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(11)

EP 1 378 456 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

07.01.2004 Bulletin 2004/02

(51) Int Cl.7: **B65D 5/72**

(21) Application number: **03015011.4**

(22) Date of filing: **02.07.2003**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR**

Designated Extension States:

AL LT LV MK

(30) Priority: **02.07.2002 GB 0215268**

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(54) **Carton and carton blank**

(57) A carton and blank for forming a carton comprising a first panel (54) with a first access opening (84) and a slidable panel (74) slidably disposed under the first panel for opening and closing the opening or cut-

out. The slidable panel has a second access opening (72) in overlapping arrangement with the first opening to define a distribution aperture which is adjusted in size by moving the second opening relative the first opening.

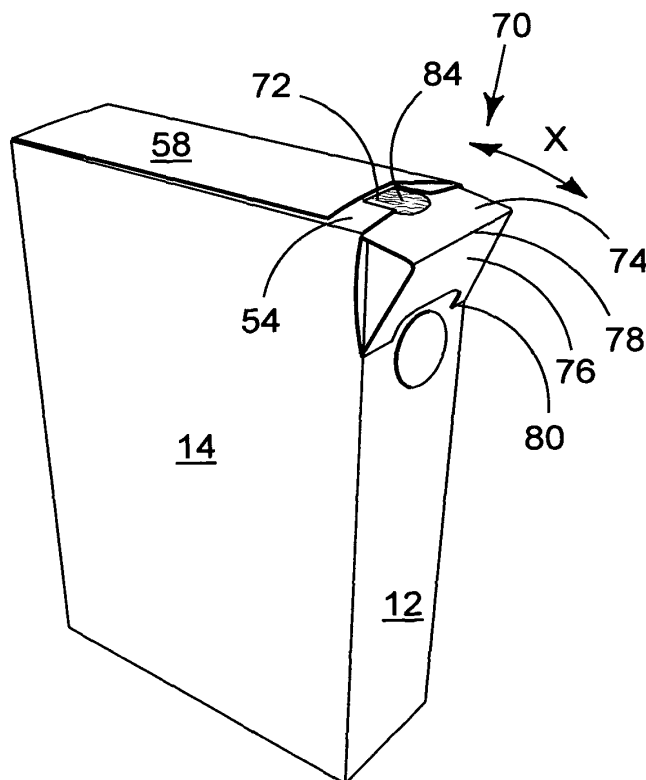


FIGURE 16

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Description

[0001] The invention relates to a carton for accommodating one or more articles, for example powder such as cereal or sugar, which carton is provided with an access structure for the introduction to or removal of the articles from the carton. The invention also provides an article pourer to assist in the removal of product.

[0002] It is known from, for example, US 5 458 272, to produce a carton having a swingable closure panel and a pair of wing flaps, each wing flap having stopper elements limiting outward movement of the closure panel. In US 4 752 029 there is shown a carton including a swingable closure panel hinged at its lower edge to a front wall for forward and backward pivotal movement and a dispensing device for gravity feeding the contents of the carton.

[0003] In US 3,040,953 there is shown a closure means for a carton having an internal panel for opening and closing an access aperture.

[0004] A problem associated with the prior art is how to provide a positive feed to improve the removal of product without damaging the integrity of the carton, and to provide an adjustable pourer.

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

[0006] One aspect of the invention provides a carton comprising a first panel with a first access opening and a slidable panel slidably disposed under the first panel for opening and closing the opening or cut-out. The slidable panel has a second access opening in overlapping arrangement with the first opening to define a distribution aperture which is adjusted in size by moving the second opening relative the first opening.

[0007] Preferably, the slidable panel is hingedly connected to a swingable panel that is hinged to a second panel disposed adjacent to, and at an angular relationship with, the first panel. More preferably, the swingable panel is provided with a tab for facilitating manipulation of the slidable panel.

[0008] In some embodiments, a stopper flap is disposed over the swingable panel and detachably attached to the second panel to prevent undesired swinging movement of the swingable panel. In such embodiments, the stopper flap covers the first opening.

[0009] According to an optional feature of this aspect of the invention a tamperproof member may cover the first opening or cut-out. Preferably, an outer panel overlies the first panel and the tamperproof member is hingedly or detachably connected to the outer panel. More preferably, a second panel is disposed adjacent to, and at an angular relationship with, the first panel, and the tamperproof member is secured to the second panel.

[0010] A second aspect of the invention provides a carton comprising a rectangular tubular body and an end closure structure closing one or each of the opposite

ends of the tubular body, the end closure structure includes a pair of overlapping, mutually glued major panels hingedly connected to first opposed walls of the tubular body respectively and a minor flap hingedly connected to at least one of second opposed walls of the tubular body and lying between the major flaps. The minor flap has a cut-away portion to increase the area of one of the major flaps directly glued to the other.

[0011] Optionally, the minor flap is configured such that the length of the minor flap is longer along one of its side edges than along its other side edge. Preferably, the minor flap is generally triangular in shape.

