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[54] Title: BAG MADE OF FLEXIBLE SYNTHETIC MATERIAL AND POSSESSING A STIFFENING AND STABILIZING

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[51] Int. Class B65D 30/10

[58] Field of Search 383/121; 383/125, 229/57

[56] Reference (s) Cited and/or Considered:

U.S. Pat. No. 3,979,049	ACHELPEHL	9-7-76
Phil. Pat. No. 18,401	Lisiecki	6-21-85

[57] ABSTRACT see attached sheet -

BAD ORIGINAL



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BAG MADE OF FLEXIBLE SYNTHETIC MATERIAL AND
POSSESSING A STIFFENING AND STABILIZING MEANS

5 The subject of the present invention is a bag
made of flexible synthetic material of the type obtained
from at least one strip of synthetic film shaped so as
to define, by means of welds, a bottom on which the bag
rests, two side walls, a stiffening and gripping zone
connecting the two side walls, and a front face like-
wise connecting the two side walls, the said front face
10 corresponding to the side on which the content of the
bag is poured after the latter has been opened.

These bags give full satisfaction, and the re-
sults published in the above-mentioned applications are
obtained.

15 However, as regards large-capacity bags, it
emerged that it was still necessary to perfect the
stability of the bag, to prevent it from falling over
onto its sides or tipping forwards.

The present invention proposes to overcome
these disadvantages.

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This result is achieved by means of a bag made of flexible synthetic material, of the type obtained from at least one strip of synthetic film shaped so as to define, by means of welds, a bottom, on which the bag rests, two side walls, a gripping and stiffening zone connecting the two side walls, and a front face likewise connecting the two side walls, the said front face corresponding to the side on which the content of the bag is poured after the latter has been opened, characterized in that the front face is provided with a means of stiffening and stabilizing the bag.

The retaining and stabilizing means can consist, for example, of a rigid buttress. The said buttress can be made of any material, for example cardboard, PVC or any other synthetic material.

The buttress can also perform other functions, such as, for example, participate in the closing of the bag.

According to another embodiment, the retaining means will consist of one or more vertical stiffening ribs arranged on the said side face.

According to another embodiment of the invention, the stiffening and stabilizing means is produced as a result of the formation of folds on the front edges of the bag or the provision of stiffening or structuring

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elements on the said edges.

Stiffening can also be obtained by two essential means:

- a modification of the structure of the film,
- 5 - the provision of an element forming an extra thickness, hence a stiffening element.

These two means can be used or put into effect on the inside or outside of the bag.

Processes for providing the said bags with the said retaining and stabilizing means are also a subject
10 of the invention.

The invention will be understood better by means of the following description made with reference to the attached drawings, in which:

- 15 - Figure 1 is a front perspective view of a bag according to the invention with a buttress;
- Figures 2 to 5 illustrate bags of the type of that in Figure 1, with different forms of buttresses;
- Figure 6 is a rear perspective view of a bag with a
20 gripping handle with a shape matching that of the buttress of Figure 1;
- Figure 7 illustrates an oblong buttress occupying the entire front face of the bag;
- Figures 8 and 9 show, enlarged, the configuration of
25 Figure 7 which participates in the closing of the bag;

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- Figure 10 illustrates an oblong buttress having means of closing the bag;
- Figures 11 and 12 show, enlarged, the configuration of Figure 10, illustrating the method of closing the bag;
- 5 - Figure 13 is a perspective view of a bag according to the invention, with two front stiffening ribs;
- Figure 13 A is a cross-section of the bag along line A-A of Figure 13;
- 10 - Figure 14 is a perspective view of a bag according to the invention, with one front stiffening rib;
- Figure 14 B is a cross-section of the bag along the line B-B of Figure 14;
- Figure 15 shows a machine for forming the ribs of the bags of Figures 13 and 14;
- 15 - Figures 15A, 15B and 15C are cross-sections of the shaping machine of Figure 15 along the lines A-A, B-B and C-C respectively;
- Figure 16 is a perspective view of a bag according to the invention, with stiffening of the front edges;
- 20 - Figures 17 to 25 illustrate diagrammatically various embodiments making it possible to achieve the desired stiffening at the front edges of the bag;
- Figure 26 is a diagrammatic view of an apparatus for producing the bags of Figures 16 to 25;
- 25

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- Figure 27 is a diagrammatic sectional view illustrating a particular embodiment of the apparatus of Figure 26, corresponding to the bag of Figure 17.

Reference will first be made to Figure 1.

5 According to this embodiment of the invention, a bag (1) comprising essentially:

- two side walls such as (2);
- a bottom (3), on which it is to rest;
- a stiffening and gripping zone (4) connecting the two
- 10 side walls (2) to one another;
- and a front face (5) likewise connecting the two side walls (2) to one another;

is provided, according to the invention, with a stiffening and stabilizing means.

15 This can be:

- a rigid buttress (6)
- and/or one or more vertical ribs (7).

The buttress will preferably be arranged in such a way that, when the bag is placed on a plane surface, the base

20 (6') of the buttress can bear on the said plane surface.

It can be made of any material, for example synthetic material, if appropriate recycled material to limit the cost price, cardboard, etc. in a non-limiting way.

It can also assume any form compatible with the

function assigned to it, such as, for example, but in a non-limiting way:

- a semicircular form as shown in Figure 1;
- a four-cornered form (7), as shown in Figure 2;
- 5 - a trapezoidal form (8), truncated if appropriate, as shown in Figure 3;
- a recessed form (9) in the shape of a horse shoe, as shown in Figure 4;
- a trapezoidal form (10) as shown in Figure 5, the base
10 angles being folded against the side walls to reinforce stabilization even further.

It will be seen that, in all the illustrative forms proposed, there is a contact line (6', 7', 8', 9', 10' respectively) between the buttress (6, 7, 8, 9, 10) and the surface on which the bag provided with it rests.
15

Optionally, as shown in Figure 6, in order to save material, the buttress (6) can be cut out from the element (11) attached in the abovementioned stiffening and gripping zone (4).

