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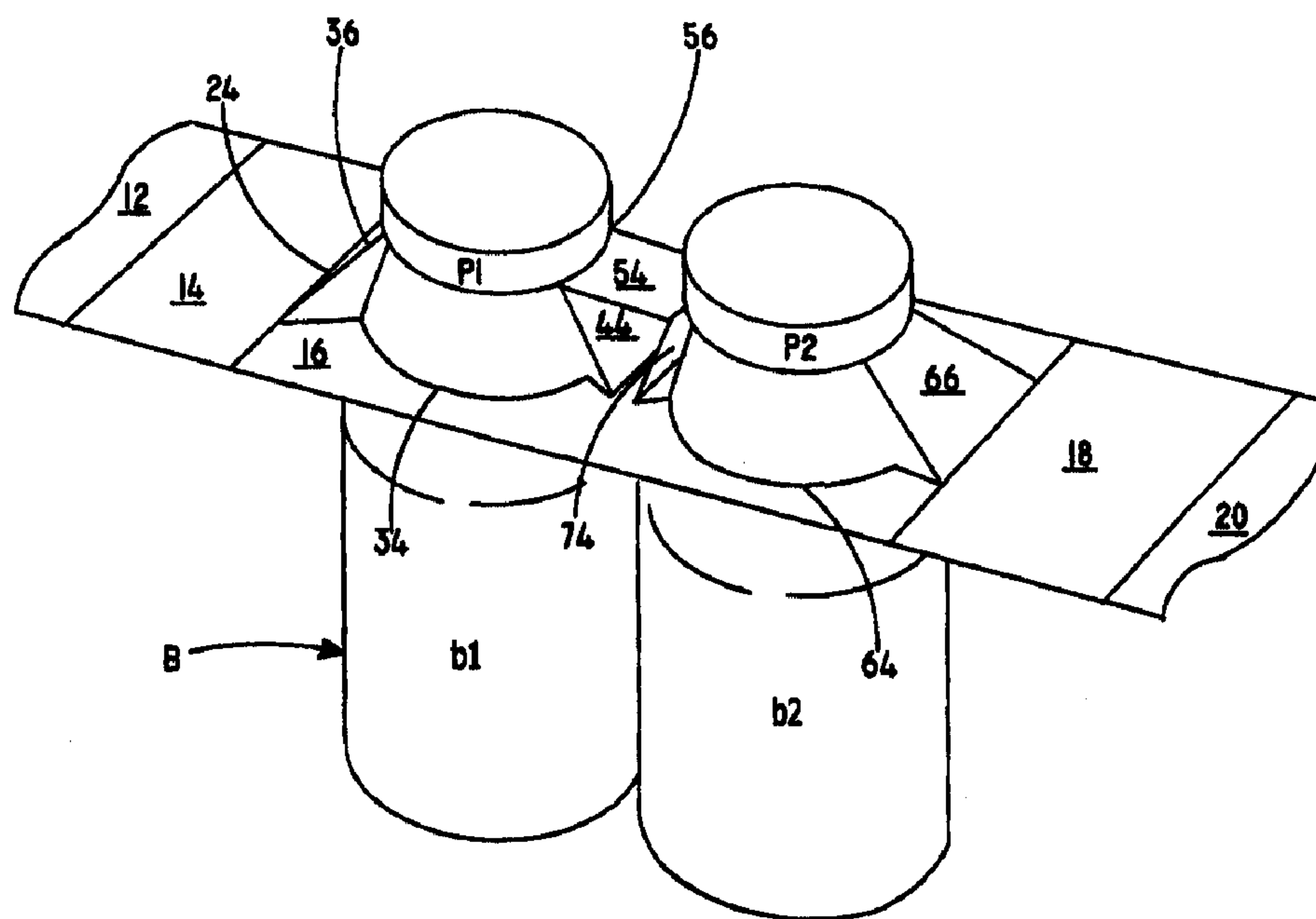
(71) THE MEAD CORPORATION, US

