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(72) Inventor: **Lebras, Philippe**
36000 Chateauroux (FR)

(74) Representative: **Hepworth, John Malcolm et al**
Hepworth Lawrence Bryer & Bizley
Bloxam Court
Corporation Street
Rugby, Warwickshire CV21 2DU (GB)

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(71) Applicant: **THE MEAD CORPORATION**
Dayton Ohio 45463 (US)

(54) **Carton and carton blank**

(57) A carton and blank (10) for forming a carton for holding one or more articles, for example connected plastic cups or a tray, comprising a first wall (12), opposed side walls (14,24) and a second wall (16) hingedly connected together to form a tubular structure. A display window (46,48) is formed in one of the side walls (14,16) and extends into the first panel. An article retention

means is hingedly connected to said first wall (12) and said second wall (16), which article retention means is provided by a central retention strip (28) and an end retention strip (26,30) formed from adjacent carton walls. The central retention strip (28) is offset from the end retention strip (26,30) so as to engage an article within the carton.

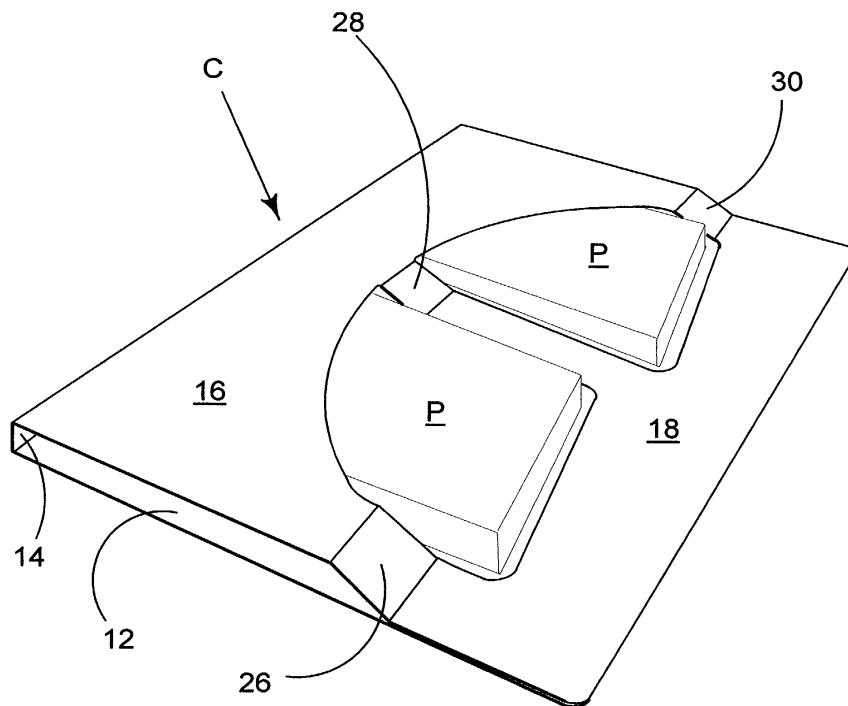


FIGURE 6

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Description

[0001] This invention relates generally to a carton having an article retention feature and more particularly to a wraparound type article carrier designed for articles such as connected plastic cups containing foodstuff or the like.

[0002] The prior art illustrates wraparound cartons with end closure panels for closing the ends of the carton that are connected to respective side and base panels by a series of gusset panels that assist in forming the end closure panels. There are many arrangements of gusset panels, examples of which are shown in US 5 180 054, FR-A-1 44 536. Prior art structures illustrate carriers for carrying articles with planar sides for example cans or bottles and end retention structures are therefore formed in a planar relationship with respective sides and ends of the corner.

[0003] When articles with tapered sides or articles provided with flanges, for example yoghurt pots, are packaged in groups or meat packs, there will tend to be relative movement between article(s) and the carton, which is undesirable. Prior art carriers do not provide satisfactory retention for articles of this type.

[0004] Another problem associated with the prior art is that the retention structure in some cases tends to collapse within the carrier.