20 Other forms of front buttress can be used, and they will advantageously perform one or more additional functions besides the desired function, that is to say the stiffening and stabilization of the bag.

Thus, it can be very advantageous if the buttress
25 participates in the closing of the bag once the latter

has been opened.

In the embodiment shown in Figures 7, 8 and 9,
to which reference will now be made, the buttress is
of a general oblong and trapezoidal form. It is made
5 integral with the bag (1) by means of two welding or
bonding lines (13, 14), one (13) located substantially
at the base of the front face and the other (14) arranged
slightly offset relative to the upper part of the said
buttress (12), thus defining a zone (15) open on three
10 sides, in particular in the direction of the top of the
bag where the pouring orifice (16) is to be made.

This structure of the upper part of the bag is
shown enlarged in Figure 8.

To close the bag again after first use, the upper
15 horn (17) possessing the orifice (16) is folded against
the buttress (12) and inserted between the zone (15) and
the front face of the bag, as shown in Figure 9.

In the alternative form illustrated in Figures
10, 11 and 12, the function of which is completely iden-
20 tical to the preceding function, the bag has a buttress
(18) provided in its upper part with a means (19) of
closing and nipping the upper horn (17) of the bag. As
shown in Figure 11, the means (19) consist essentially
of two tabs (20, 21) substantially symmetrical relative
25 to the longitudinal axis of the buttress (18) and inter-

acting with a finger (22) located between the said tabs.

The bag is closed by folding down the upper horn (17) of the bag, so as to place it over the tabs (20,21) and under the finger (22), where it is retained as a
5 result of the nipping effect obtained in this way.

The buttress of the type described above and illustrated in Figures 1 to 12 can be attached to the bag by any means such as welding or bonding, at any moment during the process of manufacturing and filling the bag.

10 For example, the buttress (6, 7, 8, 9, 12, 18) can be attached by means of a process similar to that making it possible to fasten the stiffening and gripping element (11), as described by way of example in French Patent Application No. 83-18257 in the applicant's name.

15 According to a second embodiment, the stiffening and stabilizing means can consist of one or more vertical ribs (7), already shown in Figure 1. In this illustration, these ribs (7) are used together with a buttress, such as (6), of the type illustrated above.

20 The rib or ribs (7) can also contribute alone to obtaining the desired result, that is to say the stiffening and stabilizing of the bag.

Thus, Figures 13 and 13 A show a bag (1') equipped with two vertical front ribs (23, 24) of this type.

25 Advantageously, the lower edge of the front face

of the bag (1') in contact with the surface, on which the latter is placed, will also be reinforced by means of a weld (25).

5 Figures 14 and 14B illustrate an embodiment of the same type as the preceding embodiment, but with a single stiffening and stabilizing rib (26), if appropriate reinforced by a weld (27) on the lower edge of the front face.

The ribs (23, 24, 26) can be produced by way of non-limiting example, by means of the following apparatus.

10 A shaper (28) of a type known to a person skilled in the art, to which a film (29) is delivered to be shaped in a continuous tube (30) and then filled with the liquid to be packaged and converted into individual bags or pouches by means of a central pipe (31) among other
15 things, contains processing stations and stations for shaping the rib or ribs (23, 24, 26).

The production of two ribs (23, 24) will be taken as an example.

20 At the first station (32), the film at this stage being ready to be welded so as to be converted into a continuous tube (30), a shaper (33) into which the film passes, gives the latter a W shape.

25 At the station (34) located downstream of this, the following procedures are carried out jointly or in succession:

- the film (29) is welded to shape it into a tube (30) in the conventional way by means of a welding jaw (35);

5 - the abovementioned W-shaped fold is welded at its two edges (36, 37) by means of two welding elements (38, 39), an insulating element (40) being interposed to prevent the two edges (36, 37) from being welded to one another.

10 Finally, the station (41) located downstream is equipped with two spacer fingers (42, 43) which unfold the W-shaped zone so as to give it the desired structure for forming the front face of the future bag.

15 Reference will now be made to Figure 16. The bag (101) according to the invention has on its front face (102) two edges (103, 104) which are stiffened so as to give the bag stability and shape.

 This result is obtained either as a result of the formation of folds or by the provision of stiffening or structuring elements at the said edges.

20 These elements are attached to the surface of the sheath forming the bag by means of bonding, sealing, welding or any other suitable process.

 As will be illustrated later, the said elements will be made from a single material or a composite material, flat or angular, etc.

25

Thus, Figure 17 shows a reinforcement (105) attached to the outside of the bag and forming an angle, the vertex of which marks the edge of the bag. The reinforcement (105) can have any opening angle. It is also possible to give it a certain elasticity, so that the angle remains clearly defined even when the bag is completely filled.

Figure 18 illustrates a similar structure with an outer reinforcement (106) which is attached to the edge and surrounds an insert (107) arranged parallel to the said edge. The insert can be made of any material.

In the embodiment of Figure 19, the reinforcement (108) is obtained by pinching the edge of the bag, as illustrated above.

In Figure 20, the same result is obtained by attaching a bead (109) along the edge.

In Figure 21, the edge is marked along the margin of a reinforcing strip (110).

In Figure 22, the corner of the outer reinforcement (111) is pinched, thus marking the edge in a more pronounced way.

Finally, the embodiment illustrated in Figure 23 shows an outer reinforcement (112) folded back on itself and defining a longitudinal cavity (113) which can be empty or inflated, thus achieving a more pronounced stiffening.

In the embodiments illustrated in Figures 24 and 25, the film constituting the bag is weakened either on the inside (114) or on the outside (115).

5 In this case, folding can be carried out by means of hot or cold stamping.

Reference will now be made to Figures 26 and 27 which illustrate an apparatus making it possible to obtain the embodiments of Figures 17 to 23.