(51) Int.Cl.<sup>7</sup> B65D 71/46

(30) 1997/07/02 (9713947.1) GB

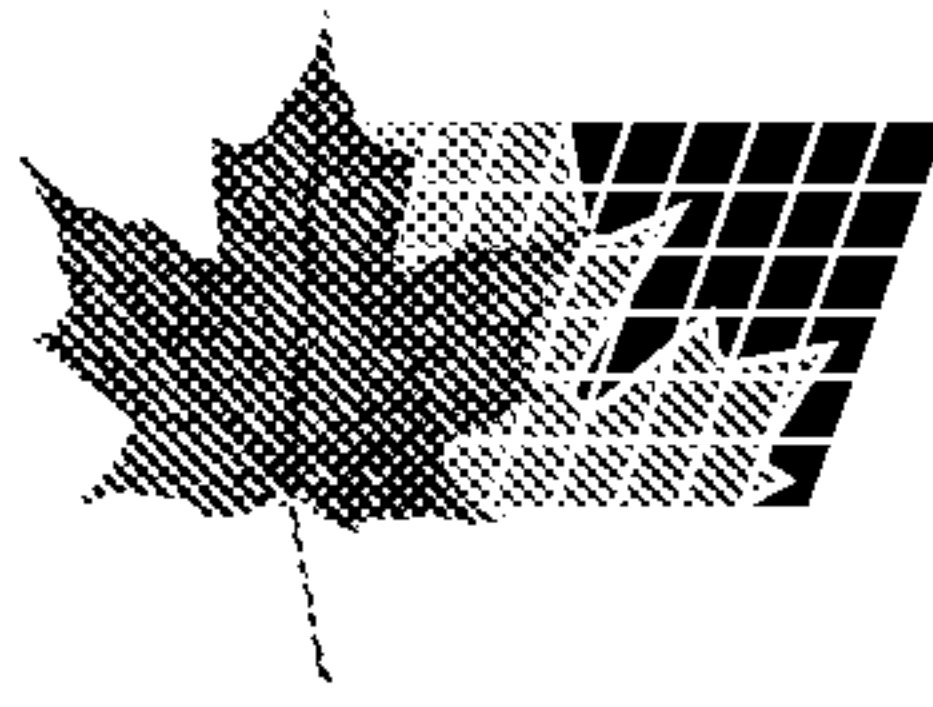
(54) **DISPOSITIF PORTEUR D'ARTICLES POURVU DE  
LANGUETTES DE RENFORCEMENT**

(54) **ARTICLE CARRIER HAVING BRACE TAB**



(57) La présente invention concerne un carton et une découpe de carton (10) destinés à former un carton permettant de saisir fermement des éléments par le haut et recevoir une pluralité de récipients, notamment des bouteilles, le carton présentant une structure tubulaire et comprenant un premier panneau (16) pourvu d'une pluralité d'ouvertures (34, 64), dont chacune possède au moins une languette de retenue pliable (30, 32) s'appliquant de manière fonctionnelle sur la face inférieure de la partie radialement saillante (P1, P2) du récipient (B) se trouvant dans l'ouverture. Une languette de renforcement (54) reliée à l'une des languettes de

(57) A carton and carton blank (10) for forming a carton of the top gripping type for accommodating a plurality of containers, for example bottles, which carton is tubular in structure and comprises a first panel (16) having a plurality of apertures (34, 64), each of which has at least one foldable retention tab (30, 32) which operatively engages the underside of the radially protruding part (P1, P2) of a container (B) present in the aperture wherein a brace tab (54) is connected to one of said retention tabs and is disposed between a pair of adjacent containers to minimize relative movement between those containers and wherein a free end edge of said brace tab



(21) (A1) **2,295,965**  
(86) 1998/07/02  
(87) 1999/01/14

retenue précitées est disposée entre une paire de récipients adjacents, de manière à réduire le déplacement relatif entre ces récipients. Un bord terminal libre de ladite languette de renforcement s'applique de manière fonctionnelle sur la face inférieure de la partie radialement saillante de l'un desdits récipients adjacents.

operatively engages the underside of the radially protruding part of one of said adjacent containers.



