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(54) Carrying structure

(57) A carrying structure comprises: a container (3) having at least one side(6); a floor (10) hingedly attached to said side; a bag (3) having at least one wall, which bag serves as a liner for the container; at least one feature (28, 30) in the at least one wall, which feature weakens the wall in the region of the feature, wherein the bag is inserted in the container such that the feature is adjacent to the floor, whereby, in use, when the carrying structure is filled with articles and the floor is hinged downwardly to form a chute, the weight of the articles causes the feature to rupture, allowing the articles to discharge along the chute.

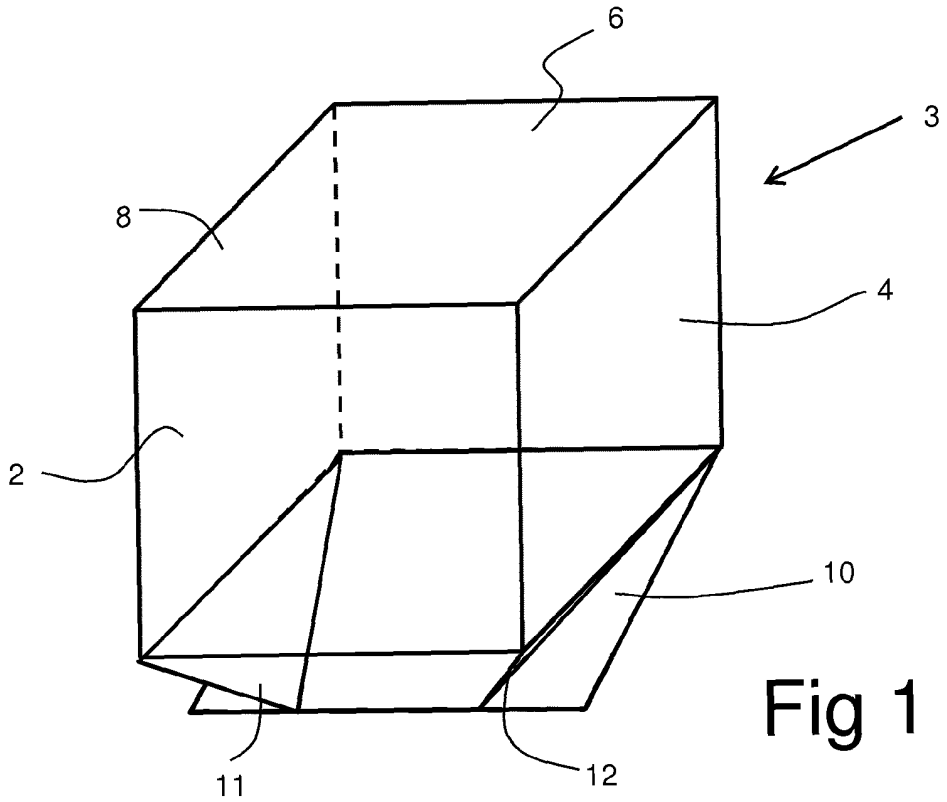

Fig 1

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Description

Field of the Invention

[0001] The invention relates to a carrying structure comprising a container and a bag serving as a liner for the container. The invention also relates to a bag for lining a container of a carrying structure and to a method of carrying.

Background to the Invention

[0002] Packaging items such as, for example, bottles or jars, for certain products where hygiene is a particular concern such as, for example, foodstuffs or pharmaceuticals, need to be kept clean whilst they are in transit, for example, between where they are made and where they are filled. One way to achieve this is to carry the packaging items in a sealed bag which serves as a liner for a container such as, for example, a rigid, plastics material box. On arriving at its destination, the packaging items have to be emptied, for example, into a hopper on a production line.

[0003] It is not always a straightforward matter to open the bag and empty it. Tipping the container runs the risk of foreign articles picked up on the exterior of the container in transit falling into the hopper and contaminating the product. It has therefore been proposed to produce a container that is configured to open to release the packaging items downwardly and to one side of the container, for example by hinging the bottom panel of the container downwardly, with triangular side panels also hinging down, to form a sideways directed chute. This type of container is disclosed and claimed in GB2439944.

[0004] A problem with this arrangement is the need to break the bag wall to allow the articles to flow along the chute and into the hopper. It is not desirable to use a knife to cut the bag, because the suspension of the container alongside the hopper makes access for such an operation difficult and potentially hazardous. In addition, the use of a knife also involves the risk of contamination by fragments of the bag. There is therefore a need for a reliable way of releasing articles from within the bag lining the container when the container is opened up.