[0012] In some embodiments, the longer side edge of the minor flap is disposed in registry with the fold line between the overlying major flap and the adjacent first wall, and the shorter side edge is disposed in registry with the fold line between the underlying major flap and the adjacent first wall. The overlying major flap may be glued to the underlying major flap and to the minor flap along at least two strips of glue extending in a direction parallel to the fold lines respectively. The at least two strips of glue may be disposed alongside the fold lines respectively.

[0013] A third aspect of the invention provides a blank for forming a carton having a plurality of panels hinged together in series to form a rectangular tubular body and an end closure structure closing one or each of the opposite ends of the tubular body, the end closure structure includes a pair of overlapping, mutually glued major panels hingedly connected to first opposed wall panels of the blank. A minor flap is hingedly connected to at least one of second opposed wall panels and adapted to lie between the major flaps in a set up condition, and the minor flap has a cut-away portion to increase the area of one of the major flaps directly glued to the other when secured together. Preferably, the minor flap is configured such that the length of the minor flap is longer along one of its side edges than along its other side edge.

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

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

FIGURES 2, 3 and 4 illustrate the formation of the carton formed from a blank of Figure 1 in a flat collapsed form;

FIGURES 5, 6 and 7 illustrate the construction of one end wall of the carton formed from a blank of Figure 1;

FIGURES 8, 9, 10 and 11 are perspective views showing the construction of the access structure and opposing end wall structure from the blank of Figure 1;

FIGURE 12 illustrates a perspective view of the carton in a set up and loaded condition; and

FIGURES 13, 14, 15 and 16 illustrate the opening of the access structure of the carton shown in Figure 12.

[0015] Referring to the drawings, there is shown a carton and blank for forming a carton. The blank and carton are formed in paperboard or other foldable sheet material, for example plastic or the like, in which has been added cut and fold lines. The cartons are used to hold one or more articles, for example powder or the like, such as sugar or cereal, and to dispense the product. Whilst in the illustrated embodiments, a unitary blank is used to make a single carton, it is envisaged that two or more blanks may be employed, for example to provide the access structure or feed means, described in more detail below.

[0016] Referring now to Figure 1, there is shown a blank comprising a plurality of panels for forming a carton with an access structure. In the first embodiment, the blank 10 comprises in series an outer first top wall panel 12, a first side wall panel 14, a base wall panel 16, second side wall panel 18 and an inner first end wall panel 20, hingedly connected one to the next in series along fold lines 22, 24, 26 and 28 respectively. Preferably, there further comprises a securing flap 30 hingedly connected to one of the end wall panels, for example outer first end wall panel 20 along fold line 32.

[0017] A first end wall structure 33 is provided by first end wall panel 34 hingedly connected to side wall panel 14 along fold line 36 and a second end wall panel 38 hingedly connected to second side wall panel 18 along fold line 40. In one class of embodiments, there comprises a pair of minor flaps 42 and 48. Preferably, each flap 42, 48 is configured such that the length L of the minor flaps 42 and 48 is longer along one of its side edges 46, 52 than along its other side edges 47 and 49. In this embodiment, minor flap 48 is hingedly connected to top wall panel 12 along fold line 50 and flap 42 is hingedly connected to base wall panel 16 along fold line 44 and the minor flaps 42 and 48 are separated from the first end wall panel 34 along cut lines defining edges 46 and 52.

[0018] In some embodiments, the minor flaps 42 and 48 are provided with a cut away portion. In Figure 1 the cut away portions are provided by making the minor flaps 42 and 48 generally triangular in shape; although it is envisaged that other shapes can be used without departing from the scope of invention. More preferably, there comprises an end edge 43 provided in the minor flap 42 and end edge 45 provided in the minor flap 48.

[0019] Along the opposing end wall there is provided a first end wall panel 54 hingedly connected to side wall panel 14 along fold line 56 and a second end wall panel 58 hingedly connected to side wall panel 18 along fold line 60. There further comprises a minor flap 62, which is hingedly connected to base wall panel 16 along fold line 64. A first side edge of the minor flap 62 is defined by cut line 66 and an opposed cut edge 67 defining along

the opposing side edge of the minor flap.

[0020] There further comprises an access structure 70 that is provided in the corner between the top wall panel 12 and the end wall structure formed from end wall panels 54 and 58. Of course, it is envisaged that the access structure is not limited to this position or arrangement within the carton and can be formed along one of the side walls or between the base and the opposing end of the structure, without departing from the scope of invention.

[0021] The access structure 70 is provided with a first access opening 72 formed, in this embodiment, by a recess formed in first end wall panel 54. There further comprises a slidable panel 74, which is hingedly connected to top wall panel 12 by means of intermediate panel 76. Slidable panel 74 is hingedly connected to intermediate panel 76 along fold line 78 and intermediate panel 76 is hingedly connected to the top wall panel 12 along fold line 80. Preferably, there is provided a tab 82 struck from intermediate panel 76 by cut line 81. Tab 81 is provided to facilitate manipulation of the slidable panel 74 in a set up carton.

