Feb. 7, 1967 R. J. HENNESSEY 3,302,847

REINFORCED POUR SPOUT CARTON

Filed May 20, 1965 2 Sheets-Sheet 1

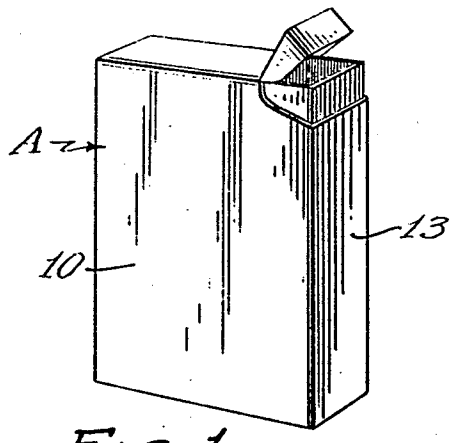


FIG. 1

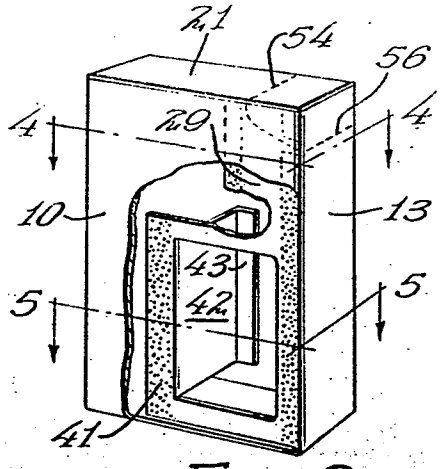


FIG. 2

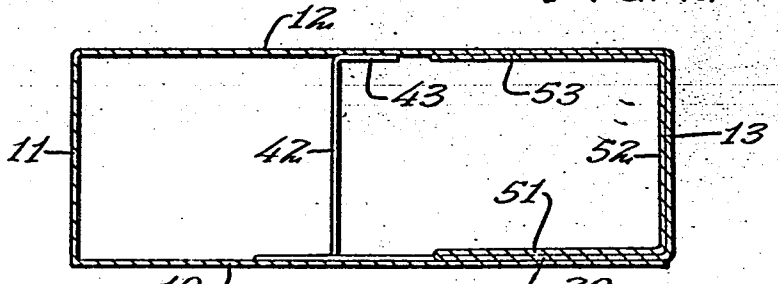


FIG. 4

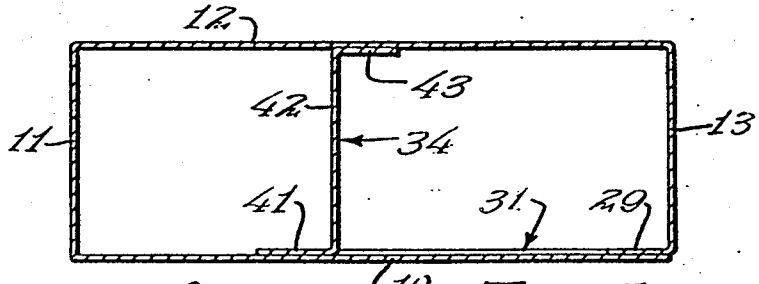


FIG. 5

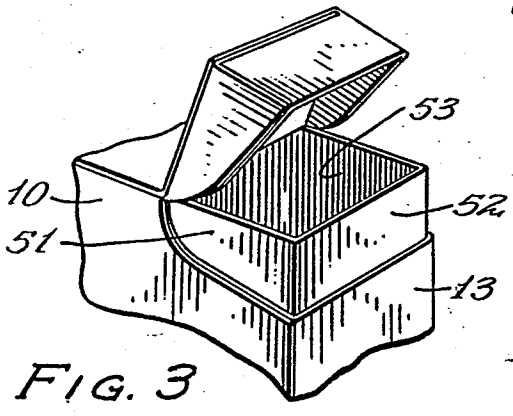


FIG. 3

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REINFORCED POUR SPOUT CARTON

