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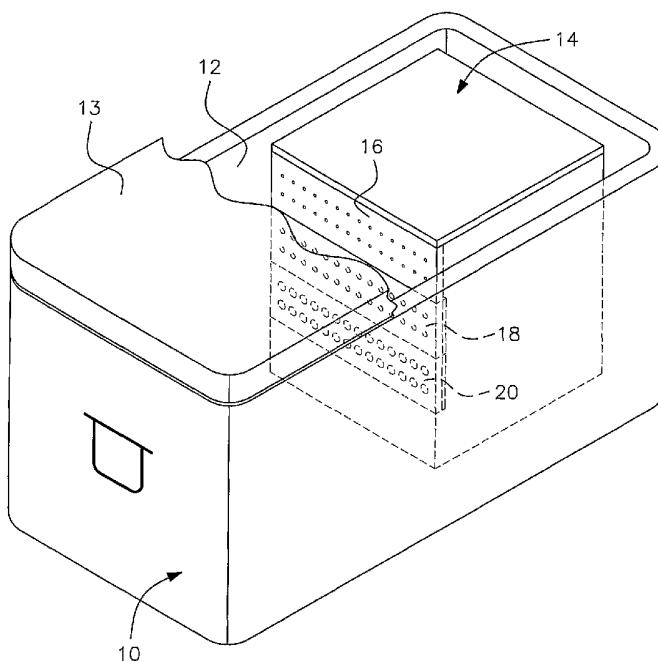
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(54) Title: ADJUSTABLE CLIMATE CONTROL AUXILIARY BOX FOR COOLING A CONTAINER, VESSEL, BOX OR CHAMBER



(57) Abstract: An auxiliary box placed in an insulated chamber, vessel or container to produce a controlled temperature. The auxiliary box receives a coolant, such as dry ice (CO₂), and is constructed to allow controlled escape of the coolant into the chamber, vessel or container at a predetermined rate thereby controlling and maintaining the temperature ranges in the chamber, vessel or container to be cooled at a substantial constant temperature.

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**ADJUSTABLE CLIMATE CONTROL AUXILIARY BOX FOR COOLING A
CONTAINER, VESSEL, BOX OR CHAMBER**

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention generally relates to an auxiliary box which can be placed in a chamber, vessel or container to produce a controlled temperature. The auxiliary box can be made of Styrofoam or any insulated material which can house a coolant, such as dry ice (CO₂),
10 and is constructed to allow the escape of the coolant into the chamber, vessel or container at a predetermined rate thereby controlling the temperature ranges in the chamber, vessel or container to be cooled at a substantial constant temperature.

15 Description of the Prior Art

 Various types of product cooling devices are well known to maintain the interior of a container within certain adjustable temperature ranges such as refrigerators and freezers which require the input of
20 energy, such as electrical energy, to operate and control the refrigeration system incorporated into the refrigerator, freezer or the like. Also, portable coolers, such as picnic coolers are well known in which water ice is placed in the chamber to cool products in the
25 chamber too or near the temperature of the water ice as the water ice melts into water. Picnic coolers of this type do not have the capability of varying the temperature range within the picnic cooler at a constant selective level for long periods of time, are rather heavy and
30 cumbersome to transport and retain a quantity of water therein which must be disposed of.

Brief Summary of the Invention

 The invention is in the form of an auxiliary box capable of being placed in a larger chamber, vessel or

container with the auxiliary box including a quantity of coolant, such as dry ice (CO₂) and allows coolant to escape at a predetermined constant rate thereby providing a control to maintain the constant but variable temperature range in the chamber, vessel or container being cooled.

5 Accordingly, it is an object of the present invention to provide an auxiliary coolant box containing a quantity of dry ice (CO₂) with the auxiliary box enabling coolant to escape at a predetermined rate to provide controlled low
10 temperature ranges in the chamber, vessel or container to be cooled without the input of electrical energy or other types of energy thereby rendering the auxiliary box and the chamber, vessel or container fully portable and capable of maintaining a constant temperature within the
15 chamber, vessel or container.