[0022] The slidable panel 74 is provided with a second access opening or cutout, 84. It is envisaged that the cut-out 84 and recess 72 can be increased or decreased in size according to the product contained within the carton and according to the desired flow rate.

[0023] In one class of embodiments, there further comprises a tamperproof arrangement 71, which is provided adjacent the second end wall panel 58 and is hingedly connected thereto along fold line 88. Thus, the tamperproof arrangement 71 comprises a tamperproof member 90, hingedly connected to an intermediate panel 86 along fold line 92. Intermediate panel 86 is hingedly connected to end wall panel 58 along fold line 88. Optionally fold line 88 is replaced with a frangible line. There further comprises a tab 94 hingedly connected to tamperproof member 90 along fold line 95. The tamperproof member 90 is also provided with a glue patch 96 frangibly connected thereto along frangible line 98.

[0024] In order to form the completed carrier in flat collapsed condition from the blank, a series of sequential folding and gluing operations are required and will be described further with reference to Figures 2 to 12 of the drawings. The folding and gluing operations can be performed in one or more straight-line machines, 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.

[0025] Referring to Figures 2, 3 and 4, the carton is constructed by securing the ends of the blank to form a flat collapsed carton. Thus, the inner top wall panel 20 and securing flap 30 are folded inwardly along fold line 28, as shown in Figures 2 and 3. Preferably glue (marked with cross-hatching), or other suitable known securing means, is provided on the securing flap 30 and inner side wall panel 20. By folding side wall panel 14

and outer top wall panel 12 inwardly along central fold line 24, these panels are brought into face contacting arrangement with securing flap 30 and inner top wall panel 20 and are secured thereto by glue or other suitable means known in the art. Thus the carton is in a flat collapsed form as shown in Figure 4, ready to be supplied to an end user, for loading or to move on to the next stage of the construction and erecting process. The tamper proof member 90 is illustrated in Figure 4 as protruding from the carton, although in other embodiments the tamper proof member 90 is folded inwardly along fold line 92 when top wall panel 20 is folded inwardly. Thus, tamper proof member 90 is held within the carton, until it is required to be set up. Advantageously, this reduces the risk of damage to the tamper proof member 90.

[0026] In order to construct the ends of the carton, reference is made to the first end wall structure 33 and Figures 5, 6 and 7. Thus the inner end wall panel 38 is folded inwardly along fold line 40, thereafter minor flaps 42 and 48 are folded inwardly to come into face contacting arrangement with the inner end wall panel 38. It will be seen that inner end wall panel 38 covers the entire width between the opposed side wall panels.

[0027] A line of glue is applied across the length of end wall panel 34 which is then folded inwardly over minor flaps 42 and 48 and inner end wall panel 38 to hold the aforementioned panels firmly in place. Beneficially, this avoids powder loss by increasing the area of the overlap between the inner and outer end wall panels 34 and 38, because the minor flaps 42 and 48 have a cut away portion.

[0028] In another class of embodiments, there further comprises two or more longitudinally extending glue strips shown in Figure 6, to improve the securing arrangement proximate each side of the carton. In a yet further embodiment of the invention glue strips are provided laterally whereby each glue strip secures the inner and outer end walls 38, 34 and one of the minor flaps 42; 48.

[0029] Likewise, the opposing end wall structure is formed by the inner end wall panel 54 when it is folded inwardly along fold line 56 and the minor flap 62 is folded into overlapping arrangement with inner end wall panel 54 along fold line 64. Thereafter, glue is applied to outer end wall panel 54 (marked with cross hatch in Figure 11), which, in this embodiment, comprises two strips of glue and is folded inwardly to secure the inner end wall panel 54, the minor flap 62 and the outer end wall panel 58 together.

[0030] In order to construct the access structure 70, reference is made to Figures 8 to 11, whereby slidable panel 74 is first folded inwardly along fold line 78, as shown in Figure 9. Thereafter, the end wall panel 54 comprising the recess 72 is folded inwardly along fold line 56 so that the recess 72 overlaps the slidable panel 74, shown in Figure 10. Thereafter, the end wall structure is formed whereby the minor flap 62 is placed in

overlapping arrangement with inner end wall panel 54. Glue is applied to outer end wall panel 58 and is then folded inwardly along fold line 60 so as to secure the inner end wall panel 54, the minor flap 62 and the outer end wall panel 58 together in overlapping relationship, illustrated in Figure 11.

[0031] In those embodiments with the tamper proof structure 71, the tamper proof member (or stopper flap) 90 is folded inwardly along fold line 92 and glue patch 96 is secured to top wall panel 12 as shown in Figures 11 and 12. Thus the carton is in a set up and loaded condition ready to be supplied to the end user.

[0032] In order to gain access to the interior of the carton, the user lifts the lower part of tab 94 and folds it outwardly along fold line 95 as shown in Figure 13. By continuing to lift the tab 94, the glue patch 96 becomes detached from tab 94 and the tamper proof member 90 is folded back along fold line 92 as shown in Figure 14; and may optionally be removed by tearing along nick points defined in frangible line 88 to reveal the access structure 70, shown in Figure 15.