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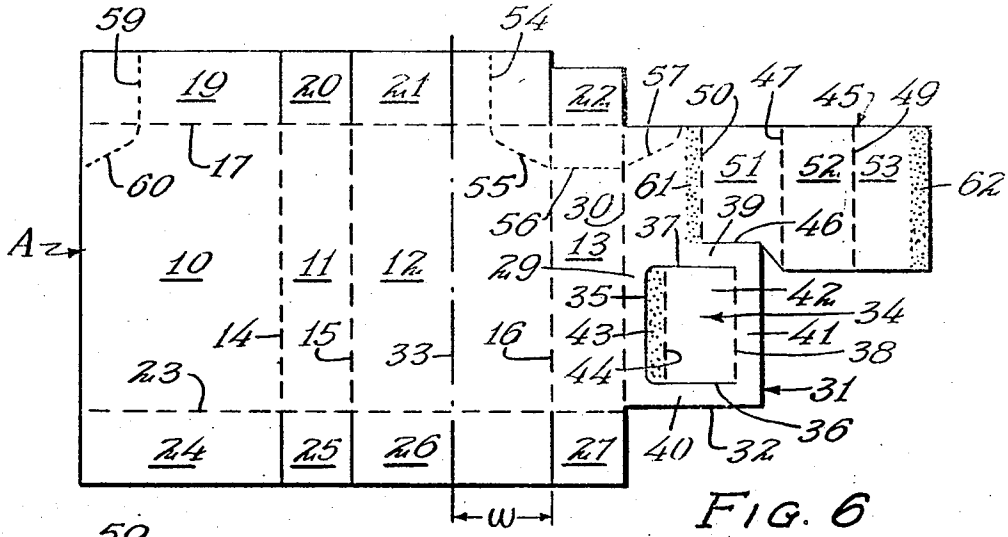


FIG. 6

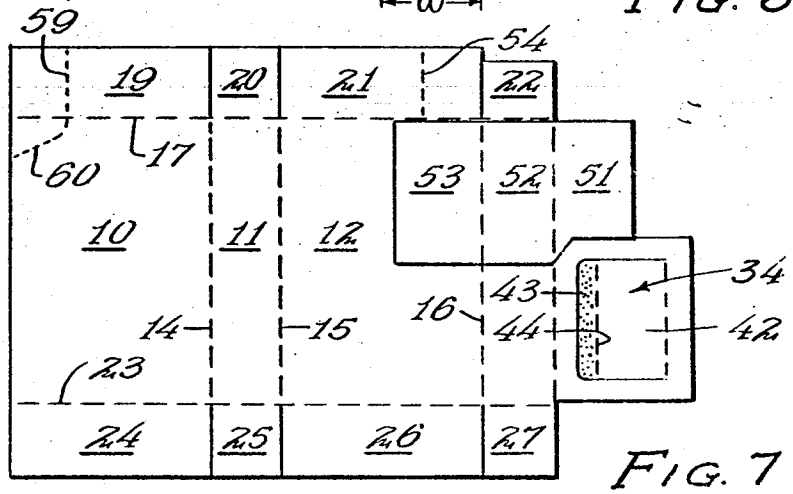


FIG. 7

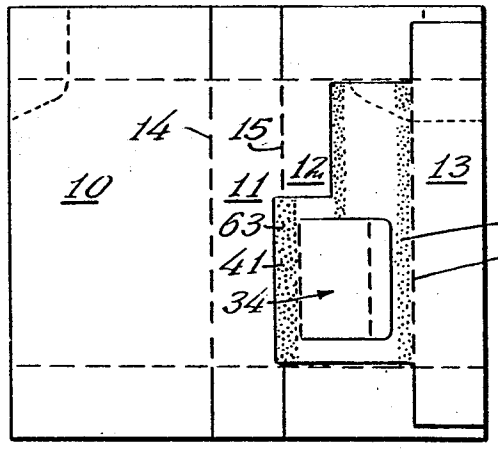


FIG. 8

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REINFORCED POUR SPOUT CARTON

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8 Claims. (Cl. 229—17)

This invention relates to an improvement in reinforced pour spout cartons and deals particularly with a carton having a reinforcing web extending between the center portions of the main panels of the carton, and also incorporating a pouring spout in conjunction therewith.