[0005] The present invention and its preferred embodiments seek to overcome or at least mitigate the problems of the prior art.

[0006] According to one aspect of the present invention there is provided a carton for holding one or more articles, for example connected plastic cups or trays, comprising a first wall, opposed side walls and a second wall hingedly connected together to form a tubular structure. A display window is formed in one of the side walls and extending into the first wall and article retention means hingedly connected to said first wall and said second wall. The article retention means is provided by a central retention strip and an end retention strip formed from adjacent carton walls, the central retention strip is offset from the end retention strip so as to engage an article within the carton.

[0007] Preferably the window is shaped to allow an article to protrude there through.

[0008] According to an optional feature of this aspect of the present invention there further comprises a second end retention strip formed from the adjacent carton walls. Preferably the edges of the central retention strip and the first and second end retention strips each abut the or each article at different positions.

[0009] According to a further optional feature of this aspect of the present invention there further comprises a glue seam hingedly connected to and extending outwardly from the end retention strip(s) and central retention strip.

[0010] Preferably there further comprises a support panel connecting the central retention strip to the glue

seam, which support panel engages in face contacting arrangement a protruding flange of the article.

[0011] According to a second aspect of the present invention provides a first wall panel, opposed side wall panels and a second wall panel hingedly connected together in series, a display window formed in one of the side walls and extending into the first wall panel and article retention means hingedly connected to said first wall panel and said second wall panel, which article retention means is provided by a central retention strip and an end retention strip formed from adjacent carton wall panels, the central retention strip is offset from the end retention strip so as to engage an article within the set up carton. Preferably there further comprises a second end retention strip formed from the adjacent carton wall panels.

[0012] According to an optional feature of the second aspect of the present invention there further comprises a glue seam hingedly connected to and extending outwardly from the end retention strip(s) and central retention strip.

[0013] Preferably, there further comprises a support panel connecting the central retention strip to the glue seam, which support panel engages in face contacting arrangement a protruding flange of the article.

[0014] Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which: -

FIGURE 1 illustrates a blank for forming a carton according to one aspect of the invention;

FIGURE 2 illustrates an article to be packaged;

FIGURES 3, 4 and 5 illustrate the carton during the different stages of construction from the blank shown in Figure 1 and

FIGURE 6 illustrates the carton loaded with articles formed from the blank of Figure 1.

[0015] Referring to the drawings, and in particular Figure 1, there is shown a carton blank for forming a carton made from paperboard or similar foldable sheet material. In these embodiments, wraparound type cartons can be formed from the blanks. However it is envisaged the invention can be applied to other types of cartons, for example fully enclosed or clip type cartons, without departing from the scope of invention.

[0016] The blank 10 comprises a plurality of panels for forming the outer walls of the carton, so in the embodiment shown in Figure 1, there comprises a first base panel 12, a first side wall panel 14, a top wall panel 16, second side wall structure 24 hingedly connected one to the next in series along fold lines 20, 22 and 32 respectively.

[0017] Preferably, there further comprises a securing panel 18 hingedly connected to the second side wall

structure 24 along fold line 34.

[0018] A series of panels for forming an article retention structure is provided along one side of the carton. In this embodiment, the article retention structure is provided with one or more apertures or display windows 46, 48 struck from top panel 16 and extending into the side wall panel 26. It will be seen from Figure 1 that the apertures 46, 48 interrupt the side wall structure so as to define a pair of side wall panels 26 and 30. Panel 30 is hingedly connected to top wall panel along fold line 40 and to securing panel 18 along fold line 42. In use, the side wall panels 26, 30 serve to function as end retention strips to retain an article within the carton.

[0019] Preferably, there further comprises a central retention strip 28 hingedly connected to top wall panel 16 along fold line 36 and to securing panel 18 along fold line 38. It will be seen that central retention strip 28 is offset with respect to the side wall structure 24 and/or end retention strips 26, 30.