[0033] In order to gain access to the interior of the carton, the slidable panel 74 is moved in an outward direction X, shown in Figure 16, by pivoting it about fold line 80 so that intermediate panel 76 is swingable and moved about fold lines 78 and 80. This action brings the second opening 84 into a partial overlapping arrangement with the first opening (or recess) 72. By changing the amount of overlap, it will increase or decrease the size of the distribution hole, so that the amount of product to be discharged from the carton can be varied according to the size of the distribution hole.

[0034] A further advantage of the arrangement described above is that a pourer is provided through these apertures, with a tamperproof structure.

[0035] It is envisaged that the shape of the inner and outer end flaps is not limited to that described above and can be altered according to the particular size and shape of carton to be manufactured.

[0036] The present invention and its preferred embodiment relates to an arrangement for providing a reclosable access structure in a fully enclosed carton. However, it is anticipated that the invention can be applied to a variety of cartons and is not limited to those of the fully enclosed type hereinbefore described and could be used for numerous applications.

[0037] It will be recognised that as used herein, directional references such as "top", "base", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one 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.

[0038] It should be understood that various changes

may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape, alternative top and base closure structures may be used. The carton may accommodate more than one article in different arrays.

Claims

1. A carton comprising a first panel with a first access opening and a slidable panel slidably disposed under the first panel for opening and closing the opening or cut-out wherein the slidable panel has a second access opening in overlapping arrangement with the first opening to define a distribution aperture which is adjusted in size by moving the second opening relative the first opening.
2. The carton as claimed in claim 1 wherein the slidable panel is hingedly connected to a swingable panel that is hinged to a second panel disposed adjacent to, and at an angular relationship with, the first panel.
3. The carton as claimed in claim 2 wherein the swingable panel is provided with a tab for facilitating manipulation of the slidable panel.
4. The carton as claimed in claim 2 or claim 3 wherein a stopper flap is disposed over the swingable panel and detachably attached to the second panel to prevent undesired swinging movement of the swingable panel.
5. The carton as claimed in claim 4 wherein the first opening is covered by the stopper flap.
6. The carton as claimed in any of claims 1 to 5 wherein a tamperproof member covers the first opening or cutout.
7. The carton as claimed in claim 6 wherein an outer panel overlies the first panel and the tamperproof member is hingedly or detachably connected to the outer panel.
8. The carton as claimed in claim 7 wherein a second panel is disposed adjacent to, and at an angular relationship with, the first panel, and the tamperproof member is secured to the second panel.
9. A carton comprising a rectangular tubular body and an end closure structure closing one or each of the opposite ends of the tubular body, the end closure structure includes a pair of overlapping, mutually glued major panels hingedly connected to first opposed walls of the tubular body respectively and a

minor flap hingedly connected to at least one of second opposed walls of the tubular body and lying between the major flaps, and the minor flap has a cut-away portion to increase the area of one of the major flaps directly glued to the other.

10. The carton as claimed in claim 9 wherein the minor flap is configured such that the length of the minor flap is longer along one of its side edges than along its other side edge.
11. The carton as claimed in claim 10 wherein the minor flap is generally triangular in shape.
12. The carton as claimed in claim 10 or claim 11 wherein the longer side edge of the minor flap is disposed in registry with the fold line between the overlying major flap and the adjacent first wall, and the shorter side edge is disposed in registry with the fold line between the underlying major flap and the adjacent first wall.
13. The carton as claimed in claim 12 wherein the overlying major flap is glued to the underlying major flap and to the minor flap along at least two strips of glue extending in a direction parallel to the fold lines respectively.
14. The carton as claimed in claim 15 wherein the at least two strips of glue is disposed alongside the fold lines respectively.
15. A blank for forming a carton as claimed in any of claims 1 to 8 or claims 9 to 14.
16. A blank for forming a carton having a plurality of panels hinged together in series to form a rectangular tubular body and an end closure structure closing one or each of the opposite ends of the tubular body, the end closure structure includes a pair of overlapping, mutually glued major panels hingedly connected to first opposed wall panels of the blank and a minor flap hingedly connected to at least one of second opposed wall panels and adapted to lie between the major flaps in a set up condition, and the minor flap has a cut-away portion to increase the area of one of the major flaps directly glued to the other when secured together.
17. The blank as claimed in claim 16 wherein the minor flap is configured such that the length of the minor flap is longer along one of its side edges than along its other side edge.
18. The blank as claimed in claim 17 wherein the minor flap is generally triangular in shape.
19. A package comprising a carton as claimed in any

of claims 1 to 8 or claims 9 to 14 and product contained therein.

