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(54) **Top-gripping carton**

Den Oberteil von Gegenständen umgreifender Träger

Porte-objets engageant la partie supérieure des objets

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**US-A- 3 747 750**

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## Description

The invention relates to a carton which is used for packaging a plurality of articles such as bottles. More particularly, it relates to a carton of the top gripping type which attaches to the tops of articles thereby to secure the articles in an array.

It is known to provide so-called top-gripping cartons which comprise so-called sunburst type apertures having a series of circumferentially arranged tabs which enable a bottle top to pass through the aperture which the tabs engage on the underside of the bottle top or on a flange on the bottle neck to prevent removal of the bottle from the aperture. Such sunburst aperture arrays require to be spaced apart on a panel, normally the top panel of the carton. Cartons of this general type are shown for example in EP188327A2 and GB154197B.

Another type of top-gripping carton is disclosed in EP42720 wherein a relatively rigid collar is provided around a series of bottles. The carton comprises apertures which each have a peripheral edge which engages the underside of opposite sides of a flange which protrudes from a bottle neck thereby to retain the bottle. Such cartons generally accommodate a single row of articles and involve a relatively intricate folding process to form both the carton and engage the articles.

None of the prior art is concerned with a carton of the top gripping type for use with containers such as bottles wherein the bottle tops have a radius which approaches that of the radius of the body of the bottle. Such articles are provided, for example, to contain dairy products such as yoghurt and can be made from plastics wherein a plastics cap closes a wide neck opening and has a plastics pull-off safety ring. The pull tab of such a safety ring can protrude to the same radial extent as the radius of the plastics bottle. Such bottles are grouped so that a space is left between adjacent bottles if a carton of the known type comprising sunburst apertures is to be used. This has the disadvantage that the overall carton is not packaged as tightly thereby creating the risk of damage to the containers and/or accidental displacement of a container from the carton.

One aspect of the present invention provides a carton of the top-gripping type accommodating a plurality of articles, for example bottles, comprises a first panel and apertures for receiving the top of the articles which apertures are struck from said first panel and comprise a first edge which engages the underside of a radially protruding part of an article present in the aperture and a second edge which edge abuts a wall of the article characterised, in that the second edge is substantially opposed to said first edge and axially above said first edge thereby to restrict article removal from said aperture.

According to a feature of this aspect of the invention the first panel may comprise a marginal panel hingably attached thereto and wherein said first edge extends into the marginal panel such that the first edge portion is

provided by the marginal panel, the carton thereby being adapted to engage an article top when the marginal panel is displaced from the first panel by folding about a hinge line.

5 According to another feature of this aspect of the invention the carton may further comprise a series of hingably interconnected side panels and a top and locking means provided by the first panel which is adapted to restrict relative movement of the panels in the formed carton. In constructions where locking means are provided, said means may comprise a tab having an upstanding portion adjacent a peripheral wall portion of one bottle of a pair and a further portion overlying the top of the adjacent bottle of that pair said further portion being secured to the top of the carton.

10 More preferably the carton comprises a locking means having a locking tab which co-operates with a locking aperture having a peripheral rim in one of the panels. Still more preferably the locking tab is provided along the longitudinal marginal portions of a panel which is disposed intermediate the first panel and the top and said locking aperture is struck from the first panel.

15 Another aspect of the invention provides a carton blank for forming a carton of the top gripping type comprising a bottom wall, a top wall and a side wall which are hinged together in series wherein article receiving apertures are provided at least in part in a panel which is to form the base of the carton, characterised by each said aperture being defined by a first edge adapted to engage a flange on the neck of an article and wherein a second edge of the aperture is adapted to engage a peripheral wall of the top of the article.

20 Preferably, the locking means comprises a tab struck from the aperture and has a first portion for disposition against a peripheral wall portion of said article and a further portion hinged to said first portion adapted to overlie the top of another article present in an adjacent aperture.

25 More preferably the locking means comprises a locking tab which co-operates with a locking aperture having a peripheral rim in one of the walls.