In my previously described application for a patent, Serial No. 353,937, filed March 23, 1964, and now Patent No. 3,166,229, for reinforced cartons, I described a structure having a reinforcing strut connecting the center portions of the two main carton panels to prevent these panels from bulging outwardly. Due to the fact that the major portion of the pressure tending to bulge the panels is in the lower half of the cartons, the reinforcing web extended only one half of the height of the carton, permitting two such cartons to be dove-tailed together in order to preserve paperboard. Cartons of the type in question and which have a great tendency to bulge usually are used to contain powdered, granular, or other flowable material as, for example, flour, cake mix, powdered milk, sugar, and the like. Most such materials are not emptied from the container at one time. In other words, only a portion of the contents is removed at a time. As a result, there is a material advantage in incorporating a pour spout and a carton reclosure in this type of construction.

I have found that by somewhat increasing the amount of paperboard used to form the reinforced carton disclosed in my previous application above referred to, two important advantages can be obtained. In the first place, the vertical height of the web connecting the main panels may be increased past the vertical center of the cartons. By folding a portion of the stock to lie inwardly of one package side wall and inwardly of adjoining portions of the main panels, a hinged closure may be formed outwardly of this added portion capable of being opened to form a pour spout.

In the structure referred to in my above-mentioned application, a strip of paperboard must be added to the glue flap which is of proper length to extend slightly beyond the center of a main panel of the carton. By increasing the length of this extension, and folding it back upon itself, a U-shaped inner liner member may be provided lying inwardly of a portion of a side wall and adjoining portions of the main panels which form a generally U-shaped inner liner for a corner portion of the carton. Accordingly, a hinged cover may be formed in the portion of the carton outwardly of this U-shaped liner portion which may be opened to permit a portion of the contents to be poured out, and which may be reclosed to protect the remainder of the content.

A further feature of the present invention resides in the provision of a pour spout carton which would normally employ a relatively large amount of paperboard to produce, and to use a portion of the paperboard which would otherwise be wasted to form an internal strut to prevent bulging of the main panels of the carton, thereby permitting thinner paperboard to be used in the formation of the carton. As a result, while a considerable area of paperboard is added by forming the pour spout and the internal strut, the cost of the paperboard may be reduced to some extent due to the use of a lighter caliper board.

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These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification,

FIGURE 1 is a perspective view of the carton with the hinged cover portion in open position to disclose the pour spout.

FIGURE 2 is a perspective view of the closed carton, portions of which are broken away to show the interior structure.

FIGURE 3 is an enlarged perspective view of the pour spout area of the carton.

FIGURE 4 is a horizontal sectional view through the upper portion of the carton, the position of the section being indicated by the line 4—4 of FIGURE 2.

FIGURE 5 is a horizontal section view through the lower portion of the carton, the position of the section being indicated by the line 5—5 of FIGURE 2.

FIGURE 6 is a diagrammatic view of the blank from which the carton is formed.

FIGURE 7 is a diagrammatic view of the blank after the first folding operation has been completed.

FIGURE 8 is a diagrammatic view of the blank at the completion of the second folding operation and just before the final fold is made.

The carton A is formed of the blank best illustrated in FIGURE 6 of the drawings. This blank includes a main panel **10**, a side wall panel **11**, a second main panel **12**, and a second side wall panel **13**, foldably connected along parallel lines of fold **14**, **15**, and **16**. The main panels **10** and **12** are preferably more than twice the width of the side wall panels **13** in order that the partition may be located at the center of the main panels.

The wall panels **10**, **11**, **12**, and **13** described are usually connected along their upper edges by a substantially common line of fold **17** to top closure flaps **19**, **20**, **21**, and **22**, respectively, while the lower edges of the wall panels are connected along a fold line **23** to bottom closing flaps **24**, **25**, **26**, and **27**, respectively. Obviously, other types of end closures could be similarly used.

A glue flap **29** is hingedly connected to the side wall **13** along a fold line **30**. A partition wall extension is indicated in general by the numeral **31** and is, in the arrangement illustrated, somewhat more than one-half the height of the main and side walls described. The lower edge **32** of the extension **31** is substantially aligned with the fold line **23** so as not to interfere with the formation of the lower closure by the closure flaps **24**, **25**, **26**, and **27**. The width of the extension **31** depends upon the proportion of the various wall panels, but it is preferred that the combined width of the end wall **13** and glue flap **29** be somewhat less than the width W of one-half the main wall panels **10** and **12**, or from the fold line **16** to the broken line **33** which indicates the center line of the panel **12**. If this is not true, the partition cannot be located at the center of the main panel.