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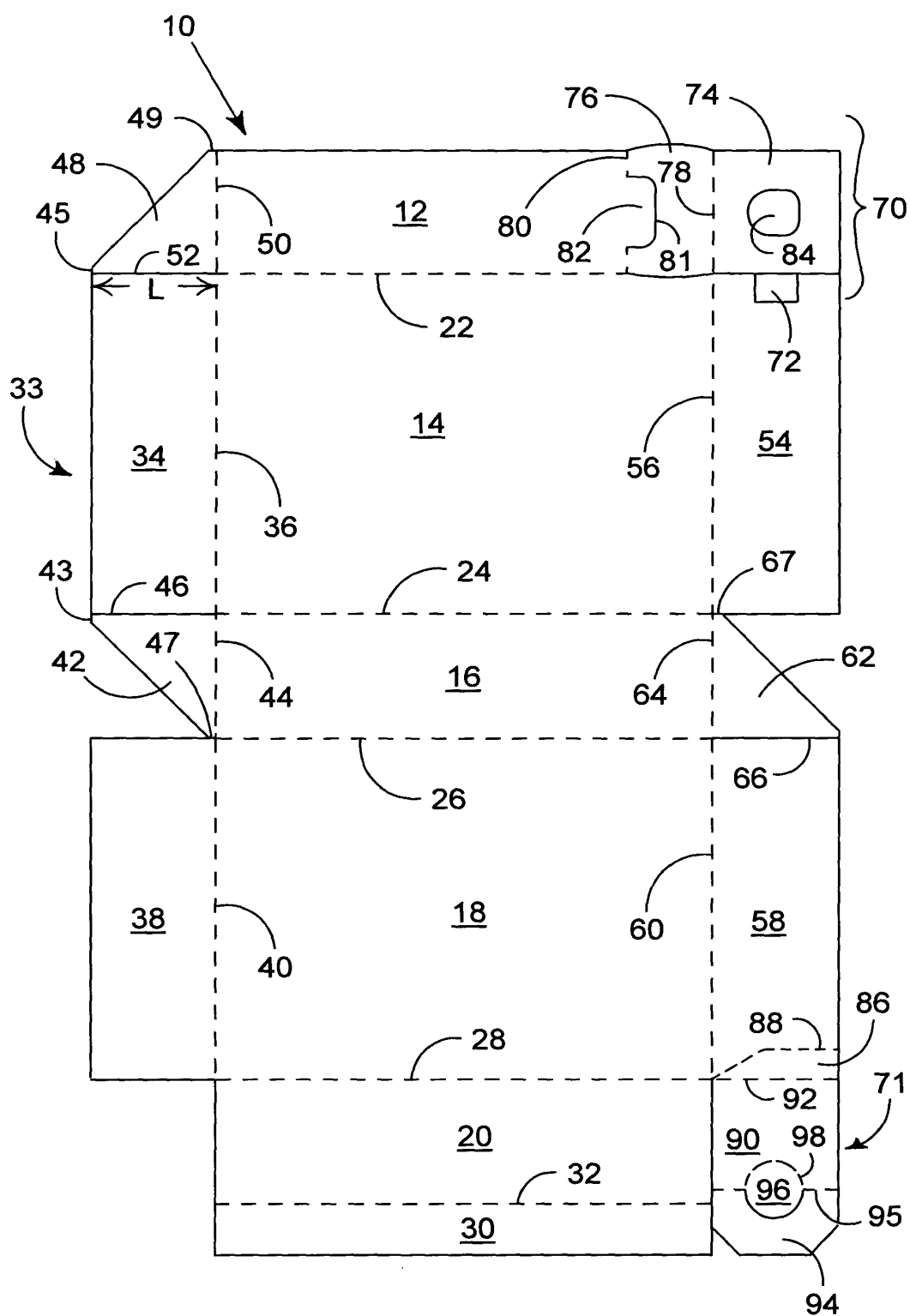


