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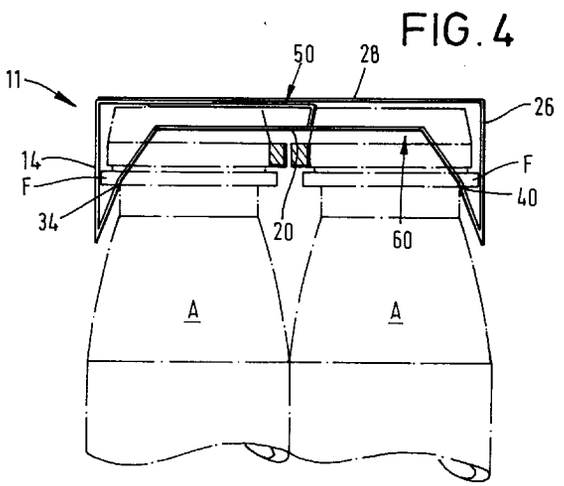
(54) Top-gripping carton.

(57) A carton (11) of the top gripping type packaging a plurality of articles (A) comprising a number of apertures (60) which receive the tops of articles (A) and which are adapted to engage the underside of a flange F of the article (A). The carton (11) further comprises locking means (50) which can act to retain at least one article (A) and can also act to provide rigidity to the carton (11) by substantially fixing the relative positions of a top panel (28) and bottom panel (20).

FIG. 4



EP 0 636 554 A2

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, such as bottles, comprises a first panel having an aperture for receiving the top of an article which aperture is defined by a peripheral edge comprising a first portion which operatively engages the underside of a radially protruding part of an article present in the aperture and a further portion which operatively abuts a peripheral wall of said top of the article at a substantially diametrically opposed location to that of said first portion and axially above said first portion thereby to provide cooperating forces which act on the article to restrict its removal from the 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 peripheral edge extends into the marginal panel such that the first peripheral 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.

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.

More preferably the carton comprises a locking means having a locking tab which cooperates 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.

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 an article receiving aperture is provided at least in part in a panel which is to form the base of the carton, said aperture being defined by a peripheral edge having a portion which is adapted to engage a flange on the neck of an article and wherein a further portion of the peripheral edge of the aperture is adapted to engage a peripheral wall of the top of the article.

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.

More preferably the locking means comprises a locking tab which cooperates with a locking aperture having a peripheral rim in one of the walls.

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

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

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;

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

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 paperboard 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 colinearly along either one of fold lines 34 or 40. However, as can be seen if 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 fiction 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, such as bottles, comprises a first panel having an aperture for receiving the top of an article which aperture is defined by a peripheral edge comprising a first portion which operatively engages the underside of a radially protruding part of an article present in the aperture and a further portion which operatively abuts a peripheral wall of said top of the article at a substantially diametrically opposed location to that of said first portion and axially above said first portion thereby to provide cooperating forces which act on the article to restrict its removal from the aperture.

2. A carton according to claim 1 wherein the first panel comprises a marginal panel hingably attached thereto and wherein said peripheral edge extends into the marginal panel such that the first peripheral 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.

3. A carton according to claim 1 or claim 2 further comprising 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.

4. A carton according to claim 3 wherein said locking means comprises 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.

5. A carton according to claim 3 wherein the locking means comprises a locking tab which cooperates with a locking aperture having a peripheral rim in one of said panels.

6. A carton according to claim 5 wherein said locking tab is provided along the longitudinal marginal portion of a panel which is disposed intermediate the first panel and the top and said locking aperture is struck from the first panel.

7. A carton blank for forming a carton of the top gripping type comprises a bottom wall, a top wall and a side wall which are hinged together in series wherein an article receiving aperture is provided at least in part in a panel which is to form the base of the carton, said aperture being defined by a peripheral edge having a portion which is adapted to engage a flange on the neck of an article and wherein a further portion of the peripheral edge of the aperture is adapted to engage a peripheral wall of the top of the article.

8. A blank according to claim 7 comprising locking means having a tab struck from the aperture and has a first portion for disposition against a peripheral wall portion of said article and a further por-

tion hinged to said first portion adapted to overlie the top of another article present in an adjacent aperture.

