

(21) Application No: **0810220.4**
(22) Date of Filing: **04.06.2008**

(51) INT CL:
B65D 81/38 (2006.01) **F25C 5/18** (2006.01)

(56) Documents Cited:
GB 2065548 A **DE 004227659 A**
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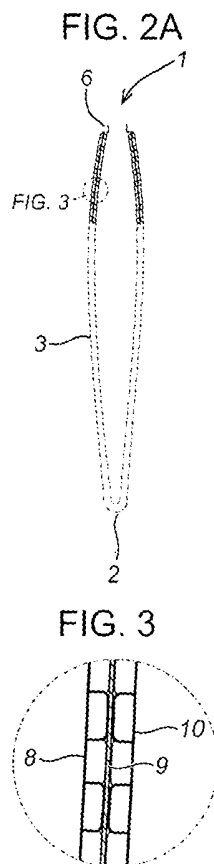
(58) Field of Search:
INT CL **B65D, F25C**
Other: **On-line databases: EPODOC, WPI**

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(54) Abstract Title: **Insulated bag for ice storage**

(57) An insulated bag 1 for storing ice, where the bag comprises an inner layer 8 of air cellular sheet material, an outer layer 10 of air cellular sheet material, and a barrier sheet 9 between the inner and outer layers of air cellular sheet material. The bag is provided with a sealable opening 6 for inserting and removing ice from the bag. The air cellular sheet material may comprise entrapped air cells or bubbles. Preferably, one side of the air cellular sheet is flat and the other side comprises an array of protuberances formed by the entrapped air cells, where the non-flat sides of the sheets abut the barrier sheet. The barrier sheet may be formed from paper such as Kraft paper. Preferably, the sealable opening comprises a closure or seal, such as a plastic zip fastener or a thistle cloth hook and loop fastener, where the opening may be resealed following removal of contents from the bag.



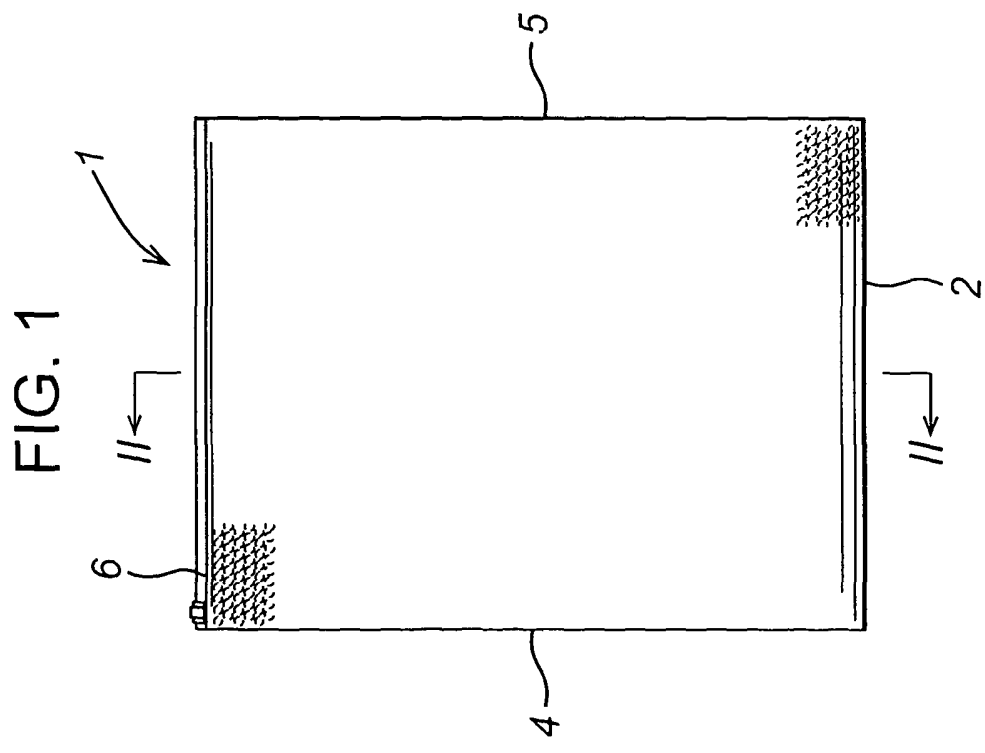
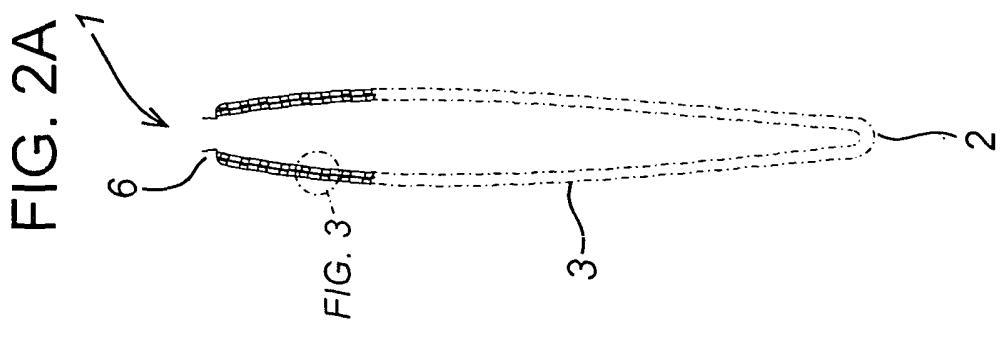
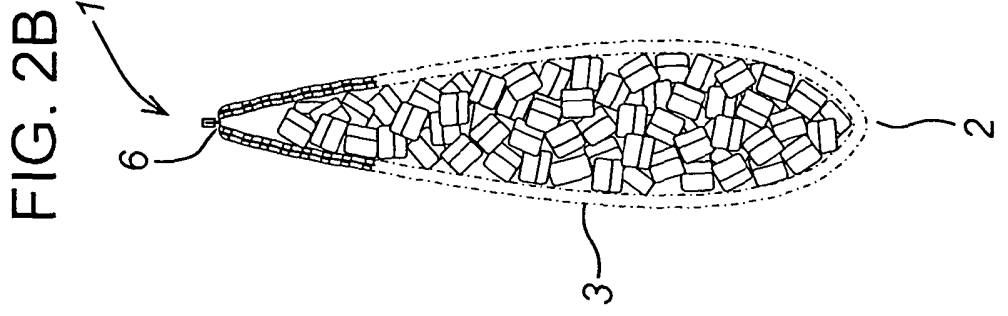


