March 27, 1962 H. G. ZASTROW 3,027,063

DIAGONAL CREASED CARTONS

Filed Aug. 17, 1960 2 Sheets-Sheet 1

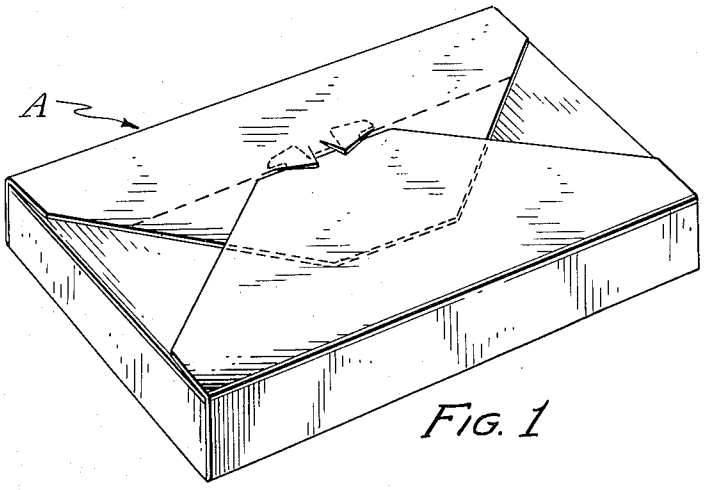


FIG. 1

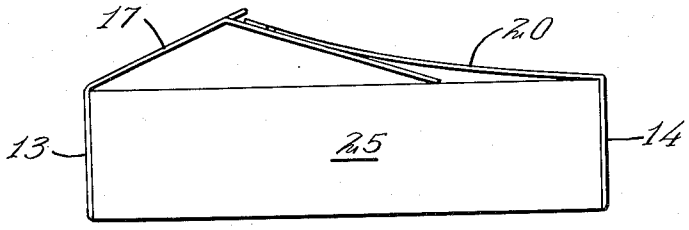


FIG. 2

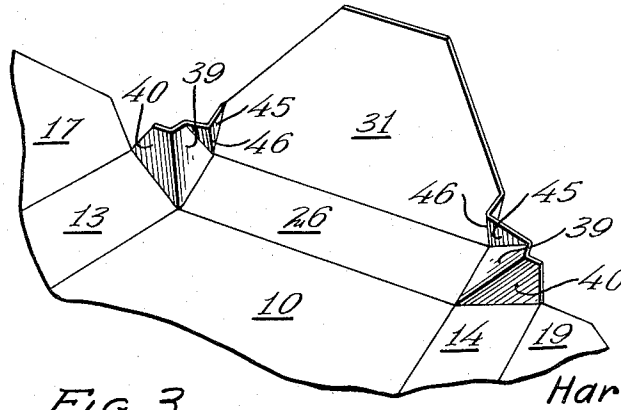


FIG. 3

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DIAGONAL CREASED CARTONS

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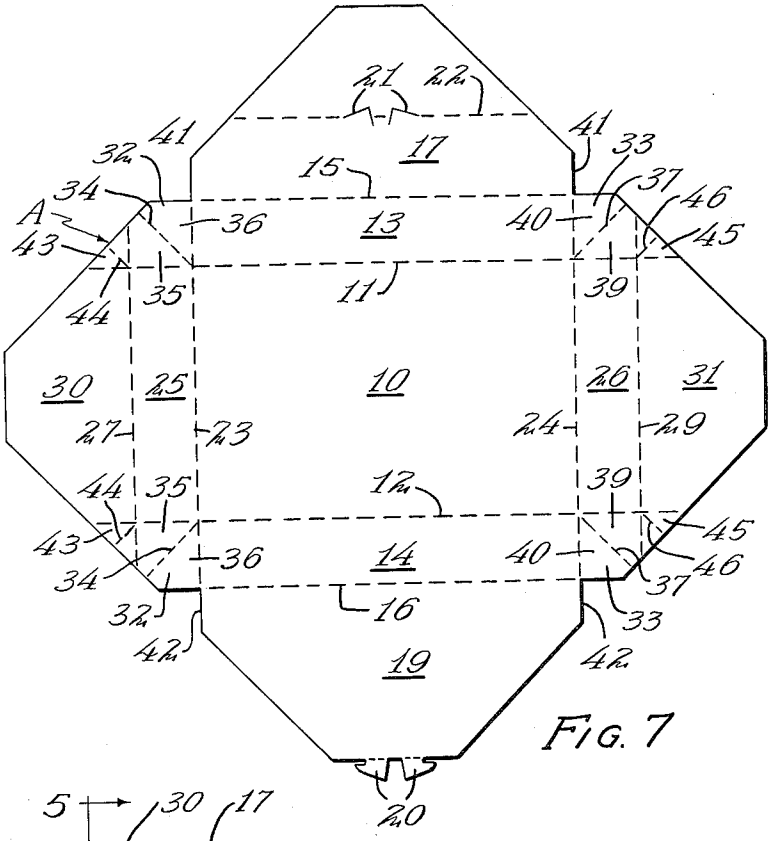