30 Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

35 FIGURE 1 shows a plan view of a carton blank according to the invention;

40 FIGURE 2 shows a side elevation view of an initial stage of forming a carton according to the invention from the blank shown in Figure 1;

45 FIGURE 3 is a side elevation view of the process shown in Figure 2 at a later stage;

50 FIGURE 4 is a side elevation view of the completed carton; and

Figure 5 is a plan view of a second embodiment of a carton blank according to the invention.

In Figure 1 there is shown a carton blank 10 for forming a top-gripping carton and made from paper-board or similar foldable sheet material. The blank comprises an end panel 12 hingably connected to a side panel 14 along fold line 30. The side panel 14 is hingably connected to first outer base panel 16 along a fold line 32 which more preferably comprises a series of cuts thereby more easily enabling panels 14 and 16 to be placed in face to face relationship so that the angle subtended between the panels is acute in the finished carton 11 as shown in Figure 4. Outer base panel 16 is foldably connected to a first, interrupted, incline panel 18 along interrupted fold line 34. The incline panel 18 is interrupted by a part of each of the apertures 60 and is hingably connected to a central base panel 20 along an interrupted fold line 36. Base panel 20 is hingably connected to a second incline panel 22 along an interrupted fold line 38. The second incline panel 22 also is interrupted by parts of aperture 60, and is hingably connected to a second outer base panel 24 along interrupted fold line 40. The second outer base panel 24 is hingably connected to side panel 26 along fold line 42 which is substantially similar to fold line 32 described above.

Side panel 26 is foldably connected to end panel 28 along fold line 44. End panels 12 and 28 together form the top of this carton.

As can be seen in Figure 1, blank 10 comprises an array of four apertures 60 defined by peripheral edges 62 which extends into central base panel 20 and the first and second incline panels 18 and 22. Each edge 62 comprises a portion 64 which is adapted to engage an underside of a protruding portion, such as a bottle cap or neck flange, of an article passed present in aperture 60. The edge portion 64 of each of the apertures 60 extends substantially co-linearly along either one of fold lines 34 or 40. However, as can be seen in Figure 1 edge portions 64 are arcuate to some extent and extend into the adjacent outer base panels 16 and 24. It is envisaged that the exact configuration of edge portions 64 is not significant so long as they can provide a retaining force in the completed carton which acts on part of an article A thereby to retain an article in the carton.

In this embodiment of the invention two of the four apertures 60 are entirely open whilst two are covered in the blank 10 shown in Figure 1 by locking means 50. The locking means 50 comprise a glue tab 56 which is hingably connected to a shoulder panel 54 along fold line 56, which in turn is foldably connected to base panel 20 along fold line 52. Fold lines 52 and 56 can be creases or comprise one or more cuts series, for example.

The method of forming a carton from the blank 10 is shown in 3 sequential stages in figures 2, 3 and 4. Blank 10 is applied to the tops T of four grouped and adjacent

bottles whose tops thereby pass through adjacent apertures 60. At the same time the end panels 12 and 28 and glue tabs 56 are raised vertically. The bottles packaged in this example are of the type comprising a safety ring S which, in use, needs to be removed by pulling a pull tab P in order to enable removal of top T which can be of a friction fit or screw type, for example. The radial extent of pull tab P of the bottles B is substantially the same as the radius of the body portions of the bottles. It can be seen, therefore, from Figure 2 that in order to package the bottles B closely it is not possible to use a carton comprising a panel having apertures of the sunburst type. Whilst the two pairs of bottles B shown in this example are placed such that pull tabs P of the bottles of each pair face one another. This is not necessary for the formation of the packaged carton 11 shown here.

Figure 3 shows that during the process to form carton 11 tab 56 is folded substantially horizontally about fold line 58 whilst shoulder panel 54 abuts the peripheral wall of the top T of the adjacent bottle of that pair which passes through the associated aperture 60 and is substantially upright. Outer base panel 24 is lifted inwardly about fold line 40 towards the bottles whilst side panel 26 is folded about fold line 42 as end panel 28 is folded substantially horizontally about fold line 44. Similarly, outer base panel 16 is folded downwardly and inwardly towards the bottles about fold line 34 while side panel 14 is folded about fold line 32 as end panel 12 is folded substantially horizontally about fold line 30. Immediately prior to the configuration shown in Figure 3 glue is applied to the upper side of glue tab 56 and to the upper side of end panel 12. As the three panels 56, 12 and 28 are brought into a substantially horizontal, overlapping relationship top panel 28 is adhered to end panel 12 which in turn is adhered to glue tab 56. By applying a downward force on the carton the edge portions 64 pass over the flanges F and engage beneath the flanges.