FIGURE 1

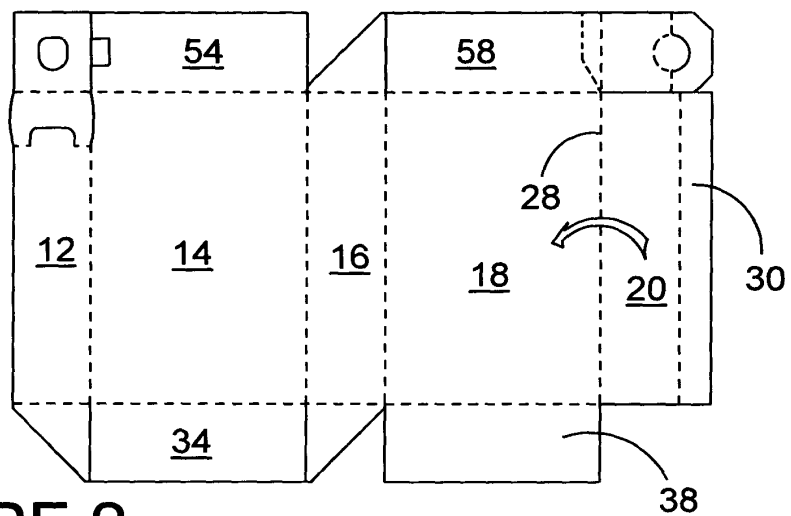


FIGURE 2

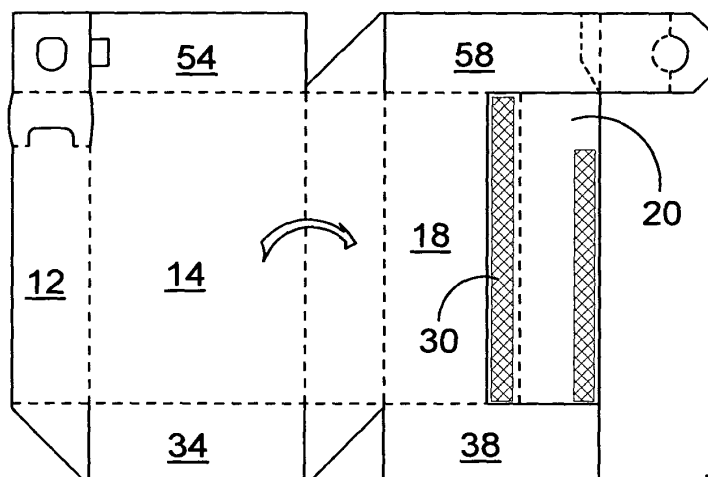


FIGURE 3

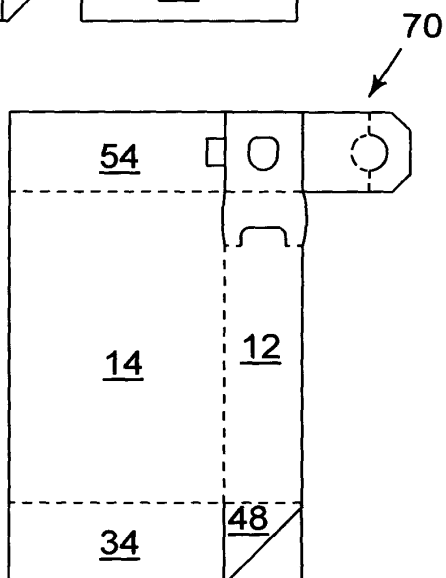


FIGURE 4

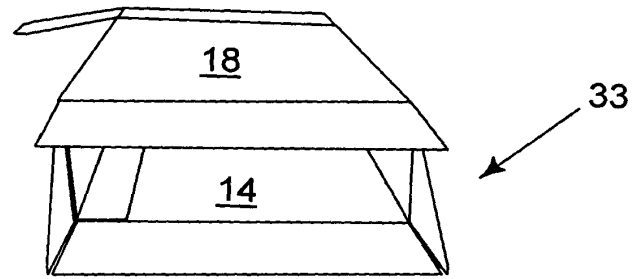


FIGURE 5

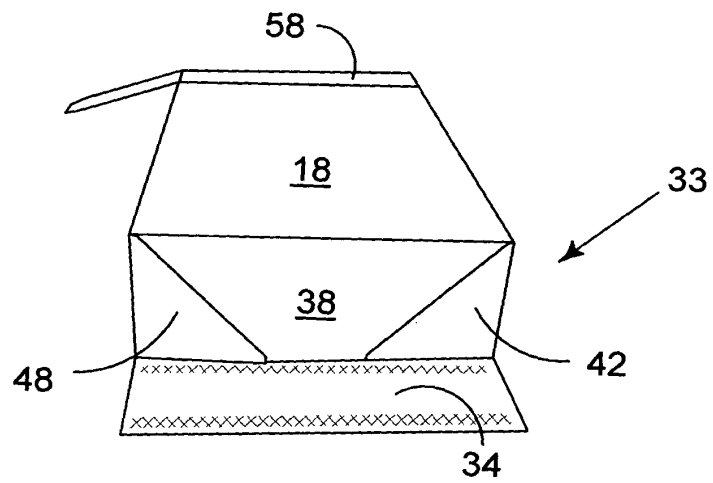


