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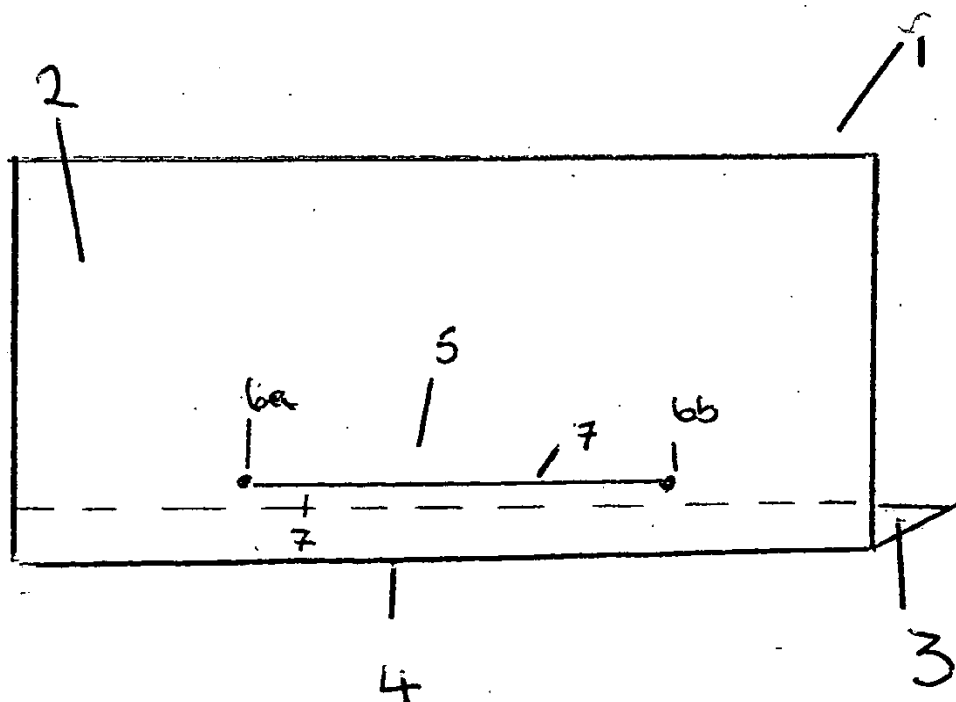
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(54) **Insert**

(57) This invention relates to the transportation of bulk cargo within cargo containers and more particularly to inserts (1) for such containers and methods of use thereof.

Figure 2



Description

[0001] This invention relates to the transportation of bulk cargo within cargo containers and more particularly to inserts for such containers and methods of use thereof.

Background to the invention

[0002] Bulk cargo may be loaded into cargo containers and then transported in these containers from one location to another by ship, truck, or railstock or some combination thereof. Once the containers reach their destination various techniques may be employed to unload the cargo from the container.

[0003] Cargo containers are generally lined with an air and/or water-flexible liner. This ensures that the cargo remains protected and uncontaminated during transportation. The encapsulation of the cargo within the liner also allows the cargo to be readily moved within the container. For example, the provision of air bags enables the cargo to be centred within the container.

[0004] On particular designs of container, e.g 30ft containers, during unloading of the bulk cargo the container is ramped up at one end, with the cargo passing through a flap which extends substantially along the width of the bottom of the container at the opposing end. This flap is generally termed in the art a "letterbox" opening. At this opening the liner is arranged into what is generally termed in the art as a "fish-tail" discharge. This discharge is then attached to an appropriate outlet means/collection means.

[0005] A problem associated with the current cargo containers is that once this letterbox is opened it becomes impossible to close it, as the weight of the cargo forces the liner to protrude out through the letterbox. This becomes a particular problem if the container is dropped on a corner. If the liner bulges out in this manner the cargo has to be fully unloaded, often in the inappropriate place. This can obviously cause substantial logistical problems with the associated financial costs.

[0006] We have found that this problem can be addressed by providing an insert which is located between the liner and the letterbox.

