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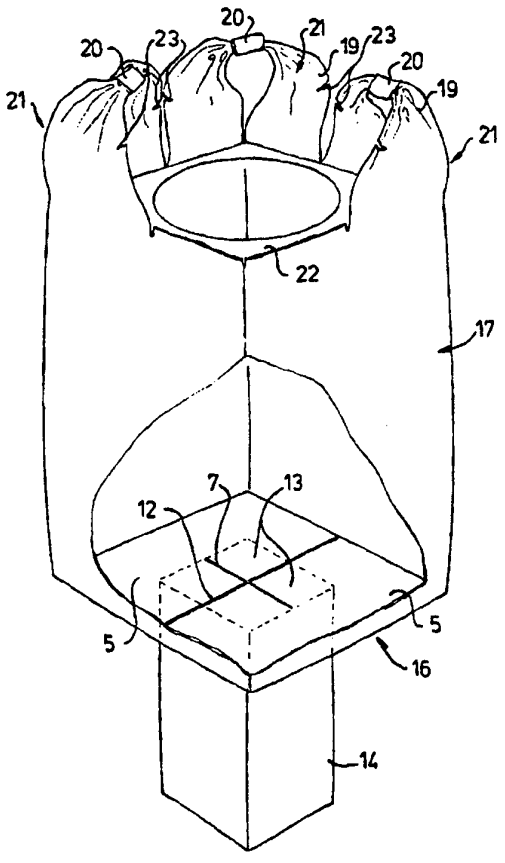
(54) Title: METHOD FOR PRODUCTION OF A BLOCK-SHAPED CONTAINER

(57) Abstract

Method for the production of a pliable block-shaped container, comprising the following steps: supplying a piece of tubular, pliable material; making four cuts (2) at one end in the lengthwise direction of the tubular piece, which cuts (2) are located, in the peripheral direction of said tubular piece, with essentially regular spacings with respect to one another and define four flaps of material (4, 5); folding in the flaps of material (4, 5) in such a way that they are made to lie on one another and attaching the flaps of material (4, 5) to one another in order to form the container base.



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Method for production of a block-shaped container

The invention relates to the production of block-shaped containers for bulk goods. Containers of this type made of pliable material are being used to an ever increasing extent for the transport of bulk goods and can have a capacity of the order of magnitude of one cubic metre; however, larger or smaller capacities are also possible. The stresses in the material from which containers of this type are made can be appreciable, especially when shocks occur during hoisting or when such a container falls to the ground.

A problem which arises with the known containers which are produced by means of a sewing process is that shock or impact stresses of this type can result in such high local stresses in the sewn seams that the container rips or bursts open at these points. The holes made during the sewing process constitute a weakness, whilst the relatively thin thread used for sewing exerts a concentrated stress on the pliable material of the container. The containers rapidly give way as a result.

In particular, the bases, which are always under heavy load, are frequently found to give problems in practice.

Furthermore, holes are made in the material of the container during sewing. As a consequence, the contents can escape. In order to prevent this it is known to sew the container using a special thread which seals the holes. However, it would be better not to make any holes at all in the material of the container, by which means, on the one hand, this relatively expensive procedure is avoided and, on the other hand, the quality of the container is improved.

The aim of the invention is, therefore, to provide a container of the abovementioned type with which such a combination of adverse factors does not arise. This aim is achieved by producing the container in accordance with the following steps:

- supplying a piece of tubular, pliable material;
- making four cuts at one end in the lengthwise direction of

the tubular piece, which cuts are located, in the peripheral direction of said tubular piece, with essentially regular spacings with respect to one another and define four flaps of material;

- folding in the flaps of material in such a way that they are made to lie on one another and attaching the flaps of material to one another in order to form the container base.

With the container according to the invention the base can be glued in such a way that not a single sown seam has to be used. Glued joins of this type provide a large surface area for transmission of forces and prevent the occurrence of concentrated stresses. A container produced in this way is consequently also well able to withstand shock or impact stresses.

The tubular piece of pliable material can be, for example, a circularly woven fabric. Nevertheless it is also possible to use a flat woven fabric which is shaped into a tubular piece by means of one or two glued seams.

Production of the container can be simplified if the following supplementary steps are also carried out:

- folding the tubular piece flat along two parallel longitudinal fold lines;
- making a first pair of oblique fold lines which diverge with respect to said end, which oblique fold lines start at two adjacent cuts, from the innermost end of the cut in each case, and intersect one another on a longitudinal fold line;
- making a second pair of similar oblique fold lines starting at the other cuts, from the innermost end of the cut in each case;
- making a peripheral fold line around the periphery of the tubular piece and passing through the intersections of the two pairs of oblique fold lines with the respective longitudinal fold lines;
- folding over the portion defined by the peripheral line and two of the oblique fold lines along said peripheral line.

In a further development of the container according to the invention, an emptying opening can also be provided in the base. To prevent stress concentrations arising in the

vicinity of the edges and/or corners of the emptying opening it is possible, when producing the container, to make cut-outs in the tops of two opposing flaps of material and to make incisions in the tops of the other two opposing flaps of material, which incisions are in line with the points where said cut-outs coincide when the container base has been assembled, in order to form an emptying opening.

The region close to the edges and the corners of the emptying opening as defined by the one pair of flaps is strengthened by the material of the other pair of flaps glued on top in this region. Because the latter pair of flaps are provided with cuts, the emptying function can still be achieved.

Preferably, the cut-outs define an essentially rectangular emptying opening and an emptying tube which has a cross-section corresponding to said emptying opening is attached to the container base.

At the other end of the tubular piece, eight cuts are made in the lengthwise direction of the tubular piece with, in the peripheral direction of said tubular piece, essentially regular spacings with respect to one another and with respect to said longitudinal fold lines. The cuts define eight flaps of material, of which in each case two adjacent flaps of material are attached to one another by their ends in order to form a total of four carrying loops. As an alternative it is also possible to form a total of one or two carrying loops.

The method according to the invention is also suitable for the production of a container which has a top cover. A top cover of this type can be obtained by fixing a separate sheet, having a central fill opening, in the container. Preferably, however, the container top cover is produced separately beforehand, for which operation the following steps can be employed:

- double-folding the piece of material for the top cover along a fold line in the widthwise direction thereof,
- attaching the opposing, parallel edges of the double-folded piece of material for the top cover to one another,

- making pairs of fold lines, each pair starting from the intersection formed by the fold line in the widthwise direction and the longitudinal edges of the piece of material for the top cover, with each fold line at an angle of essentially 45° with respect to the fold line in the widthwise direction,
- inserting the piece of material for the top cover, which has been folded flat, in that end of the tubular piece which is opposite the end where the base is located,
- attaching the piece of material for the top cover to the inside of the tubular piece over a strip some distance away from the fold line.

A method of this type is suitable for carrying out by machine. Both the pre-produced container with a base and the pre-produced container top cover can be inserted into one another while folded flat and then attached to one another, which procedure facilitates handling by a machine.

A filler pipe can also be fixed to the container top cover in a similar way if:
- a cut coincident with the fold line is made in the piece of material for the top cover,
- a piece of pipe-shaped pliable filler pipe material is inserted, while folded flat, into the piece of material for the top cover, while the latter is folded flat, in such a way that one end of the pipe-shaped piece is located at the cut in the material for the top cover,
- the pipe-shaped piece is attached to the piece of material for the top cover, around the cut in the latter.

It goes without saying that a loose lining can also be folded into said container at the same time as the container is produced as described above.

The invention will be explained in more detail below with the aid of an illustrative embodiment shown in the figures.

Figure 1 shows a perspective view of the tubular piece according to the invention.

Figure 2 shows the base section of the tubular piece according to the invention.

Figure 3 shows a cross-sectional view of the finished base of the container with an emptying tube.

Figure 4 shows a perspective view of a separate emptying tube.

Figure 5 shows a partially opened-up perspective view of the finished container according to the invention.

Figures 6^{a-c} show the steps for fitting a container top cover to the top of the container.

Figures 7^{a-c} show the steps in an alternative method for producing the base of the container with an emptying tube.

Figure 7^{d} shows the method for folding the emptying tube in the container base.

Figures 8^{a-d} show the steps for producing a container top cover.

Figure 8^{e} shows the position of the container top cover in the container, which is shown diagrammatically.

Figure 9 shows the positions in which container and container top cover are inserted into one another.

Figure 10 shows the way in which a carrying loop is made up from two flaps of material.

Figures 11^{a-c} show the steps for producing an alternative emptying tube.

The tubular piece shown in Figure 1 comprises a pliable material, which can be a so-called banded fabric. A film or a combination of film and banded fabric is also possible. A fabric of this type is generally known and will therefore not be described here. It is, of course, also possible to make the tubular piece of any other arbitrary suitable material which is able to withstand the stresses imposed on the container to be produced therefrom.