10 The stiffening element will preferably be fitted when the film is shaped from a sheath on a shaper predetermining the form and dimensions of the finished pack. A feed system will convey the stiffening element which will be attached to the film sheath on the shaper.

15 Thus, the bags according to the invention are obtained from a sheath (116) which passes over a die (117). This die possesses one or more shapers (118) to form the front edges.

20 At the shaper (118), the stiffening element (119), coming from a supply reel (120), is attached by welding, bonding or sealing by means of an appropriate device (121), its type being governed by the fastening method, that is to say welding, bonding or sealing. The device (121) will have, for example, a head (122) of a profile matching that of the shaper (118).

25 The system operates in an alternating manner, that

is to say, when a bag is being filled, the film feed is stopped and the device attaches a stiffening element to the bag which is being shaped.

5 The stiffening element will be cut automatically, before or during fitting, to the necessary length, for example the length of the edge corresponding to the filled and closed bag.

10 According to an alternative embodiment, the upper edges of the bag will likewise be reinforced as indicated by the reference number (123). The structure of this horizontal reinforcement will be identical to that illustrated in Figures 17 to 25 for the vertical reinforcement.

15 It will be fitted in the way indicated in Figure 26, from a supply (124) and according to a method of operation identical to that described above regarding the vertical reinforcement.

20 It will be appreciated that the invention applies to all the embodiments, in particular irrespective of the type of materials used.

CLAIMS:

1. Bag made of flexible synthetic material, of the type obtained from at least one strip of synthetic film shaped so as to define, by means of welds, a bottom (3), on which the bag rests, two side walls (2), a
5 stiffening and gripping zone (4) connecting the two side walls (2), and a front face (5) likewise connecting the two side walls (2), the said front face corresponding to the side on which the content of the bag is poured after the latter has been opened, characterized in that the
10 front face (5) is provided with a means of stiffening and stabilizing the bag.

2. Bag according to Claim 1, characterized in that the stiffening and stabilizing means consists of a rigid buttress (6).

15 3. Bag according to Claim 1, characterized in that the buttress (6) is arranged in such a way that, when the bag is placed on a plane surface, the base (6') of the buttress (6) can bear on the latter.

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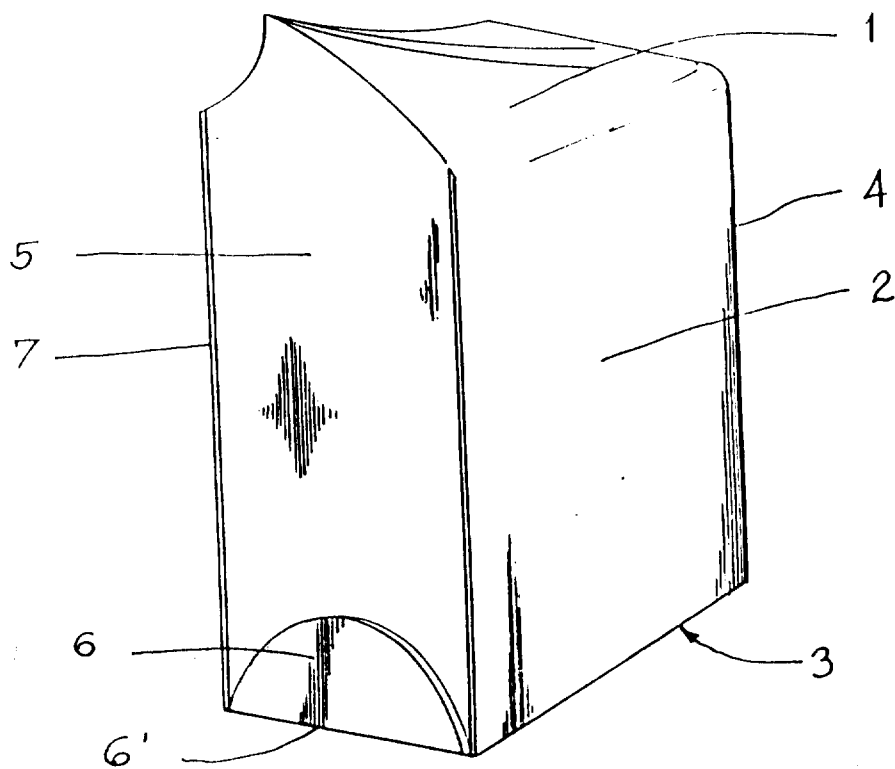


Fig. 1

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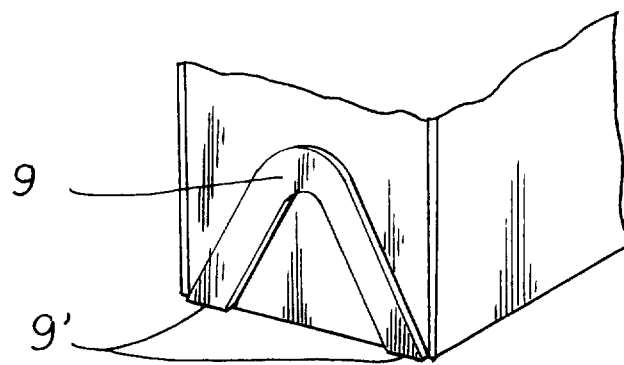