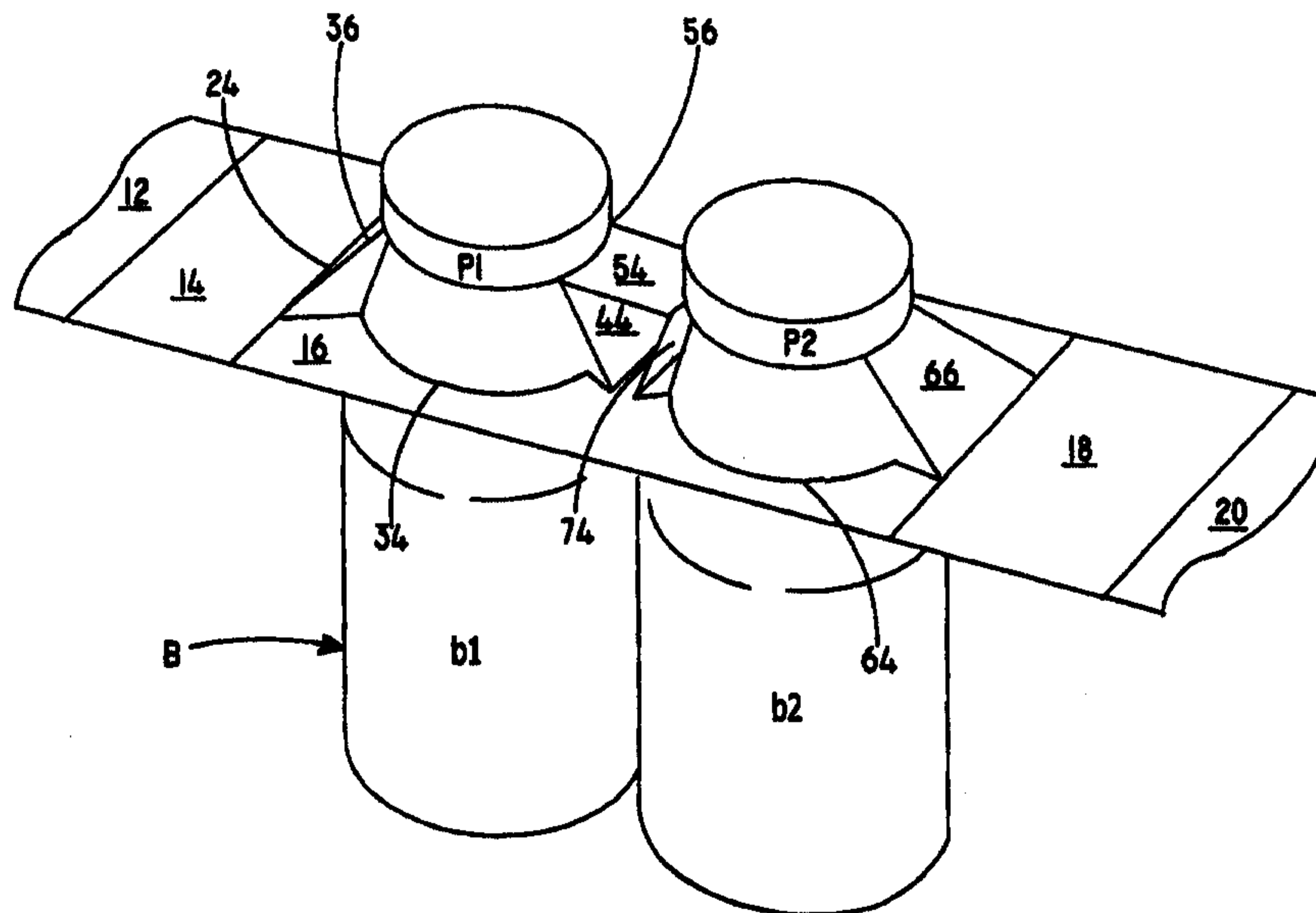
PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification<sup>6</sup> : <b>B65D 71/46</b></p>	<p><b>A1</b></p>	<p>(11) International Publication Number: <b>WO 99/01356</b></p> <p>(43) International Publication Date: 14 January 1999 (14.01.99)</p>
<p>(21) International Application Number: PCT/US98/14075</p> <p>(22) International Filing Date: 2 July 1998 (02.07.98)</p> <p>(30) Priority Data: 9713947.1                      2 July 1997 (02.07.97)                      GB</p> <p>(71) Applicant (for all designated States except US): THE MEAD CORPORATION [US/US]; Courthouse Plaza, Northeast, Dayton, OH 45463 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): BAKX, Martinus, C., M. [NL/NL]; Patijnweg 74, NL-4416 LS Goes (NL).</p> <p>(74) Agents: BOSHINSKI, Thomas, A. et al.; The Mead Corporation, 4850D North Church Lane, Smyrna, GA 30080 (US).</p>		<p>(81) Designated States: AU, BR, BY, CA, CN, CZ, EE, HU, ID, IL, JP, KE, KR, LT, LV, MX, NO, NZ, PL, RO, RU, SG, SK, TR, US, VN, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</p>

(54) Title: ARTICLE CARRIER HAVING BRACE TAB



## (57) Abstract

A carton and carton blank (10) for forming a carton of the top gripping type for accommodating a plurality of containers, for example bottles, which carton is tubular in structure and comprises a first panel (16) having a plurality of apertures (34, 64), each of which has at least one foldable retention tab (30, 32) which operatively engages the underside of the radially protruding part (P1, P2) of a container (B) present in the aperture wherein a brace tab (54) is connected to one of said retention tabs and is disposed between a pair of adjacent containers to minimize relative movement between those containers and wherein a free end edge of said brace tab operatively engages the underside of the radially protruding part of one of said adjacent containers.

## ARTICLE CARRIER HAVING BRACE TAB

Background of the Invention

The invention relates to a carton produced for packaging a plurality of articles, for example bottles. More particularly the invention relates to a carton of the top gripping type which attaches to the tops of the articles thereby securing the articles in an array.

It is known to provide top gripping cartons which comprise so called sunburst apertures having a series of circumferentially arranged tabs which enable the bottle top to pass through the apertures which tabs engage on the underside of a bottle top or on the flange of a bottle neck to prevent the removal of the bottle from the aperture. A problem arises when such sunburst type apertures are used for bottles, in particular the location in which the tab engages the underside of the bottle top is high up on the bottle neck. This creates a carton that is unstable. Further, the tabs are weakened by the unstable nature of the bottles within the carton so reducing its effectiveness.