[0007] When loading the cargo into the liner, the "fish-tail" discharge must be maintained in a closed position and furthermore prevented from moving underneath the liner, thus becoming inaccessible. In order to address this problem liners generally incorporate a long string double rubber. However, if the side walls become trapped under this mechanism the possibility of the fish-tail becoming trapped under the liner remains.

[0008] We have surprisingly found that this second problem can be addressed by the providing the insert with a means to locate the fish-tail discharge during the loading process.

[0009] A further problem associated with the current cargo containers is that the documents required to travel

with the cargo are placed on top of the liner. When the documents are checked, e.g at the discharge destination or ports, personnel have to climb up ladders to the top of the container open a hatch and retrieve the documents. This practice has led to particular Health and Safety concerns, particularly if the documents are retrieved in wet conditions when the lid of the container may become slippery.

[0010] We have found that this problem can be addressed by providing a means by which the documents can be readily and repeatedly accessed through the letterbox.

[0011] A further Health and Safety concern is the need for personnel to climb up on top of the container in order to sample the product. We have also found that this problem can be addressed by providing a sampling point that can be readily and repeatedly accessed through the letterbox.

[0012] The invention therefore provides an insert which enables the repeated opening of the letterbox, this enables any documentation to be easily and repeatedly accessed through the letterbox, and for a sampling point to be located behind the letterbox. Furthermore, this insert enables the perfect orientation of the fish-tail discharge with the letterbox.

Statements of the invention

[0013] According to a first aspect of the invention there is provided an insert for use in a cargo container, the insert comprising a panel which is adapted to form, when in use, a wall member and a base, wherein the panel is provided with a frangible region to form a cargo discharge outlet.

[0014] In a preferred embodiment of the invention the panel is provided with an axis which defines the junction between the wall member and the base and about which the wall member and the base can be angled relative to each other. Even more preferably this axis is a fold line extending along the width of the panel.

[0015] In some situations, for example whilst the panels are stored, it may be preferable that the wall member and base are angled at substantially 180°.

[0016] In an alternative embodiment of the invention the wall member and base are in a substantially parallel orientation relative to one another. Preferably the wall member and base are angled at substantially 0° relative to each other. A means may be provided in order to reversibly retain this orientation. Such means may, for example, be an adhesive or an article comprising an adhesive, such as double-sided tape. This embodiment may be particularly useful during the storage of the inserts.

[0017] Alternatively the wall member and the base are in a substantially perpendicular orientation relative to one another. Preferably, when in use, the wall member and base are angled at substantially 90° relative to each other. The insert can be located substantially parallel

with a wall of the container liner whilst also extending under the base of the container liner. In this orientation and positioning relative to the liner, the insert addresses a number of problems associated with the prior art. Firstly, as mentioned above, if the container liner inappropriately protrudes out of an aperture of the cargo container, for example through the letterbox, it is impossible to re-close the letterbox due to the pressure exerted by the bulk cargo. The provision of the insert prevents this protrusion because it is manufactured of a material that is capable of withstanding such pressures without bulging. Secondly, there is a tendency during the loading of bulk cargo for the fishtail discharge of the container liner to become trapped underneath the liner. This causes great difficulties when the bulk cargo is to be unloaded, as it is extremely difficult to free the trapped fishtail from underneath the load. The insert prevents this problem from occurring by ensuring the perfect placement of the fishtail prior to loading. The provision of the base on the insert, which is inserted underneath the base of the container liner prevents the fish-tail from being able to move underneath the liner and thus become trapped.

[0018] In some instances, particularly where the cargo comprises a heavy and/or dense powder such as terephthalic acid (PTA), it is desirable to prevent any of the powder from seeping under the base of the insert and causing bulging, which can effect the positioning of the insert. This can be achieved by the provision of additional strengthening material on the base of the insert.

[0019] Therefore in a further alternative embodiment of the invention, an additional piece of strengthening material is secured to at least part of the base region of the insert. The material may be attached to either the upper and/or lower surfaces of the base region. The material may extend substantially along the length of the base regions, or alternatively may be provided in discrete regions along the length of the base region.

