United States Patent [19]

Muth

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[54] **CARTON END WALL STRUCTURE**

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[73] Assignee: **Container Corporation of America,** Chicago, Ill.

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[52] **U.S. Cl.** **229/36**

[51] **Int. Cl.** **B65d 5/26**

[58] **Field of Search** 229/36, 35

[56] **References Cited**

UNITED STATES PATENTS

1,554,099	9/1925	Kolbe	229/35
3,285,143	11/1966	Baker	229/35 X
3,285,494	11/1966	Baker	229/36
2,829,817	4/1958	Halpern	229/36
3,086,691	4/1963	Fobiano	229/35

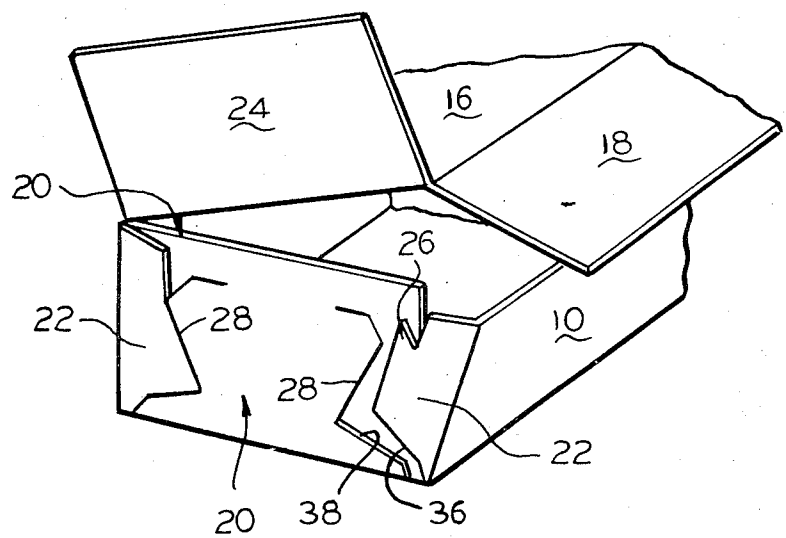
Primary Examiner—Davis T. Moorhead

Attorney—Carpenter, Ostis & Lindberg

[57] **ABSTRACT**

In a folding carton formed of foldable paperboard, an end wall structure including, an inner flap, a pair of intermediate flaps having interlocking engagement with the inner flap, an outer flap having sealing engagement with said inner and intermediate flaps, and means whereby the inner flap and portions of the intermediate flaps present generally co-planar surfaces engaging the outer flap.

