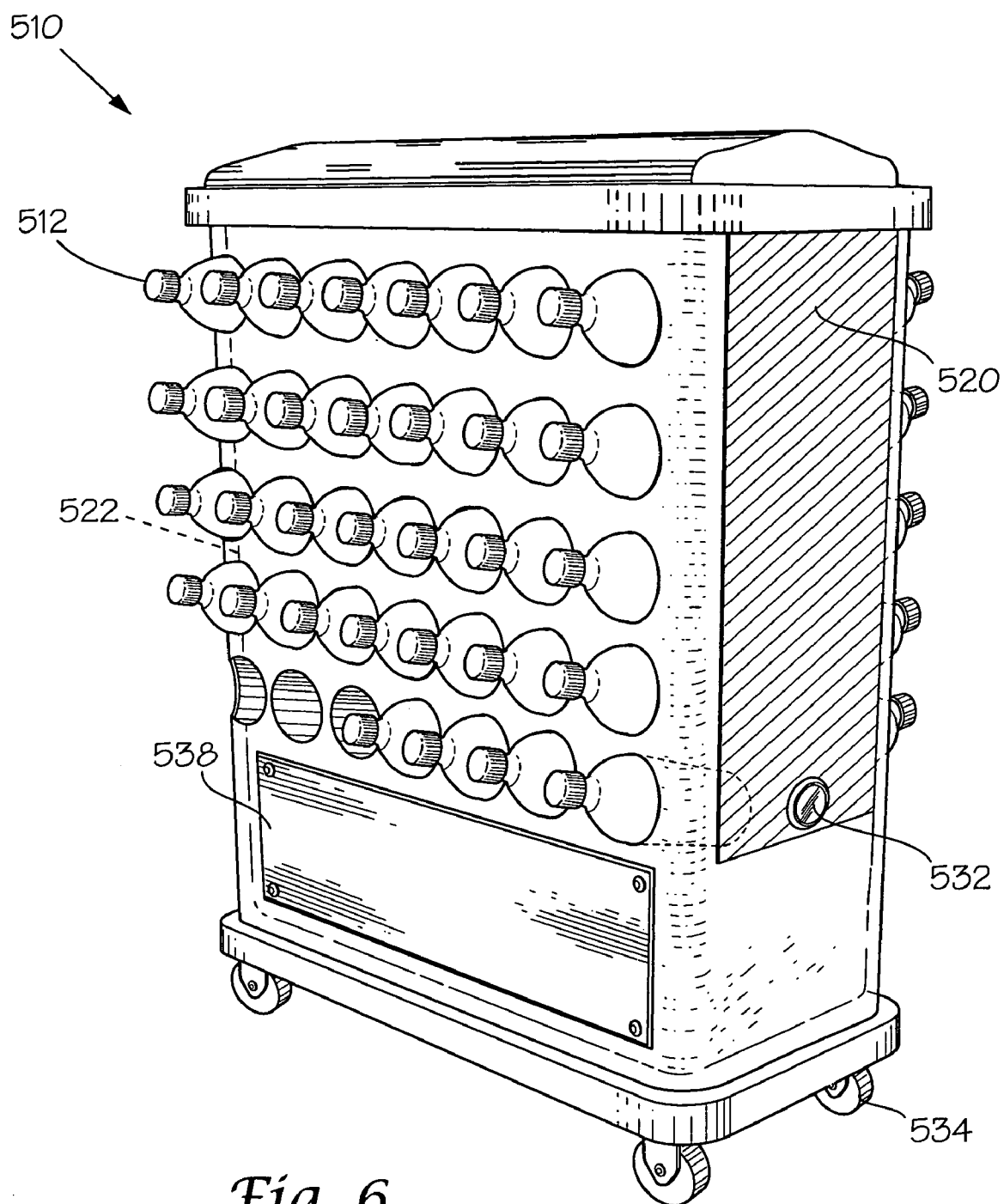


Fig. 6

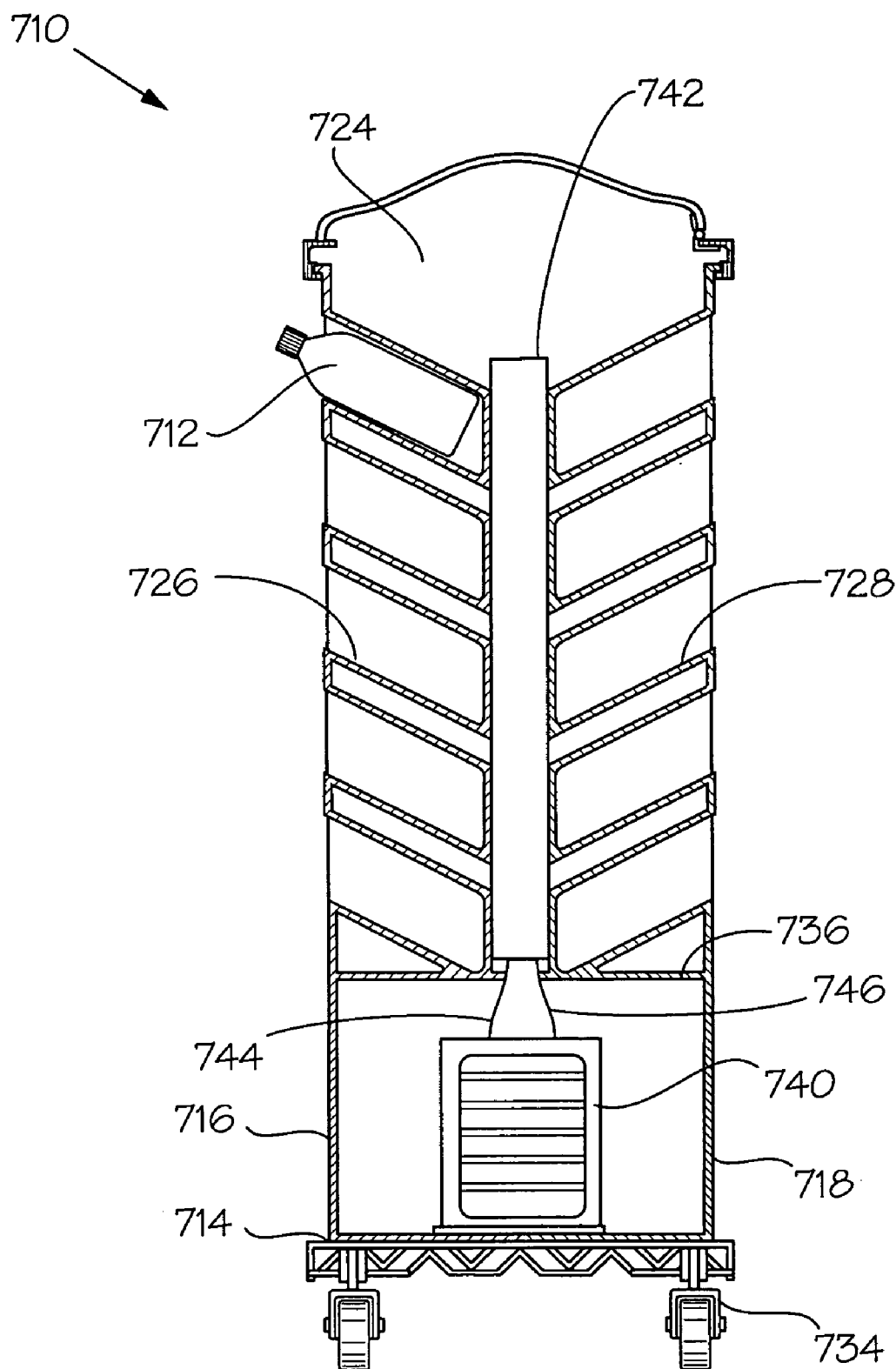


Fig. 7

COOLER WITH CONTAINER POCKETS AND COLD PLATE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part of non-provisional application Ser. No. 11/047,031 filed Jan. 31, 2005 entitled Cooler With Individual Container Pockets, and a continuation-in-part of provisional application Ser. No. 160/716,269 Filed Sep. 12, 2005 entitled Cold Plate Refrigerator.

TECHNICAL FIELD OF THE INVENTION

[0002] This invention relates generally to refrigeration equipment, and, more particularly, to a cooler for beverages and the like.