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

FIG.1

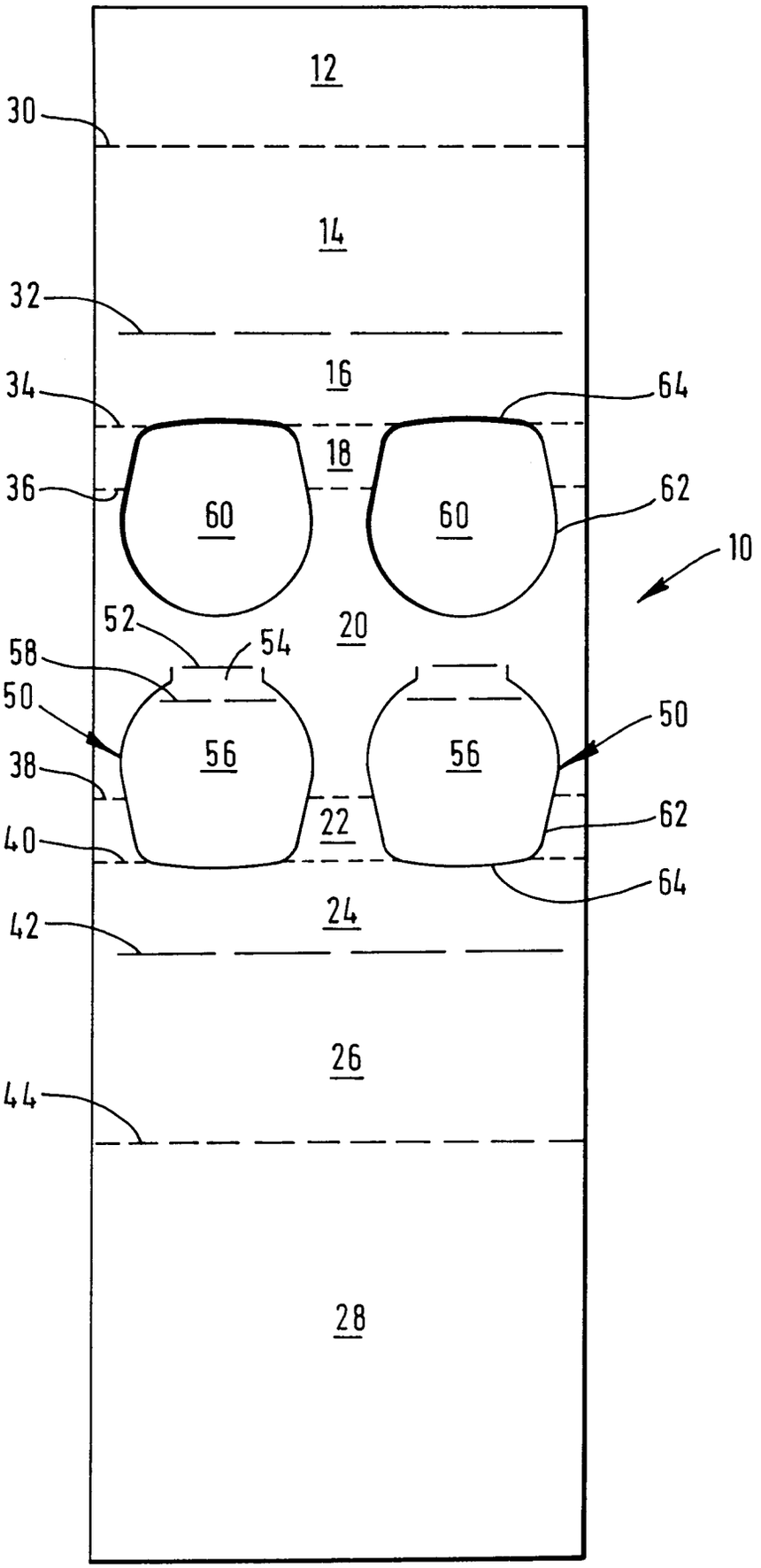