1 Claim, 6 Drawing Figures



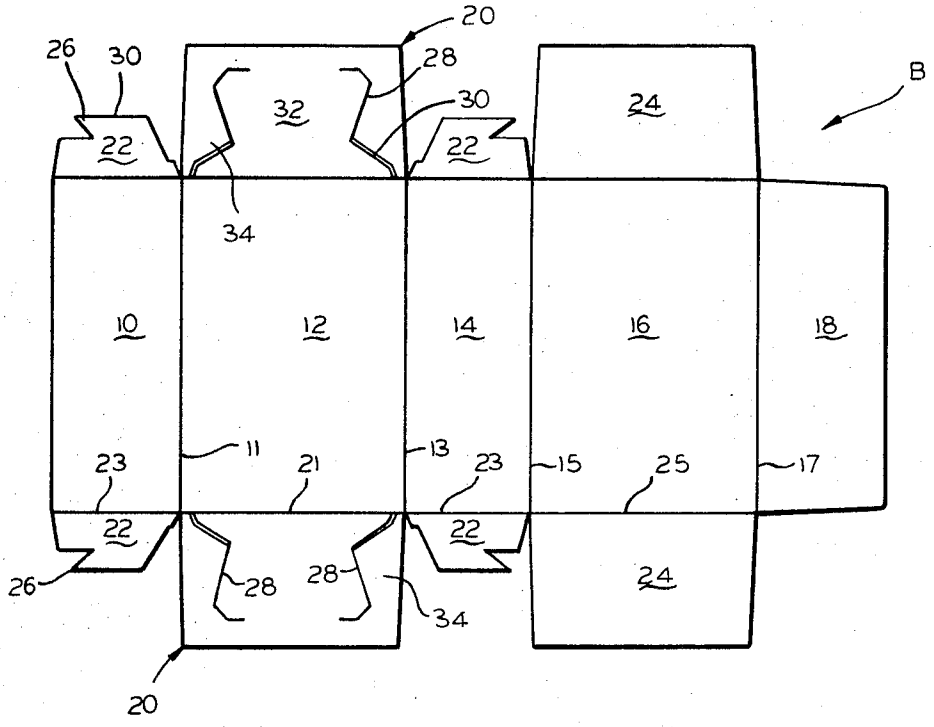


FIG.1

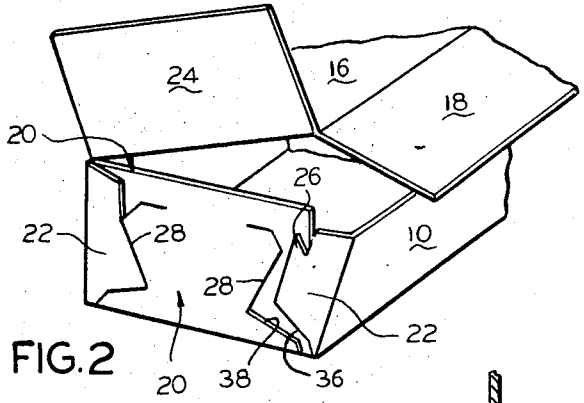


FIG.2

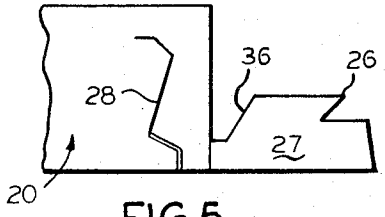


FIG.5

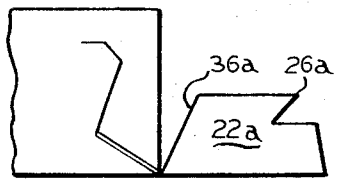


FIG.6

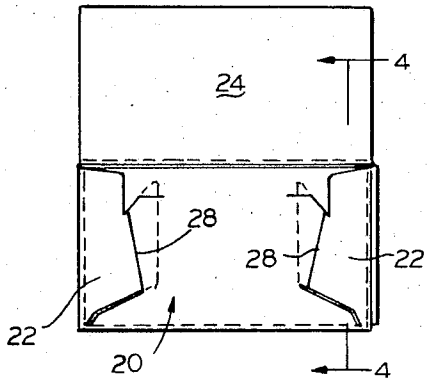


FIG.3

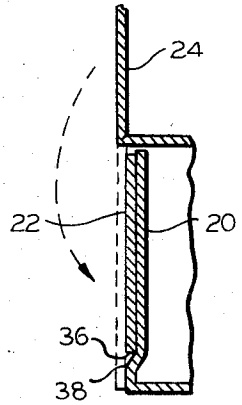


FIG.4

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CARTON END WALL STRUCTURE

One of the problems incurred in forming a seal-end carton wherein certain of the overlapping end flaps have interlocking as well as sealing engagement with each other is that if the co-engaging surfaces are not generally co-planar, a good sealing bond is difficult to achieve.

It is therefore an object of this invention to provide, in a seal-end carton with interlocking end flaps an improved method of increasing the amount of surface contact between engaging flap portions to be sealed.

A more specific object of the invention is the provision, in a carton of the type described, of raised and depressed portions on interlocking flaps which cooperate to provide generally co-planar surfaces for engagement with a related flap.

These and other objects of the invention will be apparent from an examination of the following description and drawings, wherein:

FIG. 1 is a plan view of a folding carton blank from which the carton of the other views may be formed;

FIG. 2 is a perspective view of a carton embodying features of the invention, as seen in a partially erected condition;

FIG. 3 is an end view of the structure illustrated in FIG. 2 with the end walls shown in completely erected condition;

FIG. 4 is a fragmentary vertical section taken on line 4—4 of FIG. 3;

FIG. 5 is a fragmentary end view of the structure illustrated in the previous views but with the intermediate flap shown in the position prior to being interlocked with the inner end flap; and

FIG. 6 is a view similar to FIG. 5 but illustrating a slightly modified form of the invention.