A further problem is that a top gripping carton needs to be of sufficient strength to support the bottle. A rigid structure would address this problem but produces its own difficulties. In particular, a top panel and/or base panel does not provide requisite rigidity and sufficient strength to support the bottle.

Known cartons of this type are disclosed in EP0541334 A1. This patent specification discloses keel construction suitable for retaining and/or separating articles. However, the keels are somewhat complex to set up from a collapsed form in the carton blank. Several different embodiments of keels are shown and described however, each keel acts to separate two articles in adjacent rows is formed from at least two separate tabs which are struck from the base of the carton which panels are required to be interlocked for example at a co-

operating tab and aperture in order to form an erected keel. In some embodiments the base of the carton is formed from two overlapping base panels which are also required to be interlocked and accordingly the formation of the carton and keel structure is fairly complex.

The invention seeks to avoid or at least mitigate these and other problems of the prior art. Positional support is provided to maintain top and base panels in a spaced arrangement while additional strength is provided by multi layering the panels. Therefore the board can be reduced in thickness without reducing the strength needed to hold the bottle.

#### Summary of the Invention

Accordingly, in one form of the invention there is provided a carton of the top gripping type for accommodating a plurality of containers, for example bottles, which carton is tubular in structure and comprises a first panel having a plurality of apertures each of which has at least one foldable retention tab which operatively engages the underside of a radially protruding part of a container present in the aperture wherein a brace tab is connected to one of said retention tabs and is disposed between a pair of adjacent containers to minimize relative movement between those containers and wherein a free end edge of said brace tab operatively engages the underside of the radially protruding part of one of said adjacent containers.

According to one optional feature each aperture may be defined by a pair of retention tabs struck from said first panel. The retention tabs of the pair are disposed in positions where they are opposed to each other.

According to another optional feature said brace tab may be placed in a substantially parallel and spaced relationship with the said first panel.

Another aspect of the invention provides a unitary blank for forming a carton of the top gripping type

which comprises a first panel having a plurality of apertures each of which has at least one foldable retention tab around each aperture and foldable to stand out of the general plane thereof and a brace tab struck from one of the apertures and hingably connected to one of said retention tabs, the brace tab being foldable out of the plane of the retention tab so that the end edge of the brace tab abuts a retention tab from an adjacent aperture when said carton is set up.

10 A further aspect of the invention provides a keel structure for separating two adjacent articles and/or retaining said articles in a carton, comprising first and second retention tabs hingably connected to a panel of the carton, said first and second retention tabs respectively engaging the underside of the radially protruding parts of the adjacent articles, wherein said first retention tab comprises a brace tab which extends between the first and second retention tabs to separate and/or retain said adjacent articles.

20 Preferably, the keel structure resiliently separates two adjacent articles.

#### Brief Description of the Drawings

In the drawings:

25 FIGURE 1 is a plan view of a carton blank for forming a carton according to the invention;

FIGURE 2 is a schematic perspective view of a carton formed from a carton blank shown in Figure 1 according to the invention; and

30 FIGURES 3 and 4 are a schematic perspective representations of two stages in the process of forming a keel structure and part of a carton according to the invention.

#### Detailed Description of the Preferred Embodiment

35 Referring to the drawings, and in particular Figure 1 thereof, there is shown a carton blank 10 for

forming a top gripping carton made from paper board or similar foldable sheet material. The blank 10 comprises glue flap 12, first side panel 14, base panel 16, second side panel 18, and top panel 20, hingably connected one to the next along fold lines 22, 24, 26 and 28 respectively.

As illustrated in Figure 1, base panel 16 is formed with two pairs 30 and 32 of retention tabs being struck from base panel 16 adjacent to fold line 24 and laterally spaced intermediate the side edges of base panel 16. Each pair 30 and 32 of retention tabs are struck from base panel 16 to define the pair of article receiving apertures 34 illustrated partially in Figure 2.

Turning in detail to the configuration of one pair 30 of retention tabs, there comprises retention tab 36 struck from and hingably connected to first side panel 14 along fold line 24. Tab 36 extends inwardly of base panel 16 to its distal edge 38. Tab 36 comprises opposed side edges 40 and 42 which arcuately curve outwardly and diverge from each other toward the distal edge 38 such that the length of the distal edge 38 is greater than the fold line connecting tab 36 to first side panel 14.

A second retention tab 44 is hingably connected to base panel 16 along fold line 46 and is positioned in a central region of base panel 16. In this embodiment, tab 44 is oppositely disposed to tab 36 and extends into aperture 34. In this embodiment, distal edge 48 of tab 44 is juxtaposed to the distal edge 38 of tab 36. Likewise, the side edges 50, 52 of tab 44 arcuately curve outwardly and diverge from each other towards distal edge 48 to provide the distal edge 48 having a greater length than the fold line 46. The curved side edges 40, 42; 50, 52 of tabs 36 and 44 respectively define a substantially circular aperture 34 shown in Figure 2, when the retention tabs 36, 44 are in a set up condition.