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FIG. 2

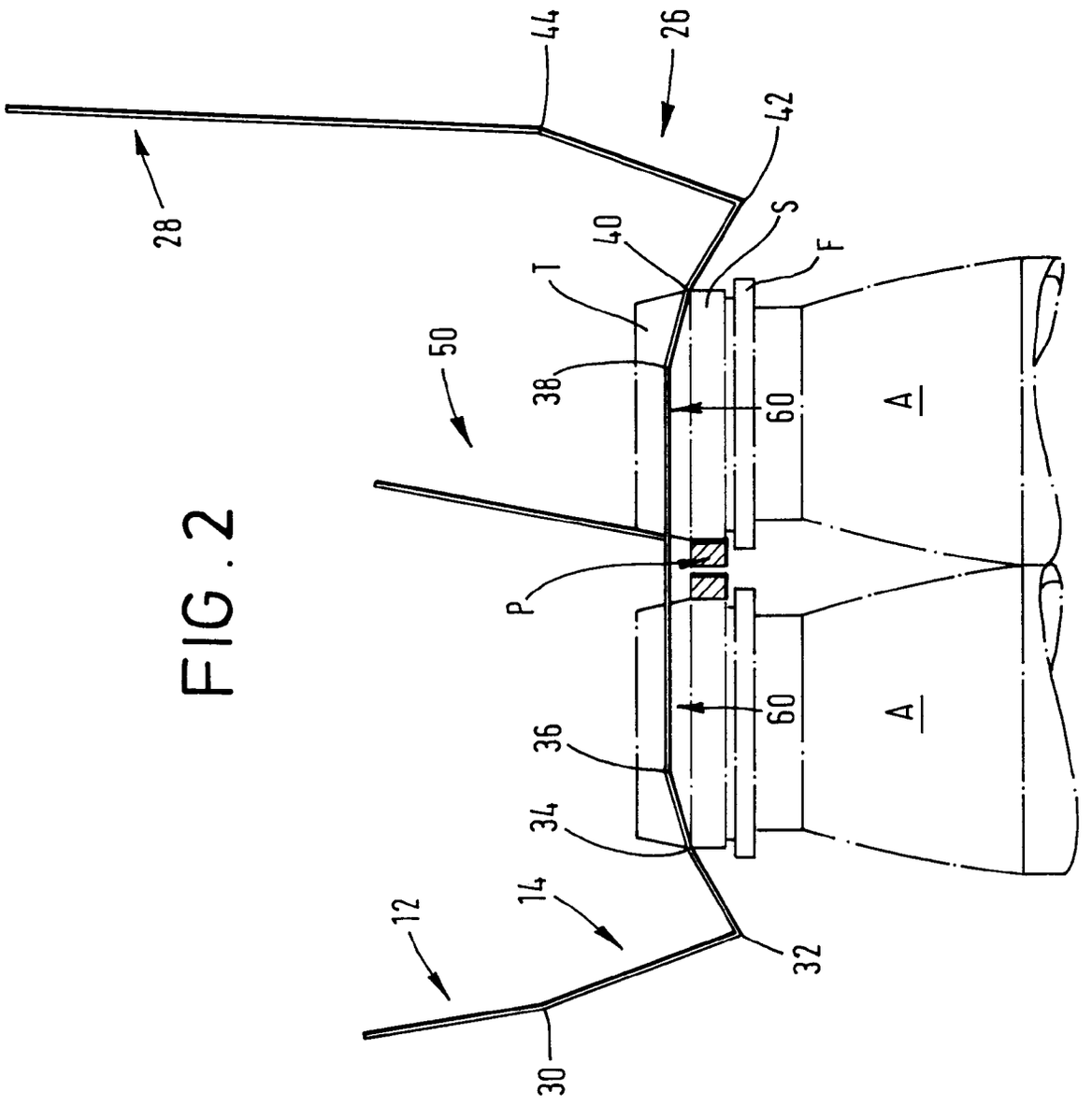