Fig. 4

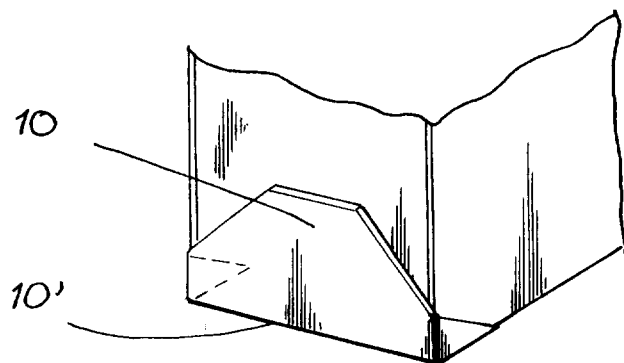


Fig. 5

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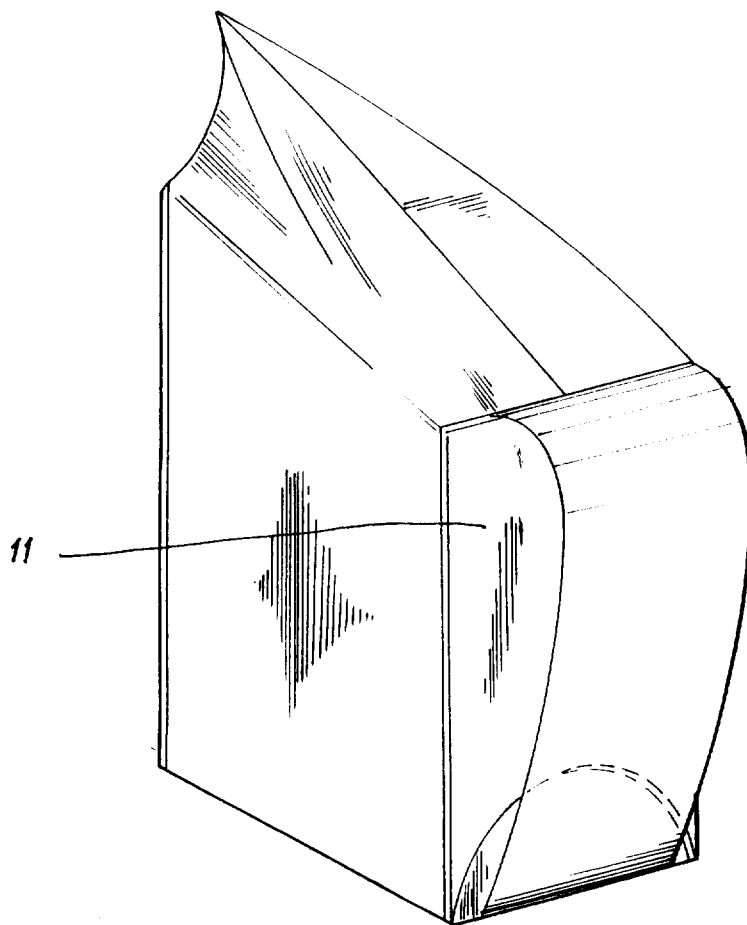


Fig. 6

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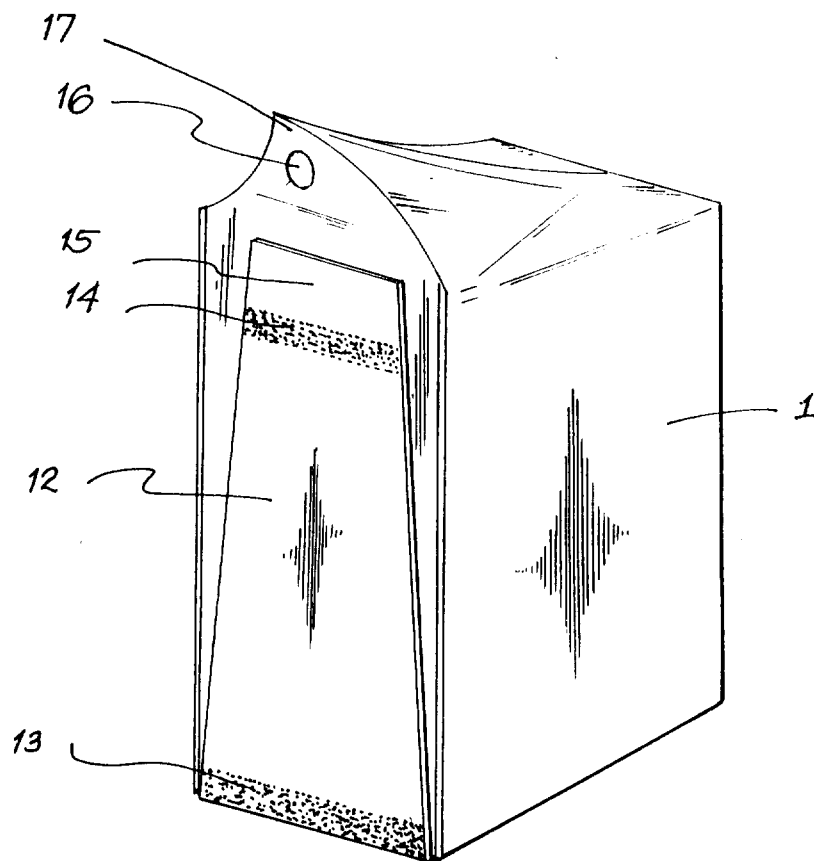


Fig. 7

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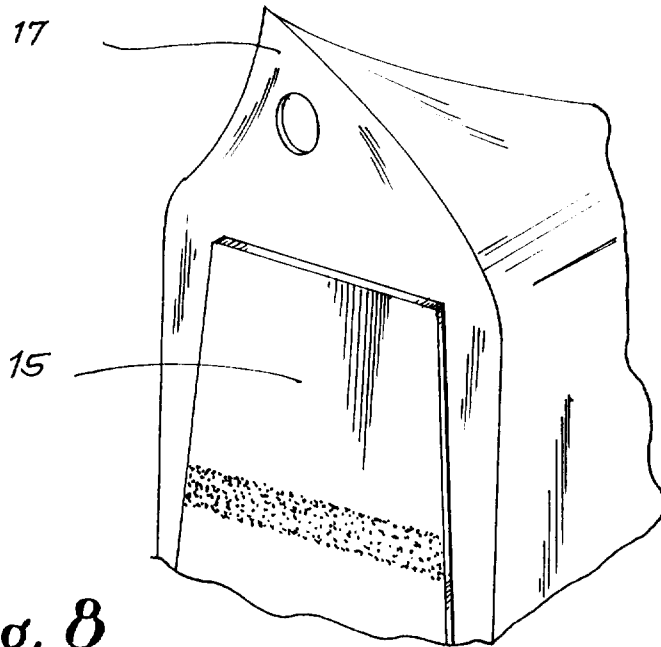