[0020] Preferably this strengthening material is manufactured of a plastics. Even more preferably this strengthening material is a woven polypropylene.

[0021] The strengthening material may be secured to the base of the insert by a number of techniques known to the skilled man, including the use of adhesives.

[0022] Even more preferably the base of the insert may be secured to the underside of the liner, for example, by the use of the use of an adhesive.

[0023] When the cargo is unloaded, a cargo discharge outlet of the container liner cooperates with a cargo discharge outlet on the cargo container. For example, the fishtail is positioned through letterbox and the cargo then unloaded. However, because the insert is sandwiched between the cargo container and the container liner it prevents this of co-operation between these two outlets. Due to the weight of the cargo pressing down on the insert base, it is not possible to remove the insert in an intact form prior to unloading the cargo. Thus in a preferred embodiment of the invention the wall member of the insert is provided with a frangible region.

The dimensions of this frangible region are such that a cargo discharge outlet of the container liner can readily pass through it. More preferable still the dimensions of this frangible region are such that the fishtail can pass through it.

[0024] In a still further embodiment of the invention, the dimensions of the frangible region are substantially similar to the dimensions of the cargo discharge outlet of the cargo container. Even more preferably still the dimensions of the frangible region are substantially similar to the dimensions of the letterbox.

[0025] When the cargo is to be unloaded, the frangible region is opened to form an aperture within the insert, thereby allow the placement of the cargo discharge outlet of the container liner through the cargo discharge outlet of the cargo container. Thus, in a further preferred embodiment of the invention the frangible region comprises a ripcord. Preferably the ripcord is secured to the insert by passing the ends of the ripcord through two apertures and securing, for example by the formation of a knot at the ends on the side of the insert which, when in use is adjacent to the container liner.

[0026] Alternatively the frangible region comprises plurality of perforations along which the frangible region can be opened. More preferably these perforations are orientated in a substantially straight line, even more preferably still a substantially horizontal line. The provision of one ripcord results in a slit-like aperture being made in the insert through which the cargo can flow.

[0027] In an alternative embodiment of the invention, the frangible region is completely removed from the insert, thereby enabling an increased flow rate of the cargo. Preferably the aperture is substantially rectangular in shape and is formed by the provision of two rip-cords which are orientated substantially horizontally along the upper and lower edges of the insert and which are transected by two vertical perforation lines.

[0028] A knife or similar sharp instrument may be used to break the line of perforations, although this may cause damage to the container liner and thus result in the inappropriate discharge of the cargo within the cargo container itself. Therefore, preferably the frangible region is provided with a ripcord, which is secured to along the line of perforations and which when pulled, disrupts the perforations.

[0029] In a further embodiment of the invention the insert is of a substantially rigid material. Preferably the insert is of cardboard, even more preferably still of corrugated cardboard.

[0030] The dimensions of the insert should be such that they match the dimensions of the cargo discharge outlet on the cargo container. For example the width of the insert should sufficient to fully cover the letterbox. The base of the insert should also be sufficient to extend under the base of the liner without the risk of the base becoming dislodged when the cargo is loaded. Preferably the insert is reversibly secured to the liner. Even more preferably this is by the provision of an adhesive,

such as glue or double-sided tape.

[0031] In order to prevent personnel having to climb on top of the cargo container to retrieve documents the insert is provided with a document retaining means, allowing the document being accessible through an aperture in a wall member of the cargo container. Preferably this aperture is a flap, such as the letterbox. The document retaining means is preferably in the form of a reusable pouch or envelope which may be reversibly secured to the insert. The document can be repeatedly accessed through the letterbox with the insert preventing the container liner from protruding through the letterbox.

[0032] In order to prevent personnel having to climb on top of the cargo container to sample the bulk cargo, the insert is provided with a cargo sampling port. Preferably this sampling port is re-sealable. Even more preferably still this port is located behind the letterbox and is capable of cooperating with a sample spout which is placed through an letterbox.