As shown, the tubular piece is obtained by joining the two opposing edges of a piece of pliable material together along a weld seam 1. Four cuts 2 are then made in one end of the tubular piece thus obtained. Said cuts are regularly spaced.

The tubular piece is pressed flat, by which means two fold lines 3 are obtained. The cuts 2 are also equal

distances away from said fold lines 3.

The four cuts 2 define four flaps of material, two of which are indicated by 4 and two by 5. In this embodiment an opening 6 has been cut out in the flaps of material 4, whilst a cut 7 has been made in the flaps of material 5.

Fold lines which run at an angle of 45° with respect to the end of the tubular piece are made from the innermost ends of the cuts. Said fold lines 8 are also made in the lower half of the tubular piece, which is not visible, in such a way that in each case one visible and one non-visible fold line 8 intersect at intersection 9. A peripheral fold line 10 is made through said intersections 9, parallel to the end of the tubular piece.

The base of the container is now produced as follows. The trapezium-shaped region 11 of the tubular piece, as delimited by the fold lines 8, the intersections 9 and the flap 5, is folded over along fold line 10. As a result said trapezium-shaped piece 11 comes to lie on that part of the tubular piece located higher up. The situation thus obtained is shown in Figure 2. The trapezium-shaped region 11, which is now no longer visible, is lying on that part of the tubular piece which is located above fold line 10, which is likewise no longer visible. The flaps of material 4 face outwards, whilst the flaps of material 5 have already been folded towards one another, such that their edges 5a just touch, or just fail to touch, one another, with the formation of a more or less narrow slit. In this position, their cuts 7 are a lengthwise extension of one another.

As the next step, the flaps of material 4 can now be folded on top of the flaps of material 5, about a fold line bordering the sides of said flaps of material 5. In this position the edges 4a of the flaps of material 4 likewise just touch, or just fail to touch, one another.

Before the flaps of material 4 are folded back, however, the region of the flaps of material 5 indicated by shading can be coated with adhesive. The flaps of material 4 can, of course, also be coated with adhesive. Outstanding adhesion between flaps of material 5 on the one hand and 4 on

the other hand is obtained in this way. With this procedure the central area of the flaps of material 5 remains free. As there is a cross-shaped cut in this area, which cut is defined on the one hand by the boundary line 12 between the opposing edges 5a of flaps 5 as well as by the cuts 7, which are a lengthwise extension of one another, in said flaps 5, there is an emptying opening in the finished base of the container. This is because the separate tongues of material 13 can easily move aside, so that the emptying opening is exposed.

It is pointed out that, because of the presence of said tongues 13, the corners of said emptying opening are well protected against stress concentrations. The occurrence of tears at the corners of the rectangular emptying opening is virtually excluded in the light of the strengthening provided by the material of the tongues 13 at these points. However, even if the corner were to tear there would still be no leakage.

An emptying tube 14 can then also be glued into said emptying opening, as shown in the vertical section in Figure 3 and in perspective in Figure 4. Said emptying tube 14 has four outward-facing flaps 15 at its top, each flap being glued between the flaps of material 4 and 5 of the tubular piece. The emptying tube can be made of circularly woven or flat-woven fabric, the tube shape being obtained in the latter case by means of one or two glued seams. Nevertheless, a tube of another pliable material can also be used, whilst the join can also be obtained in another way, for example by heating.

The periphery of the flaps 15 of emptying tube 14 is also shown diagrammatically in Figure 2.

Figure 5 shows a perspective view of the finished container. Viewed from top to bottom, the base 16 of the container 17 comprises the flaps 5, the non-visible flaps 15 of the emptying tube 14 and the flaps 4. The tongues 13 and the cuts 7, which are an extension of one another, of said flaps 5 are visible. In view of the presence of the cuts and the boundary line 12, the bulk goods contained in container

17 will push aside the tongues 13 as soon as the emptying tube 14 is unfolded, after which the bulk goods are able to run out.

As shown in Figure 1, eight cuts 18 are made at the other end of the tubular piece. Eight flaps of material 19 are formed as a result. Said flaps of material 19 are attached to one another in adjacent pairs, in order to form four carrying loops 21 at the top sides of container 17: see Figure 5. Said carrying loops 21 are then gathered together in their transverse direction and held together by a tape or band 20 as shown in Figure 5.

It is pointed out that, by making fewer cuts 18, it is also possible to obtain a smaller number of flaps of material 19 in order to form, for example, two carrying loops (four flaps of material 19 required) or one carrying loop (two flaps of material 19 required).

Cuts 23 are made in order to dissipate the stresses in the flaps of material 19. Said cuts 23 are located at that edge of each flap of material 19 which ends up in the centre of the walls of container 17. Similar incisions are not required at the other edges of the flaps of material 19.

The container can finally be closed off at the top by a container top cover 22, in which an opening can also be present. A filler tube can be connected at this opening. According to an alternative it is, however, also possible to make up a container top cover from opposing flaps of material at the top of the container.

Furthermore, an emptying tube can be fitted in the container base using the same procedure as that employed for fitting the filler tube in the container top cover 22.

Finally, it is pointed out that the container according to the invention can also be constructed without an emptying opening. In this case there is no need to make openings 6 in the flaps 4, whilst the cuts 7 in the flaps 5 can also be dispensed with. In this embodiment the flaps 4 and 5 cover one another completely in the situation shown in Figure 2. Consequently, they can be glued to one another over their full surface, as a result of which a very robust and

shock-resistant base construction is obtained.

A container which is folded flat and has its flaps 19 facing outwards is drawn in Figure 6[a]. Part of the uppermost trapezium-shaped regions 24, which are analogous to the trapezium-shaped base regions 11, can also be seen in the rectangle defined by the flaps 19. The pliable container top cover at the top of the container, which is shown in Figure 5, is now glued in place in the border region which is defined between said pliable strips of material 19 and the adjoining parts of the trapezium-shaped regions 24. The area coated with adhesive is indicated by 25 in Figure 6[b]. Finally, Figure 6[c] shows how the container top cover is affixed to the area coated with adhesive. The flaps of material 19 can then be shaped in the known manner to give the carrying loops 21, as shown in Figure 5.

Figure 7[a] shows the base of a container, folded flat. The strips 19 are also shown; the top of the container has not yet been folded up.

The flaps 26 of the base 16 have not yet been folded in, although the flaps 27 have. Both flaps 27 have a cut 29.

The flaps 26 are glued to flaps 27 .

An emptying tube 32 can be glued to the base 16 formed in the way, as shown in Figure 7[b]. Said emptying tube is glued in place by means of its flaps 15, analogously to the case of flaps 15 in Figure 4. The emptying trunk of the emptying tube has been folded flat several times, thus assuming the hexagonal shape shown in Figure 7[b].

The flaps 26 can then be glued in place, by which means the closed base shown in Figure 7[c] is obtained. Region 33 of the slit formed between the flaps 26 is free, that is to say is not attached by adhesive to the other parts of the base. Consequently, the emptying tube remains accessible via the slit 33 and can be pulled out by pushing the adjacent parts of the flaps of material 26 aside to some extent. The bulk material contained in the finished sack can then run out via the slits 29 (see Figure 7[a]) and the slit formed between the edges of the flaps of material 27 and be unloaded via the tube.

The advantage of the construction according to Figure 7 lies in the fact that the emptying tube 32 is now completely stowed away in the base of the container. In view of the various layers folded over one another, the emptying tube remains firmly closed even when the container is completely filled. The bulk material will run out of the container only after the tube 32 has been pulled to the outside via slit 33.

Figure 7^d shows the partially folded emptying tube 32, as well as its flaps of material 15, which are glued to the container base. The folded tube of material 32 has been folded up several times in its transverse direction along fold lines 34 and fitted flat to the container base. The flaps of material 26 are then glued to the container base, leaving slit 33 free (see Figure 7^c).

Figure 8^a shows a piece of top cover material 35 folded double in order to form the top cover of the container. Said piece of top cover material is folded onto itself along fold line 36. Fold lines 37, which run perpendicular to fold line 36, and fold lines 38, which are at an angle of 45° with respect to fold lines 37, are also provided.

The halves of the piece of top cover material either side of fold line 36 are attached to one another at the short sides 39.

A peripheral fold line 40 is also made some distance below the uppermost opening in the piece of top cover material 35.

By means of these fold lines the piece of top cover material 35 can be folded via positions 8^b and 8^c into position 8^d. During this folding operation side flaps 41 are formed, which, in the manner shown in Figure 8^e, end up inside the container 47, shown diagrammatically in said figure. The peripheral strip 42 of the container top cover 35, as defined by the peripheral fold line 40, is attached, for example glued, to the inside wall of container 47.