A brace tab 54 is hingably connected to the distal edge 48 of tab 44 along fold line 56. Tab 54 is struck from and extends into retention tab 36. In this

embodiment, brace tab 54 is substantially trapezoidal in shape.

Likewise, the second pair 32 of retention tabs is substantially identical in size and configuration to the first pair 30 of retention tabs described above and are not therefore described in any greater detail.

Base panel 16 is also formed with two further pairs 60 and 62 of retention tabs. As illustrated in Figure 1, the further pairs 60 and 62 of retention tabs are struck from base panel 16 adjacent to fold line 26 and laterally spaced intermediate the side edges of base panel 16. Each pair 60 and 62 of retention tabs are struck from base panel 16 to define the pair of article receiving apertures 64, illustrated partially in Figure 2.

Turning in detail to the configuration of one pair 60 of retention tabs, there comprises retention tab 66 struck from and hingably connected to second side panel 18 along fold line 26. Tab 66 extends inwardly of base panel 16 to its distal edge 68. Tab 66 comprises opposed side edges 70 and 72 which arcuately curve outwardly and diverge from each other toward the distal edge 68 such that the length of the distal edge 68 is greater than the fold line connecting tab 66 to second side panel 18.

A second retention tab 74 is hingably connected to base panel 16 along fold line 76 and is positioned in a central region of base panel 16. In this embodiment, fold line 76 is in a parallel and spaced relationship with fold line 46 such that retention tabs 44 and 74 are aligned. It is envisaged that such alignment is not necessary in all embodiments. Tab 74 is oppositely disposed to tab 66 and extends into aperture 60. In this embodiment, distal edge 78 is juxtaposed to the distal edge 68 of tab 66. Likewise, the side edges 80, 82 of tab 74 arcuately curve outwardly and diverge from each other towards distal edge 78 to provide the distal edge 78 having a greater length than the fold line 76. The curved side edges 70, 72; 80, 82 of tabs 66 and 74 respectively define a substantially

circular aperture 64 shown in Figure 2, when the tabs 66, 74 are in a set up condition.

The second pair 62 of retention tabs is substantially identical in configuration to the first pair 60 of retention tabs described above and are not therefore  
5 described in any greater detail.

It is envisaged that suitable handle means generally known may be provided.

Turning to the construction of the carton as  
10 illustrated in Figures 2, 3 and 4, the blank 10 requires a series of sequential folding and gluing operations which can be 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  
15 limited to that described below and can be altered according to particular manufacturing requirements.

Thus, bottles B are grouped together in two rows of two bottles b1, b2 and the blank 10 is introduced to the group from above by relative vertical movement between the  
20 bottles and the blank 10, preferably during forward feed movement well known in the art. It is envisaged that blank 10 can be adapted to accommodate any number of articles in any number of rows.

Figure 3 and 4 show only a section of the carton  
25 substantially as hereinbefore described and illustrated in Figures 1 and 2, and are included to illustrate the folding process. It is envisaged that the shape of retention tabs and brace tabs is not limited to the type illustrated in Figures 1 and 2. Thus, each pair 30 and 60 of retention  
30 tabs, shown in Figures 3 and 4 are folded along their respective fold lines 24, 46;26, 76 and out of their general plane with respect to base panel 16 to create article receiving apertures 34, 64, shown in Figure 2. In this embodiment, tabs 44 and 74 are moved inwardly and  
35 upwardly in the direction of arrow 'X' and 'Y' respectively and are placed in a substantially upright position, while tabs 36 and 66 are moved outwardly and upwardly and are

placed in a substantially upright position. The angle subtended between retention tabs for example 36 or 44 and the associated main carton panel such as base panel 16 is not crucial but is preferably in the region of 60 - 90°, but of course can be adapted to suit the shape of the packaged article.

As shown in Figure 3, the bottles b1 and b2 are moved into their respective apertures 34 and 64 until the distal edges 38,; 68,78 of the retention tabs 36,;66,74 respectively come into contact with and are engaged with the underside of the respective protruding portion P1 and P2 of the bottles B associated within each of the apertures 34,64. Optionally, the edge of each article receiving aperture 34,64 is in contact with a neck portion of each of the respective bottles B to provide additional support.

Brace tab 54 is folded backwardly about fold line 56 and placed in an angular relationship with retention tab 44. Thus, distal edge 48 of tab 44 is engaged with the underside of protruding portion P1 of bottle B1. Brace tab 54 extends towards retention tab 74 struck from the opposite aperture 64 and engages the protruding portion P2 of an adjacent bottle b2. Preferably, brace tab 54 abuts retention tab 74 and serves as a brace between the retention tabs 44 and 74, as shown in Figure 4.