[0033] Preferably the cargo container comprises bulk cargo. Examples of such bulk cargo include, but are by no way limited to; grains (e.g corn, maize germ, maize grit, rice wheat), bulk commodities (e.g chocolate crumb, cocoa beans, coffee and sugar) and chemicals (e.g aluminium oxide, PET, polyester, PVC, polypropylene, PTA).

[0034] According to a second aspect of the invention there is provided a cargo container liner comprising an insert according to according to the invention. Preferably this insert is reversibly secured to the liner, but alternatively the insert is permanently secured to the liner.

[0035] According to a third aspect of the invention there is provided a container comprising an insert according to the invention. Preferably this cargo container transports bulk cargo.

[0036] According to a fourth aspect of the invention there is provided a transport means comprising a container according to the invention, such transport means being selected from the group consisting of, but by no means limited to; a lorry, a ship, railstock.

[0037] According to a fifth aspect of the invention there is provided a method of orientating a cargo discharge outlet of a cargo container liner towards a cargo discharge outlet of a cargo container, comprising the steps of;

- i) providing an insert according to the invention;
- ii) locating the insert so that when in use, the insert is sandwiched between the cargo discharge outlets of the liner and the container;
- iii) folding the panel to form a wall member and a base and positioning the insert so that the base locates underneath the liner and prevents the cargo discharge outlets from folding under the liner.

[0038] In a preferred embodiment of the invention the insert is reversibly secured to the liner, for example by the provision of an adhesive, such as a glue of double

side sticking tape on the base and/or the container liner.

[0039] In a still preferred embodiment of the invention the insert is located on the container liner prior to the liner being placed in the cargo container. Alternatively, the liner is firstly placed in the cargo container and the insert then sandwiched between the container liner and the cargo container. In this embodiment it would be necessary for the base of the insert to be positioned underneath the base of the container liner *in situ*, and such positioning could be achieved through the cargo discharge outlet of the cargo container. Preferably this cargo discharge outlet is an aperture. Even more preferably this aperture is a flap, e.g the letterbox.

[0040] In a further embodiment of the invention the cargo discharge outlet of the liner is an aperture, preferably an aperture formed by a fish-tail arrangement of the liner.

[0041] According to a sixth aspect of the invention there is provided a method for inhibiting the protrusion of a cargo container liner through an aperture in a cargo container comprising the steps of;

- i) providing an insert according the invention;
- ii) locating the insert so that when in use, the insert is sandwiched between the cargo discharge outlets of the liner and the container;

[0042] In a preferred embodiment of the invention the insert is reversibly secured to the liner, for example by the provision of an adhesive, such as a glue of double side sticking tape on the base and/or the container liner.

[0043] In a still preferred embodiment of the invention the insert is located on the container liner prior to the liner being placed in the cargo container. Alternatively, the liner is firstly placed in the cargo container and the insert then sandwiched between the container liner and the cargo container

[0044] According to a seventh aspect of the invention there is provided a method to enable the repeated access of a document through an aperture in a wall member of a cargo container comprising the steps of;

- i) providing an insert according to claim 1;
- ii) locating the insert so that when in use, the insert is sandwiched between
- iii) the cargo container and container liner;

associating a document retaining means with the insert.

[0045] In a preferred embodiment of the invention the document retaining means is reversibly adhered to the insert.

[0046] In a further preferred embodiment of the invention the aperture is a flap, preferably the letterbox.

[0047] In a still further embodiment of the invention the document retaining means is an envelope or pouch.

[0048] According to an eighth aspect of the invention there is provided a kit comprising a cargo container liner

and an insert according to the invention. Even more preferably a kit is provided which further comprises a cargo container.

[0049] An insert, method or kit substantially as hereinbefore described with reference to the accompanying drawings

Detailed Description of the Invention

[0050] Embodiment of the invention will now be described by example only and with reference to the following Figures:

Figure 1: Illustrates a front view of the insert in a first embodiment of the invention, in which the wall member and base of the insert are angled substantially 180° relative to one another.