Summary of the Invention

[0005] According to a first aspect, the invention provides a carrying structure comprising: a container having at least one side; a floor hingedly attached to said side; a bag having at least one wall, which bag serves as a liner for the container; at least one feature in the at least one wall, which feature weakens the wall in the region of the feature, wherein the bag is inserted in the container such that the feature is adjacent to the floor, whereby, in use, when the carrying structure is filled with articles and the floor is hinged downwardly to form a chute, the weight of the articles causes the feature to rupture, allowing the articles to discharge along the chute.

[0006] The effect of the feature is that, when the bag is filled with items such as, for example packaging items, and the door is opened, the force exerted by the items on bag walls results in the bag splitting in the weakened region. Consequently, the items spill out through the opening formed by the split and the aperture. To put it another way, the feature causes the bag to open and empty in a predictable manner.

[0007] Aptly, there are at least two walls and a feature in each of the at least two walls such that, in each of at least two different orientations of the bag, one feature is located adjacent to the edge of the floor opposite the hinge attachment.

[0008] Aptly, the or each feature is a perforation.

[0009] Aptly, the or each feature may be adjacent the bottom of the bag.

[0010] Aptly, the bag has a mouth which is sealable shut.

[0011] The bag may be made from plastics material film which may be from 15 to 80 μm thick. Typically, the film is 25 μm thick.

[0012] Aptly, the container has a lid.

[0013] The container may be box-like.

[0014] The container may be made from rigid plastics material.

[0015] According to a second aspect, the invention provides a bag for a structure according to the first aspect.

[0016] According to a third aspect, the invention provides a method of carrying comprising using a structure according to the first aspect.

Brief Description of the Drawings

[0017]

Figure 1 is a perspective view of a container forming part of a carrying structure according to one aspect of the invention;

Figure 2 is a perspective view of a bag for a carrying structure, according to another aspect of the invention;

Figure 3 is an end view of the bag of Figure 2 in its post-production/pre-use form;

Figure 4 is a view illustrating an alternative manufacturing method for the bag; and

Figure 5 is a view corresponding to that of Figure 3, showing a modified form of the bag.

Detailed Description of the Illustrated Embodiment

[0018] With reference to Figure 1, a carrying structure comprises a rigid, plastics material, box-like container 3 having four sides 2, 4, 6, 8 and a floor 10. The container is illustrated in its discharge configuration. The floor 10 of the container is hinged along one edge 10a and is normally held closed, for example by a latching arrangement (not shown). Triangular panels 11 and 12 are

hingedly connected to the lower edges of sides 8 and 4 respectively. Means (not shown) are provided for limiting the downward movement of the floor 10, when released, in order to form an obliquely angled discharge chute with the triangular panels 11 and 12. The container 3 also includes a lid (not shown), which is omitted for ease of understanding. The lid covers the open top of the container 3.

[0019] With reference also to Figure 2, the carrying structure 1 also comprises a bag 5 serving as a liner for the container 3. The bag 5 has two opposing side walls 20, 24, two opposing end walls 18, 22 and a bottom 16. Along each of the opposing side walls 20, 24, adjacent its bottom edge, is a feature in the form of a perforation 28, 30. Each perforation 28, 30 weakens its associated side wall 20, 24 in the region of the perforation 28, 30 in the sense of undermining the side wall's 20, 24 structural integrity. The perforation 28 in side wall 20 extends, in use, along the lower edge of the side 2 of the container opposite the hinge for the floor 10. The bag 5 may be inserted into the container 3 such that the perforation 30 in side wall 24 is in this position, so that the bag can be inserted into the container in either of two orientations. The container, and hence the bag which lines it, is rectangular, rather than square, and so the bag cannot be inserted with the perforations inaccessible to the opening. However, the bag may be printed with alignment markings to ensure correct positioning in the container. The bag 5 also has a mouth 26 which is shown in Figures 1 and 2 as flush with the top of the container and open. However, the height of the bag will conveniently be greater than that of the container, so that the excess can be folded over to close the mouth 26.