[0020] In one class of embodiments there further comprises a support panel 44, which extends from securing panel 18 to separate the display window and to provide a panel for engaging a flange of the article to be packaged. It will be seen from Figure 1 that support panel 44 connects central retention strip 28 to securing panel 18.

[0021] Turning to the construction of the carton from the carton blank as illustrated in Figure 1, the blank 10 requires a series of sequential folding and gluing operations which is preferably performed in a straight line machine, so that the carton is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

[0022] As the carton blank 10 is moved forward continuously in a packaging machine, it is constructed in the manner shown in Figures 2 to 5 and is applied to an array of articles, for example a pair of articles P connected together by a flange and arranged in a single row, as shown in Figure 2.

[0023] The first stage of construction is shown in Figure 3 whereby glue is applied to the base panel 12, in this embodiment designated by the reference G. Thereafter the articles P are placed on the base panel 12, as shown in Figure 4, and the top and sides of the carton are formed by folding panels 14, 16 and 18 inwardly in direction X (Figure 5) along fold lines 20 and 22. Thus, the carton is in a part-erected condition as shown in Figure 5.

[0024] In order to construct the end retention strips and a central retention strip 28 in those embodiments with such a feature the securing panel 18 is folded out of alignment with top panel 16 along fold lines 42, 34 and 38 and likewise end retention panels 26 and 30 and, preferably central retention panel 36, are folded out of alignment with top panel 16 along fold lines 32, 40 and 28 respectively.

[0025] The glue seam of securing panel 18 is brought in to face contacting arrangement with base panel 12 and is secured thereto by glue or other suitable means known in the art.

[0026] Thus, the carton is in a set up and loaded condition as shown in Figure 6, whereby a carton for holding one or more articles, for example connected plastic cups or trays, comprising a first wall 16, opposed side walls 14, 24 and a second wall 12 hingedly connected together to form a tubular structure. A display window 46, 48 formed in one of the side walls and extending into the first wall and article retention means is hingedly connected to said first wall and the second wall. The article retention means is provided by a central retention strip 28 and an end retention strip 26 formed from adjacent carton walls, the central retention strip is offset from the end retention strip so as to engage an article within the carton.

[0027] Beneficially, the articles P are held in place by the article retention structures to prevent unwanted removal. The retention structures 26, 28 and 30 are prevented from collapsing by the secure engagement between base panel 12 and securing panel 18. It will be seen from Figure 6 that the articles protrude through apertures 46 and, in one class of embodiments the edges of the apertures engage at least part of the articles held therein.

[0028] In those embodiments with a central strip 28 and a support panel 44, they engage articles on either side of the strip to restrict movement of each article.

[0029] By offsetting the central retention strip 28 from the each end retention strip 26, 30, the articles are held by at least three contact points thereby providing a more rigid structure to prevent article movement within the carton.

[0030] It will be recognised that as used herein, directional references such as "top", "base", "end", "side", "inner" and "outer" do not limit the respective panels to such orientation, but merely serve to distinguish these panels one from another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only: indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

[0031] The present invention and its preferred embodiment relates to a carton that is shaped to provide satisfactory strength to hold articles securely, but with a degree of flexibility so that during transit the articles are retained within the carrier. The shape of the blank minimises the amount of paperboard required and the carrier can be applied to an array of articles by hand or automatic machinery. It is anticipated that the invention can be applied to a variety of carriers and is not limited to those of the wraparound type hereinabove described. Further or alternatively, the carton may be adapted to carry a greater or lesser number of articles without departing from the scope of the invention.