Fig. 8

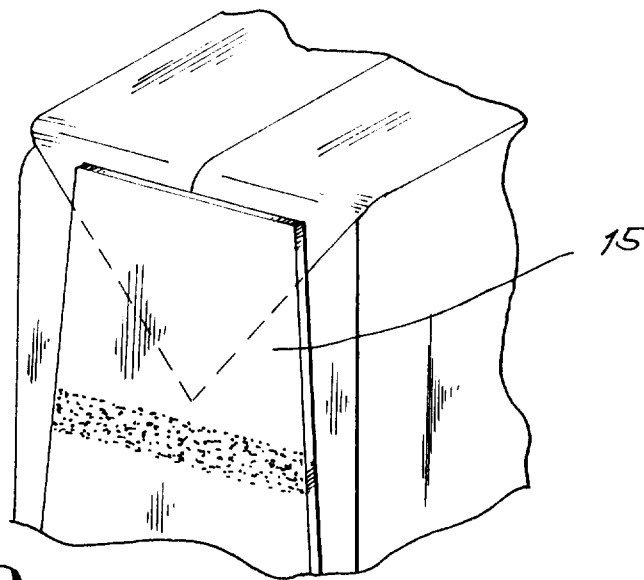


Fig. 9

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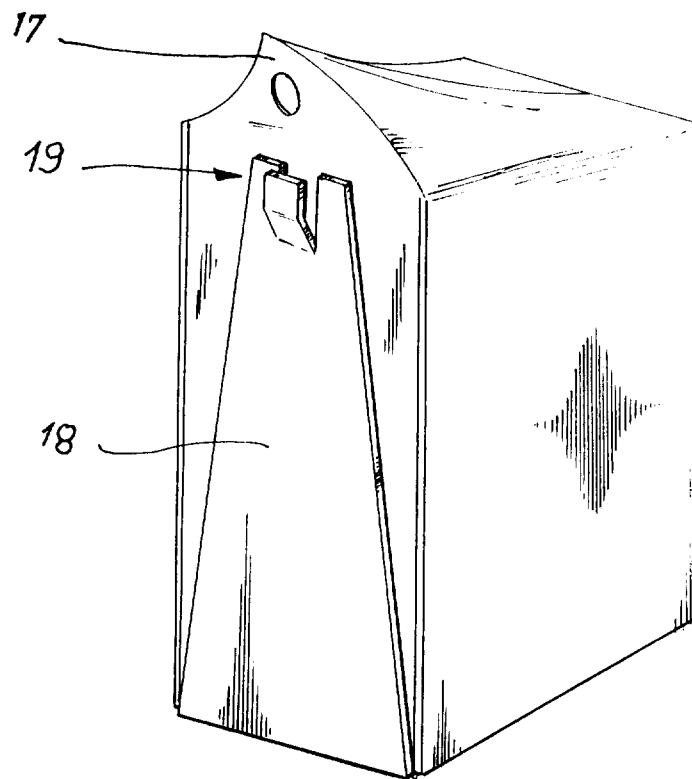


Fig. 10

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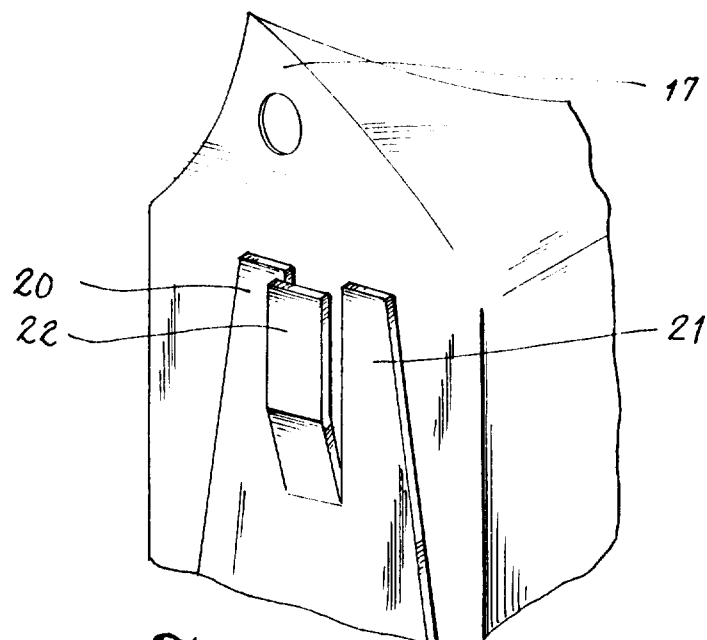


Fig. 11

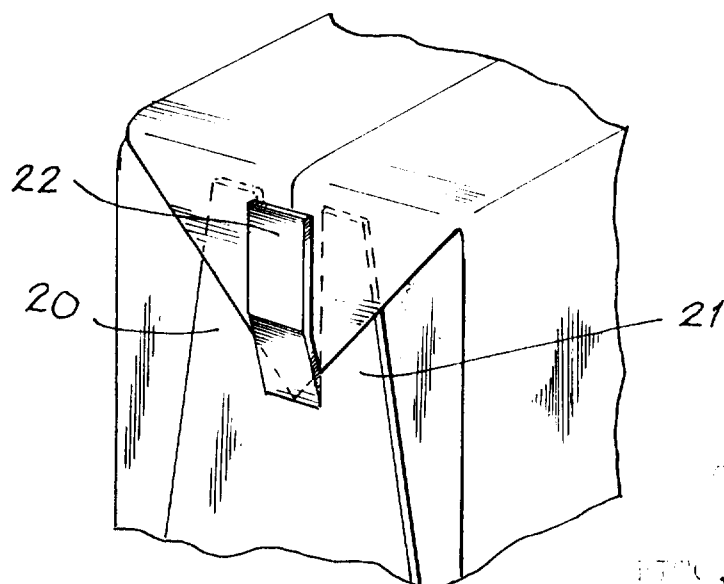
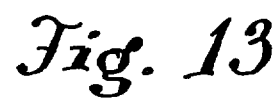