The extension **31** is generally rectangular in outline. An inner flap structure **34** is formed in the extension **31** by a generally U-shaped cut line arrangement including a vertical cut line **35** and a pair of horizontal cut lines **36** and **37** extending from the ends of the vertical cut line **35**. The cut line **35** is usually spaced from the fold line **30** a distance sufficient to provide the lower end of the glue flap **29** so that the glue flap extends continuously throughout the height of the carton wall panels. The U-shaped cut lines thus define an inner flap structure **34** which is enclosed within a rectangular frame, this frame including the lower portion of the glue flap **29**,

an upper horizontal strap **39**, a lower horizontal strap **40**, and a vertical strap **41** connecting the ends of the straps **39** and **40**. The inner flap structure **34** is connected to the outer flap structure **31** along a vertical fold line **38**.

The inner flap structure **34** is divided into a partition panel **42** and a glue flap **43** by a vertical fold line **44**. The partition panel **42** is of a width substantially equal to the width of the side walls **11** and **13** and, when the carton is erected, acts to connect the center portions of the main panels **10** and **12**.

Above the extension **31** is a pouring spout extension **45** which is partially separated from the upper edge of the extension **31** by a cut line **46**. The pouring spout extension **45** is divided into three panels by a pair of vertical parallel fold lines **47** and **49**, and the extension **45** is hingedly connected to the element which acts as a glue flap by a parallel fold line **50**. The area between the fold lines **50** and **47** is indicated at **51** and comprises a main panel liner panel. The area between the fold lines **47** and **49** comprises a side wall liner panel **52**. The area between the fold line **49** and the end of the extension **45** comprises a second main panel liner panel **53**. Usually, the panels **51** and **53** are of substantially equal width.

The main panel liner panel **51** is of a width substantially equal to the width of the upper portion of the glue flap **29** to which it is hinged. Accordingly, when the extension **45** is doubled back upon itself, the liner panel **51** lies inwardly of the glue flap and is substantially coextensive therewith in width. The side wall liner panel **52** is substantially equal in width to the width of the side wall **13** and is designed to lie inwardly thereof in face contact therewith. The main panel liner panel **53** is designed to lie inwardly of the main panel **12**.

A fold line **54** extends across the top closure flap **21** secured to the main panel **12**, the fold line **54** extending perpendicularly to the fold line **17**. A perforated line or weakened line of separation extends from the juncture of the fold line **54** and the fold line **17** across an upper corner of the main panel **12** to define a corner area which, in the particular form of construction illustrated, it is generally triangular. The weakened line **55** extends continuously across the side wall **13** as indicated at **56**, and a continuation of the same weakened line extends, as indicated at **57**, across a corner of the glue flap **19**. As is also indicated in FIGURE 6, the glue flap **19** hinged to the main panel **10** is also provided with a fold line **59** which coincides with the fold line **54** when the carton is closed. A perforated line or other weakened line of separation **60** extends across a corner of the main panel **10**, this weakened line **60** coinciding with the weakened line **57** in the folded form of the carton.

FIGURE 7 of the drawings discloses the carton blank after the first folding operation. As indicated in FIGURE 6, adhesive is applied in an area **61** of the glue flap **29** adjoining the fold line **50**, and also to an area **62** near the free end of the extension **45**. In the first folding operation, the extension **45** is folded along the fold line **50** so that the liner panel **51** is secured in face contact to the inner surface of the glue flap **29**, the side wall linner panel **52** lies in face contact with the inner surface of the side wall **13**, and the main panel liner panel **53** is adhered in face contact with the inner surface of the main panel **12**. When this operation is complete, the blank appears as indicated in FIGURE 7 of the drawings.

Adhesive is also applied to the glue flap **43** forming a part of the inner flap structure **34**. During the second folding operation, the carton is folded along the fold line **16** which connects the main panel **12** and the side wall **13**. After this folding operation, the glue flap **43** is adhered to the center portion of the main panel **12**, the fold line **44** usually substantially coinciding with the main panel center line **33**. At the completion of the second folding operation, the carton appears as indicated in FIGURE 8 of the drawings.