FIGURE 6

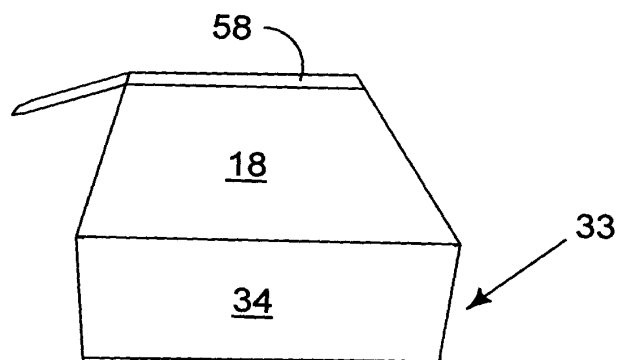


FIGURE 7

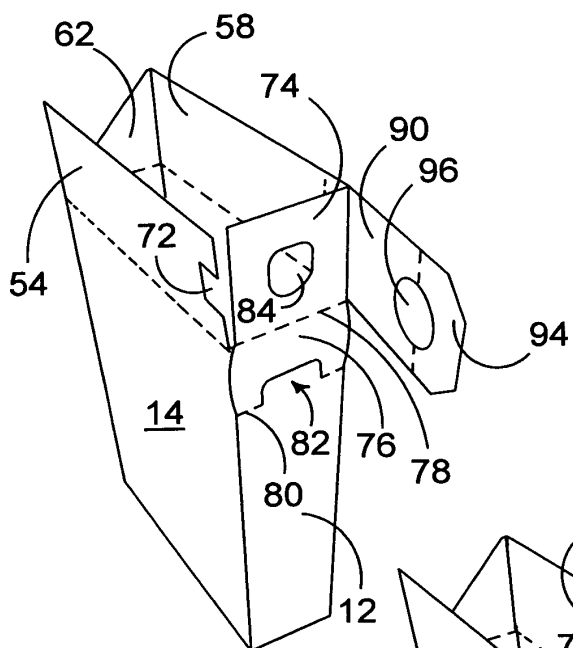


FIGURE 8

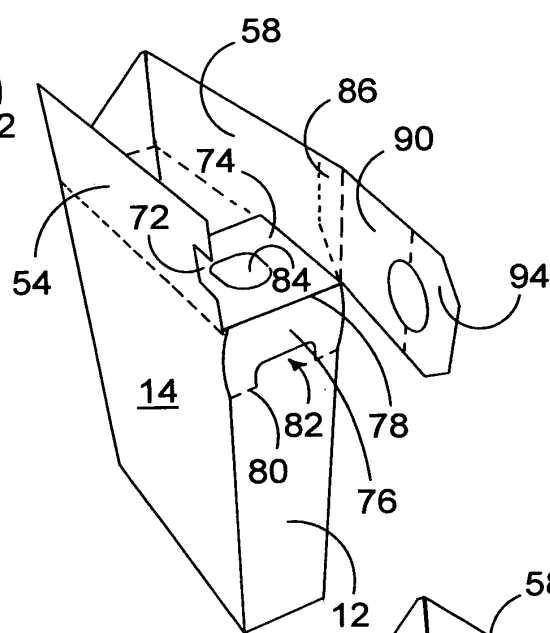


FIGURE 9

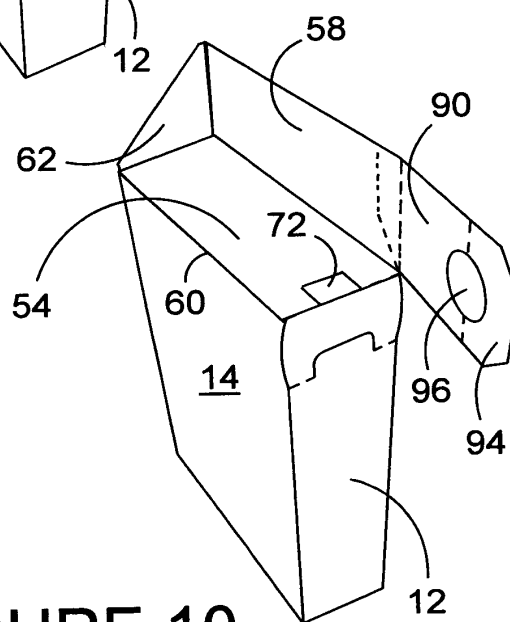


FIGURE 10

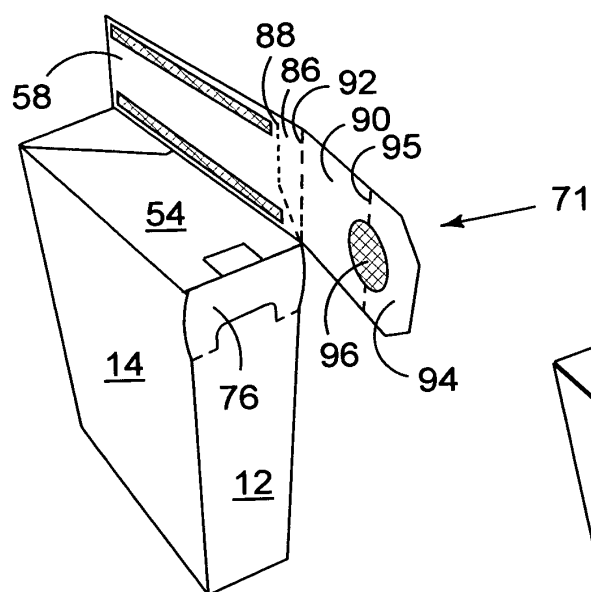


FIGURE 11