Fig. 12

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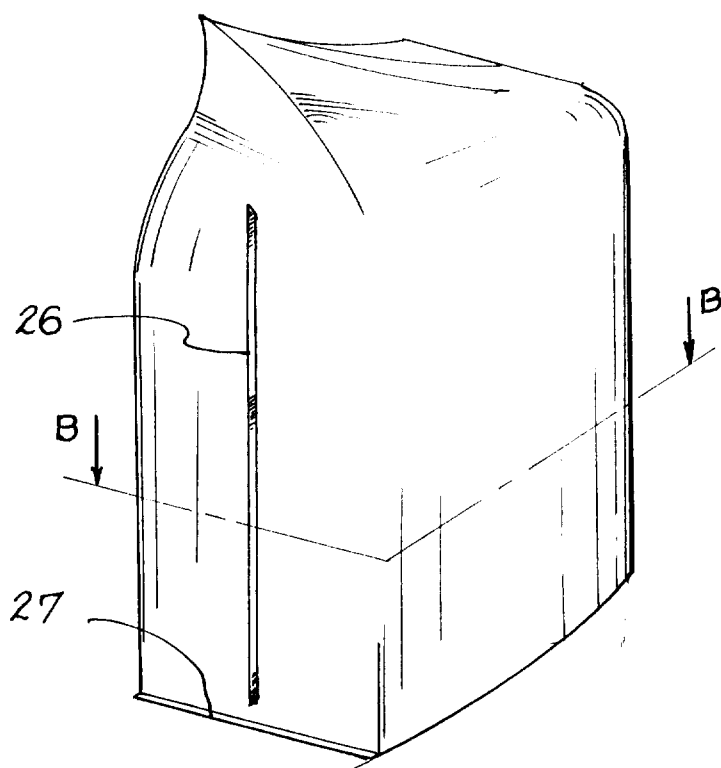


Fig. 14

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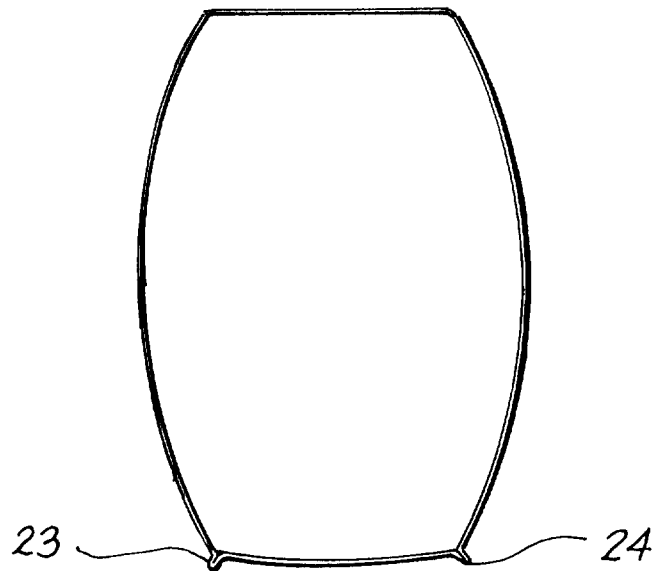


Fig. 13A

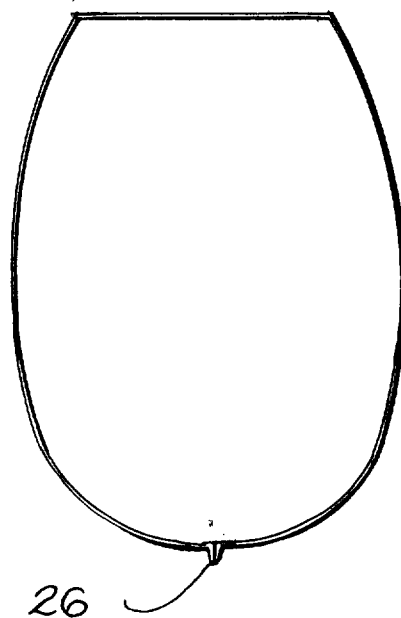


Fig. 14A

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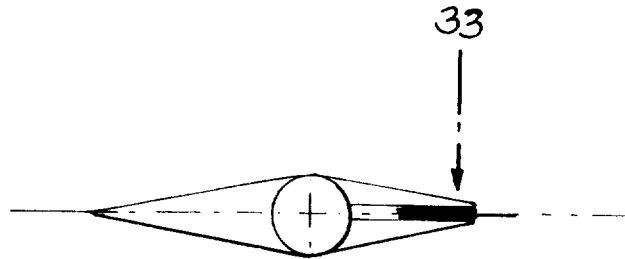