The locking means 50 acts to provide rigidity in the completed carton 11 by providing fixed relative displacement of the top panel 28 and bottom panel 20. Locking means 50 also acts to provide a horizontal retaining force on an article top T through abutting shoulder panel 54. This action helps to prevent an article A from becoming dislodged through any pivotal movement of an article about rim portion 64. Of course, such retaining force is also provided by that part of the aperture rim 62 in top panel 20 which abuts the article top in the formed carton 11. The substantive retaining force provided by the carton is an upright reaction force provided by rim portions 64 which abut the underside of flange F of the article. Horizontal retaining forces are provided by tight gripping of the side of the article top T by the aperture rim 62 - especially by portions thereof diametrically opposite to rim portion 64, which prevents rotational movement of the article about the pivot provided by the rim portion 64.

In Figure 5 a second embodiment of the invention is

shown. Features which are common to the two embodiments are given the same two digit reference where, in Figure 5, this is prefixed by a digit 1. It is readily seen that the carton 110 shown in Figure 5 is for packaging 8 articles rather than 4 as in the previous embodiment. Carton 110 is however substantially similar to carton 10 in that the top of an article A is engaged in an aperture 160. The panels are then folded substantially as described with reference to Figures 2, 3 and 4 except that in this second embodiment, there is no direct equivalent to tab 56. However, a means for interlocking base panel 120 and end panel 112 is provided in the form of a locking tab 117 which operatively engages an aperture 180 struck in base panel 120. The locking tab 170 and aperture 180 therefore perform substantially the same function as locking means 50 of the first embodiment.

Thus, in forming a package carton using blank 110, article tops are engaged in a similar manner to that shown in Figure 2 and panels 112, 114, 116, 118, 122, 124, 126 and 128 are folded so as to engage the article tops in the apertures and provide the outline carton as shown in Figure 3. However, base panel 112 is longer in this embodiment than in the first and accordingly the panel extends across the top of the adjacent article tops so that the locking tabs 170 can be folded downwardly so as to engage apertures 180. The tabs shown here comprise a shoulder portion 172 which passes through the apertures 180 and engages the underside thereof, abutting against the base panel 120. The apertures 180 are provided with a flap 182 which is displaced where the locking tabs 180 are engaged.

Top panel 128 is attached to end panel 112 in a similar manner to that described with reference to the first embodiment and can therefore be attached by gluing for example.

In the second embodiment there is again provided a top-gripping carton which securely engages a number of articles. Naturally modification of design of either of the blanks shown here could be made to provide a carton for packaging any number of articles.

### Claims

1. A carton of the top-gripping type accommodating a plurality of articles, for example bottles, comprises a first panel (20), and apertures (60) for receiving the tops of the articles which apertures (60) are struck from said first panel (20) and each comprise a first edge (64) which engages the underside of a radially protruding part (F) of an article (A) present in the aperture (60) and a second edge, which edge abuts a wall of the article, characterised in that the second edge is substantially opposed to said first edge (64) and axially above said first edge (64) thereby to restrict article (A) removal from said aperture (60).
2. A carton according to claim 1 wherein the first panel (20) comprises a marginal panel (18) hingably attached thereto and wherein said first edge (64) extends into the marginal panel (18) such that the first edge (64) is provided by the marginal panel (18), the carton thereby being adapted to engage an article top when the marginal panel (18) is displaced from the first panel (20) by folding about a hinge line (36).
3. A carton according to claim 1 or claim 2 further comprising a series of hingably interconnected side panels (14, 26) and a top (12, 28) and locking means (50) provided by the first panel (20) which is adapted to restrict relative movement of the panels in the formed carton.
4. A carton according to claim 3 wherein said locking means (50) comprises a tab having an upstanding portion (54) adjacent a peripheral wall portion of one bottle of a pair and a further portion (56) overlying the top of the adjacent bottle of that pair said further portion (56) being secured to the top (28) of the carton.
5. A carton according to claim 3 wherein the locking means (170) comprises a locking tab (172) which cooperates with a locking aperture (180) having a peripheral rim in one of said panels (120).
6. A carton according to claim 5 wherein said locking tab (172) is provided along the longitudinal marginal portion of a panel (112) which is disposed intermediate the first panel (120) and the top (128) and said locking aperture (160) is struck from the first panel (120).
7. A carton blank for forming a carton of the top gripping type in line with claims 1 - 6 comprises a bottom wall (16, 12, 20, 22, 24), a top wall (12, 28) and a side wall (14, 26) which are hinged together in series wherein article receiving apertures (60) are provided at least in part in a panel (20) which is to form the base of the carton, characterised by each aperture (60) being defined by a first edge (64) adapted to engage a flange (F) on the neck of an article and wherein a second edge of the aperture (60) is adapted to engage a peripheral wall of the top of the article.
8. A blank according to claim 7 comprising locking means (50) having a tab struck from the aperture (60) and has a first portion (54) for disposition against a peripheral wall portion of said article and a further portion (56) hinged to said first portion (54) adapted to overlie the top of another article present in an adjacent aperture.