Thereafter, side panel 14 is folded about fold line 24 into a substantially perpendicular relationship with base panel 16 and glue flap 12 is folded about fold line 22 such that glue flap 12 is in a substantially parallel and spaced relationship with base panel 16. Likewise side panel 18 is folded about fold line 26 into a substantially perpendicular relationship with base panel 16 and top panel 20 is folded about fold line 28 such that the free end portion of top panel 20 is placed in a face to face contacting relationship with glue flap 12. Top panel 20 and glue flap 12 are secured together by glue or other means known in the art. Thus the carton is in a set up condition as shown in Figure 4.

In use, the brace tabs 54, provide a horizontal brace to better maintain the bottles in their upright position.

The present invention and its preferred embodiments relate to an article carrier which is shaped to provide satisfactory strength to hold bottles securely but with a degree of flexibility so that the load transferred through the retention tabs is absorbed by the carrier. The shape of the blank minimizes the amount of paper that would be required and the carrier can be applied to an array of bottles by hand or automatic machinery. It is anticipated that the invention can be applied to a variety of carrier and not limited to those of the top gripping type.

CLAIMS

1. A carton of the top gripping type for accommodating a plurality of containers, for example bottles, which carton is tubular in structure and comprises a first panel having a plurality of apertures each of which has at least one foldable retention tab which operatively engages the underside of a radially protruding part of a container present in said each aperture wherein a brace tab is connected to one of said retention tabs and is disposed between a pair of adjacent containers to minimize relative movement between those containers and wherein an edge of said brace tab operatively engages the underside of a radially protruding part of one of said adjacent containers.
2. The carton according to claim 1 wherein said each aperture is defined by a pair of retention tabs struck from said first panel, said retention tabs of said pair being disposed in respective positions where said retention tabs are opposed to each other.
3. The carton according to claim 1 or claim 2 wherein said brace tab is placed in a substantially parallel and spaced relationship with the said first panel.
4. A unitary blank for forming a carton of the top gripping type which comprises a first panel having a plurality of apertures each of which has at least one foldable retention tab around said each aperture, said retention tabs being foldable to stand out of a general plane of said first panel, and a brace tab struck from one of said apertures and hingably connected to one of said retention tabs, said brace tab being foldable out of a plane of said one retention tab so that when said carton is set up, an end edge of said brace tab abuts a retention tab formed from an adjacent aperture.

5. A keel structure for separating two adjacent articles and/or retaining said articles in a carton, comprising first and second retention tabs hingably connected to a panel of the carton, said first and second retention tabs respectively engaging undersides of radially protruding parts of said adjacent articles, wherein said first retention tab comprises a brace tab for extending between said first and second retention tabs to separate and retain said adjacent articles.

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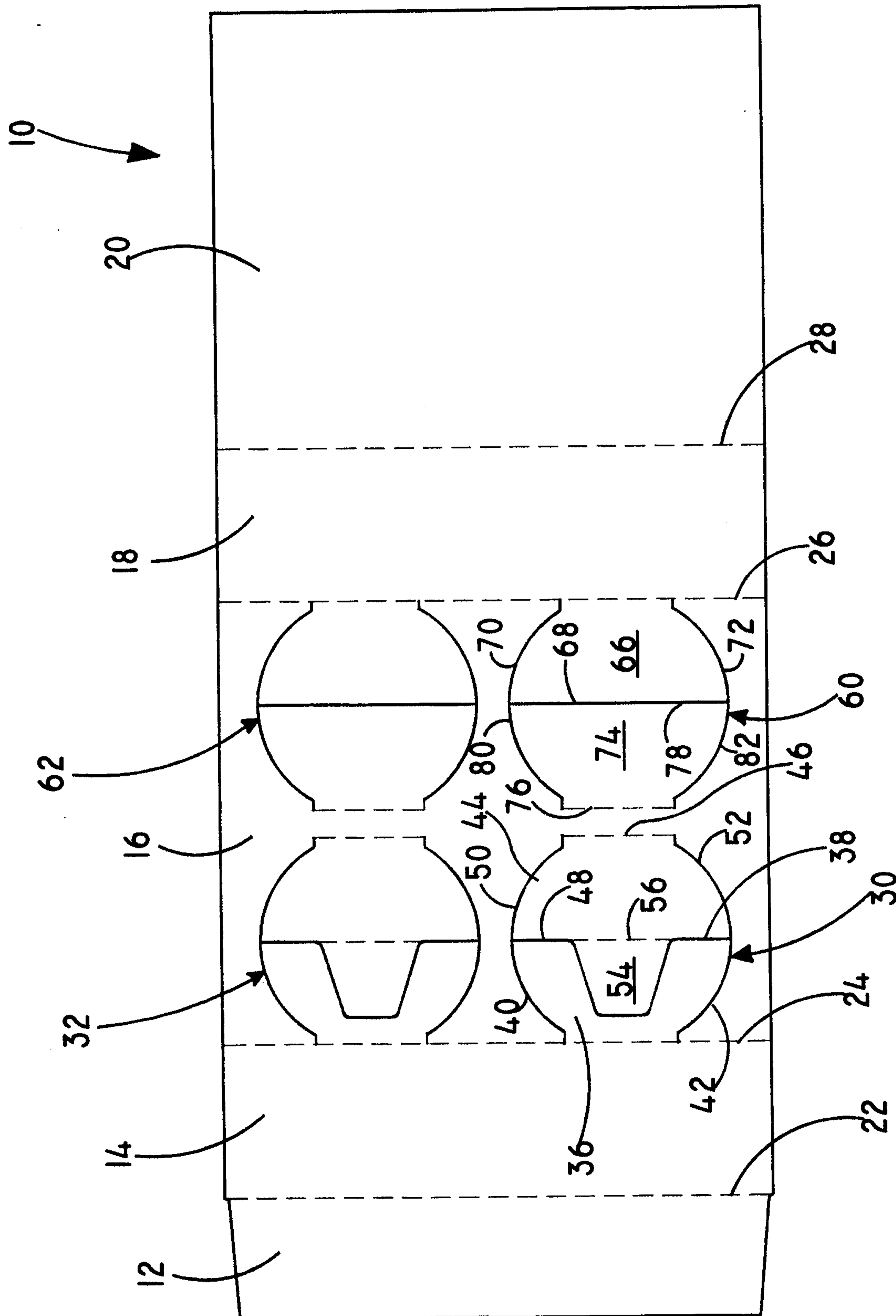