Claims

1. A carton for holding one or more articles, for example connected plastic cups or trays, comprising a first wall, opposed side walls and a second wall hingedly connected together to form a tubular structure, a display window formed in one of the side walls and extending into the first wall and article retention means hingedly connected to said first wall and said second wall, which article retention means is provided by a central retention strip and an end retention strip formed from adjacent carton walls, the central retention strip is offset from the end retention strip so as to engage an article within the carton. 5 10 15
2. A carton as claimed in claim 1 wherein the window is shaped to allow an article to protrude there-through. 20
3. A carton as claimed in claim 1 or claim 2 wherein there further comprises a second end retention strip formed from the adjacent carton walls. 25
4. A carton as claimed in claim 3 wherein the edges of the central retention strip and the first and second end retention strips each abut the or each article at different positions. 30
5. A carton as claimed in any of the preceding claims wherein there further comprises a glue seam hingedly connected to and extending outwardly from the end retention strip(s) and central retention strip. 35
6. A carton as claimed in claim 5 wherein there further comprises a support panel connecting the central retention strip to the glue seam, which support panel engages in face contacting arrangement a protruding flange of the article. 40
7. A blank for forming a carton for example connected plastic cups or a tray, comprising a first wall panel, opposed side wall panels and a second wall panel hingedly connected together in series, a display window formed in one of the side walls and extending into the first wall panel and article retention means hingedly connected to said first wall panel and said second wall panel, which article retention means is provided by a central retention strip and an end retention strip formed from adjacent carton wall panels, the central retention strip is offset from the end retention strip so as to engage an article within the set up carton. 45 50 55
8. A blank as claimed in claim 7 wherein there further comprises a second end retention strip formed from the adjacent carton wall panels.
9. A blank as claimed in claim 7 or claim 8 wherein there further comprises a glue seam hingedly connected to and extending outwardly from the end retention strip(s) and central retention strip.
10. A blank as claimed in claim 9 wherein there further comprises a support panel connecting the central retention strip to the glue seam, which support panel engages in face contacting arrangement a protruding flange of the article.