[0020] With reference to Figure 3, the bag 5 is shown in its closed, blank state before being opened up for insertion into the container 3. The blank state is the state in which the bag 5 comes off the production line (in roll form with successive blanks being separated by perforations so that they may be torn off the roll, one at a time). The blank is typically made from 25 μm thick plastics material film. The blank has side edges 36, 38 at which the film is folded back on itself so as to form four ply margins 40, 42. The perforations 28, 30 are pressed into the margins 40, 42 so as to penetrate all four plies. A base seal 32 (not shown in Figure 1) extends edge-to-edge so as to close one end of the blank, and two mitre seals 34a, 34b (not shown in Figure 1) each extend obliquely from the base seal 32 to one of the edges 36, 38, across the adjacent margin 40, 42. When the bag 5 is opened up, the seals 32, 34a, 34b cause the region of film adjacent the base seal 32 to form the bottom 16 and the margins 40, 42 form the opposing side walls 20, 24 including the perforations 28, 30. The regions of film between the opposing side walls 20, 24 form the end walls 18, 22 respectively. The end of the blank opposite the closed end forms the mouth 26.

[0021] In use (not shown) of the structure, the bag 5 is inserted into the container 3 with the perforation 28 along the base of the wall 20. The bag 5 is filled with packaging items, the mouth 26 is folded over and the lid is placed on the container 3. The structure is carried to its destination where, when it is desired to empty the packaging items into a hopper (not shown), the floor 10 is hinged downwardly, forming a chute with the triangular panels 11 and 12. The packaging items exert a force on the walls 18, 20, 22, 24 of the bag 5, and particularly on the base of the bag, which causes rupture of the perforation 28 and release of the packaging items into the hopper. The diagonal seals 34a and 34b ensure that the bottom of the bag tends to conform with the shape of the chute, and also leave no corners within the bag to trap any of the packaging items.

[0022] Referring now to Figure 4, an alternative manufacturing method for the bag is disclosed. An extruded tubular film is folded to form four-ply margins or gusset folds 40 and 42 along opposed sides. The sides of bags are defined by spaced pairs of welds 44 extending transversely of the folded web, and diagonal welds or seals 46 extend through the margins to each side of the pair of welds 44. Transverse perforations 48 extend within the pairs of welds 44, permitting the bags to be separated, when required, from a continuous roll of such bags. Further perforations 50 are formed through the web, extending lengthwise of the web, inwardly of the innermost fold of the gusset/margin by a short distance (e.g. 50mm) and parallel to it. The perforations 50 extend over a length corresponding to the distance between the outermost edges of the diagonal seals 46. Finally, the web is slit centrally lengthwise (indicated at 52), to form two separate webs of bags which are then rolled. The advantages of this method are twofold: the perforations 50 can be confined to the sides of the bag which correspond to the opening part of the container - in the Figure 3 embodiment they extend further than this, and the rate of production can be greatly increased.

[0023] Figure 5 shows an alternative embodiment to that of Figure 3. Instead of two lines of perforations 28 and 30 enabling the bag to be inserted into the container in two alternative positions, there is just a single line of perforations 30 on one side of the bag, again cutting through the four layers, but the perforations run out to the edge of the bag instead of stopping short of the edge as in the version in Figure 3. The advantage of this arrangement is that the shape of the spout formed after tearing along the perforation in use is less likely to hold back the last few straggling items in the bag during tipping. An instruction may be printed on the bag to ensure that users tearing an individual bag from the roll start tearing the correct perforation from the opposite edge of the bag, to avoid inadvertent tearing along the perforation 30. It may also be desirable to put a printed position mark on the bag to indicate correct alignment with the top of the container in use, so that the bag is positioned at the correct depth in the container.

Claims

1. A carrying structure comprising: a container having at least one side; a floor hingedly attached to said side; a bag having at least one wall, which bag serves as a liner for the container; at least one feature in the at least one wall, which feature weakens the wall in the region of the feature, wherein the bag is inserted in the container such that the feature is adjacent to the floor, whereby, in use, when the carrying structure is filled with articles and the floor is hinged downwardly to form a chute, the weight of the articles causes the feature to rupture, allowing the articles to discharge along the chute.

2. A structure according to Claim 1, wherein there are at least two walls and a feature in each of the at least two walls such that, in each of at least two different orientations of the bag, one feature is located adjacent to the edge of the floor opposite the hinge attachment.

3. A structure according to Claim 1 or 2, wherein the or each feature is a perforation.

4. A structure according to Claim 1, 2 or 3, wherein the bag is made from plastics material which may be from 15 to 80 μm thick.