Another object of the invention is to provide an auxiliary box receiving a quantity of dry ice (CO₂) having removable and interchangeable areas with perforations or small passages to enable the rate of passage of coolant
20 from the auxiliary box into the chamber, vessel or container to produce a controlled and constant temperature in the chamber, vessel or container.

A further object of the invention is to provide an auxiliary box in accordance with the preceding objects
25 which can be of any size or form with the perforated areas or porous areas providing a selective temperature range so that the chamber, vessel or container becomes a mobile refrigerator inasmuch as no batteries, electrical power or mechanical moving parts are required.

30 Additional objects and advantages of the invention include an auxiliary box that can be placed in a chamber, vessel or container to produce a controlled temperature from about 65°F to about -90°F. The auxiliary box can be built into a chamber, vessel or container such as a cooler
35 of insulating material as a permanent part thereof to

enable reuse but also may be made of disposable inexpensive material to be used with various chambers, vessels or containers and can be cooled by CO₂ pellets, dry ice blocks or chemical coolants. The auxiliary box can be built into a part of the chamber, vessel or container such as into a removable lid to enable insertion of the coolant for discharge into the auxiliary box for passage through the perforated areas or porous panels.

Brief Description of the Drawings

10 The drawings are intended to illustrate the invention, but are not necessarily to scale.

Figure 1 is a top plan view of a chamber, vessel or container with the auxiliary box of the present invention positioned therein.

15 Figure 2 is a perspective view of the auxiliary box illustrating interchangeable panels or areas having different size perforations or porosity.

Figure 3 is a sectional view of the auxiliary box illustrating further structural details of the interchangeable panels and the association with the quantity of coolant within the auxiliary box.

Detailed Description of the Preferred Embodiments

25 In describing a preferred embodiment of the invention illustrated in the drawings, specific terminology will be resorted to for the sake of clarity. However, the invention is not intended to be limited to the specific terms so selected, and it is to be understood that each specific term includes all technical equivalents which operate in a similar manner to accomplish a similar purpose.

30 Figure 1 illustrates the structure of the chamber, vessel or container 10 which may be of any size, shape or configuration and provided with an insulated space or

volume 12 occupying a major portion of the chamber 10. A closure lid 13 will be provided for the chamber 10 which may be in the form of a removable lid sealingly engaging the top edge of the chamber 10 in a manner similar to a lid used in a conventional picnic cooler.

The auxiliary box 14 containing the coolant is placed interiorly of the space or volume 12 at any point of the periphery of the chamber including in the lid. The auxiliary box 14 allows coolant to escape at a predetermined rate for controlling the temperature ranges in the space or volume 12 of the chamber 10.

As illustrated, the auxiliary box 14 includes a plurality of panels or areas 16, 18 and 20 forming a portion of the periphery of the auxiliary box with the panels 16, 18 and 20 having perforations therethrough or a different porosity with the upper panel 16 controlling passage of coolant to maintain a warmer temperature in the space 12 whereas the panel 18 includes larger perforations or greater porosity to provide a colder temperature within the space 12 and the lower most panel 20 has the largest perforations or porosity and maintains a freezing or below freezing temperature in the space 12.

The coolant within the auxiliary box is illustrated in Figure 3 and may be in the form of a solid block of dry ice CO₂ 22 or dry ice pellets or other chemical coolant which changes into a gaseous phase for passages through the perforations or porous areas formed by the panels 16, 18 and 20. This controls the temperature in the space 12 at a constant temperature depending upon the number and porosity or size perforations in the panels. This enables adjustment in the temperature within the space 12 and maintains the temperature by interchanging panels and by using a selected panel with perforations or porosity and other panels of solid construction to maintain a relatively warm temperature or using multiple panels with

larger perforations or greater porosity to maintain constant lower temperatures. Also, imperforate panels 24 may be mounted against the interim surface panels 16, 18 and 20 thereby providing further control of the temperature by space 12.