In the position shown in FIGURE 8, adhesive is applied to the vertical strap **41** at the end of the inner flap structure, to an area **64** adjoining the fold line **50** connecting the upper pouring spout extension **45** to the glue flap **29**, and along the entire glue flap **29** adjoining the fold line **30** connecting this glue flap to the side wall **13**. To complete the folding operation, the carton blank is folded along the fold line **14** to adhere the adhesive coated areas of the two extensions to the main panel **10**. The carton is now completed in flat folded form.

When the carton A is squared up, one end of the carton is closed in the customary way and the carton is filled. After filling, the other end of the carton is closed, usually by folding the flaps **20** and **22** in a common plane, and then folding the main panel closure flaps **19** and **21** into superimposed relation adhered to the inner flaps **20** and **22**. Usually, the flaps **19** and **21** are formed as illustrated of a length substantially equal to the width of the side walls **11** and **13**. As will be understood, these flaps may be shortened if desired in the interest of economy, and may, if desired meet in edge-abutting relation.

When used, the partition wall **42** acts to connect center portions of the main panels **10** and **12** to prevent the bulging of the cartons. The partition wall **34** may extend a substantial proportion of the height of the carton if so desired. The liner panels **51**, **52**, and **53**, lie inwardly of the main panel **10**, the side wall **13**, and the main panel **12** through small areas of these panels, the liner panels lying inwardly of the weakened lines of separation which have been described. Accordingly, when it is desired to open the carton, the panels may be split along these weakened lines of separation. When this is done, the areas of the glue flaps **19** and **21** between the aligned fold lines **59** and **54** and the side wall **13** may combine with the corner area of the main panel **10**, the upper portion of the side wall **13** above the weakened line **56** and the adjoining corner portion of the main panel **12** to provide a hinged closure which is shown in open position in FIGURE 1 of the drawings.

In accordance with the patent statutes, I have described the principles of construction and operation of my improvement in reinforced pour spout cartons; while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A reinforced pour spout carton blank including:

a first main panel, a first side wall panel, a second main panel, and a second side wall panel connected in series by substantially parallel fold lines,

a fifth panel hinged to said second side wall panel along a glue flap hinge line,

a generally U-shaped cut in the lower portion of said fifth panel including a pair of spaced cut lines substantially perpendicular to said fold line and terminating in spaced relation to said glue flap hinge line, and a third cut line connecting the ends of said cut lines of said pair which are closest to said glue flap hinge line,

a fold line parallel to said previously described fold lines and connecting the ends of said cut lines of said pair which are most remote from said glue flap hinge line,

an additional fold line extending between the cut lines of said pair and parallel to and spaced from said third cut line dividing the area within said U-shaped cut into a partition panel and a glue panel said partition panel being substantially equal in width to said side wall panels.

a pour spout extension hinged to the upper portion of said fifth panel along a pour spout extension hinge

line parallel to said previously described fold lines,
said pour spout being creased along parallel fold lines to provide a first main panel liner panel, a side wall liner panel, and a second main panel liner panel,
said first main panel liner panel being of a width substantially equal to the distance between said pour spout extension hinge line and said glue flap hinge line, and said side wall liner panel being substantially equal in width to said side wall panels, and
closure flaps hinged to certain of said panels.

2. The blank of claim 1 and in which the apertured lower portion of said fifth panel is separated from said pour spout extension by a cut line.

3. A reinforced pour spout carton blank including:
a first main panel, a first side wall panel, a second main panel, and a second side wall panel connected in series by substantially parallel fold lines,
a fifth panel hinged to said second side wall panel along a glue flap hinge line,
the lower portion of said fifth panel forming a partition wall extension including an anchored area adapted to be secured in face contact with the inner surface of said first main panel, a partition panel adapted to extend between said main panels, and a glue flap adapted to be secured in face contact with the inner surface of said second main panel,
a pour spout extension hinged to the upper portion of said fifth panel along a pour spout extension hinge line parallel to said previously described fold lines,
said pour spout being creased along parallel fold lines to provide a first main panel liner panel, a side wall liner panel, and a second main panel liner panel,
said first main panel liner panel being of a width substantially equal to the distance between said pour spout extension hinge line and said glue flap hinge line, and said side wall liner panel being substantially equal in width to said side wall panels, and,
closure flaps hinged to certain of said panels.