BACKGROUND OF THE INVENTION

[0003] Coolers for use with ice are used in convenience stores and other commercial environments to place containers of beverages for easy access by consumers. Ice coolers typically take the form of a barrel or chest positioned near a store entrance, near the cash register, at the end of an aisle or other locations to spur an impulse purchase. These containers are filled with ice and the beverage containers are placed on the ice and onto the ice. As the ice melts, the beverage containers sink forcing a consumer to fish around in the ice for the desired container. In addition to having a cold, wet hand, which is unpleasant, the consumer is sometimes exposed to germ-laden water. Barrel and chest coolers also have the disadvantage of placing the beverage containers at waist level instead of at eye level. It is desirable to have a cooler wherein melting ice does not wet the beverage containers and contaminate the water or containers.

[0004] A problem with barrel and chest coolers is capacity. Typically, capacity is limited by the barrel or chest opening. A barrel opening increases in size with barrel diameter which is limited by distance between aisles, or, when located at the end of an aisle, by shelf width. Similarly, a chest opening is limited by shelf width. It is therefore desirable to have a cooler whose capacity is not limited by shelf width or distance between shelves.

[0005] Another problem with chest and barrel coolers is the inability to remove a single container without disturbing remaining containers. It is therefore desirable to have a cooler wherein containers can be removed, one at a time, without disturbing the remaining containers.

[0006] Refrigerators are widely used for cooling food items and beverages. With beverages, the cooler is repeatedly opened and closed, not only to remove a beverage, but to see what beverage is available. It is therefore desirable to have a cooler that indicates what beverage is available without actually opening the door. It is also desirable to have beverage coolers that are mobile, if not portable, for placement on a retail floor as the need arises. Many such coolers use ice which can be quite messy; so, it would be advantageous to have a unit that is compact and cools efficiently without ice.

SUMMARY OF THE INVENTION

[0007] The present invention is directed to overcoming one or more of the problems set forth above. Briefly sum-

marized, according to the present invention, a cooler, comprises a bottom panel having lateral and transverse edge portions and a plurality of upright panels attached thereto and extending upward therefrom forming a vessel with an interior. The plurality of upright panels includes a front panel having a front surface and plurality of front pockets extending from the front surface to the interior of the vessel. A divider panel in the interior divides the interior into upper and lower chambers. A cold plate disposed in the upper chamber cools the plurality of front pockets.

[0008] These and other aspects, objects, features and advantages of the present invention will be more clearly understood and appreciated from a review of the following detailed description of the preferred embodiments and appended claims, and by reference to the accompanying drawings wherein similar reference numerals have been used, where possible, to designate similar or identical features that are common to the figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] **FIG. 1** is a perspective view of a preferred embodiment of a cooler with pockets for containers according to the present invention.

[0010] **FIG. 2** is a sectional view of the cooler taken along line 2-2 of **FIG. 1**.

[0011] **FIG. 3** is a perspective view of a cooler similar to **FIG. 1** but having a lower access panel.

[0012] **FIG. 4** is a perspective view of another preferred embodiment of a cooler according to the present invention featuring a display panel attached to support ribs.

[0013] **FIG. 5** is a sectional view similar to **FIG. 2** but illustrating another preferred embodiment of the cooler utilizing refrigeration equipment.

[0014] **FIG. 6** is a perspective view of a cooler similar to **FIG. 1** but utilizing refrigeration equipment.

[0015] **FIG. 7** is a sectional view similar to **FIG. 5** but illustrating another preferred embodiment with a cold plate abutting container pockets.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Referring to **FIGS. 1-2**, a cooler **10** is provided for cooling beverage containers **12** or other items. Cooler **10** has a bottom panel **12** and a plurality of upright panels forming a vessel capable of holding water. Bottom panel **12** has lateral and transverse edge portions and is polygonal shaped. Preferably bottom panel **12** is rectangular in shape with a front edge portion, a rear edge portion and side edge portions, but may be triangular or other shapes. In a retail environment, a triangular shape is especially adapted for the end of a row of shelving or alongside a row of shelving allowing access to beverage containers from two sides. A rectangular shape is preferable at the end of a row of shelving because it protrudes less from the end of the shelving while holding more containers.