Fig. 15 A

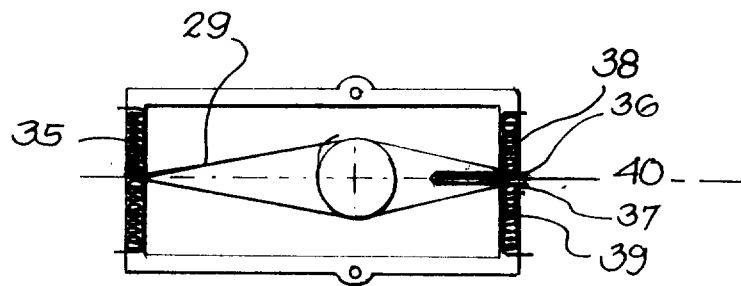


Fig. 15 B

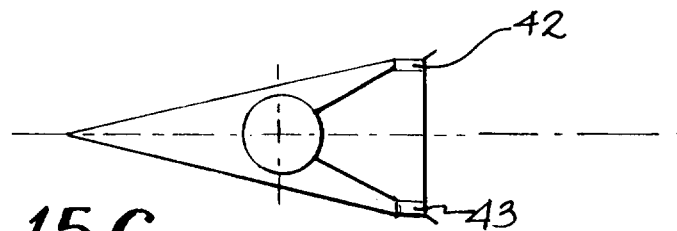


Fig. 15 C

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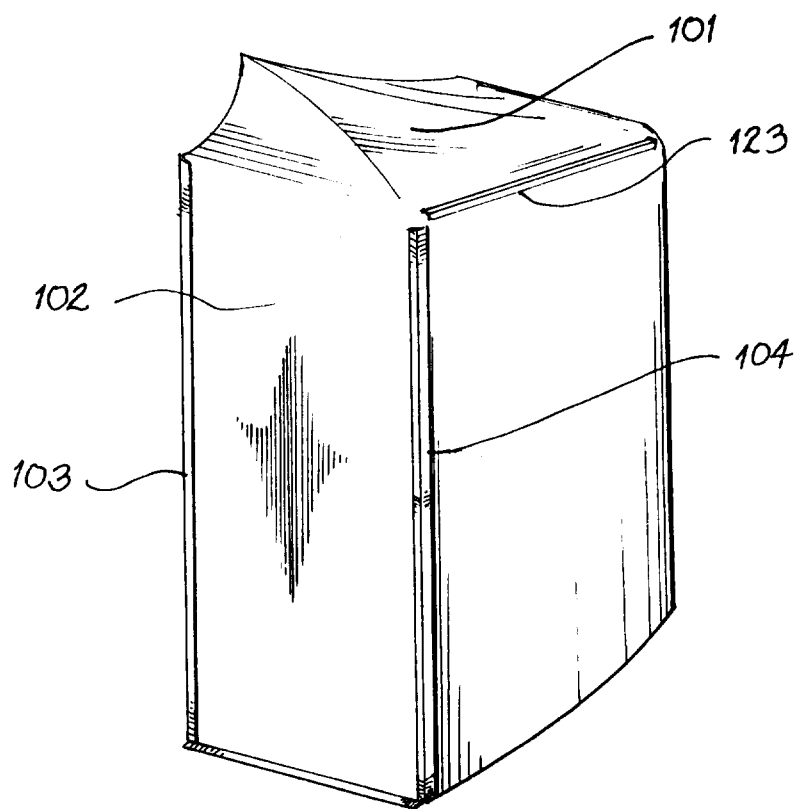


Fig. 16

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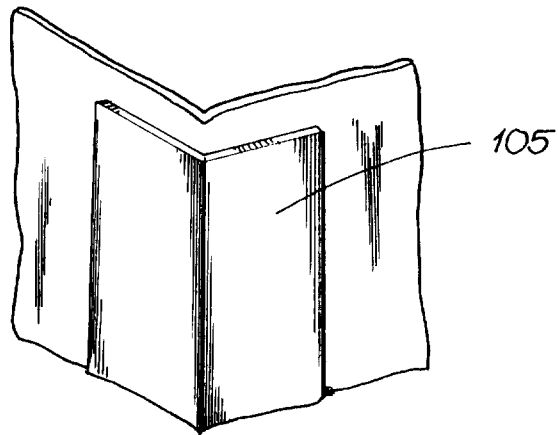


Fig. 17

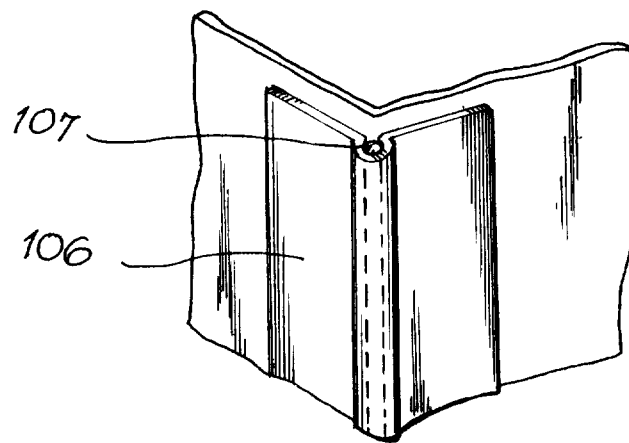


Fig. 18

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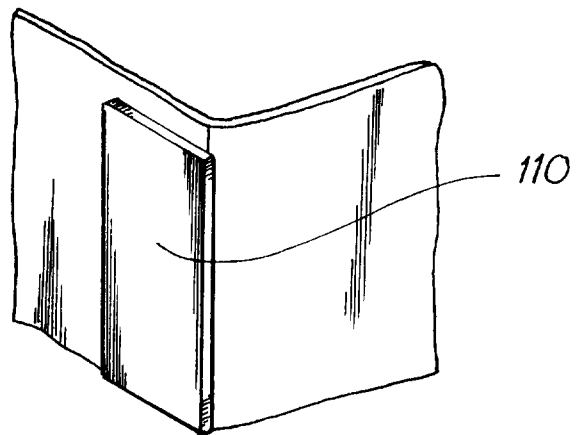