5. A structure according to Claim 4, wherein the film is 25 μm thick.

6. A structure according to any preceding claim wherein the container has a lid.

7. A structure according to any preceding claim wherein the container is made from rigid plastics material.

8. A bag for a structure according to any preceding claim.

9. A method of carrying comprising using a structure according to any of Claims 1 to 7.

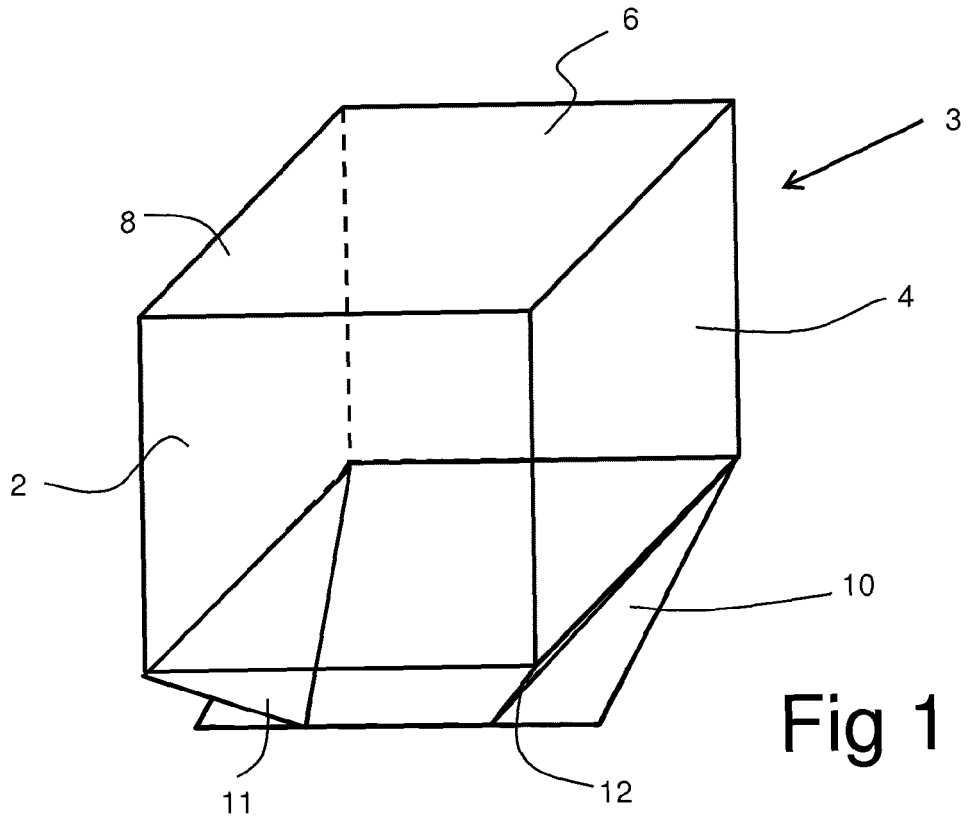

Fig 1

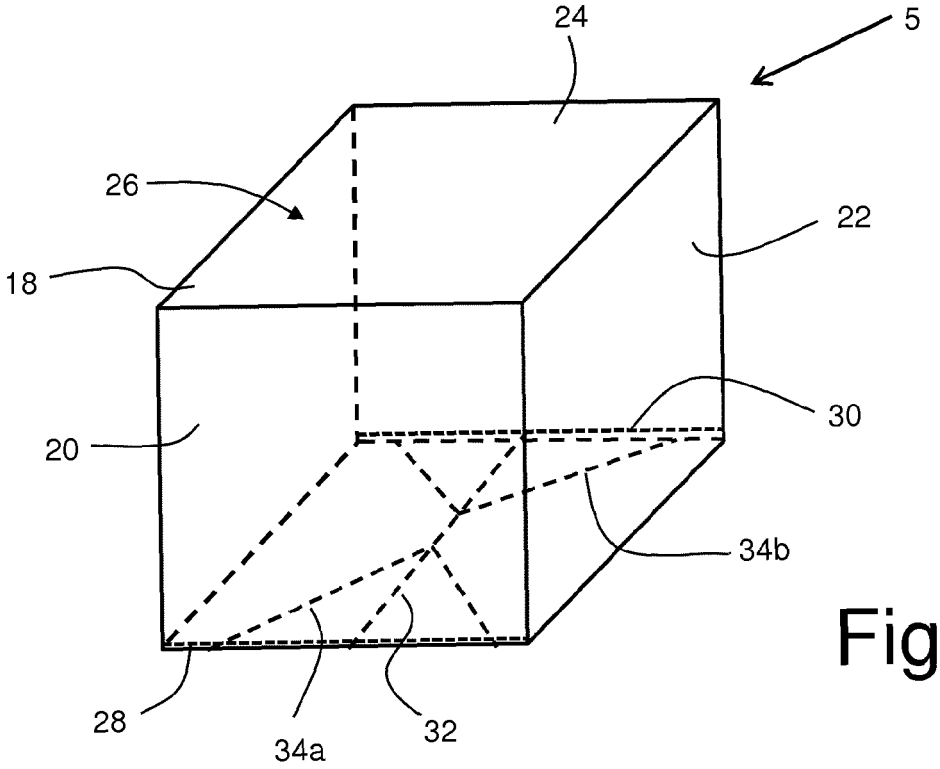

Fig 2

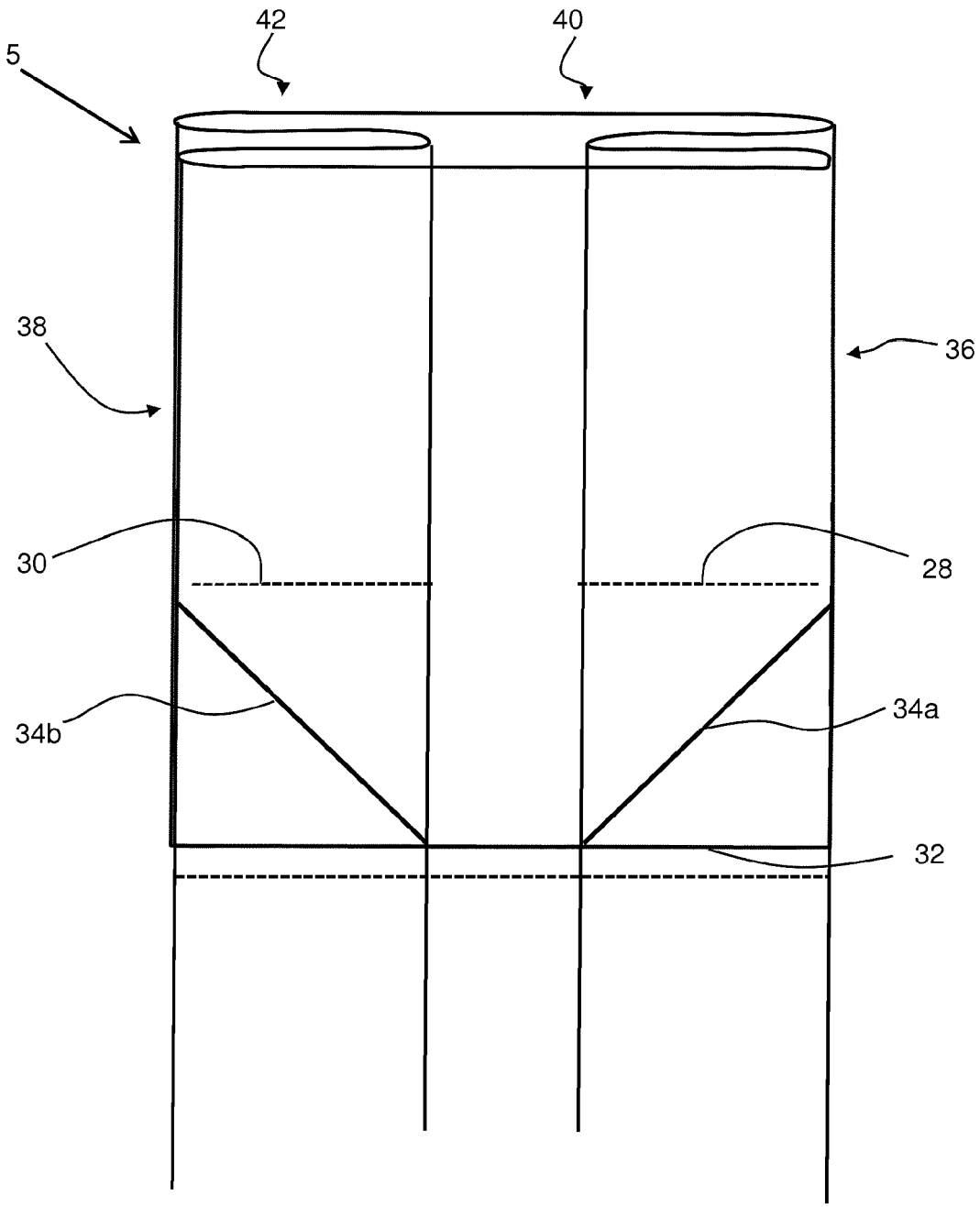

Fig 3

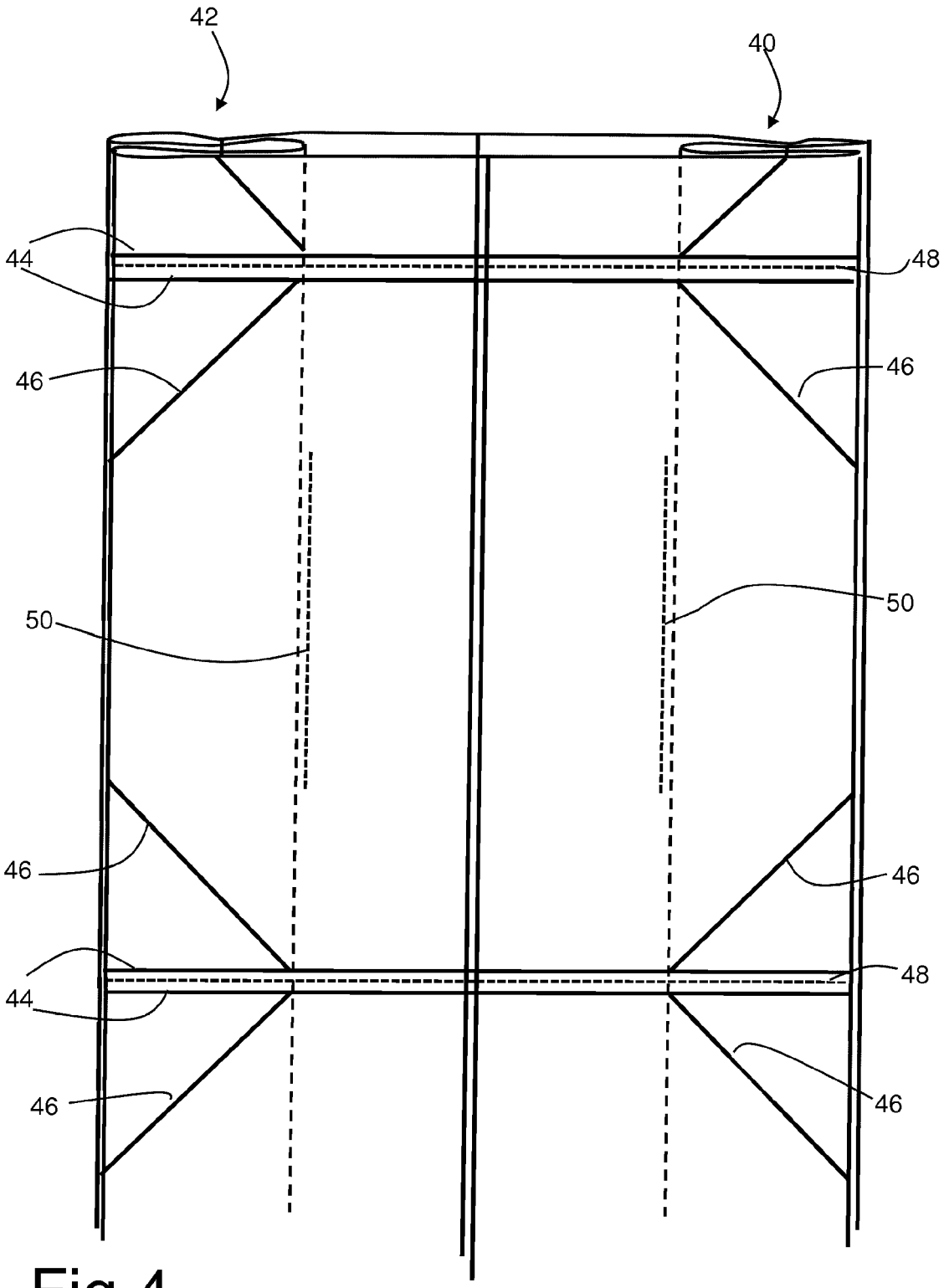