[0017] The plurality of upright panels includes a front panel **16** attached to base **14** and extending upward therefrom. Similarly a rear panel **18** and end panels **20**, **22** also attach to base **14** and extend upward forming a vessel with

an interior **24** adapted to hold fluid. Naturally, the number of upright panel will match the number of edge portions of bottom panel **14**. Front panel **16** has an exterior front surface and plurality of pockets **26** extending from the exterior front surface to the interior **24** of the vessel. Similarly, rear panel **18** has an exterior surface and plurality of pockets **28** extending from the exterior surface to the interior **24** of the vessel. Pockets **26**, **28** are shown arranged in rows and columns but may be arranged in any order. Each pocket is preferably spaced from adjacent pockets to facilitate contact with the cooling medium.

[0018] Still referring to **FIGS. 1-2**, cooler **10** has a lid **30** preferably hingedly attached to rear panel **18**. Alternatively, lid **30** may simply rest atop the upright panels in a recess formed therein. Lid **30** may have a contoured configuration for aesthetic appeal or may be planar. Lid **30** swings open to provide access to the interior **20** of the cooler for adding ice for cooling. Lid **30** may be spaced from the topmost pockets to provide more space for ice. When added, ice will fill some of the spaces between the pockets. As the ice melts, water will fill voids between pockets and provide contact for heat transfer from the pockets. As the pockets cool, the containers in the pockets will also cool. To retard heat loss through the upright panels, interior panel surfaces not having a pocket can be insulated with foam, double walled construction, or a spray on insulating coating. In addition, the portions of the pockets immediately adjacent an insulated surface may also be insulated.

[0019] A drain pipe **32** disposed along the bottom of the vessel collects water and is used to drain the vessel through a drain opening in one of the bottom or upright panels. Drain pipe **32** is preferably perforated so that it does not clog with ice particles. When the ice melts and the vessel is filled with water, it is time to drain the water. Water may be drained at other times as is convenient.

[0020] A plurality of coasters or wheels **34** are mounted on base panel **14** for easy transport of the cooler from one location on a merchandise floor to another.

[0021] Referring now to **FIG. 3**, instead of ice, the vessel may be filled with a fluid, such as air or water, or other heat conductive means or material, to be used for cooling by conventional refrigeration means (not shown) carried in a bottom compartment below the pockets. A divider panel **36** divides the cooler into an upper fluid holding vessel and a lower compartment for refrigeration equipment. One of the upright panels, the front panel as illustrated, has an access panel **38** adapted to provide access to the lower compartment. This configuration eliminates the chore of periodically changing the ice. Where it is desired or most practical to use ice, the bottom compartment can be used to store additional containers instead of refrigeration equipment. Such stored containers would be at a temperature cooler than room temperature and always ready for insertion into available pockets.

[0022] Referring now to **FIG. 4**, the cooler **10** may be shortened to fit on a tabletop or countertop where all containers are at eye level. In this case, lid **30** should be planar and the top surface used for displaying chips, nuts or other items complimentary to the beverages available in the pockets.

[0023] Referring to **FIGS. 5-6**, a cooler **510** is provided for cooling beverage containers **512** or other items. Cooler

510 has a bottom panel **514** and a plurality of upright panels **516**, **518**, **520**, **522** forming a vessel. Bottom panel **514** has lateral and transverse edge portions and is polygonal shaped. Preferably bottom panel **514** is rectangular in shape with a front edge portion, a rear edge portion and side edge portions, but may be triangular or other shapes. In a retail environment, a triangular shape is especially adapted for the end of a row of shelving or alongside a row of shelving allowing access to beverage containers from two sides. A rectangular shape is preferable at the end of a row of shelving because it protrudes less from the end of the shelving while holding more containers.

[0024] The plurality of upright panels includes a front panel **516** attached to base **514** and extending upward therefrom. Similarly, a rear panel **518** and end panels **520**, **522** also attach to base **514** and extend upward forming a vessel, preferably with an interior **524** adapted to hold fluid. Naturally, the number of upright panel will match the number of edge portions of bottom panel **514**. Front panel **516** has an exterior front surface and plurality of front pockets **526** extending from the exterior front surface to the interior **524** of the vessel. Similarly, rear panel **518** has an exterior surface and plurality of rear pockets **528** extending from the exterior surface to the interior **524** of the vessel. Pockets **526**, **528** are shown arranged in rows and columns but may be arranged in any order. Each pocket is preferably spaced from adjacent pockets to facilitate contact with the cooling medium.