FIG. 3

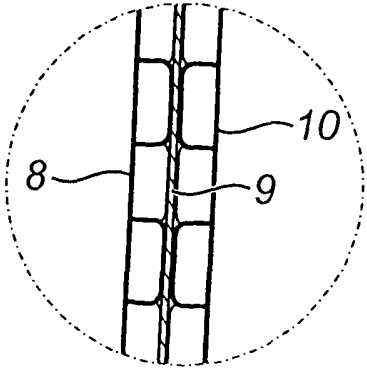


FIG. 4A

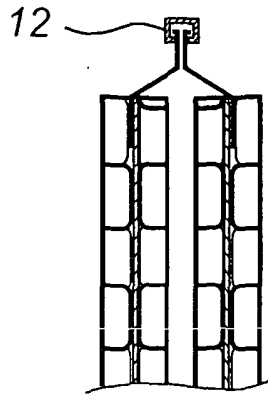


FIG. 5

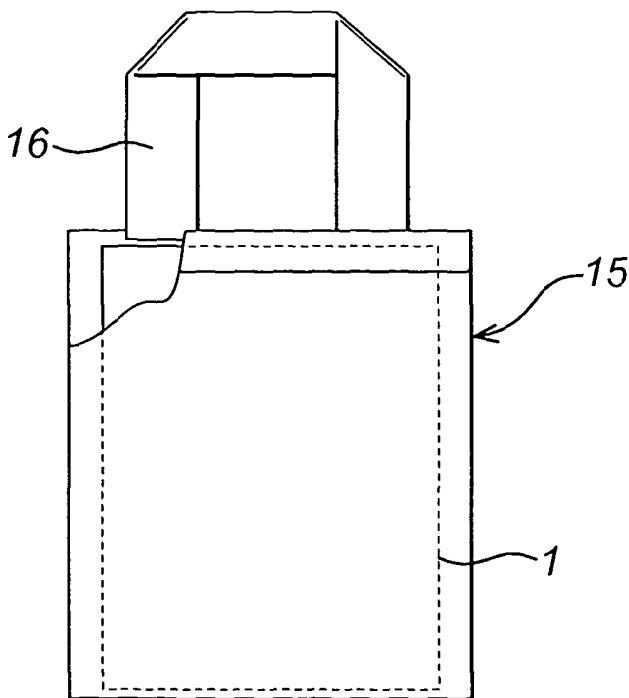
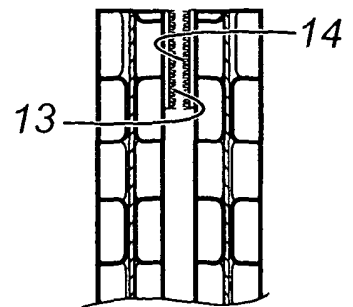