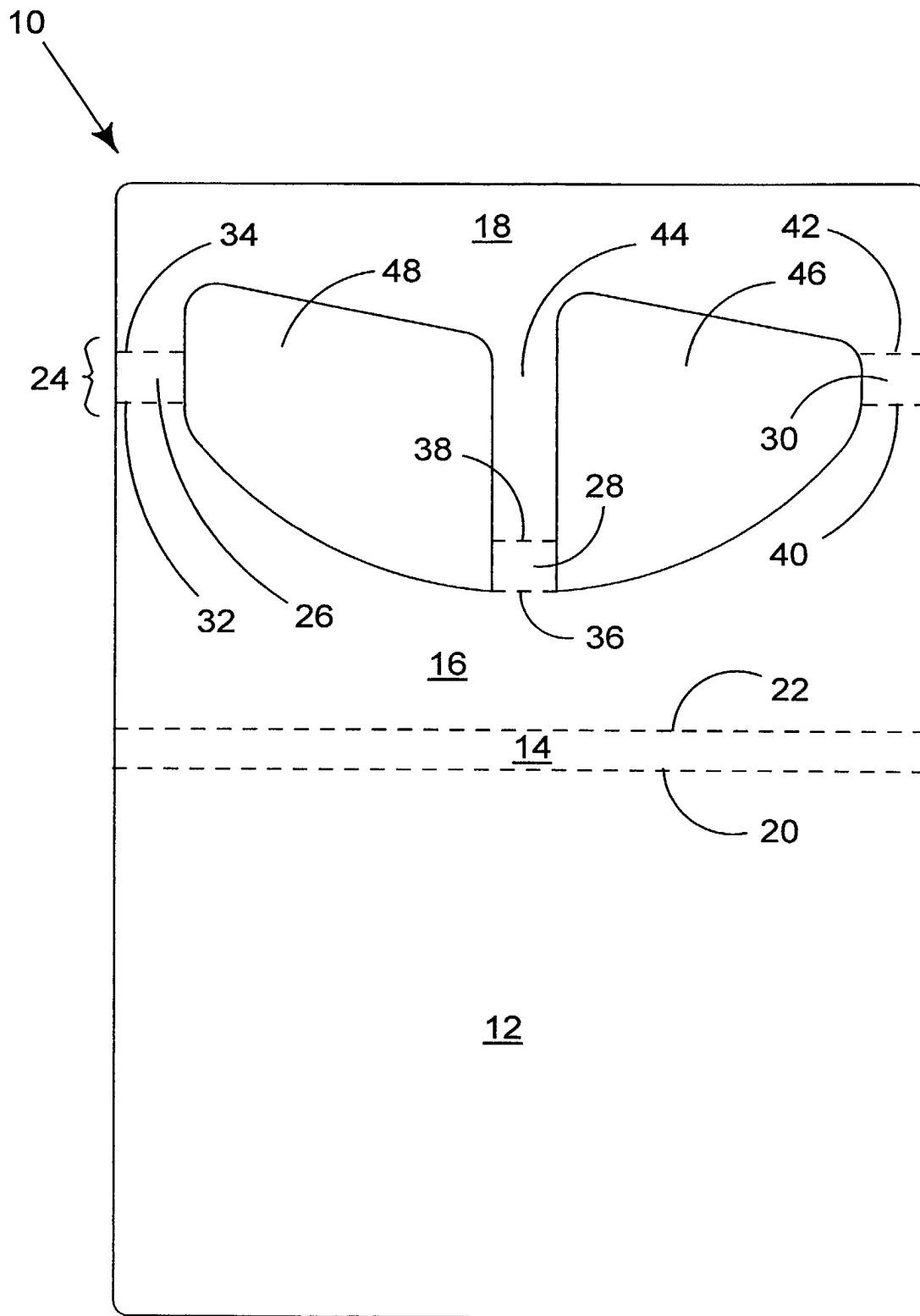


FIGURE 1

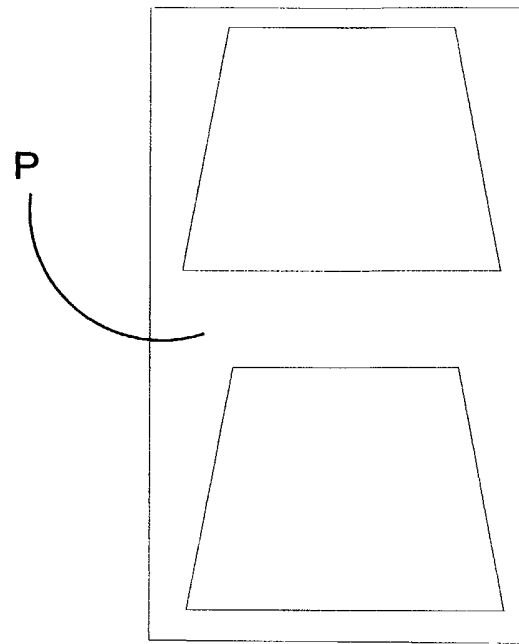


FIGURE 2

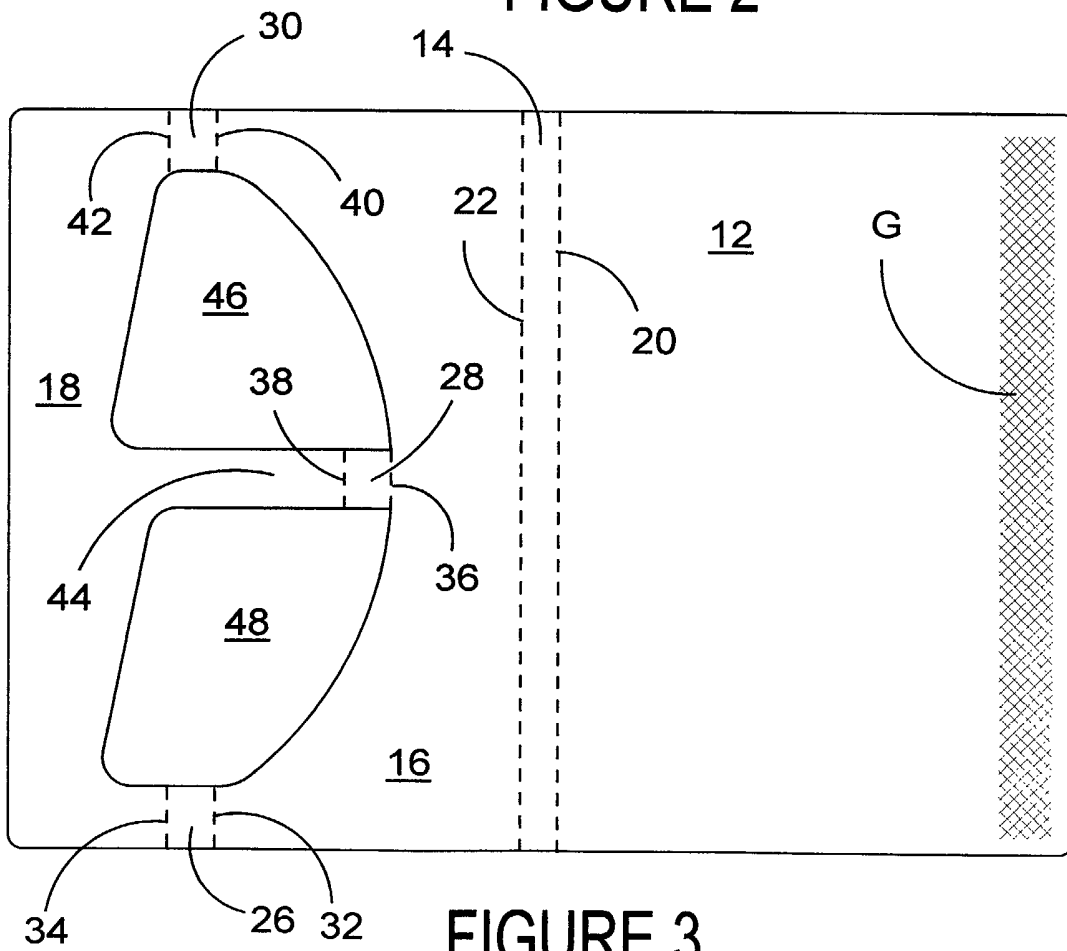


FIGURE 3

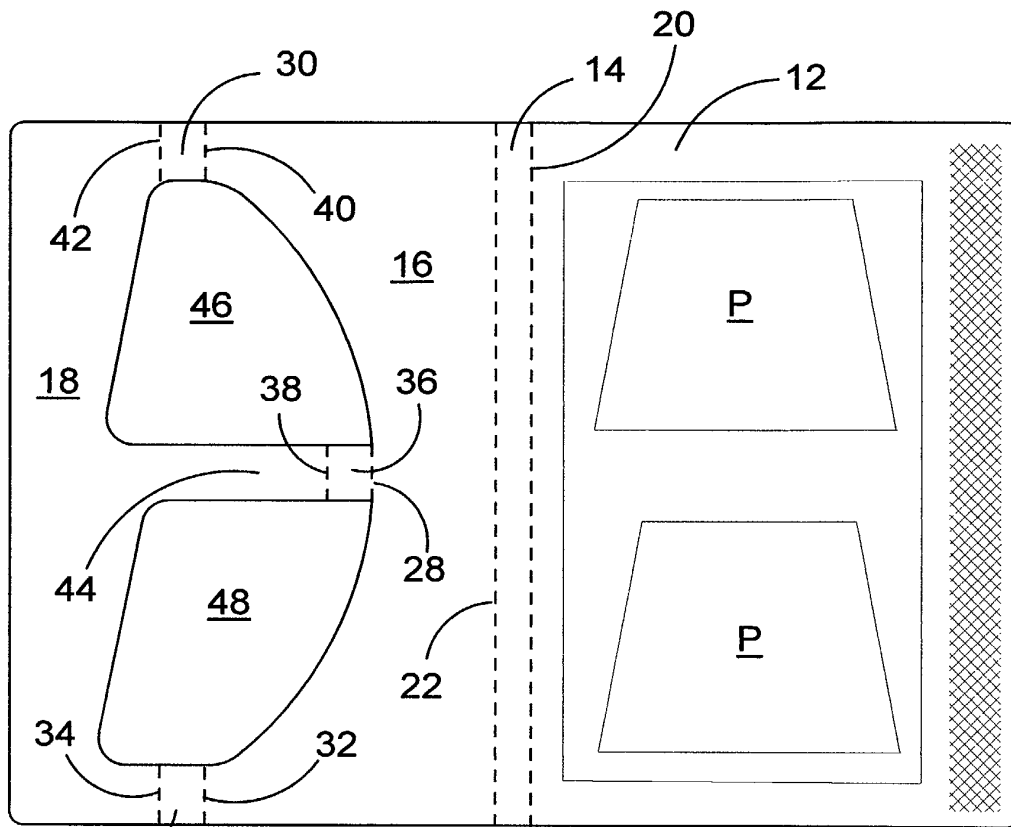


FIGURE 4

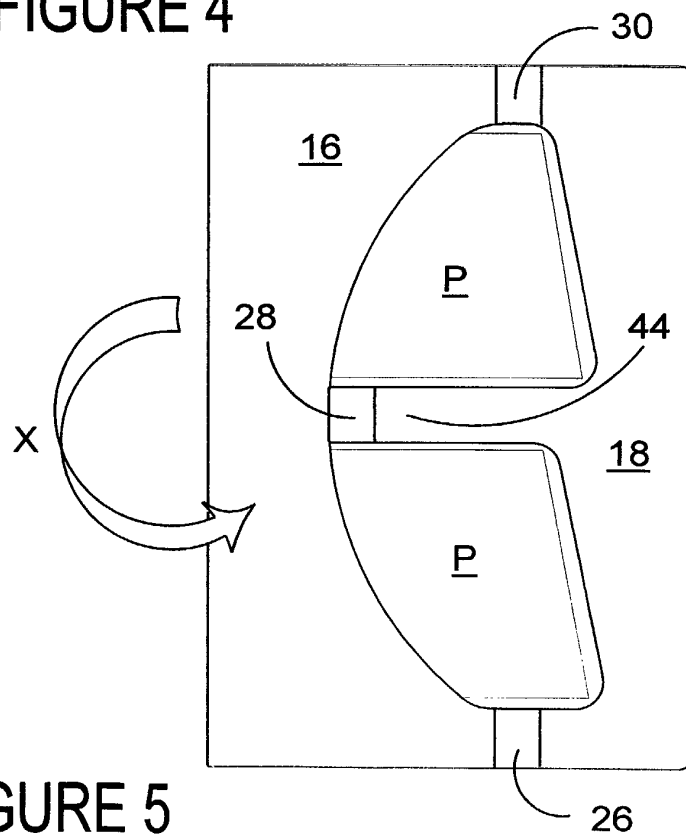


FIGURE 5

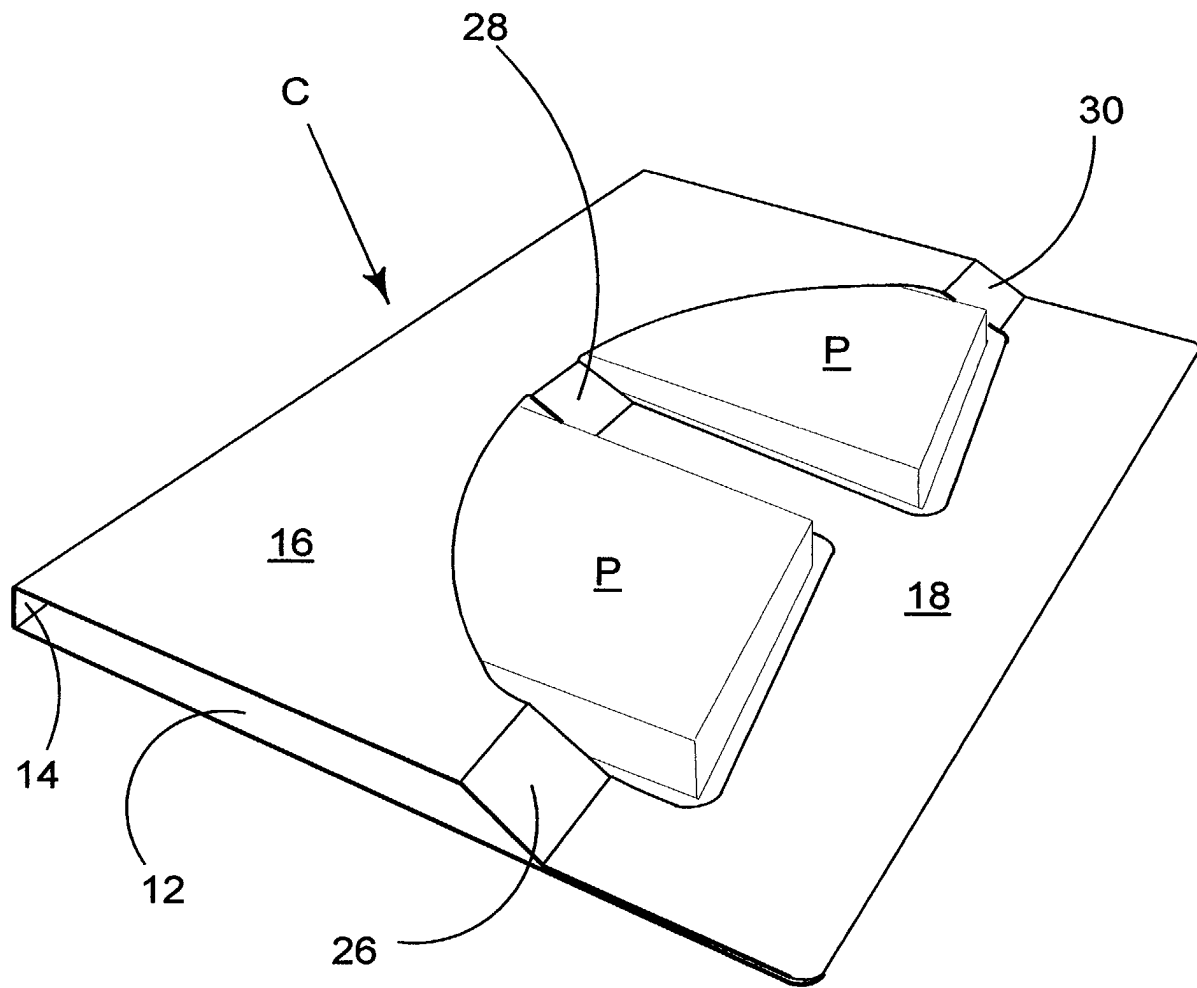


FIGURE 6



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EUROPEAN SEARCH REPORT

Application Number
EP 02 02 3871

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 918 583 A (ADAMS JOSEPH H) 11 November 1975 (1975-11-11) * column 8, paragraph 2 * * column 15, paragraph 6 * * column 15, paragraph 8 * * column 16, paragraph 1 * * column 16, paragraph 5 * * column 16, paragraph 7 - paragraph 9 * * column 16, line 67 - line 68 * * column 17, line 1 - line 2 * * figures 21-23 *	1-10	B65D73/00
A	US 3 847 282 A (COLLURA P ET AL) 12 November 1974 (1974-11-12) * the whole document *	1-10	
A	FR 2 234 624 A (RECKITT & COLMANN PROD LTD) 17 January 1975 (1975-01-17) * page 4, line 3 - line 13 * * page 5, line 25 - line 29 * * figure 9 *	1-10	
A	GB 705 279 A (ROY STEWART UFFINDELL) 10 March 1954 (1954-03-10) * column 1, paragraph 3 * * column 2, paragraph 1 - paragraph 2 * * figure 1 *	1-10	B65D
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 28 February 2003	Examiner Nistor, L
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 02 3871

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28-02-2003

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