Figure 2: Illustrates a front view of the insert in a second embodiment of the invention in which the wall member and base of the insert are angled substantially 90° relative to one another.

Figure 3: Illustrates a side view of the insert in a third embodiment of the invention in which the wall member and base of the insert are angled substantially 0° relative to one another.

Figure 4: Illustrates a front view of the insert when sandwiched between the cargo container and the container liner.

Figure 5: Illustrates a front/side view of the insert when sandwiched between the cargo container and the container liner.

[0051] Figure 1 illustrates the insert 1, which comprises a wall member 2 and a base 3. The boundary between the wall member and the base are defined by a horizontal axis 4. There is a frangible region 5 which comprises two apertures 6a/b, through which a ripcord 7 is secured.

[0052] Figure 2 illustrates the insert 1 with the wall member 2 and the base 3 angled substantially 90° relative to one another.

[0053] Figure 3 illustrates the insert 1 with the wall member 2 and the base 3 angled substantially 0° relative to one another.

[0054] Figure 4 illustrates a front view of the insert 1 which is sandwiched between a wall member of a cargo container 8 and a wall member of a container liner 9. The axis 4, about which the wall member 2 and the base 3 are angled 90°, is positioned at the junction between the wall member 8 and the base 10 of the cargo container. Whilst it is sufficient for the insert 1 to extend behind the letterbox 11, in this figure it is shown extending across the width of the cargo container 8. The frangible region 5, comprising two apertures 6a/6b through which

a ripcord 7, is shown positioned slightly above the lower edge of the insert's wall member 2. When the ripcord is pulled the frangible region is broken. The section of the frangible region which is above this break can be lifted upwards to enable the cargo discharge outlet of the container liner e.g the fishtail (not shown) to be placed through the letterbox 11. The lifting of this upper region is facilitated by the provision of two perforated diagonal crease lines 12a/12b which extend from axis 4 to a horizontal crease line 12c, which is positioned at the horizontal boundary of the letterbox.

[0055] Figure 5 illustrates a front/side view of the insert when sandwiched between the cargo container and the container liner, reference numerals as in Figure 4.

Claims

1. An insert for use in a cargo container, the insert comprising a panel which is adapted to form, when in use, a wall member and a base, wherein the panel is provided with a frangible region to form a cargo discharge outlet.
2. An insert according to claim 1, wherein the panel is provided with an axis which defines the junction between the wall member and the base and about which the wall member and the base can be angled relative to each other.
3. An insert according to claim 2, wherein the angle is substantially 0°.
4. An insert according to claim 2, wherein the angle is in the range of 1° to 180°.
5. An insert according to claim 4, wherein the angle is substantially 90°.
6. An insert according to claim 1 or 2, wherein the wall member is provided with the frangible region.
7. An insert according to any of claims 1 to 6, wherein the frangible region comprises a plurality of perforations.
8. An insert according to claim 7, wherein the perforations are orientated in a substantially straight line.
9. An insert according to claim 8, wherein, when in use, the straight line is substantially horizontal.
10. An insert according to any of claims 1 to 9, wherein the frangible region is provided with a ripcord.
11. An insert according to any of claims 1 to 10, wherein the dimensions of the frangible region are such that it can accommodate a discharge outlet of cargo lin-

er.

12. An insert according to any of claims 1 to 11 wherein the insert is of a substantially rigid material.

13. An insert according to claim 12, wherein the insert is of cardboard.

14. An insert according to claim 13, wherein the cardboard is corrugated.

15. An insert according to any of claims 1 to 14, wherein the insert is provided with a document retaining means, so that when in use, the document is accessible through an aperture in a wall member of the cargo container.

16. An insert according to claim 15, wherein the aperture is a flap or letterbox.

17. An insert according to claims 15 or 16, wherein the document retaining means is a pouch or envelope.

18. An insert according to any of claims 1 to 17, wherein the insert is provided with a cargo sampling port, so that when in use, the cargo can be sampled through an aperture in a wall member of the cargo container.