9. A blank according to claim 7 comprising locking means (170) having a locking tab (172) which cooperates with a locking aperture (180) having a peripheral rim in one of said walls (120).

### Patentansprüche

1. Schachtel des Oberteil-greifenden Typs zur Aufnahme einer Vielzahl von Gegenständen, beispielsweise Flaschen, die eine erste Wandfläche (20) sowie Öffnungen (60) zur Aufnahme der Gegenstandsoberteile umfaßt, wobei die Öffnungen (60) aus der ersten Wandfläche (20) gestanzt sind und eine jede eine erste Kante (64) aufweist, die eine Unterseite eines radial hervorstehenden Teils (F) eines Gegenstands (A), der sich in der Öffnung (60) befindet, in Eingriff nimmt, sowie eine zweite Kante, wobei die Kante in anstoßender Beziehung mit einer Wand des Gegenstands steht, dadurch gekennzeichnet, daß die zweite Kante im wesentlichen gegenüberliegend der ersten Kante angeordnet ist und axial oberhalb der ersten Kante liegt, um dadurch eine Bewegung des Gegenstands (A) aus der Öffnung (60) zu verhindern.
2. Schachtel nach Anspruch 1, in welcher die erste Wandfläche (20) eine Rand-Wandfläche (18) umfaßt, die gelenkig hieran angebracht ist und in welcher die erste Kante (64) sich in die Rand-Wandfläche (18) hineinerstreckt dergestalt, daß die erste Kante (64) durch die Rand-Wandfläche (18) bereitgestellt wird, und die Schachtel dadurch angepaßt ist, ein Gegenstandsoberteil in Eingriff zu nehmen, wenn die Rand-Wandfläche (18) von der ersten Wandfläche (20) durch Faltung um eine Biegelinie (36) verschoben wird.
3. Schachtel nach Anspruch 1 oder 2, die weiterhin eine Reihe von gelenkig miteinander verbundenen Seitenwandflächen (14, 26) sowie ein Oberteil (12, 28) und eine Verschlubeinrichtung (50) aufweist, die in der ersten Wandfläche (20) bereitgestellt ist und die angepaßt ist, eine relative Bewegung der Wandflächen in der ausgebildeten Schachtel zu verhindern.
4. Schachtel nach Anspruch 3, in welcher die Verschlubeinrichtung (50) eine Lasche umfaßt mit einem senkrechten Abschnitt (54), angrenzend an einen Umfangs-Wandabschnitt von einer Flasche eines Flaschenpaares sowie einen weiteren Abschnitt (56), der das Oberteil der angrenzenden Flasche jenes Paares überdeckt, wobei der weitere Abschnitt (56) an dem Oberteil (28) der Schachtel befestigt ist.
5. Schachtel nach Anspruch 3, in welcher die Verschlubeinrichtung (170) eine Verschußflasche

(172) aufweist, die mit einer Verschußöffnung (180), die eine Umfangs-Krempe in einer der Seitenwandflächen (120) aufweist, zusammenwirkt.