As illustrated, auxiliary box 14 has no moving parts, no batteries or electrical connections, no attachments and may be of any size, shape or configuration and the panels may be selectively used to expose different areas of perforations or porosity at any one time to determine the quantity of coolant entering the chamber space 12.

As illustrated in Figure 3, a solid block of dry ice 22 may be used in the auxiliary box 14. Alternatively, pieces of solid CO₂, CO₂ pellets or other types of chemical coolants may also be used. The auxiliary box 14 can maintain adjustable temperatures for a long period of time depending on the size of the space 12 and the frequency of refilling the space 12 with products to be cooled.

The foregoing description should be considered as illustrative only of the principles of the invention. Since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and, accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

CLAIMSI CLAIM:

1. An auxiliary cooling box for positioning in a product receiving space in an insulated container for maintaining said space at a constant selected low temperature, a quantity of dry ice CO₂ coolant in said cooling box, said cooling box including peripheral wall areas provided with different porosity characteristics to vary the flow of coolant into said product receiving space, and a closure for selective porosity areas in the peripheral wall of said cooling box to maintain a predetermined temperature in said product receiving space in said insulated container.

2. The cooling box as claimed in claim 1, wherein said peripheral wall of the cooling box includes a removable to enable a selected quantity of dry ice to be placed in the cooling box to maintain a selected low temperature in the product receiving space in the insulated container for a predetermined time period to facilitate use of the insulated container as a self-contained refrigerator.

3. The cooling box as claimed in claim 1, wherein said closure for selective porosity areas includes imperforate panels positioned in closing relation to selective porosity areas.

4. The cooling box as claimed in claim 2, wherein said removable lid on said cooling box includes a support for dry ice coolant for discharge of coolant downwardly into said cooling box to reduce temperature stratification in said cooling box.

5. In combination with an insulated container having a product receiving space provided with a removable closure to provide access to said space, an auxiliary cooling box dimensioned to be placed in said space, a quantity of dry ice CO₂ coolant in said auxiliary box, said auxiliary box having a porous wall area for discharging gaseous coolant into said space at a selective rate to lower the temperature in said product receiving space to a constant selected temperature for a predetermined time interval.

6. The combination as claimed in claim 5, wherein said porous wall area includes areas having selective porous characteristics that are selectively used to enable variation in the temperature in said product receiving space.