The container top cover is further provided with a cross-shaped opening 43, at which an filler tube 44, shown

diagrammatically, can be fitted.

Figure 9 shows that the container top cover 35 when folded flat can be inserted in the container 47 when this is likewise folded flat. For this operation the eight flaps of material 19, only four of which are shown, must be held somewhat apart. The container top cover 35 which is folded flat can then be inserted and, by means of top border 42, glued in place in the regions indicated by shading. An operation of this type can easily be carried out by machine.

As is also shown in Figure 9, a filler tube 44 which is folded flat and is provided with a cross-shaped opening 45 can be fitted in the same way inside the container top cover 35 when this is folded flat. The filler tube 44 can be fixed in place by means of the areas indicated by shading, to which, for example, adhesive has been applied.

Figure 10 shows how two adjacent flaps of material 19 of the container 47 can be attached to one another. The two flaps of material 19 attached to one another are joined together by those surfaces which initially are on the inside of the container. By this means a somewhat twisted carrying loop 46 is formed, which provides an advantageous transfer of stress to the side wall of the container 47.

Figures 11^{a-c} show the way in which an alternative emptying tube can be produced. In this case the pliable tubular piece of material 51 is placed between the pliable halves 52, 53. The piece 51 and the halves 52, 53 are then attached to one another by means of welds 54 and a cut 55 is made in each half 52, 53.

The tubular piece 51 is finally unfolded, the halves 52, 53 being laid flat. The emptying tube shown in the final step in Figure 11 is obtained in this way. When turned upside down, said emptying tube can be attached to the base, as shown in Figure 2. During this operation the halves 52, 53 are glued in place on the area indicated by shading in Fig. 2. As an alternative, this emptying tube can be attached to the base shown in Figure 7^{a}.

A tube of this type can also be used as a filler tube. In that case it is fitted on the top of the container,

for example cover 35 in Figure 8e.

Claims

1. Method for the production of a pliable block-shaped container, comprising the following steps:
- supplying a piece of tubular, pliable material;
- making four cuts (2) at one end in the lengthwise direction of the tubular piece, which cuts are located, in the peripheral direction of said tubular piece, with essentially regular spacings with respect to one another and define four flaps of material (4, 5);
- folding in the flaps of material (4, 5) in such a way that they are made to lie on one another and attaching the flaps of material (4, 5) to one another in order to form the container base.

2. Method according to Claim 1, further comprising the following steps:
- folding the tubular piece flat along two parallel longitudinal fold lines (3);
- making a first pair of oblique fold lines (8) which diverge with respect to said end, which oblique fold lines (8) start at two adjacent cuts (2), from the innermost end of the cut in each case, and intersect one another on a longitudinal fold line (3);
- making a second pair of similar oblique fold lines (8) starting at the other cuts (2), from the innermost end of the cut in each case;
- making a peripheral fold line (10) around the periphery of the tubular piece and passing through the intersections (9) of the two pairs of oblique fold lines (8) with the respective longitudinal fold lines (3);
- folding over the portion defined by the peripheral line (10) and two of the oblique fold lines (8) along said peripheral line (10).

3. Method according to Claim 1 or 2, wherein cut-outs (6) are made in the tops of two opposing flaps of material (4) and incisions (7) are made in the tops of the other two

opposing flaps of material (5), which incisions are in line with the points where said cut-outs (6) coincide when the container base has been assembled, in order to form an emptying opening.

4. Method according to Claim 3, wherein the cut-outs (6) define an essentially rectangular emptying opening and an emptying tube (14) which has a cross-section corresponding to said emptying opening is attached to the container base.

5. Method according to Claim 4, wherein the emptying tube (14) is provided at one end with flaps of material (15) which are fixed between the flaps of material (4, 5) of the container base.

6. Method according to Claim 1 or 2, wherein an incision is made at the end of each of the two flaps of material (27) which are located on the inside of the container, the emptying tube (32) is glued to said flaps of material (27) and then folded flat, after which the flaps of material (26) which are located on the outside of the container are glued to the inner flaps of material, leaving free the region in which the emptying tube (32) is located.

7. Method according to one of the preceding claims, wherein the flaps of material (4, 5) are attached to one another by gluing.

8. Method according to one of the preceding claims, wherein, at the other end, eight cuts (18) are made in the lengthwise direction of the tubular piece with, in the peripheral direction of said tubular piece, essentially regular spacings with respect to one another and with respect to said longitudinal fold lines, which cuts (18) define eight flaps of material (19), of which in each case two adjacent flaps of material (19) are attached to one another by their ends in order to form a total of four carrying loops (21).

9. Method according to one of Claims 1-7, wherein, at the other end, four cuts (18) are made in the lengthwise direction of the tubular piece with, in the peripheral direction of said tubular piece, essentially regular spacings with respect to one another and with respect to said longitudinal fold lines, which cuts (18) define four flaps of material (19), of which in each case two adjacent flaps of material (19) are attached to one another by their ends in order to form a total of two carrying loops (21).

10. Method according to Claim 8 or 9, wherein the ends of two flaps of material are fixed flat on one another in such a way that those surfaces of the flaps of material which are on the same side with respect to the tubular piece are lying against one another.

11. Method according to Claim 8, 9 or 10, wherein the carrying loops (21) are gathered together in their transverse direction.

12. Method according to one of the preceding claims, wherein a container top cover is fixed in the tubular piece opposite the container base.

13. Method according to Claim 12, wherein the container top cover is pre-formed by a piece of pliable top cover material, the width of which corresponds to the mutual spacing of the longitudinal fold lines of the tubular piece which has been folded flat, comprising the following steps:
- double-folding the piece of material for the top cover along a fold line in the widthwise direction thereof,
- attaching the opposing, parallel edges of the double-folded piece of material for the top cover to one another,
- making pairs of fold lines, each pair starting from the intersection formed by the fold line in the widthwise direction and the longitudinal edges of the piece of material for the top cover, with each fold line at an angle of essentially 45° with respect to the fold line in the

widthwise direction,
- inserting the piece of material for the top cover, which has been folded flat, in that end of the tubular piece which is opposite the end where the base is located,
- attaching the piece of material for the top cover to the inside of the tubular piece over a strip some distance away from the fold line.

14. Method according to Claim 12 or 13, wherein
- a cut coincident with the fold line is made in the piece of material for the top cover,
- a piece of pipe-shaped pliable filler pipe material is inserted, while folded flat, into the piece of material for the top cover, while the latter is folded flat, in such a way that one end of the pipe-shaped piece is located at the cut in the material for the top cover,
- the pipe-shaped piece is attached to the piece of material for the top cover, around the cut in the latter.

15. Method for the production of a pliable block-shaped container, comprising the following steps:
- supplying a piece of tubular, pliable material;
- making four cuts (2) at one end in the lengthwise direction of the tubular piece, which cuts are located, in the peripheral direction of said tubular piece, with essentially regular spacings with respect to one another and with respect to the said longitudinal fold lines and define four flaps of material (4, 5);
- folding the tubular piece flat along two parallel longitudinal fold lines (3);
- making a first pair of oblique fold lines (8) which diverge with respect to said end, which oblique fold lines (8) start at two adjacent cuts (2), from the innermost end of the cut in each case, and intersect one another on a longitudinal fold line (3);
- making a second pair of similar oblique fold lines (8) starting at the other cuts (2), from the innermost end of the cut in each case;

- making a peripheral fold line (10) around the periphery of the tubular piece and passing through the intersections (9) of the two pairs of oblique fold lines (8) with the respective longitudinal fold lines (3);
- folding over the portion defined by the peripheral line (10) and two of the oblique fold lines (8) along said peripheral line (10);
- folding in the flaps of material (4, 5), defined between two adjacent cuts (2) in each case, along a base fold line (10a), which base fold lines extend between the intersections of, in each case, two oblique fold lines (8) and a cut (2), the spacing between the peripheral fold line (10) and base fold line (10a) of each flap of material (4, 5) being equal to or greater than the spacing between said base fold line (10a) and the opposing free edge (4a, 5a) of said flap of material (4, 5), such that the free edges (4a, 5a) of two corresponding flaps of material come to lie directly opposite and on top of one another respectively;
- and attaching the flaps of material (4, 5) to one another in order to form the container base.