- 5 6. Schachtel nach Anspruch 5, in welcher die Verschußflasche (172) entlang des längs verlaufenden Randabschnitts einer Wandfläche (112), der zwischen der ersten Wandfläche (120) und dem Oberteil (128) angeordnet ist, bereitgestellt wird und die Verschußöffnung (160) aus der ersten Wandfläche (120) gestanzt ist.
- 10 7. Schachtelzuschnitt zur Ausbildung einer Schachtel des Oberteil-greifenden Typs gemäß irgendeinem der vorhergehenden Ansprüche 1 bis 6, wobei der Zuschnitt eine Bodenwand (16, 12, 20, 22, 24), eine Deckenwand (12, 28) sowie eine Seitenwand (14, 28) umfaßt, die der Reihe nach gelenkig miteinander verbunden sind und in welchem Gegenstandsaufnehmende Öffnungen (60) in wenigstens einem Teil einer Wandfläche (20), die zur Ausbildung des Bodens der Schachtel dient, bereitgestellt sind, dadurch gekennzeichnet, daß durch eine jede Öffnung (60), die durch eine erste Kante (64) definiert ist, die derart geformt ist, um einen Flansch (F) an dem Hals eines Gegenstands in Eingriff zu nehmen und wobei eine zweite Kante der Öffnung (60) angepaßt ist, um eine Umfangswand des Oberteils eines Gegenstands in Eingriff zu nehmen.
- 15 8. Zuschnitt nach Anspruch 7, der eine Verschlubeinrichtung (50) umfaßt, die eine Lasche aufweist, die aus der Öffnung (60) ausgestanzt ist und einen ersten Abschnitt (54) zum Anordnen gegen einen Umfangs-Wandabschnitt des Gegenstands aufweist sowie einen weiteren Abschnitt (56), der an den ersten Abschnitt (54) angelenkt ist und angepaßt ist, das Oberteil eines anderen Gegenstands, der sich in einer angrenzenden Öffnung befindet, zu überdecken.
- 20 9. Zuschnitt nach Anspruch 7, der eine Verschlubeinrichtung (170) umfaßt, die eine Verschußflasche (172) aufweist, welche mit einer Verschußöffnung (180) zusammenwirkt, die eine Umfangs-Krempe in einer der Seitenwände (120) aufweist.
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### Revendications