FIG. 1

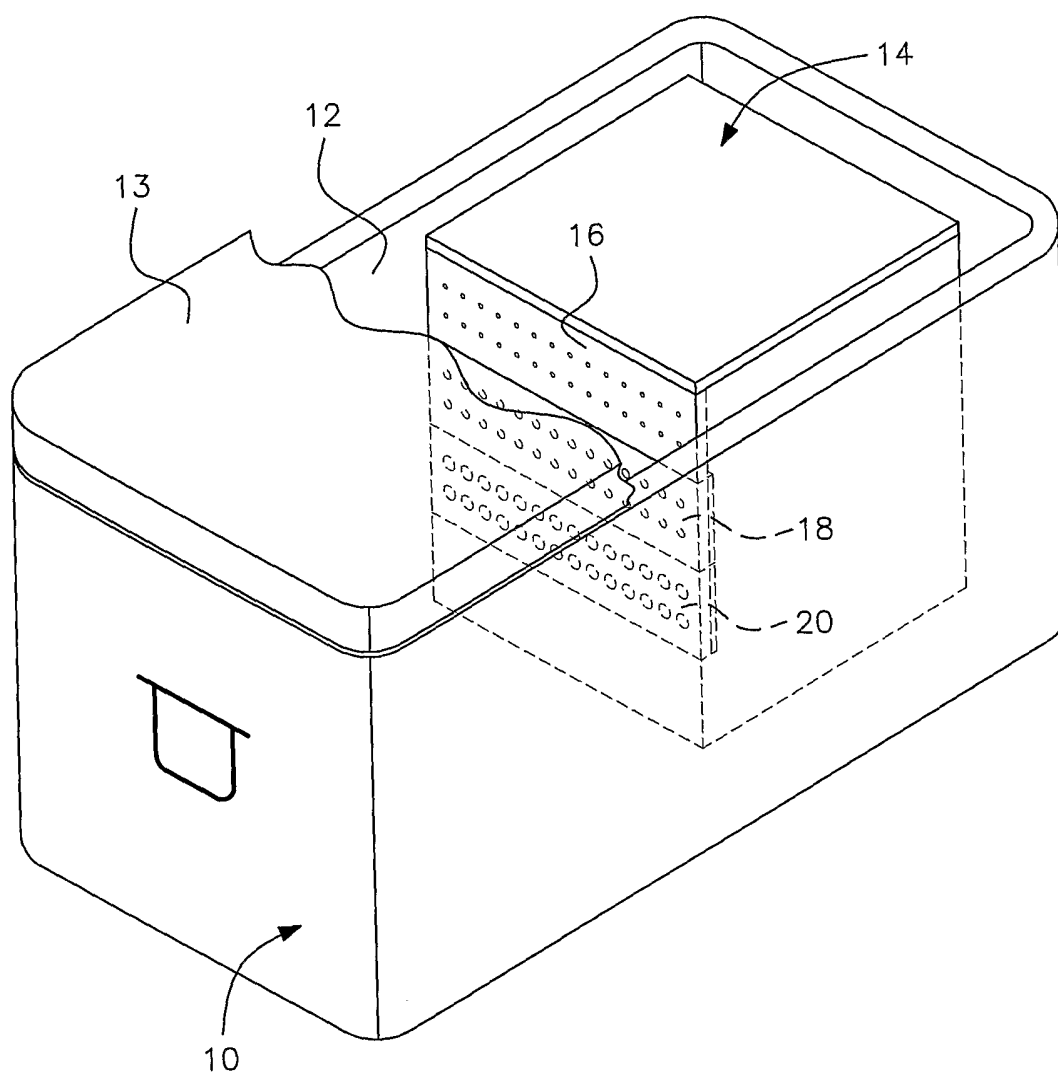


FIG. 2

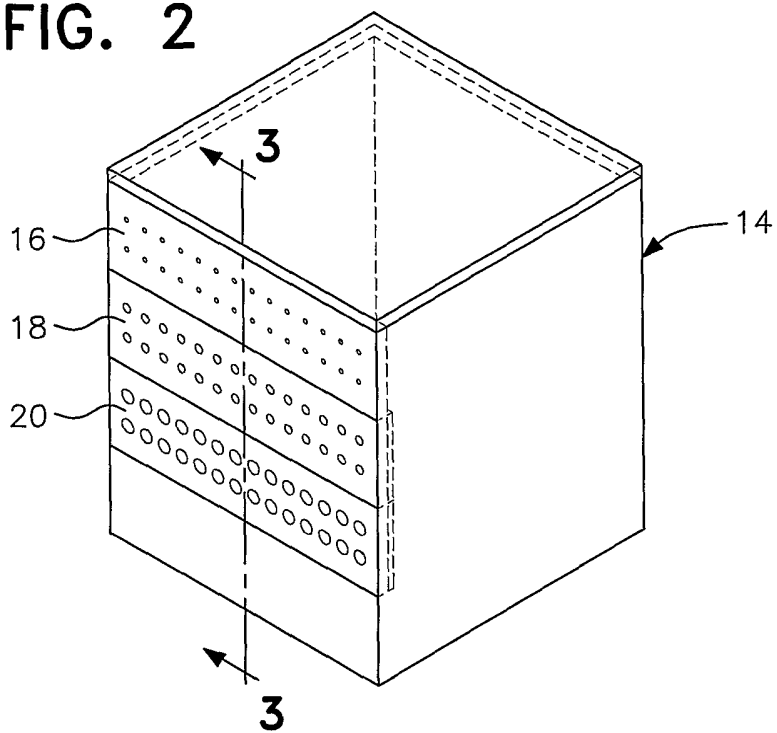


FIG. 3