FIG. 7

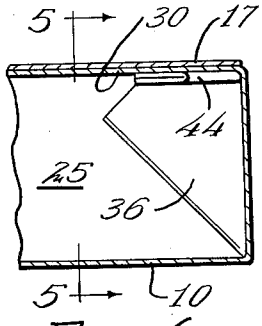


FIG. 4

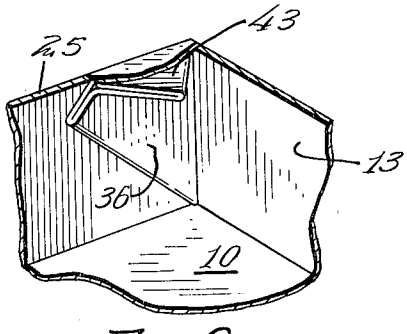


FIG. 6

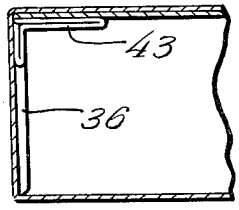


FIG. 5

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DIAGONAL CREASED CARTONS

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Filed Aug. 17, 1960, Ser. No. 50,172
5 Claims. (Cl. 229—31)

This invention relates to an improvement in diagonal creased cartons and deals particularly with a means of holding the gusset folds at the corners of the carton in place.

Many types of diagonally folded cartons have been produced. One of the difficulties which is experienced in providing a tray or folder having gusset folds at the corner lies in the fact that some means must be provided for holding the generally triangular flaps against a wall of the carton. There is a natural tendency for the flaps to extend diagonally into the carton rather than along the walls thereof. It is the object of the present invention to provide a means of automatically holding the flaps in place when the cover of the folder is closed, eliminating the requirements for other holding means.

A feature of the present invention resides in the provision of a folder having diagonal creases at the corners providing a pair of gusset folds arranged in face contact and in providing a second gusset fold between one of the gusset flaps and a flap forming the cover panel. As the flap forming the cover panel is folded down over the contents, this second gusset fold is folded down into horizontal position thereby locking the gusset flaps forming the carton corner in proper position against a carton wall.

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 a folder carton showing the carton in closed position.

FIGURE 2 is a side elevational view of the carton shown in FIGURE 1 in partially closed position.

FIGURE 3 is a perspective view of one end of the carton in partially closed position.

FIGURE 4 is a sectional view through an end of the closed carton showing the gusset flaps therein.

FIGURE 5 is a sectional view through a portion of the closed carton, the position of the section being indicated by the line 5—5 of FIGURE 4.

FIGURE 6 is a perspective view of a corner of the carton, the top being broken away to disclose the flap structure.

FIGURE 7 is a diagrammatic view of the blank from which the carton is produced.

The carton or folder A is constructed of the blank illustrated in FIGURE 7 of the drawings. As indicated in this figure, the blank includes a bottom panel 10 of rectangular form connected along two opposite edges by fold lines 11 and 12 to side wall panels 13 and 14 respectively. The side walls 13 and 14 are connected along fold lines 15 and 16 to closing flaps 17 and 19 respectively. In the particular arrangement, these closing flaps 17 and 19 are generally triangular in shape. Locking tongues 20 are foldably connected to the end of the triangular flap 19 and these tongues are designed to extend into angular slots 21. A line of fold 22 is provided extending transversely across the flap 17 parallel to the fold line 15 to simplify the insertion of the locking tongues into the slots 21. This arrangement is not a part of the present invention but is shown as a means of holding the folder closed.

The bottom panel 10 is foldably connected along its end edges by fold lines 23 and 24 to end wall panels 25 and 26 respectively. Fold lines 27 and 29 foldably connect

end walls 25 and 26 to generally triangular closing flaps 30 and 31. These flaps 30 and 31 are designed to fold beneath the innerlocking flaps 17 and 19.

Similar corner flaps 32 are foldably connected to the side walls 13 and 14 along extensions of the fold line 23. These corner flaps 32 are also connected to the end wall 25 along extensions of the fold line 11 and 12. Similar corner flaps 33 are connected to the side walls 13 and 14 along extensions of the fold line 24, and are connected to the end wall 26 by extensions of the fold lines 11 and 12. The flaps 32 are divided into two generally triangular flaps by diagonal fold lines 34 which form gusset flaps 35 and 36, the first of which is foldably connected to the ends of the end wall 25 and the second of which are connected to the ends of the side walls 13 and 14. The corner flaps 33 are similarly divided by diagonal fold lines 37 which divide the flaps 33 into generally triangular gusset flaps 39 which are hinged to the ends of the end walls 26 and 40 which are hingedly connected to the ends of the side walls 13 and 14.

Up to this point, the construction is generally conventional. As the side and end walls are folded into right angular relation with the bottom panel 10, the gusset flaps 35 and 36 fold into face contact at one end of the carton and the gusset flaps 39 and 40 fold into face contact at the other end of the carton. In this way a liquid tight tray is formed.