4. A reinforced pour spout carton including:
rectangularly arranged walls including a pair of opposed parallel main panels and a pair of parallel side wall panels connected in tubular relation,
a fifth panel hinged to one of said side wall panels and having a portion thereof secured in face contact with the inner surface of one of said main panels,
a partition panel hinged to the lower portion of said fifth panel near the center of said one main panel and extending between said main panels generally parallel to said side wall panels,
a glue flap hinged to said partition panel and secured in face contact with the inner surface of the other of said main panels,
a pour spout extension hinged to said fifth panel along a fold line spaced from, and parallel to, the hinge line connecting said fifth panel to said one side wall panel,
said pour spout extension being above the portion of said fifth panel to which said partition wall is secured and being creased along fold lines parallel to said hinge line to provide a first main panel liner panel lying in face contact with a portion of the inner surface of said fifth panel, a side wall liner panel lying inwardly of, and in face contact with, a portion of the inner surface of said one side wall panel, and a second main panel liner panel lying inwardly of, and in face contact with, a portion of the other main panel, and
end closure flaps hingedly connected to the upper and lower portions of at least certain of said main panels and side wall panels and foldable to provide end closures.

5. The structure of claim 4 and in which portions of the first and second main panels and said one side wall panel lying outwardly of said liner panels are separable from the remainder of said panels and are hingedly connected to one said upper closure flap.

6. A reinforced pour spout carton including:
rectangularly arranged walls including a pair of opposed parallel main panels and a pair of parallel side wall panels connected in tubular relation,
a fifth panel hinged to one of said side wall panels and having a portion thereof secured in face contact with the inner surface of one of said main panels,
a partition panel hinged to the lower portion of said fifth panel near the center of said one main panel and extending between said main panels generally parallel to said side wall panels,
a glue flap hinged to said partition panel and secured in face contact with the inner surface of the other of said main panels,
a pour spout extension hinged to said fifth panel along a fold line spaced from, and parallel to, the hinge line connecting said fifth panel to said one side wall panel,
said pour spout extension being above the portion of said fifth panel to which said partition wall is secured and being creased along fold lines parallel to said hinge line to provide a first main panel liner panel lying in face contact with a portion of the inner surface of said fifth panel, a side wall liner panel lying inwardly of, and in face contact with, a portion of the inner surface of said one side wall panel, and a second main panel liner panel lying inwardly of, and in face contact with, a portion of the other main panel,
closure flaps secured to the upper edges of said side walls and folded inwardly into a common plane, and closure flaps on said main panels foldable into face contact against said side wall closure flaps and secured in position,
fold lines extending across said main panel closure flaps parallel to said side walls and spaced from said one side wall a distance no more than the width of said main panel liner panels, and continuous lines of separation extending from the ends of said last named fold line across corner portions of said main panels and across said one side wall, said lines of separation lying outwardly of said liner panels, and
the portions of said main panel closure flaps between said fold line therein and said one side wall combining with the adjoining corner portions of said main panel and upper portion of said one side panel to provide a hinged closure.

7. The structure of claim 6 and in which the side wall closure flap on said one side wall is no longer than the distance between said fold line in said main panel closure flaps and said one side wall.

8. A reinforced pour spout carton including:
rectangularly arranged walls including a pair of opposed parallel main panels and a pair of parallel side wall panels connected in tubular relation,
a fifth panel hinged to one of said side wall panels and having a portion thereof secured in face contact with the inner surface of one of said main panels,
a pour spout extension hinged to said fifth panel along a fold line spaced from, and parallel to, the hinge line connecting said fifth panel to said one side wall panel,
closure flaps on the upper edges of said main panel and on at least said one side wall secured to provide a top closure,
a fold line extending across said top closure parallel to said one side wall and spaced therefrom a distance at not exceeding the width of said main panel liner panels,
continuous lines of separation extending from the ends of said top closure fold line across corner portions

of said main panels and across said one side wall, said lines of separation being outwardly of said liner panels, and

the corner portions of said main panels above said lines of separation and the portion of said one side wall above said line of separation combining with the portion of said top closure between said fold line therein and said one side wall to provide a hinged closure.

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