FIG. 4B



INSULATED BAG FOR ICE STORAGE

The present invention relates to an insulated bag suitable for the storage and transportation of ice.

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When persons are picnicking or having a beach party, it is desirable to provide insulated containers for the storage and transportation of ice, in particular for the storage and transportation of ice cubes (or other shaped ice pieces) used to cool drinks. Ideally, the insulated containers should be inexpensive and portable, as well as providing excellent thermal insulation to minimize the melting of the stored ice even when the container is held in warm ambient conditions for extended periods.

Various picnic coolers are known for storing and transporting ice. These consist of a rigid, thermally insulating body and a rigid, thermally insulating lid. Such picnic coolers are quite heavy and bulky. It is also known to use vacuum flasks for storing and transporting ice, but there are cost and weight disadvantages with this solution.

WO-A-2006126899 describes a beverage pack that comprises a bladder with at least one strap that is integral to the pack to enable the pack to be carried on a user's back. The pack may include an area of insulation, such as bubble type wrap or any other appropriate insulating material, on at least part of it. The pack may also include a reflective panel, such as silver type plastic, on its front panel to keep the beverage within the pack cold and to reflect sunlight. The pack includes a non-toxic drinking hose that is sealed within pack. However, this pack is not suitable for carrying ice.

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The present invention provides an insulated bag for storing ice, wherein the bag comprises an inner layer of air cellular sheet material, an outer layer of air cellular sheet material, and a barrier sheet between the inner and outer layers of air cellular sheet material, and the bag is provided with a sealable opening for inserting and removing ice from the bag.

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The term "bag" refers to a collapsible container formed substantially or completely from flexible sheet material. The bag according to the invention is formed substantially or

completely from a heat insulating laminate comprising or consisting essentially of an inner layer of air cellular sheet material, an outer layer of air cellular sheet material, and a barrier sheet between the inner and outer layers of air cellular sheet material.

5 The term "air cellular sheet material" refers to thermoplastic sheet material containing a regular, two-dimensional array of entrapped air cells. Such materials are widely used for shock-resistant packaging of goods, and are available for example from Sealed Air Corporation under the Registered Trade Mark BUBBLE WRAP. Suitably, the entrapped air cells are of uniform size and shape, for example they may be substantially
10 hemispherical. Suitably, the entrapped air cells have a volume of from about 0.05cm^3 to about 4cm^3 , for example from about 0.2cm^3 to about 1cm^3 . Suitably, the maximum thickness of the air cellular sheet material is from about 3mm to about 25mm, for example from about 5mm to about 1cm. Suitably, the entrapped air cells are arranged in a substantially close-packed array. Suitably, the entrapped air cells occupy at least about
15 50% of the area of the cellular sheet material, for example at least about 75% of the area of the cellular sheet material, in plan view. In certain embodiments, the entrapped air cells form an array of protuberances on one side of the cellular sheet, the other side of the sheet being substantially flat. In these embodiments, the non-flat sides of the sheets suitably abut the barrier sheet, whereby the interior and exterior surfaces of the
20 insulating laminate are substantially flat.

The air cellular sheet material is suitably formed from a thermoplastic, such as polyethylene. The edges of this material are suitably heat-welded, at least for the inner layer, to form a watertight enclosure for the ice.