- 50 1. Carton du type enserrant la partie supérieure d'articles, destiné à recevoir une pluralité d'articles, par exemple des bouteilles, comprenant un premier panneau (20) et des ouvertures (60) destinées à recevoir les parties supérieures des articles, lesquelles ouvertures (60) sont formées à partir dudit panneau (20) et chacune d'entre elles comprend un premier bord (64) qui s'applique contre la face inférieure d'une partie (F), qui fait saillie radialement,
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- d'un article (A) présent dans l'ouverture (60), et un second bord, lequel bord est a butée contre une paroi de l'article, caractérisé en ce que le second bord est essentiellement opposé audit premier bord (64) et est disposé axialement au-dessus dudit premier bord (64), de manière à empêcher un retrait de l'article (A) à partir de ladite ouverture (60). 5
2. Carton selon la revendication 1, dans lequel le premier panneau (20) comprend un panneau marginal (18) fixé d'une manière articulée à ce panneau, et dans lequel ledit premier bord (64) s'étend dans le panneau marginal (18) de telle sorte que le premier bord (64) est formé par le panneau marginal (18), le carton étant de ce fait adapté pour coopérer avec une partie supérieure d'un article lorsque le panneau marginal (18) est déplacé à partir du premier panneau (20) sous l'effet de son pliage autour d'une ligne formant charnière (36). 10
3. Carton selon la revendication 1 ou 2, comprenant en outre une série de panneaux latéraux (14, 26), qui sont interconnectés d'une manière pouvant être articulée, et une partie supérieure (12, 28) et des moyens de blocage (50) fournis par le premier panneau (20), qui sont adaptés pour limiter le déplacement relatif des panneaux dans le carton formé. 15
4. Carton selon la revendication 3, dans lequel lesdits moyens de blocage (50) comprennent une patte possédant une partie redressée (54) adjacente à une partie de paroi périphérique d'une bouteille d'un couple, et une autre partie (56) située au-dessus de la partie supérieure de la bouteille adjacente de ce couple, ladite autre partie (56) étant fixée à la partie supérieure (28) du carton. 20
5. Carton selon la revendication 3, dans lequel les moyens de blocage (170) comprennent une patte de blocage (172) qui coopère avec une ouverture de blocage (180) possédant un rebord périphérique dans l'un desdits panneaux (120). 25
6. Carton selon la revendication 5, dans lequel ladite patte de blocage (172) est prévue le long de la partie marginale longitudinale d'un panneau (112), qui est disposé entre le premier panneau (120) et la partie supérieure (128), et ladite ouverture de blocage (160) est formée à partir du premier panneau (120). 30
7. Ebauche de carton pour former un carton du type enserrant les parties supérieures d'articles selon les revendications 1-6 qui comprend une paroi de fond (16, 12, 20, 22, 24), une paroi supérieure (12, 28) et une paroi latérale (14, 26), qui sont réunies de façon articulée en série, et dans lequel des ouvertures (60) de réception d'articles sont prévues au moins en partie des un panneau (20) qui doit former la base du carton, caractérisée en ce que son ouverture (60) est définie par un premier bord (64) adapté pour coopérer avec une bride (F) située sur le goulot d'un article, et dans lequel un second bord de l'ouverture (60) est adapté pour coopérer avec une paroi périphérique de la partie supérieure de l'article. 35
8. Ebauche selon la revendication 7 comprenant des moyens de blocage (50) possédant une patte qui est repoussée à partir de l'ouverture (60) et possède une première partie (55) destinée à être disposée contre une portion de paroi périphérique dudit article, et une autre portion (56) articulée sur ladite première partie (54) et adaptée de manière à recouvrir la partie supérieure d'un autre article présent dans une ouverture adjacente. 40
9. Ebauche selon la revendication 7 comprenant des moyens (170) possédant une patte de blocage (172), qui coopère avec une ouverture de blocage (180) possédant un rebord périphérique dans l'une desdites parois (120). 45
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FIG.1