In usual practice in a folder of this type, a triangular notch is provided between the gusset flaps and the top closure flaps so that these closure flaps may be folded down without interference and will extend in edge overlapping relation. Two such notches 41 are shown between the corner flaps 32 and 33 and the top closure flap 17. Similar notches 42 are shown between the ends of the corner flaps 32 and 33 and the closure flap 19. However, the area between the ends of the corner flaps 32 and the closure flap 30 remains in tact, providing small triangular areas of paperboard 43 between the intersecting fold lines 11 and 27 and between the fold lines 12 and 27. These triangular areas 43 are centrally divided by a diagonal fold lines 44 which emanate from the junctures of the fold line 27 with the fold lines 11 and 12. In a similar manner, triangular areas 45 are provided between the corner flaps 33 and the closure flaps 31, these triangular areas 45 being centrally divided by fold lines 46 which emanate from the junctures between the fold line 29 and the intersecting fold lines 11 and 12. As a result, the triangular areas 43 and 45 are subdivided into two triangular areas which may be folded to provide gusset flaps.

The folder is erected in the usual manner, the side walls 13 and 14 and the end walls 25 and 26 being folded up into right angular relation with the bottom 10, the gusset flaps 35 and 36 folding into face contact at one end of the carton and the gusset flaps 39 and 40 folding into face contact at the other end of the carton. The pairs of gusset flaps 35, 36 are then folded so that the flaps 35 extend in face contact with the end wall 25, and the pairs of gusset flaps 39, 40 are folded so that the flaps 39 extend in face contact with the end wall 26. Unless the walls are held erect, the gusset flaps have a tendency to swing inwardly into diagonal relation to the corners, or toward the center of the bottom rather than to lie in face contact with the end walls. In order to prevent this difficulty, the triangular areas 43 and 45 are kinked inwardly, the two sections of these areas folding along the central fold lines 44 and 46 respectively. This requires that the flaps 30 and 31 be swung inwardly to some extent. When this is done, an outward pressure is exerted against the gusset flaps 35 and 39 to which the triangular areas are hinged. When the flaps 30 and 31 are swung down into horizontal position, the gusset flaps formed by the triangular areas 43 and 45 underlie

the closing flaps **30** and **31** to which they are also attached as indicated in FIGURES 4, 5 and 6 of the drawings, holding the corner flaps **35** and **39** in position against the end walls **25** and **26** and materially strengthening the corners of the carton.

While the corner structure has been shown in conjunction with a folder having triangular closing flaps, this is only in the interest of economy, as the closing flaps could just as well be rectangular in form if it were so desired. A folder of similar size having rectangular closing flaps normally requires the use of more paperboard, as the flaps usually overlap to a greater extent.

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

I claim:

1. A carton including a rectangular bottom panel, side and end walls hingedly connected thereto, diagonally creased corner flaps connected to the ends of the side and end flaps providing a pair of gusset flaps foldable into face contact against two of said walls which are opposed, closure flaps hingedly connected to said side walls and end walls and foldable into overlapping relation generally parallel to said bottom panel, a second pair of gusset flaps hingedly connected between said closure flaps of said two walls and the adjacent corner flaps, said second gusset flaps being centrally connected along diagonal fold lines emanating from the junctures between the fold lines connecting the closure flaps with said two walls and the fold lines connecting said corner flaps to said two walls, said second gusset flaps being foldable into face contact beneath the closure flaps connected to said two walls in substantially right angular relation to said first gusset flaps when said closure flaps of said two walls are folded into substantially parallel relation with said bottom panel.

2. The structure of claim 1 and in which said two walls comprise the end walls.

3. The structure of claim 1 and including interlocking means on the closure flaps of the remaining two walls.

4. A carton corner structure for use in a carton having a base panel, a pair of wall panels of equal height connected to said base panel along fold lines intersecting at substantially right angles, a corner flap connected to said wall panels along extensions of said intersecting fold lines, said corner flap being bisected by a diagonal fold line emanating from the intersection of said fold lines to provide first gusset flaps foldable in face contact and against one of said walls, a closure flap hingedly connected to the edge of said one wall opposite the edge hinged to said base panel, a second pair of gusset flaps foldably connected together along a diagonal fold line emanating from the juncture of the fold line connecting said one wall to said corner flap and the fold line connecting said closure flap to said one wall, one of said second gusset flaps being foldably connected to said closure flap along an extension of the fold line connecting said one wall and said corner flap and the other second gusset flap connected to said corner flap along an extension of the fold line connecting said one wall and said closure flap.

5. A carton including a rectangular bottom panel, side and end walls extending upwardly from the edges thereof, diagonally folded gusset flaps connecting the ends of the side walls and end walls, said gussets being in face contact against two opposed of said walls, closure flaps secured to said two walls and folded in substantially parallel relation to said bottom panel, and a second pair of diagonally folded gusset flaps connected between the first named gusset flaps hinged to said two walls and to the edges of said closure flaps, said second gusset flaps being in face contact and in substantially right angular relation to said first named gusset flaps beneath said closure flaps.

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