Fig-1

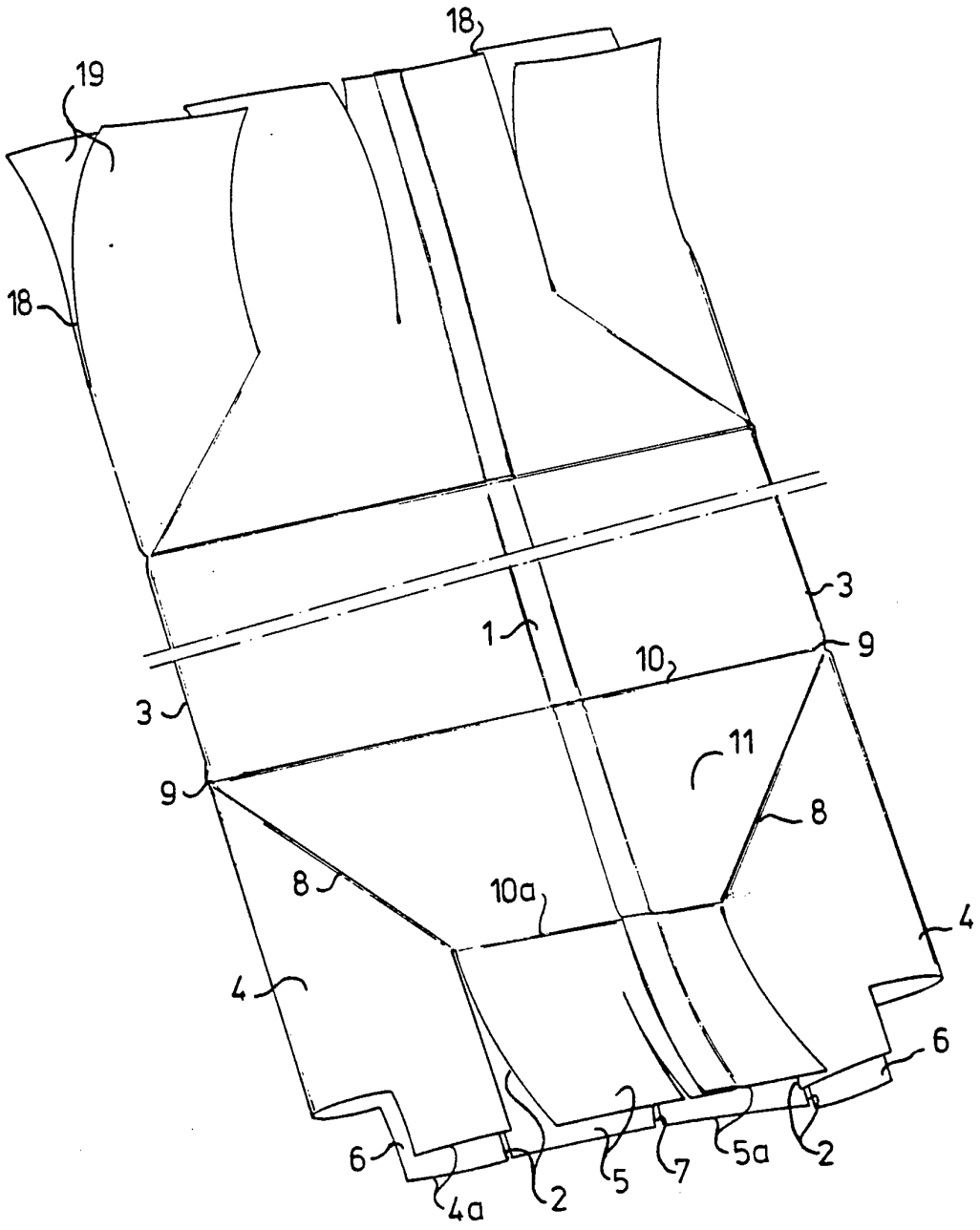

fig-2

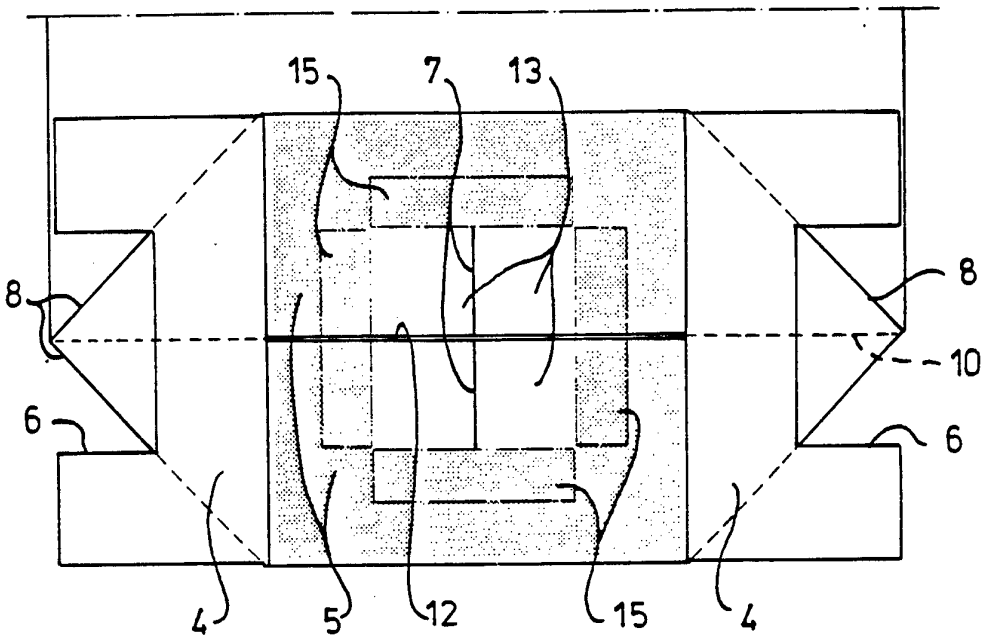

fig-3

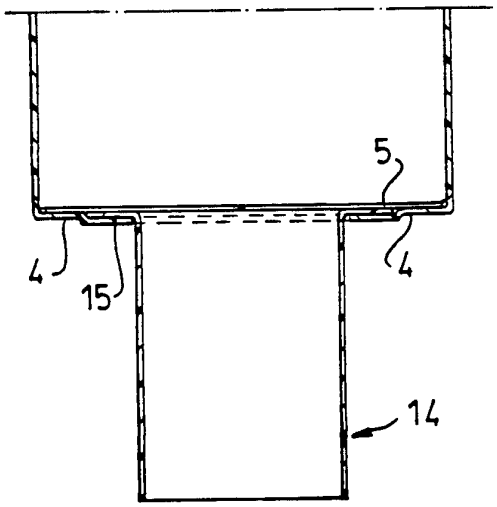

Fig - 4

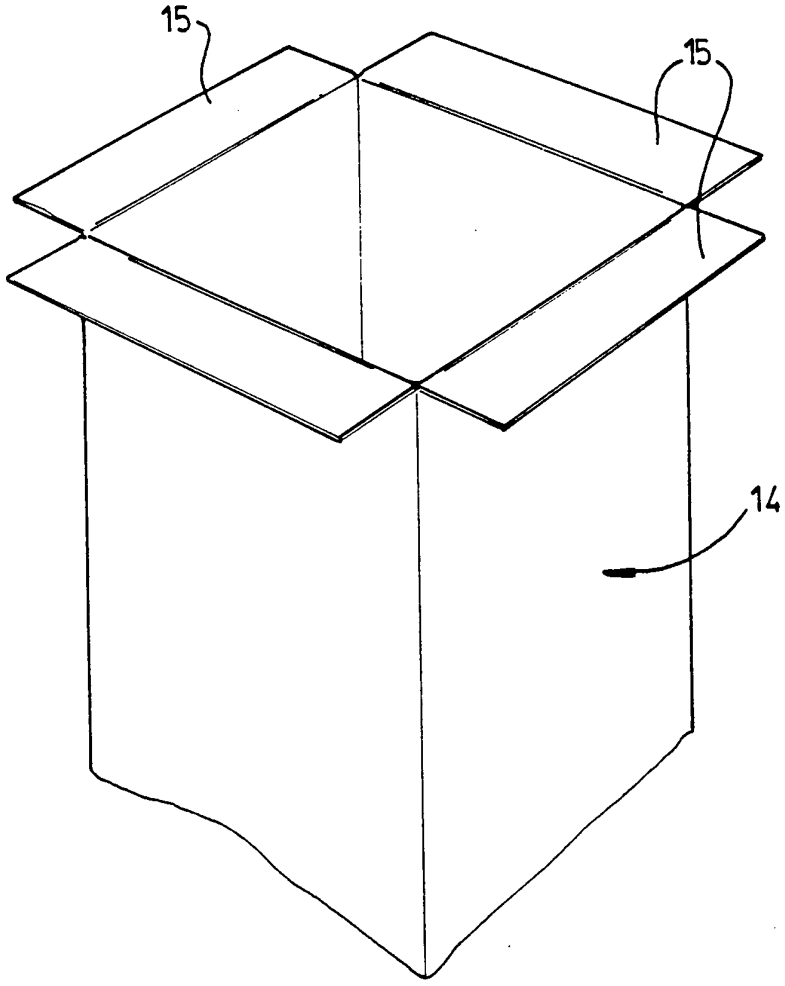

Fig - 5

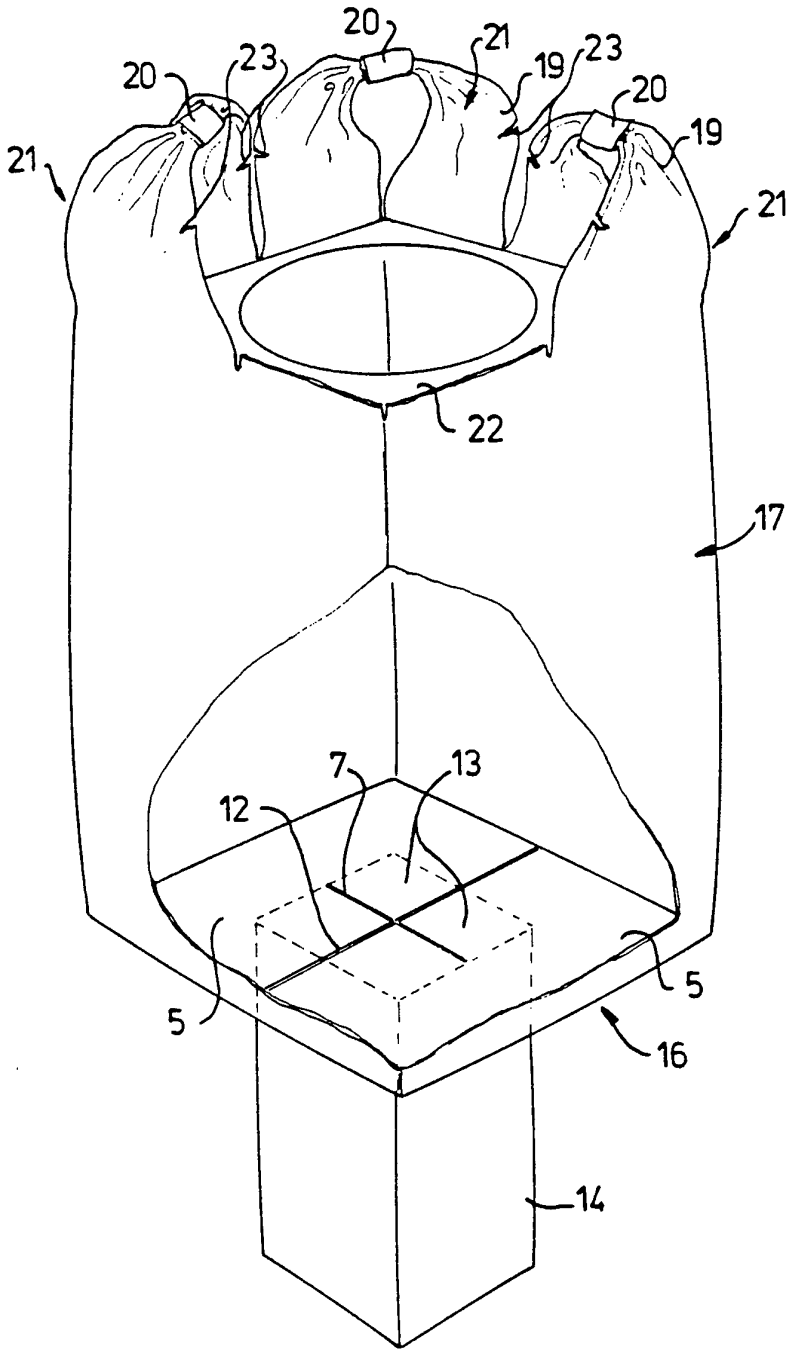

Fig-6a

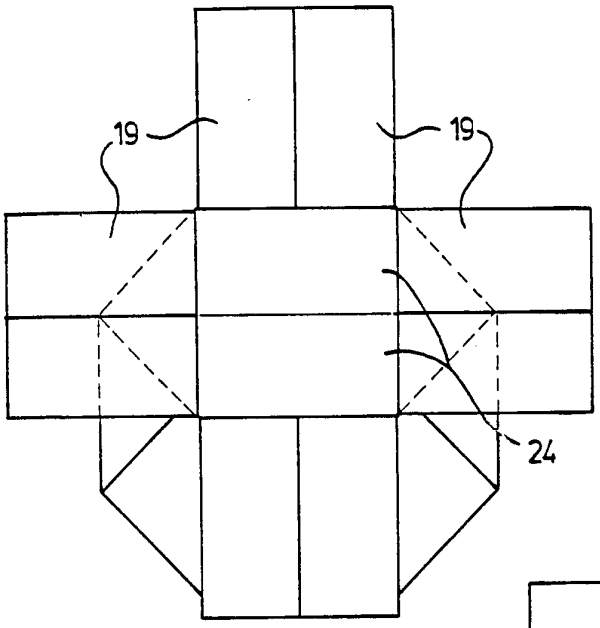

Fig-6b

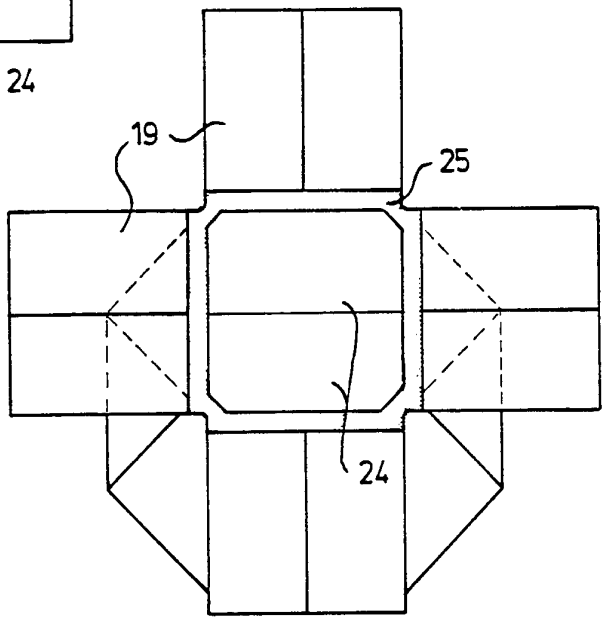

Fig-6c

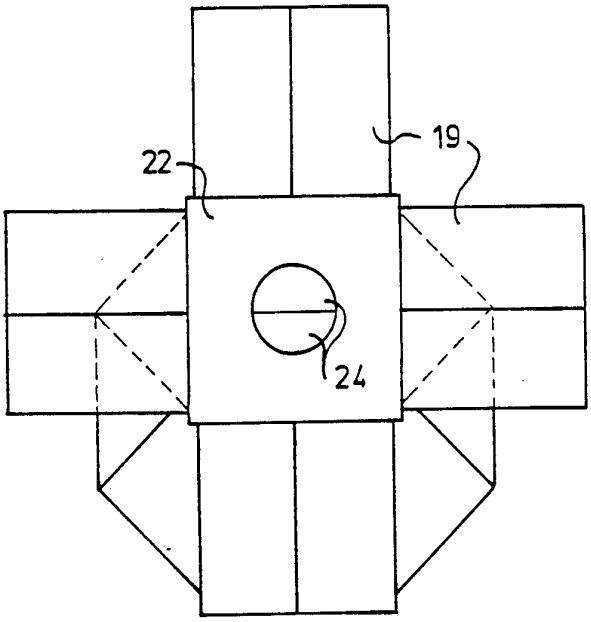

Fig -7a

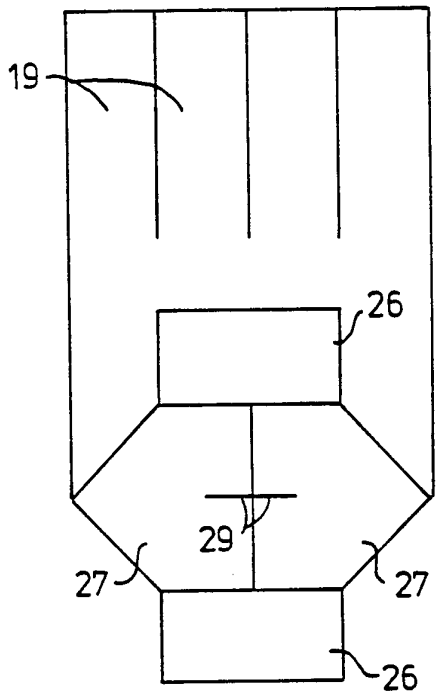

Fig -7b