[0025] Still referring to **FIGS. 5-6**, as the pockets cool, the containers in the pockets will also cool. To retard heat loss through the upright panels, interior panel surfaces not having a pocket can be insulated with foam, double walled construction, or a spray on insulating coating. In addition, the portions of the pockets immediately adjacent an insulated surface may also be insulated.

[0026] A drain pipe **532** may be disposed along the bottom of the vessel to collect condensation and is used to drain the vessel through a drain opening in one of the panels. A plurality of coasters or wheels **534** are mounted on base panel **514** for easy transport of the cooler from one location on a merchandise floor to another.

[0027] A divider panel **536** divides the cooler into an upper chamber or compartment and a lower compartment for refrigeration equipment, such as compressor **540**. One of the upright panels, the front panel as illustrated, has an access panel **538** adapted to provide access to the lower compartment.

[0028] A cold plate **542** provides cooling for front and rear pockets **526**, **528** which cool the beverage containers **512**. Cold plate **542** is disposed in the upper compartment and is connected to the compressor **540** in the lower compartment via inlet and outlet tubes **544**, **546**. Cold plate may extend from the bottom of the upper compartment to the bottom of the upper compartment, or, to conserve material and weight, may be disposed in only the upper portion of the upper compartment. When disposed in the upper portion of the upper compartment, cold air gravitates to the lower portion causing air to continuously circulate. Spaces in the interior of the upper compartment may be filled with a heat transfer medium for more effective cooling.

[0029] Referring now to **FIG. 7**, a cooler **710** is provided for cooling beverage containers **712** or other items. Cooler

710 has a bottom panel **714** and a plurality of upright panels forming a vessel. The plurality of upright panels includes a front panel **716** attached to base **714** and extending upward therefrom. Similarly, a rear panel **718** and end panels (not shown) also attach to base **714** and extend upward forming a vessel with an interior **724**. Front panel **716** has an exterior front surface and plurality of front pockets **726** extending from the exterior front surface to the interior **724** of the vessel. Similarly, rear panel **718** has an exterior surface and plurality of rear pockets **728** extending from the exterior surface to the interior **724** of the vessel. Pockets **726**, **728** are shown arranged in rows and columns but may be arranged in any order. As the pockets cool, the containers in the pockets will also cool. To retard heat loss through the upright panels, interior panel surfaces not having a pocket can be insulated with foam, double walled construction, or a spray-on insulating coating. In addition, the portions of the pockets immediately adjacent an insulated surface may also be insulated.

[0030] A drain pipe **732** may be disposed along the bottom of the vessel to collect condensation and is used to drain the vessel through a drain opening in one of the panels. A plurality of coasters or wheels **734** are mounted on base panel **714** for easy transport of the cooler from one location on a merchandise floor to another.

[0031] A divider panel **736** divides the cooler into an upper chamber or compartment and a lower compartment for refrigeration equipment, such as compressor **740**. One of the upright panels has an access panel adapted to provide access to the lower compartment.

[0032] A cold plate **742** provides cooling for front and rear pockets **726**, **728** which cool the beverage containers **712**. Cold plate **742** is disposed in the upper compartment and is connected to the compressor **740** in the lower compartment via inlet and outlet tubes **742**, **744**. Cold plate may extend from the bottom of the upper compartment to the bottom of the upper compartment, or, to conserve material and weight, may be disposed in only the upper portion of the upper compartment. When disposed in the upper portion of the upper compartment, cold air gravitates to the lower portion causing air to continuously circulate. Spaces in the interior of the upper compartment may be filled with a heat transfer medium for more effective cooling.

[0033] Still referring to **FIG. 7**, front and rear pockets **726**, **728** preferably have bottom extensions that abut cold plate **742**. Each bottom extension has a general triangular configuration owing to its angled orientation relative to the front and rear panels. Forming the bottom extensions of a heat conductive material, such as a heat conductive polymer for example, promotes efficient cooling.