Fig 4

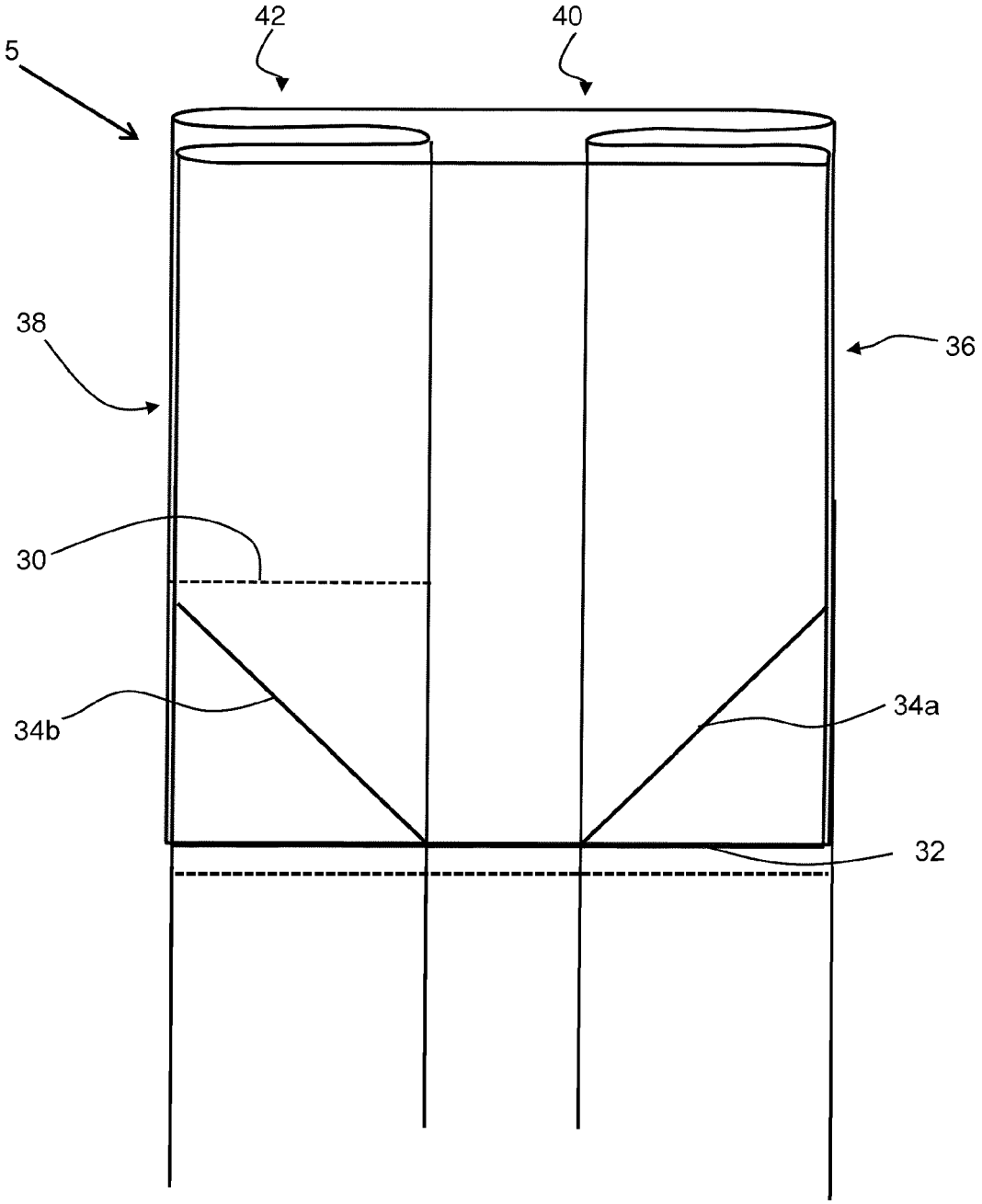

Fig 5

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EUROPEAN SEARCH REPORT

Application Number
EP 14 15 8149

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 480 741 A1 (BJK IND INC [US]) 15 April 1992 (1992-04-15) * column 3, line 58 - column 10, line 38; figures 5,6,14 *	1-9	INV. B65D77/06 B65D88/58 B65D90/04 B65D90/62
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 May 2014	Lämmel, Gunnar

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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