FIG. 1

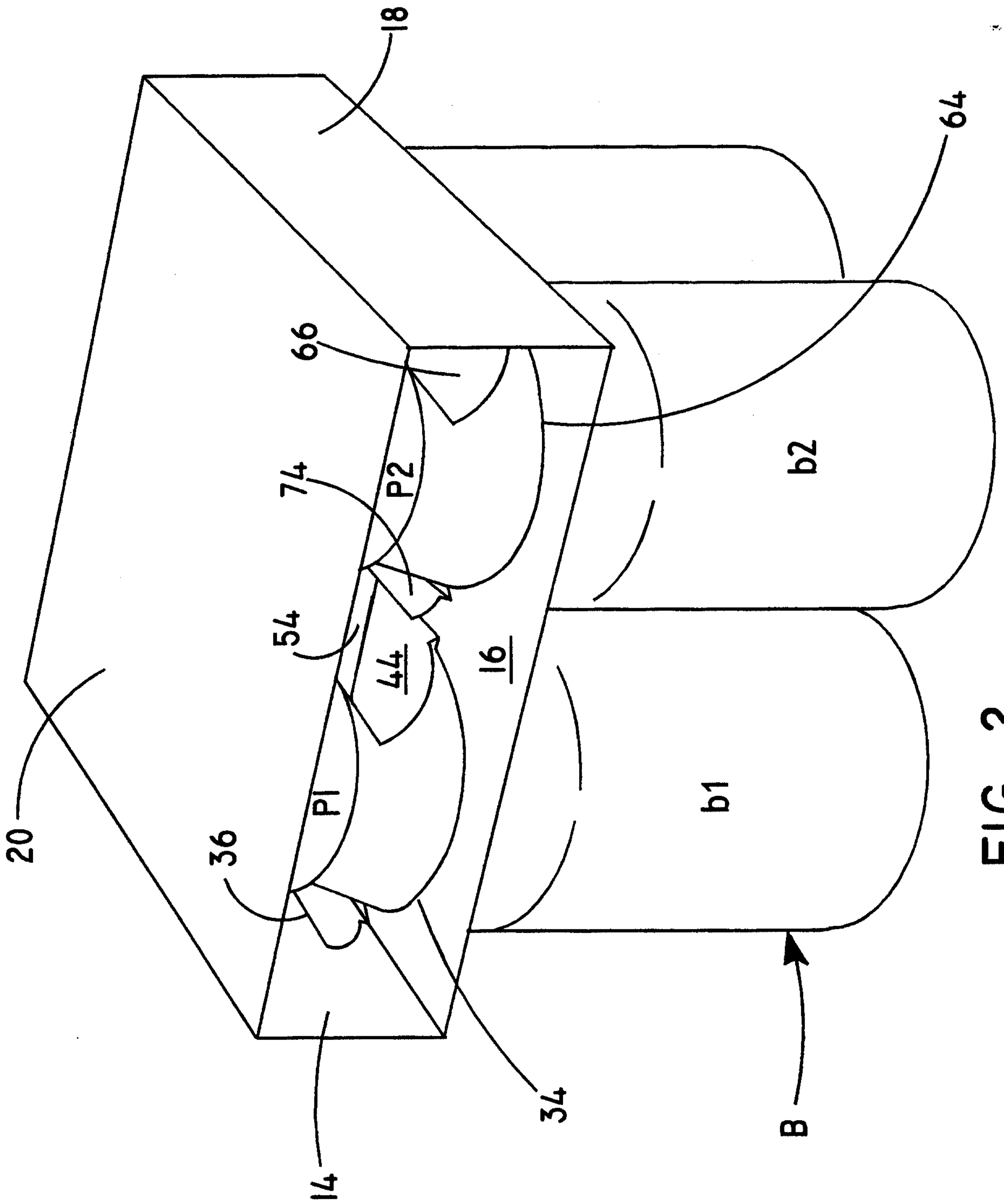


FIG. 2