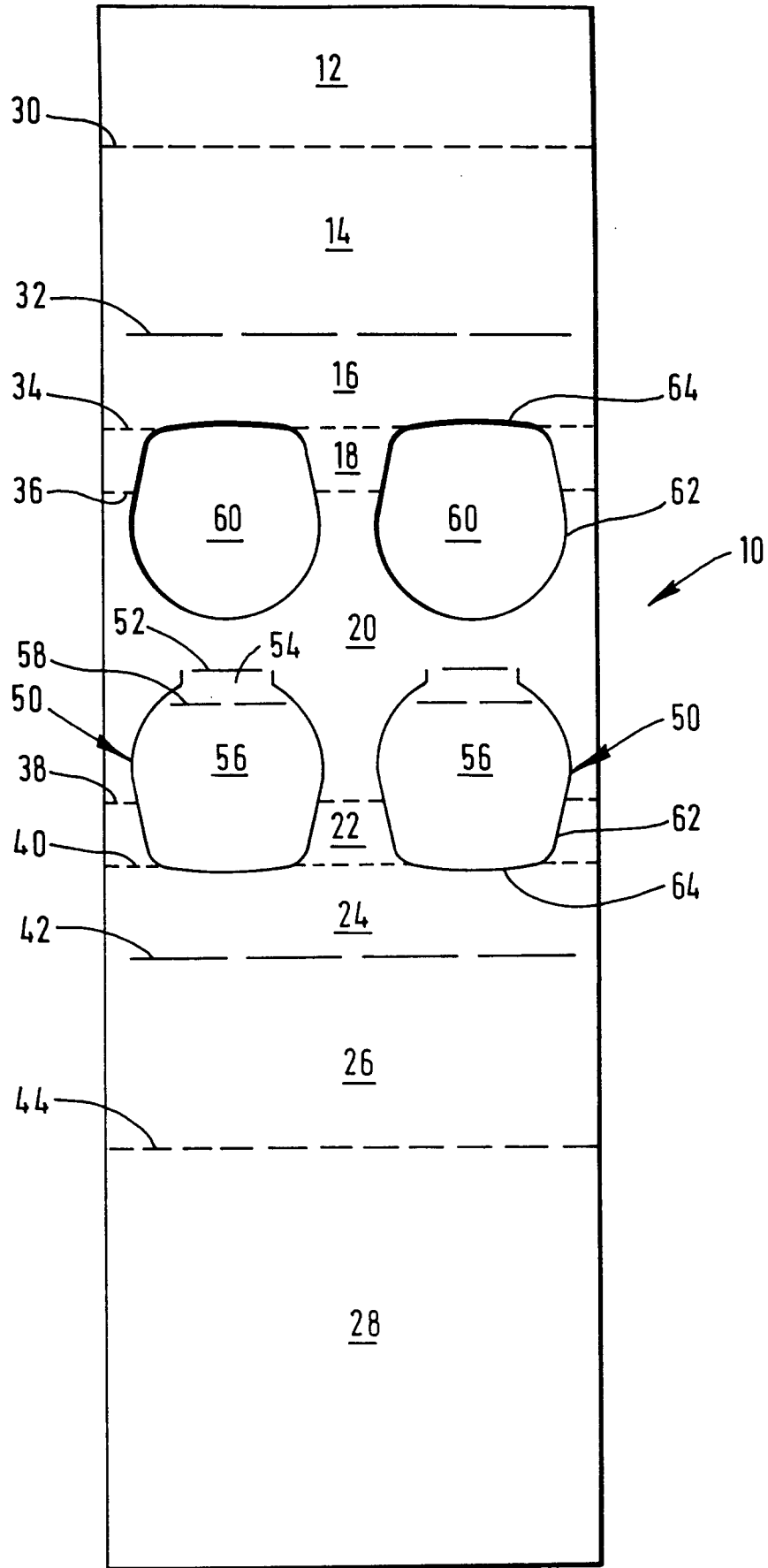


FIG. 2

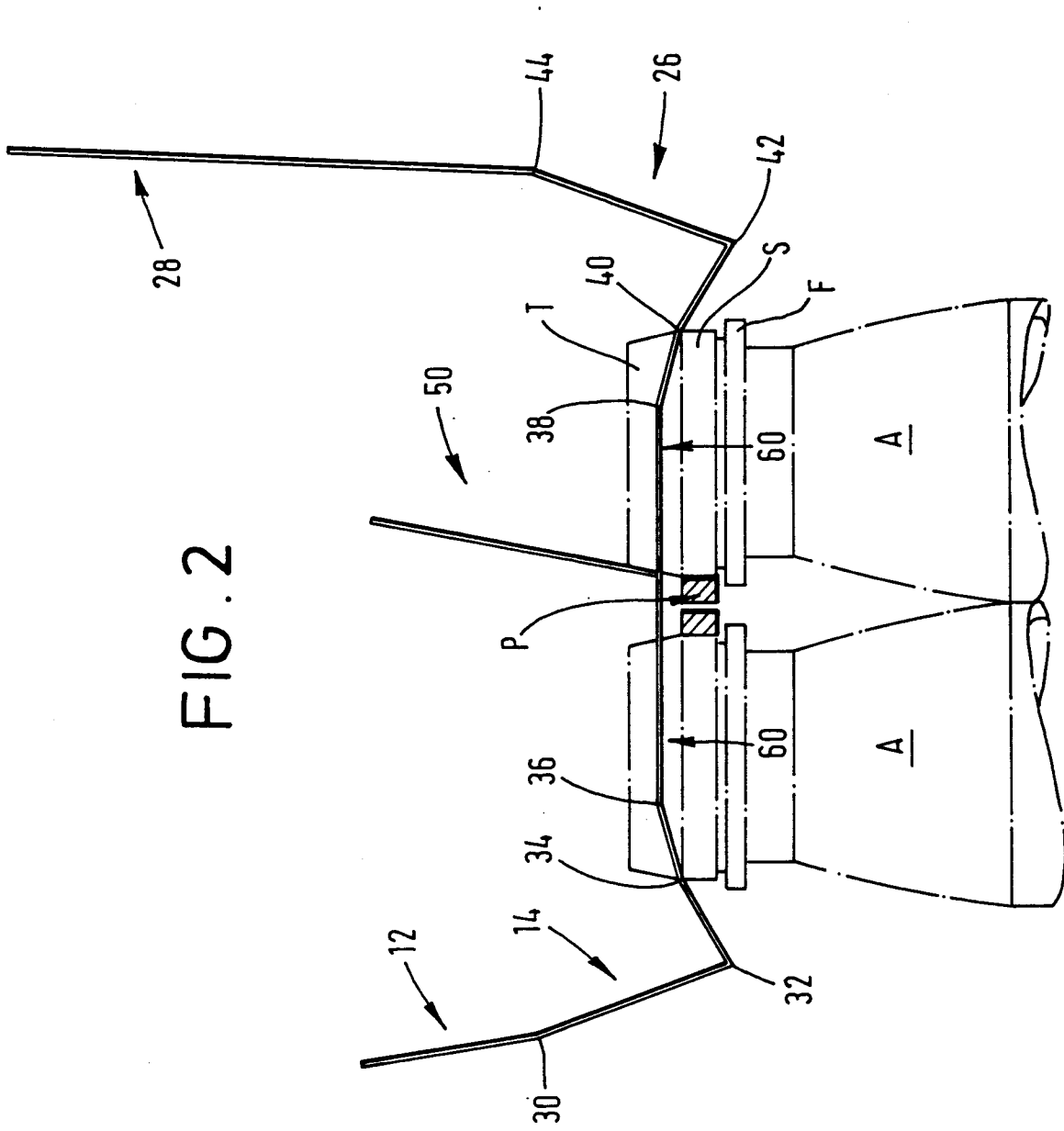