19. An insert according to claim 18, wherein the cargo sampling port is re-sealable.

20. An insert according to any of claims 1 to 19, wherein the cargo container comprises bulk cargo.

21. A cargo container liner comprising an insert according to any of claims 1 to 20 attached thereto.

22. A cargo container liner according to claim 21, wherein the insert is reversibly secured to the liner.

23. A container comprising an insert according to any of claims 1 to 20.

24. A transport means comprising a container according to claim 23, wherein the transport means is selected from the group consisting of; a lorry, a ship, rail-stock.

25. A method of orientating a cargo discharge outlet of a cargo container liner towards a cargo discharge outlet of a cargo container, comprising the steps of;

- i) providing an insert according to claim 1;
- ii) locating the insert so that when in use, the insert is sandwiched between the cargo discharge outlets of the liner and the container;
- iii) folding the panel to form a wall member and a base and positioning the insert so that the

base locates underneath the liner and prevents the cargo discharge outlets from folding under the liner.

26. A method according to claim 25, wherein the insert is reversibly secured to the liner.

27. A method according to claim 25 or 26, wherein the insert is located on the container liner prior to the liner being placed in the container.

28. A method according any of claims 25 to 27, wherein the cargo discharge outlet of the liner is an aperture.

29. A method according to claim 28, wherein the aperture is formed by a fish-tail arrangement of the liner.

30. A method according to any of claims 25 to 29, wherein the cargo discharge outlet of the cargo container is an aperture.

31. A method according to claim 30, wherein the aperture is a flap.

32. A method for inhibiting the bulging of a cargo container liner through an aperture in a cargo container comprising the steps of;

- i) providing an insert according to claim 1;
- ii) locating the insert so that when in use, the insert is sandwiched between the cargo discharge outlets of the liner and the container;

33. A method according to claim 32, wherein the insert is reversibly secured to the liner.

34. A method according to claim 32 or 33, wherein the insert is located on the container liner prior to the liner being placed in the container.

35. A method to enable the repeated access of a document through an aperture in a wall member of a cargo container comprising the steps of;

- i) providing an insert according to claim 1;
- ii) locating the insert so that when in use, the insert is sandwiched between the cargo container and container liner;
- iii) associating a document retaining means with the insert.