Fig. 21

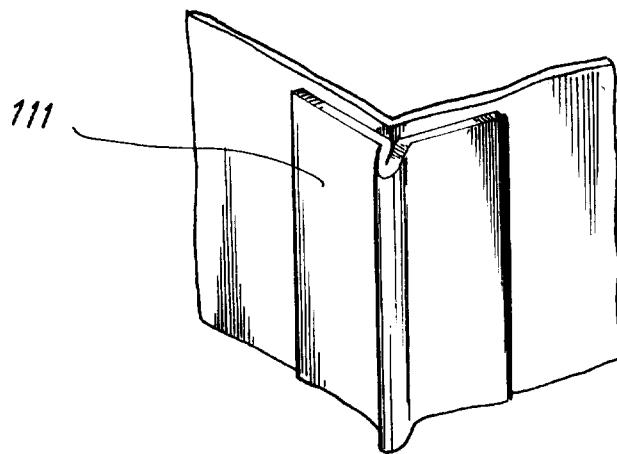


Fig. 22

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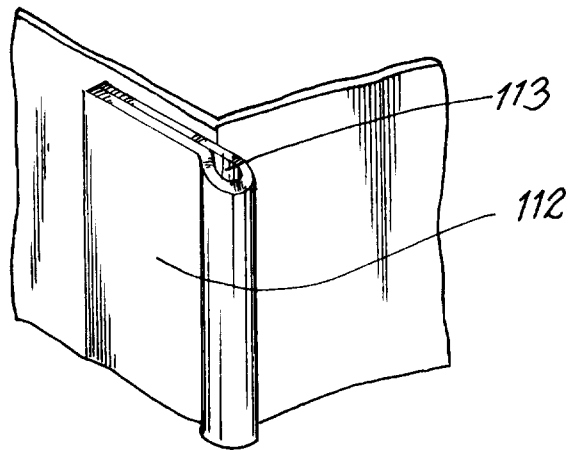


Fig. 23

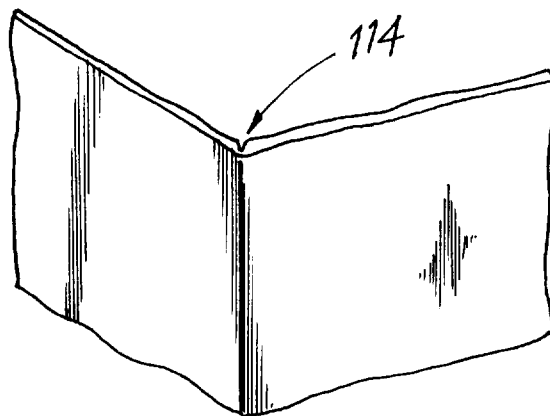


Fig. 24

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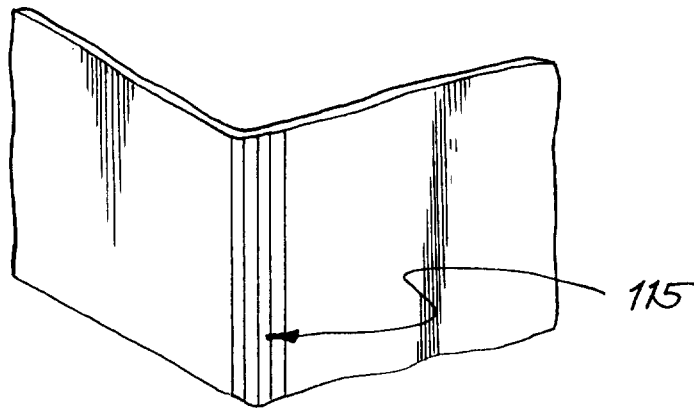


Fig. 25

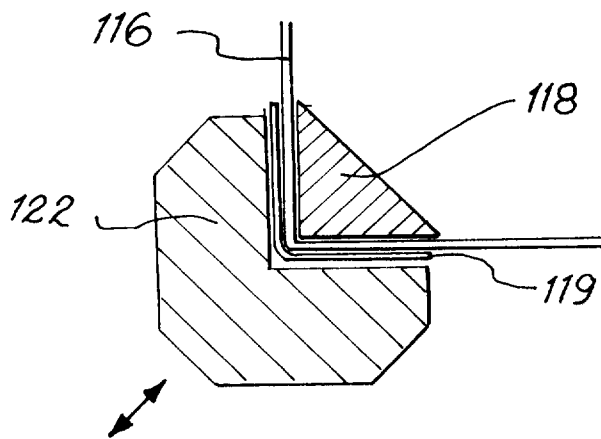


Fig. 27

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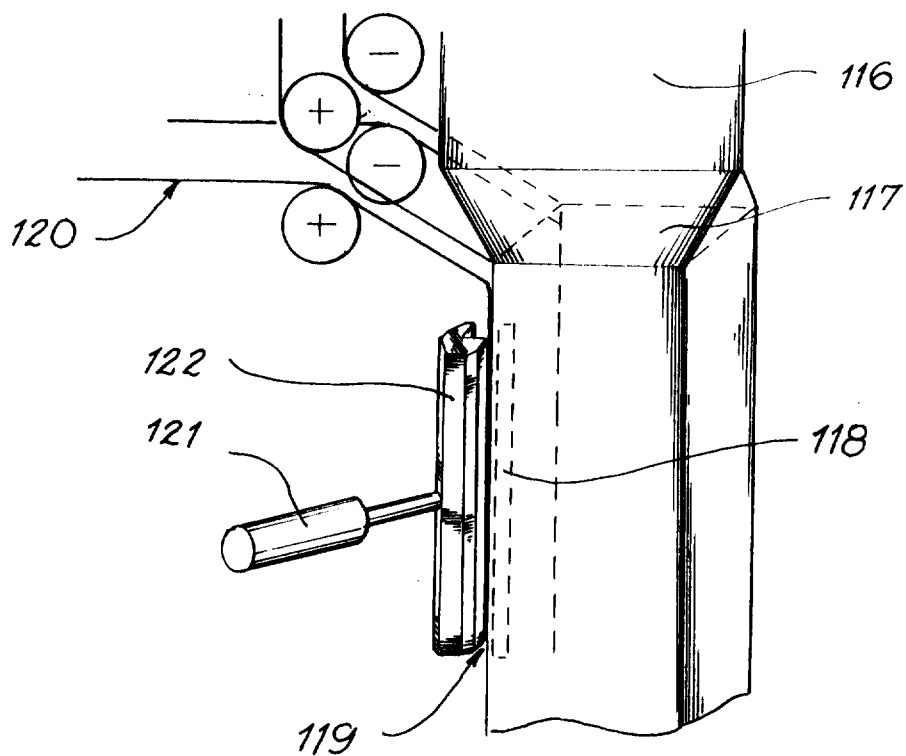


Fig. 26

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