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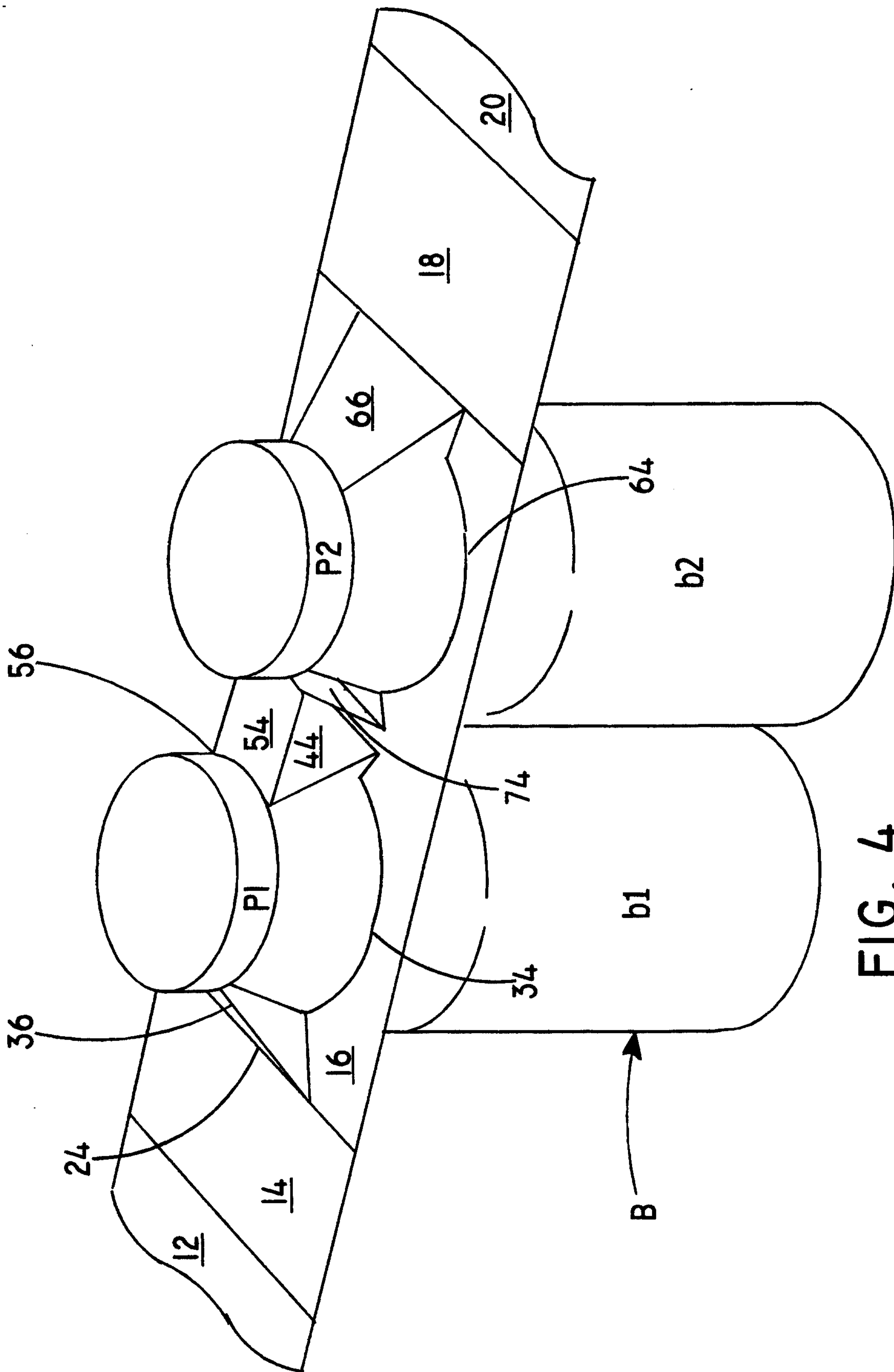


FIG. 4