36. A method according to claim 35, wherein the document retaining means is reversibly adhered to the insert.

37. A method according to claims 35 or 36, wherein the aperture is a flap.

38. A method according to any of claims 35 to 37, wherein the document retaining means is an envelope or pouch.

39. A kit comprising a cargo container liner and an insert according to any of claims 1 to 22. 5

40. A kit according to claim 39, wherein the kit further comprises a cargo container. 10

41. An insert, method or kit substantially as hereinbefore described with reference to the accompanying drawings 15

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Figure 1

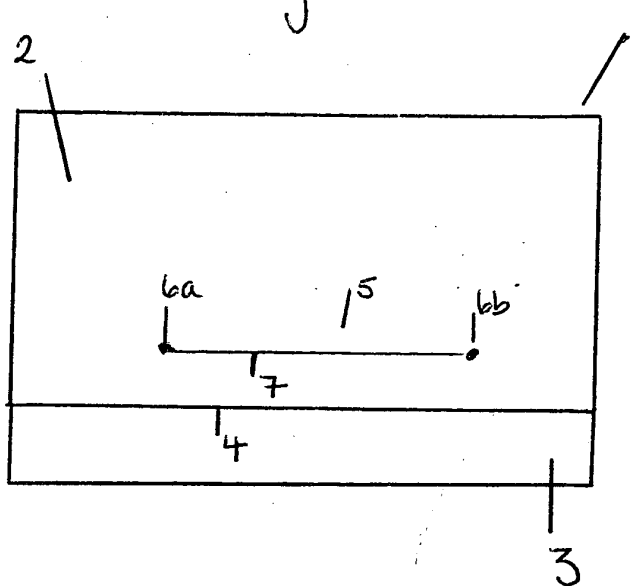


Figure 2

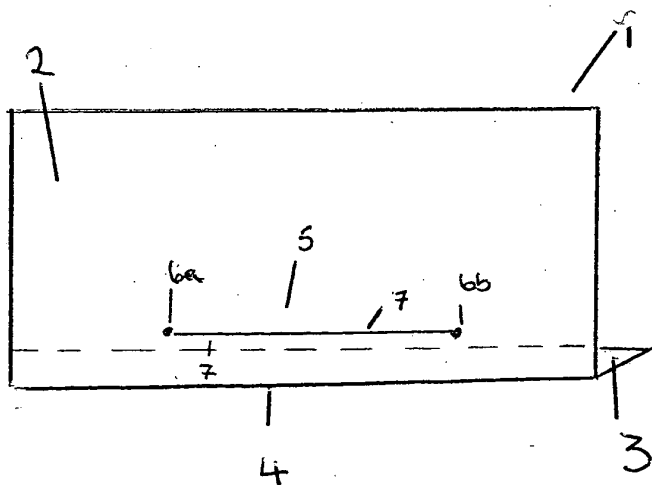


Figure 3.

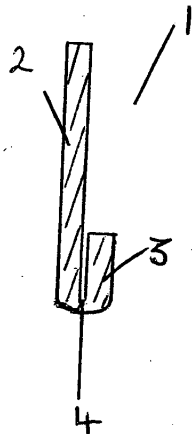


Figure 4

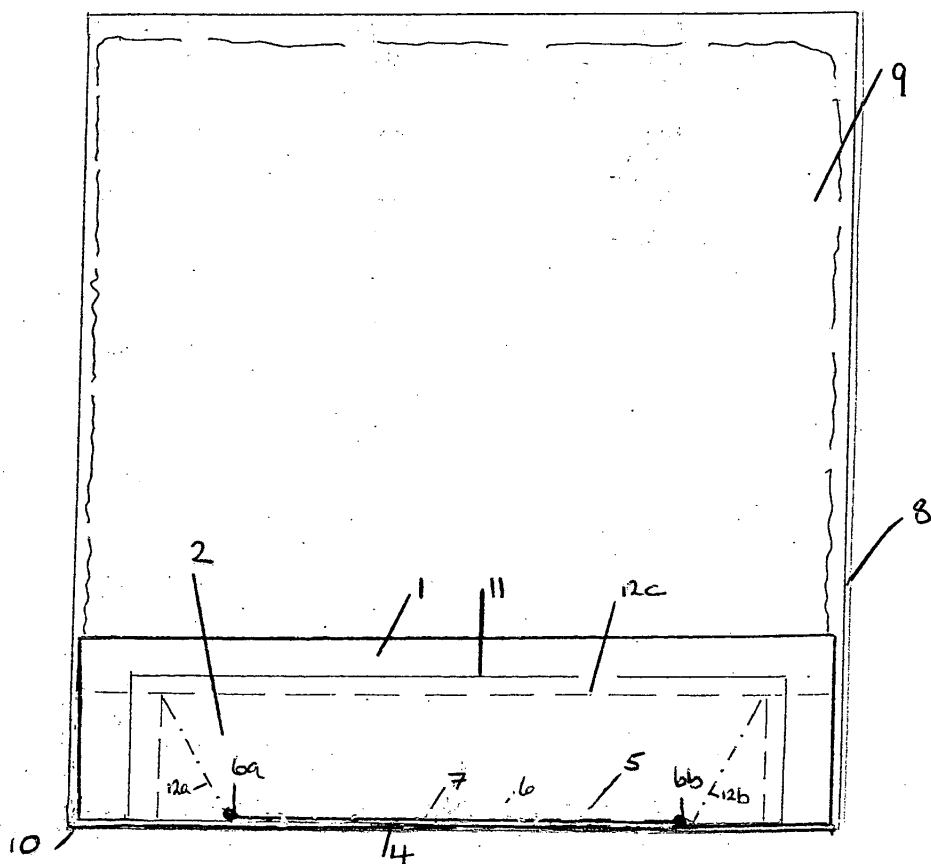


Figure 5