FIG. 3

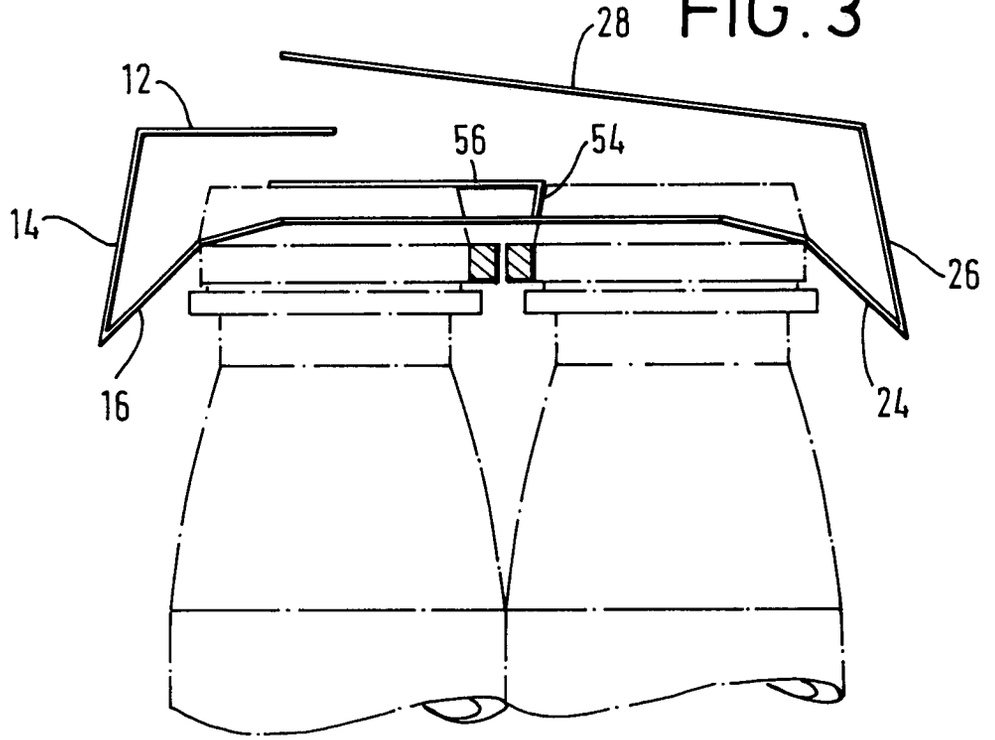


FIG. 4

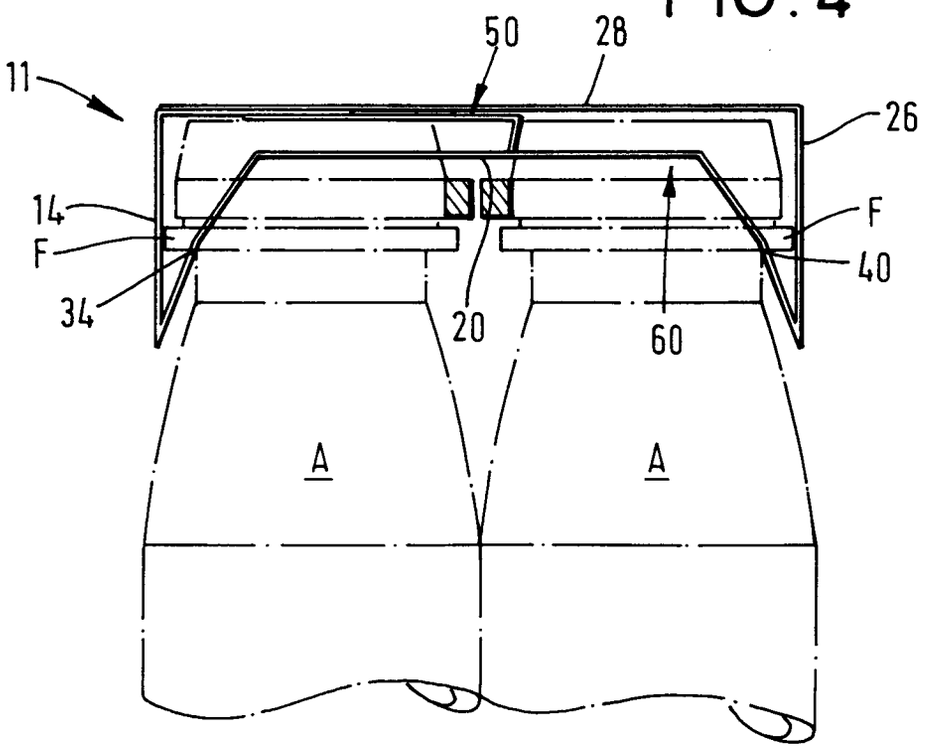