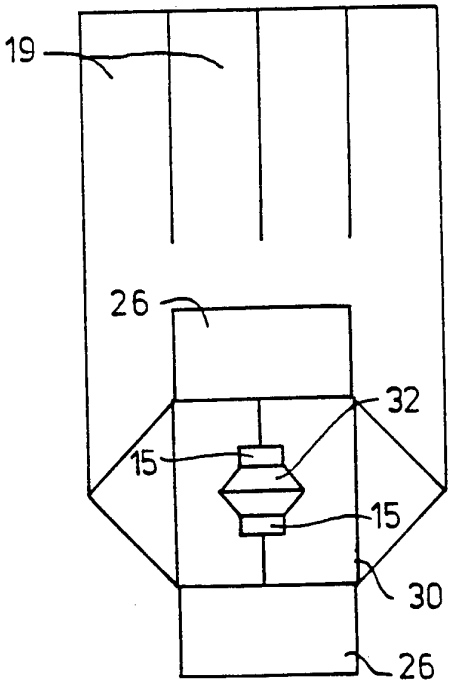

Fig -7c

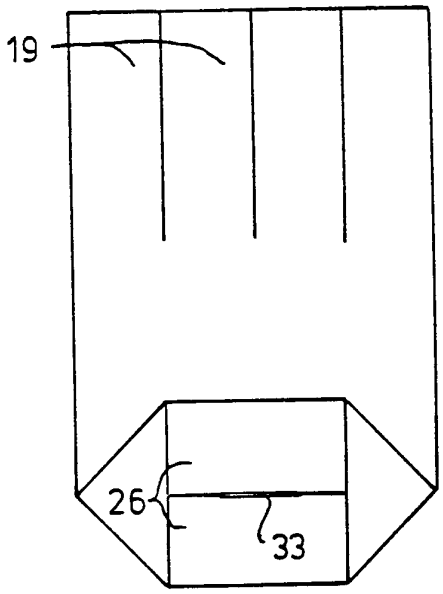

Fig-7d

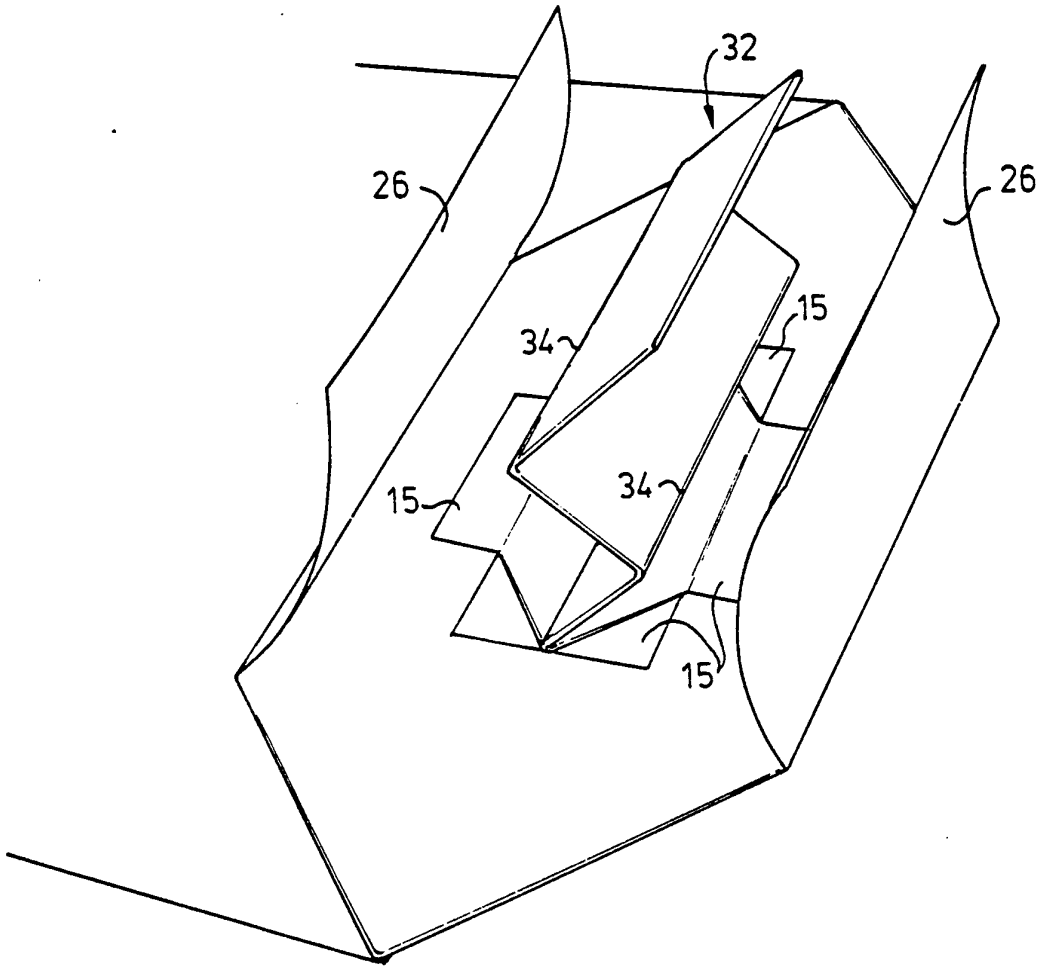

Fig-8a

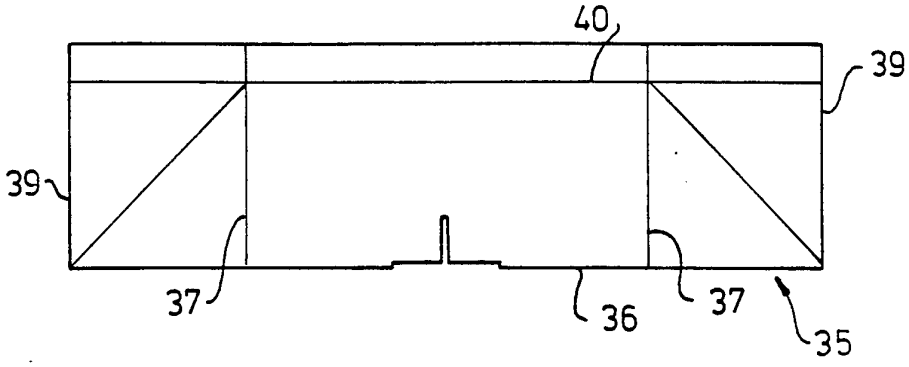

Fig-8b

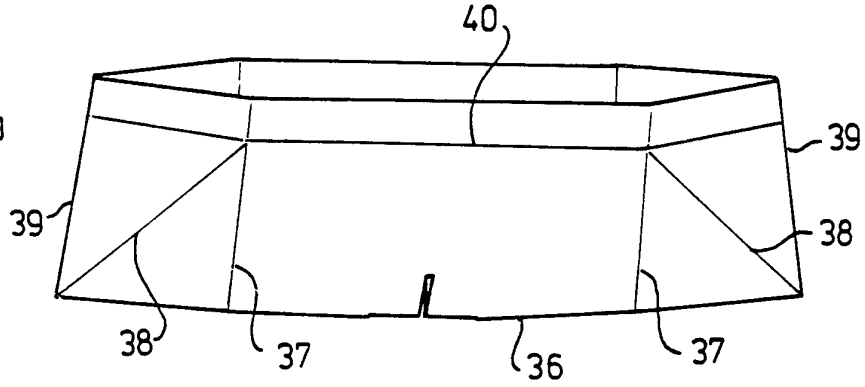

Fig-8c

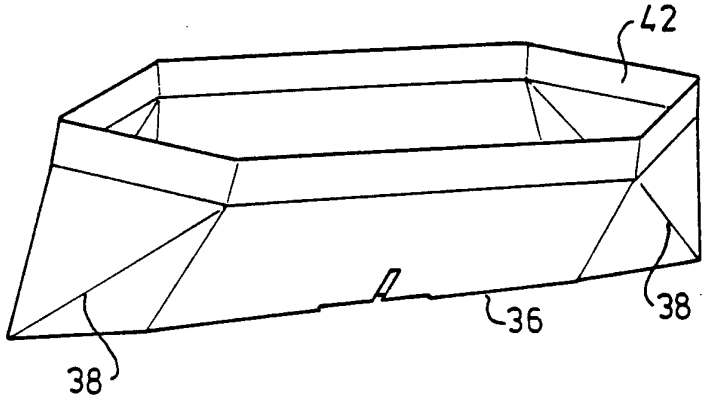

Fig-8d

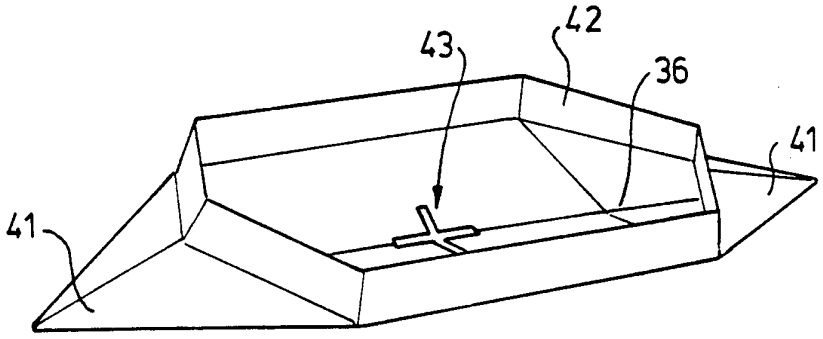

fig-8e

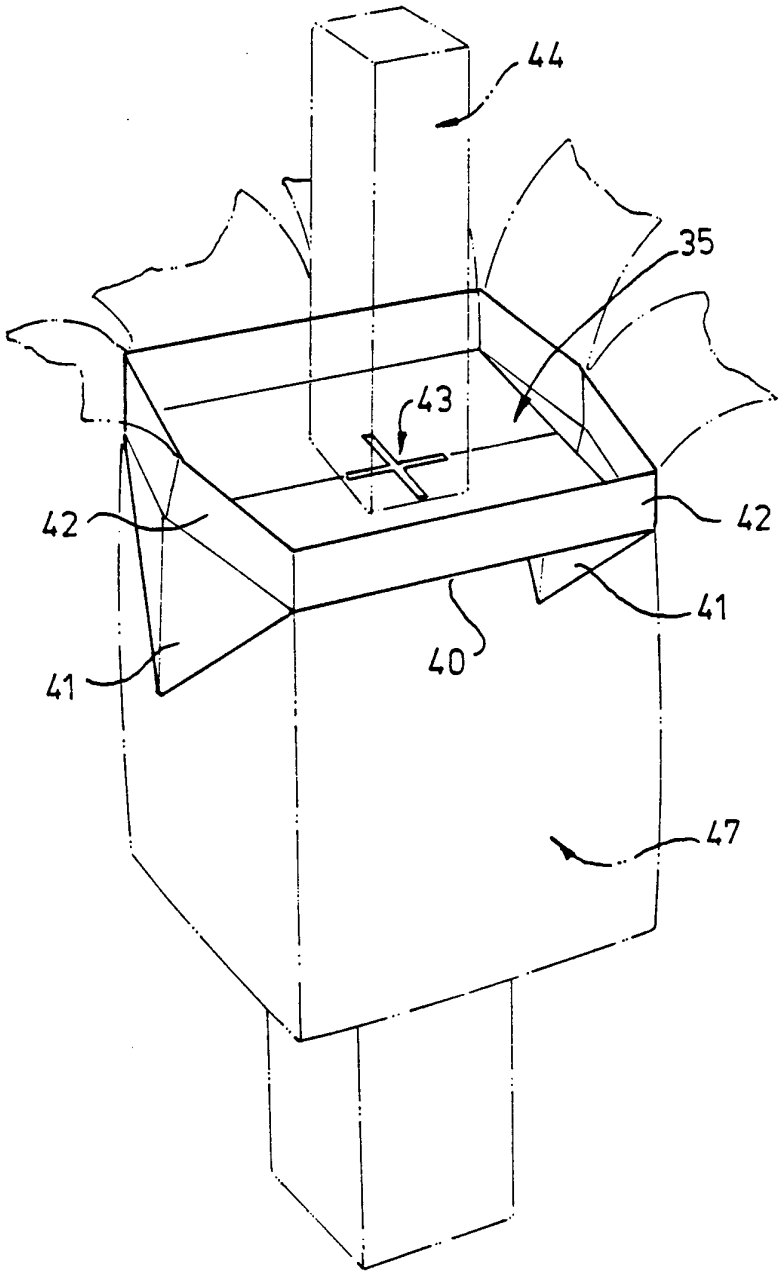

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Fig-9

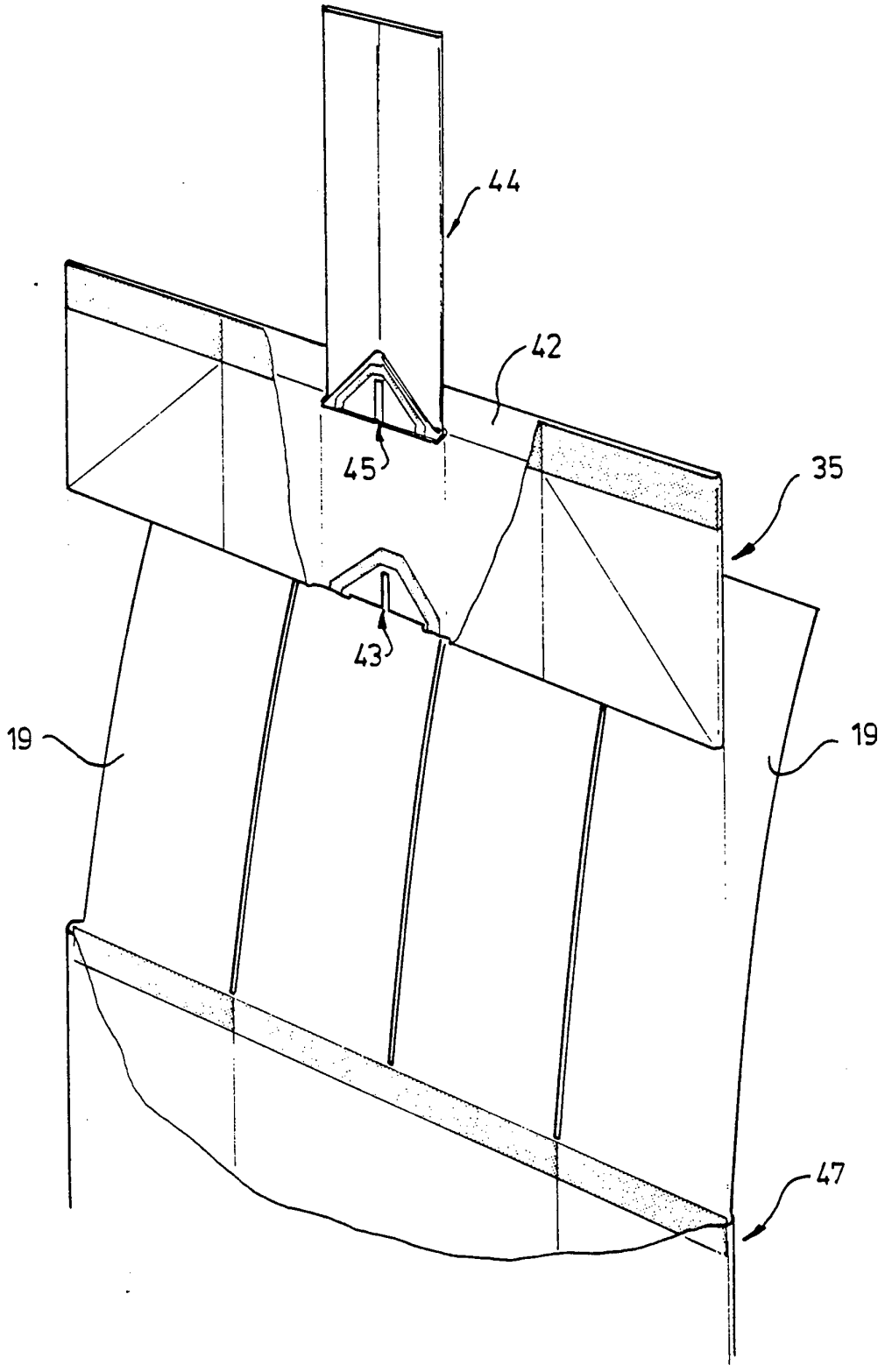