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The barrier sheet is intercalated between the two sheets of air cellular sheet material in the insulating laminate. The barrier sheet is suitably formed from a substantially continuous, flexible sheet material such as a thermoplastic film or paper. Suitably, the barrier sheet is formed from paper, for example from Kraft paper. The barrier layer
30 reduces convective heat transfer and may also serve as a light barrier. The barrier layer can also be used to regulate the stiffness of the insulating laminate for optimum stiffness of the bag, since the air cellular sheet materials alone may be insufficiently rigid.

The ice bag according to the present invention further comprises a sealable opening for inserting and removing ice from the bag. The term "sealable opening" refers to an opening that can be sealed after filling of the bag, and opened subsequently to remove the ice from the bag. Suitably, the opening is readily resealable following removal of
5 part of the contents of the bag. Suitably, the opening extends partially or completely along an edge of the bag.

The opening is suitably adapted to be repeatedly opened and closed by closure/sealing means suitably formed from a rib extending across one panel of the inner air cellular
10 sheets below the opening of the bag and inter-engaging in a groove formed between, and therefore defined by, two ribs extending across the other panel and also below the opening of the bag. Two parallel extending ribs on either sides of the rib which engages within the groove serve to capture the ribs within the defined groove. The ribs and grooves are shaped and dimensioned so that the rib fits tightly within its associated
15 groove and the ribs defining the associated groove deform to allow the rib to enter and to be captured within its associated groove. The bag is opened by gripping the free edges of the panel at the opening of the bag and pulling the panels apart with the rib disengaging from its associated groove thereby allowing access to the interior of the bag to receive or retrieve the ice. To close or reseal the opening to the bag one end of the rib is pressed by
20 thumb and finger pressure into the adjacent end of the associated groove with the thumb or finger under pressure being subsequently drawn along the length of the rib and groove arrangement to progressively introduce the rib into its associated groove to be tightly received therein and whereby to seal the opening of the bag. Alternatively, a fastener tab (zipper) may be drawn along the length of the rib and groove to press them together.
25 The opening of the bag can be repeatedly opened and closed as required, with the closure process being analogous to that accomplished by a zipper and thus the term "zipper" is sometimes used to describe such reclosable bags. Reclosable plastic bag fasteners of this type are available under the Registered Trade Marks ZIPLOC (S.C. Johnson & Co.) and MINIGRIP (the Minigrip Company).

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Alternatively or additionally, the resealable fastener on the opening of the bag may comprise thistle cloth, for example the cloth available under the registered trade mark VELCRO.

The dimensions of the ice bag according to the present invention are suitably from about 10cm to 50cm x 10cm to 50cm in plan view. The storage capacity of the bag is suitably from about 100g to about 10kg of ice, for example from about 500g to about 2kg of ice.

5 Suitably, the storage bag according to the present invention contains from about 100g to about 10kg of ice. The ice is suitably in the form of pieces, such as cubes. For example, at least about 75% of the ice by weight is suitably present in the form of ice cubes or other ice pieces each having a weight in the range of from about 1g to about 100g, for example about 5g to about 50g.

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The insulated storage bags according to the present invention may conveniently be made by starting from a commercially available padded envelopes having an air cellular lining layer and an outer layer of Kraft paper. The insulated storage bags are produced by wrapping a further air cellular insulating layer around the envelope. A suitable plastic
15 zip fastener may be attached across the opening of the envelope. The resulting assembly is optionally inserted into a carrier bag having handles.

An embodiment of the insulated storage bag according to the present invention will now be described further, by way of example, with reference to the accompanying drawings,
20 in which:

Figure 1 shows a plan view of an insulated storage bag according to the invention;
Figure 2 shows longitudinal cross section through the insulated storage bag of Fig. 1 when empty (Fig. 2A) and filled with ice cubes (Fig. 2B) ;
Figure 3 shows a detailed cross-sectional view of part of the insulating laminate in the
25 embodiments of Figs. 1 and 2;
Figure 4 shows a detailed cross-sectional view of the sealing region of Fig. 2 according to a first embodiment (Fig 4A) and a second embodiment (Fig. 4B);
Figure 5 shows a plan view of a further embodiment, in which a bag according to the embodiment of Figs. 1-4 is inserted into an outer, carrier bag having handles.