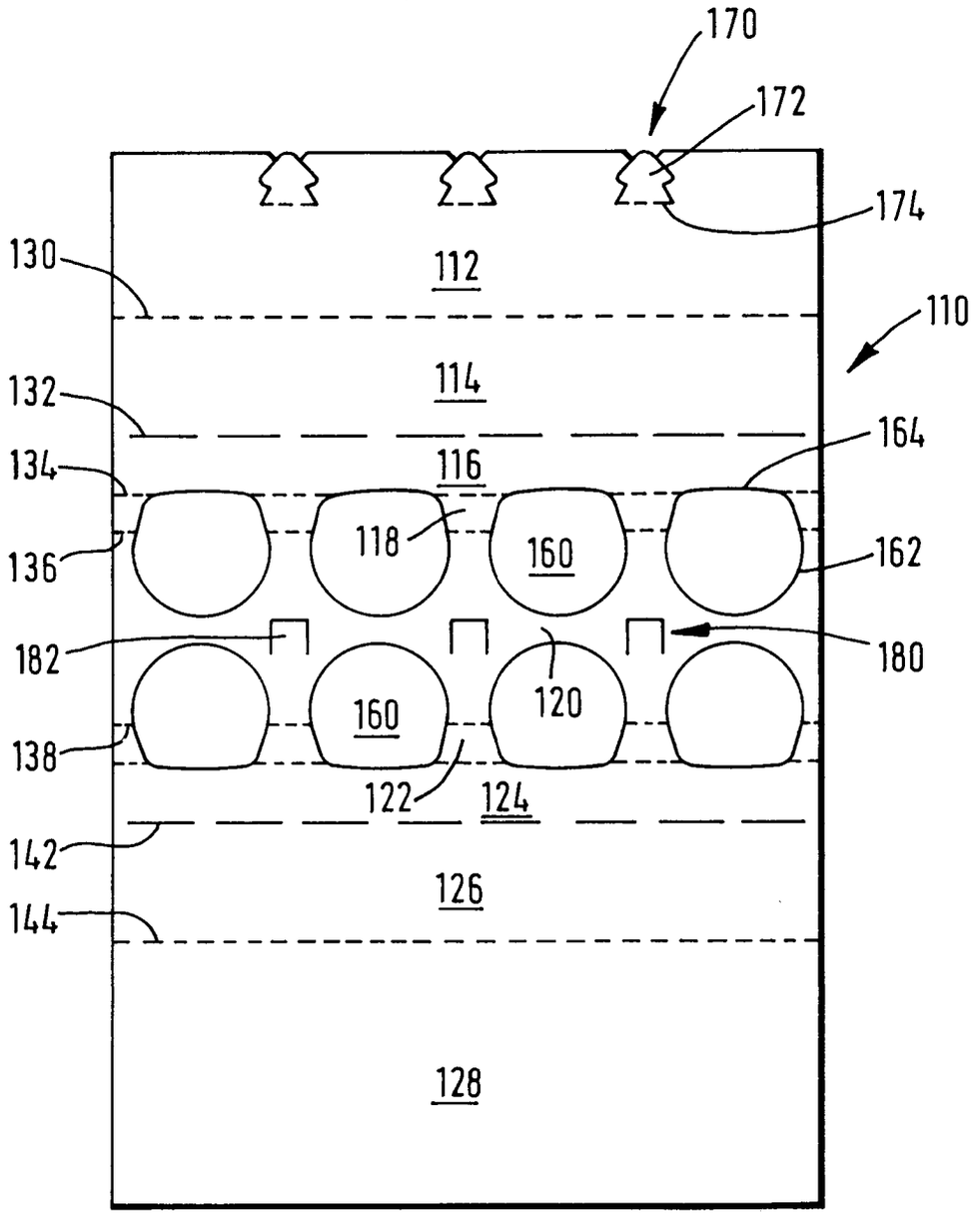


FIG. 5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