Fig-10

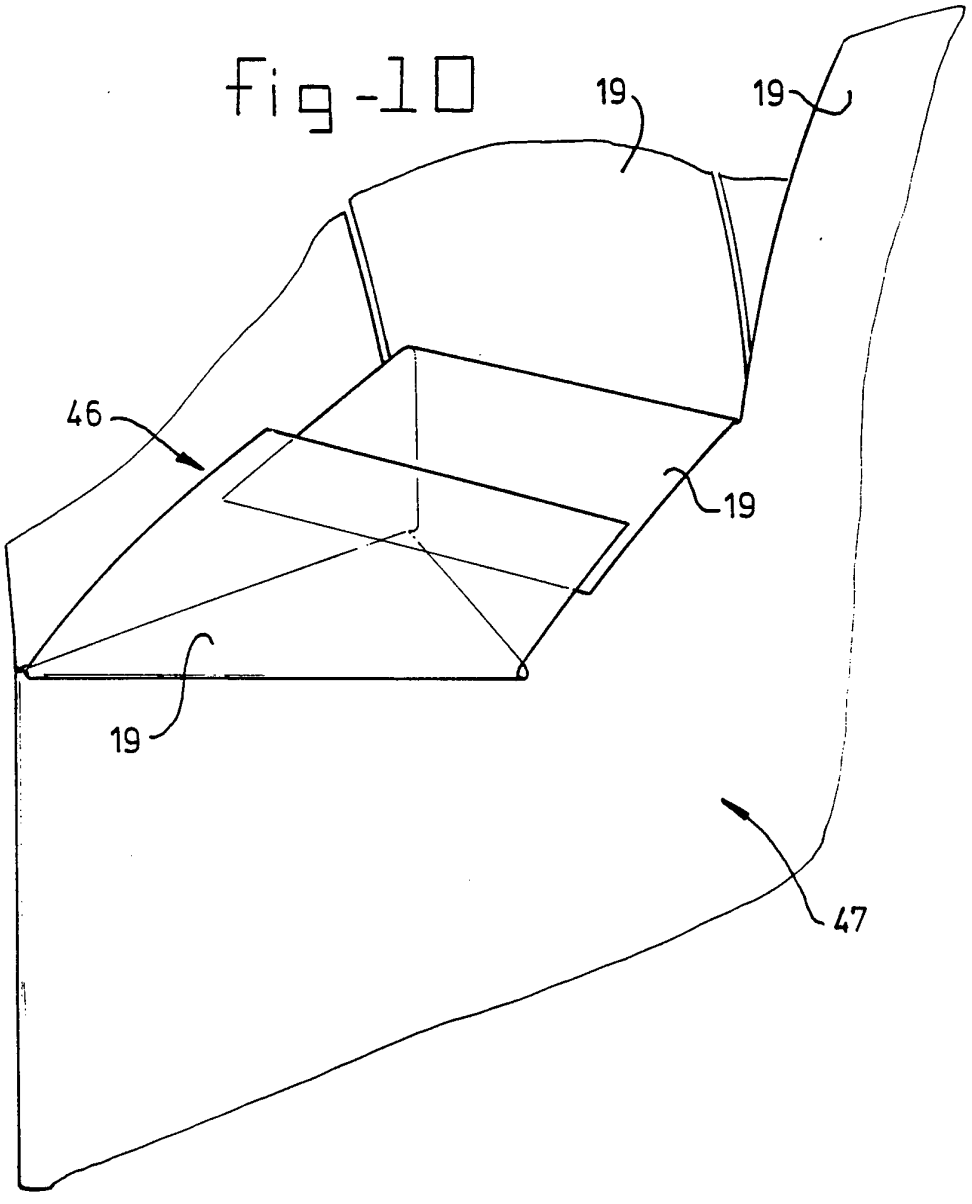


fig-11a

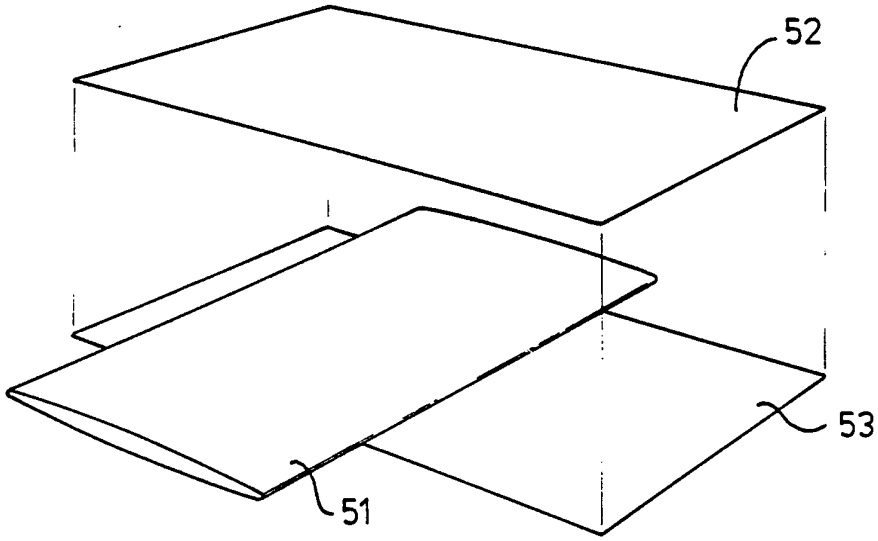


fig-11b

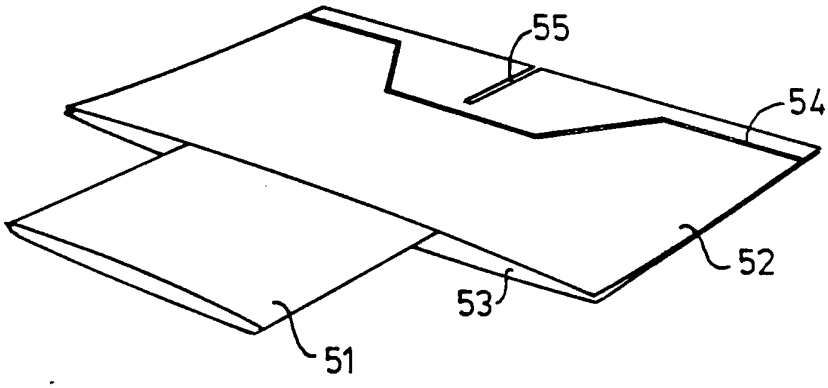
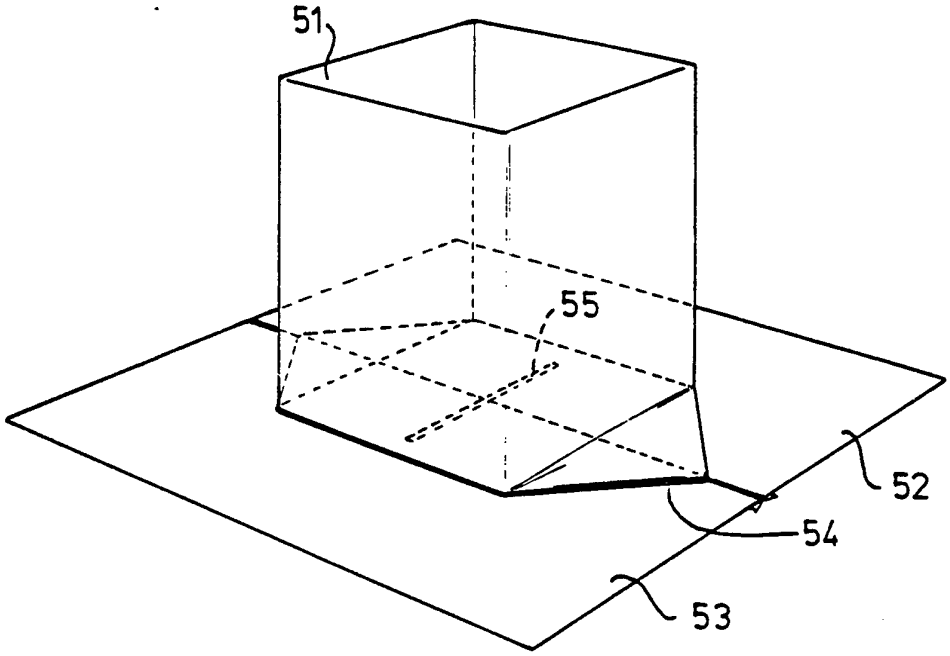


Fig-11c



INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/NL 94/00131

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 B65D75/40 B65D88/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 5 B65D B31B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 105 238 (CUSTOM PACKAGING SYSTEMS INC.) 11 April 1984 see page 5, line 9 - page 7, line 15; claims; figures ---	1,2,4-6, 15
A	FR,A,2 016 398 (INDUSTRIELE ONDERNEMING WAVIN N.V.) 8 May 1970 see claims; figures ---	1,2,7,15
A	EP,A,0 083 505 (SUPER SACK MANUFACTURING CORPORATION) 13 July 1983 see page 21, line 10 - page 26, line 7; figures ---	1,2,5-7, 15
A	FR,A,2 436 720 (FIRMA WINDMOLLER &HOLSCHER) 18 April 1980 see page 4, line 6 - line 36; figures --- -/--	5,6

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
13 September 1994	20. 09. 94

Name and mailing address of the ISA	Authorized officer
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A,4 703 517 (FRANK J. MARINO) 27 October 1987 see abstract; figures	8-11
A	EP,A,0 026 287 (OY W. ROSENLEW AB) 8 April 1981 see page 3, line 26 - page 4, line 8; figures	1,15

INTERNATIONAL SEARCH REPORT

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