FIG. 3

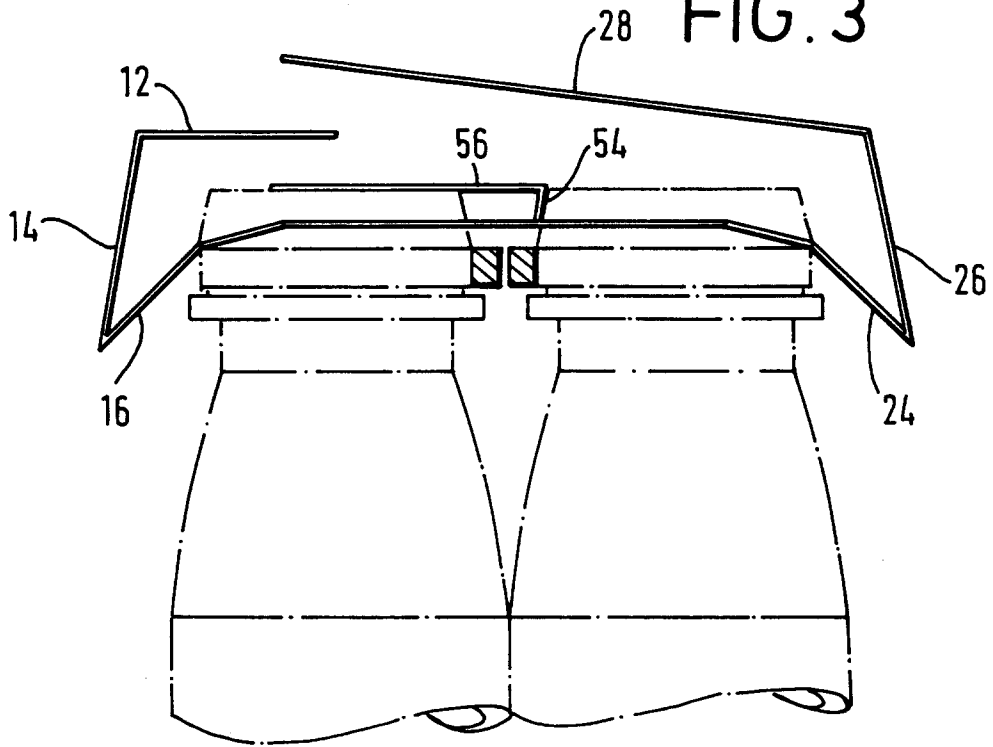


FIG. 4