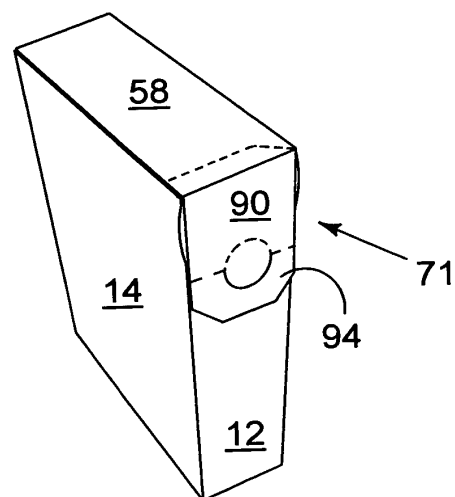


FIGURE 12

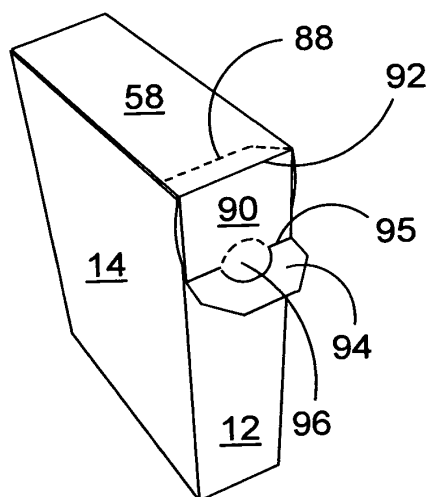


FIGURE 13

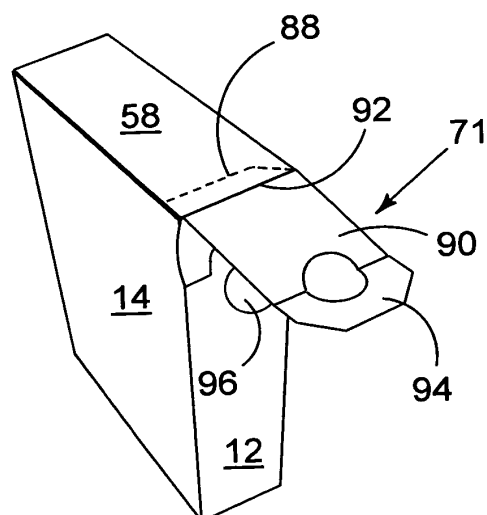


FIGURE 14

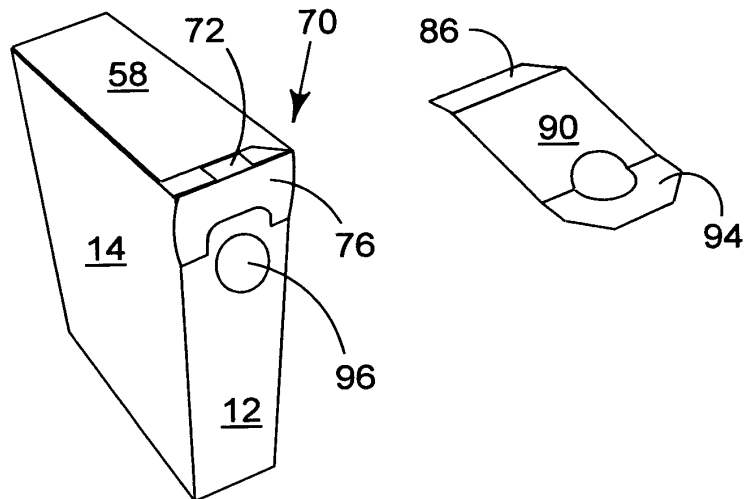


FIGURE 15

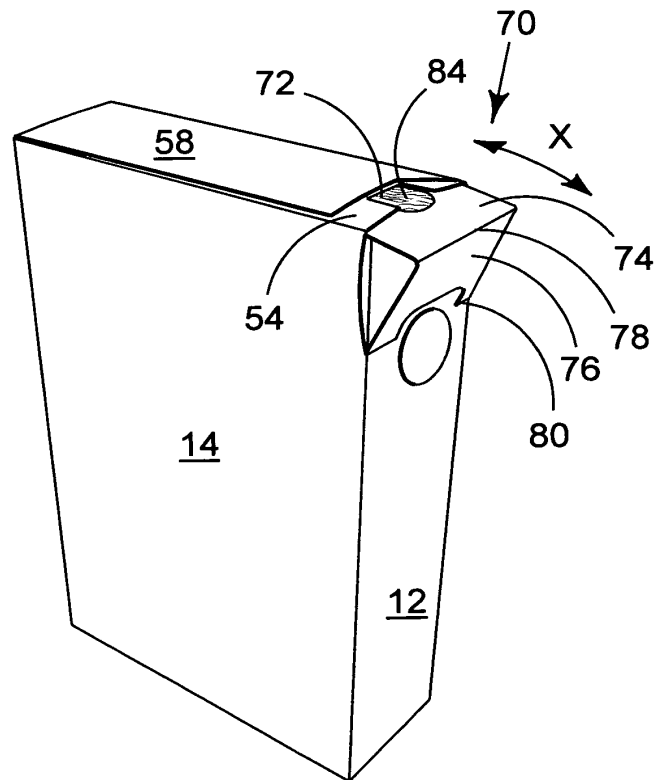


FIGURE 16