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Referring to the drawings, the insulated storage bag 1 according to the present invention is generally in the shape of an envelope formed from a sheet of insulating laminate 3 that is folded about a bottom edge 2 to define front and back faces, the faces being thermally

bonded together along side edges 4,5. The top edge of the envelope is provided with a resealable opening 6 that can be opened and resealed to admit or remove ice from the bag. The sheet of insulating laminate comprises an inner layer 8 of air cellular sheet material, a barrier sheet 9 of Kraft paper, and an outer layer 10 of air cellular sheet material. In this embodiment, the air cellular sheet materials are BUBBLE WRAP having an array of substantially hemispherical air cells each of a diameter about 10mm. The air cells define an array of protuberances on a first, non-flat side of the air cellular sheet material, the other side of the air cellular sheet material being substantially flat. The inner and outer layers of air cellular sheet material are configured so that the non-flat faces thereof abut the barrier sheet and the flat surfaces form the outer surfaces of the laminate.

The resealable opening 6 in the top edge of the envelope may be closed by a ZIPLOC-type plastic zip fastener 12, as shown in Fig. 4A. According to the alternative embodiment shown in Fig. 4B, the resealable opening 6 is sealed by complementary strips 13,14 of thistle cloth bonded to the inner surface of the laminate along the top edge.

In the embodiment of Fig. 5, the bag 1 of insulating laminate is enclosed in a plastic carrier bag 15 of polythene or similar material having handles 16 for carrying.

In use, the bag is filled with ice cubes or similar ice pieces as shown in Fig. 2B, and is then sealed with the fastener. The bag can then be opened at any time to remove ice from the bag.

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The bags according to the present invention provide advantages of excellent thermal insulation, low cost, light weight, and the ability to collapse the bags after use for easy portability and storage. A further advantage of the collapsible bags is that they can be filled with more or less ice, according to need, without leaving a void space in the bags.

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The above embodiment has been described by way of example only. Many other embodiments falling within the scope of the accompanying claims will be apparent to the skilled reader.

CLAIMS

1. An insulated bag for storing ice, wherein the bag comprises an inner layer of air cellular sheet material, an outer layer of air cellular sheet material, and a barrier sheet
5 between the inner and outer layers of air cellular sheet material, and the bag is provided with a sealable opening for inserting and removing ice from the bag.
2. An insulated bag according to claim 1, wherein the entrapped air cells of the air cellular sheet material have a volume of from about 0.05cm^3 to about 4cm^3 , for example
10 from about 0.2cm^3 to about 1cm^3 .
3. An insulated bag according to claim 1 or 2, wherein the maximum thickness of the air cellular sheet material is from about 3mm to about 25mm, for example from about 5mm to about 1cm. Suitably, the entrapped air cells are arranged in a substantially
15 close-packed array.
4. An insulated bag according to any preceding claim, wherein the entrapped air cells of the air cellular sheet material form an array of protuberances on one side of the air cellular sheet, the other side of the sheet being substantially flat, and the non-flat
20 sides of the sheets abut the barrier sheet.
5. An insulated bag according to any preceding claim, wherein the barrier sheet is formed from paper, for example from Kraft paper.
- 25 6. An insulated bag according to any preceding claim, wherein the sealable opening comprises closure/sealing means whereby the opening is readily resealable following removal of part of the contents of the bag.
7. An insulated bag according to claim 6, wherein the closure/resealing means
30 comprises a plastic zip fastener or thistle cloth.
8. An insulated bag according to any preceding claim, further comprising an outer, carrier bag with a handle.

9. An insulated bag according to any preceding claim, wherein the storage capacity of the bag is from about 100g to about 10kg of ice, for example from about 500g to about 2kg of ice.
- 5 10. An insulated bag according to any preceding claim, containing from about 100g to about 10kg of ice, for example from about 500g to about 2kg of ice.

Application No: GB0810220.4
Claims searched: 1-10

Examiner: Gareth Davies
Date of search: 4 August 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-4, 6, 9, 10	DE4227659 A (PETERS) and WPI Abstract Accession No. 1994-066714 [09] - see abstract and figure 1; noting air cellular sheet material (2) and sealable opening (6).
A	-	GB2065548 A (OLIVELARK) - see whole document and figure 1.
A	-	US2004/120611 A (SEALED AIR) - see whole document and figures 1 and 2.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

Worldwide search of patent documents classified in the following areas of the IPC
B65D; F25C
The following online and other databases have been used in the preparation of this search report
EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
B65D	0081/38	01/01/2006
F25C	0005/18	01/01/2006