[0034] It can now be appreciated that a cold plate resides in the upper compartment. The cold plate is preferably vertically oriented to aid convection cooling wherein cooler, denser air descends as warmer, lighter air rises in the cooler. Naturally, the greater the height of cold plate **20**, the greater the convection cooling. Convection cooling is sufficient for cooling beverages without a fan thereby simplifying the construction and operation of the cooler. While a fan is not necessary, a fan can be used for faster cooling.

[0035] While the invention has been described with particular reference to the preferred embodiments, it will be

understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements of the preferred embodiments without departing from invention. For example, the pockets can be arranged to resemble the contour of familiar beverage containers instead of the rows and columns illustrated. Also, in humid environments, the pockets can have drain holes to remove condensate. In addition, it is possible to dispose the cold plate in a sidewall in the upper compartment. It is accordingly intended that the claims shall cover all such modifications and applications as do not depart from the true spirit and scope of the invention.

ELEMENT LIST

[0036]	10 cooler
[0037]	12 beverage containers
[0038]	14 base panel
[0039]	16 front panel
[0040]	18 rear panel
[0041]	20, 22 end panels
[0042]	24 interior of water holding vessel
[0043]	26 front pockets
[0044]	28 rear pockets 28
[0045]	30 lid
[0046]	32 drain pipe
[0047]	34 wheels
[0048]	36 divider panel
[0049]	38 access panel
[0050]	510 cooler
[0051]	512 beverage containers
[0052]	514 bottom panel
[0053]	516 front panel
[0054]	518 rear panel
[0055]	520, 522 end panels
[0056]	524 interior of vessel
[0057]	526 front pockets
[0058]	528 rear pockets
[0059]	532 drain pipe
[0060]	534 coasters or wheels
[0061]	536 divider panel
[0062]	538 access panel
[0063]	540 compressor
[0064]	542 cold plate
[0065]	544 inlet tube
[0066]	546 outlet tube
[0067]	712 beverage containers
[0068]	714 bottom panel

[0069] 716 front panel
 [0070] 718 rear panel
 [0071] 724 interior of vessel
 [0072] 726 front pockets
 [0073] 728 rear pockets
 [0074] 732 drain pipe
 [0075] 734 coasters or wheels
 [0076] 736 divider panel
 [0077] 740 compressor
 [0078] 742 cold plate
 [0079] 744 inlet tube
 [0080] 746 outlet tube

What is claimed is:

1. A cooler, comprising:
 - a bottom panel having lateral and transverse edge portions and a plurality of upright panels attached thereto and extending upward therefrom forming a vessel with an interior, said plurality of upright panels including a front panel having a front surface and plurality of front pockets extending from said front surface to said interior of said vessel;
 - a divider panel in said interior dividing said interior into upper and lower chambers; and
 - a cold plate disposed in said upper chamber and adapted to cool said plurality of front pockets.
2. A cooler, as set forth in claim 1, including a compressor mounted in said lower chamber and attached to said cold plate.
3. A cooler, as set forth in claim 2, wherein one of said upright panels has an access panel adapted to provide access to said compressor in said lower chamber.

4. A cooler, as set forth in claim 1, wherein said cold plate is adjacent a number of pockets of said plurality of front pockets.

5. A cooler, as set forth in claim 4, wherein said number of pockets of said plurality of front pockets are formed of a thermally conductive material to transfer heat to said cold plate.

6. A cooler, as set forth in claim 1, wherein said cold plate abuts a number of pockets of said plurality of front pockets.

7. A cooler, as set forth in claim 6, wherein said number of pockets of said plurality of front pockets are formed of a thermally conductive material to transfer heat to said cold plate.

8. A cooler, as set forth in claim 1, wherein said plurality of upright panels includes a rear panel having an exterior surface and plurality of rear pockets extending from said exterior surface to said interior of said vessel, said cold being adapted to cool said plurality of rear pockets.

9. A cooler, as set forth in claim 8, wherein said cold plate is adjacent a number of pockets of said plurality of rear pockets.

10. A cooler, as set forth in claim 9, wherein said number of pockets of said plurality of rear pockets are formed of a thermally conductive material to transfer heat to said cold plate.

11. A cooler, as set forth in claim 8, wherein said cold plate abuts a number of pockets of said plurality of rear pockets.

12. A cooler, as set forth in claim 11, wherein said number of pockets of said plurality of rear pockets are formed of a thermally conductive material to transfer heat to said cold plate.

* * * * *