It will be understood that, for purposes of clarity, certain elements have been intentionally omitted from certain views where they are believed to be illustrated to better advantage in other views.

Referring now to the drawing for a better understanding of the invention, and particularly to FIGS. 1 and 2, it will be seen that the carton may be formed from a unitary blank, indicated generally at B of foldable paperboard cut and scored to provide a plurality of hingedly interconnected panels which form a tubular structure with end flaps arranged in overlapping relationship to form a closure for the ends of the carton.

As seen in FIG. 1, the main portion of the carton blank includes an inner front wall panel **10**, a bottom wall panel **12**, a rear wall panel **14**, an upper wall panel **16**, and an outer front wall panel **18** which are hingedly attached to each along parallel fold lines **11**, **13**, **15**, and **17**, respectively. When end panels of the blank are joined, with the front wall inner and outer panels **10** and **18** secured to each other in overlapped relation to form a common front wall, there is provided a tubular structure, each end of which is closed by a plurality of end flaps folded into overlapped relation and interlockingly sealingly connected to each other.

Each end wall includes an inner end flap **20** hingedly attached along fold line **21** to an end edge of bottom wall panel **12**, a pair of intermediate flaps **22** hingedly attached along fold lines **23** to front wall inner panel **10** and rear wall panel **14**, and an outer end flap **24** hingedly attached along fold line **25** to upper wall panel **16**. It will be seen that each of the intermediate end flaps **22** is provided with locking ear **26** adapted to be received within a related locking slit **28** cut in inner end flap **20**.

As best seen in FIG. 2, intermediate flaps **22** are folded at right angles to their panels from which they are attached, so as to overlap outer marginal portions of inner end flap **20**, with their locking ears **26** received within inner end flap locking slits **28**. As best seen in FIGS. 1 and 2, each inner end flap **20** is provided with a pair of crease scores **30** which extend from points on fold line **21** to the lower end of a related locking slit **28**. As best seen in FIGS. 2 and 4, the effect of the crease scores **30** is to provide a central raised area **32**, lying in the area defined by the crease scores and fold line **21**, and also a pair of side areas **34**, which lie above the crease scores **30** and are depressed with respect to the central area.

Thus, it will be seen that when the intermediate end flaps **22** are folded in position to interlock within the slits **28** of the inner end flap they lie within the side areas with the lower edges **36** of flaps **22** in abutting relation with the edges or shoulders **38** provided by the crease scores **30**. Thus, the outer surfaces of the intermediate end flaps **22** are co-planar with the outer surface central area **32** of the inner end flap to provide more complete full face engagement with the inner surface of the outer end flap **24** when it is folded over and bonded thereto either by a heat sealable coating or in some other type of adhesive bond. This is best illustrated in FIG. 4.

Because of the co-planar relationship between the outer surfaces of the inner and intermediate end flaps and the inner surface of the outer end flap it is possible to obtain more complete and uniform bonding throughout the entire cross-section of the end wall and thereby provide a more perfect seal for the carton end.

FIG. 5 illustrates the preferred contour for the lower edges of end wall intermediate flaps **22**, however, where desired a slightly different contour may be provided as shown by the line **36a** in FIG. **6** of the drawing.

I claim:

1. In a folding carton formed from a unitary blank of paperboard having foldably interconnected opposed pairs of major and minor panels forming a tubular structure, a closure arrangement for an end of said structure comprising:

a. an inner end flap hingedly attached to one of said major panels along a fold line and having:

i. a pair of locking slits spaced inwardly from opposed free side edges of said inner end flap and each extending from a first point spaced inwardly from said fold line to a second point spaced inwardly from the free edge opposite said fold line;

ii. a crease score defining a shoulder extending from the first point of each slit at an angle to said fold line to a point inwardly adjacent a related one of said opposed free side edges of said inner end flap;

iii. said crease scores and said shoulders and said fold line defining therebetween a central area of said inner end flap which is raised with respect to the remaining side areas of said inner end flap;

b. a pair of intermediate end flaps hingedly attached to said minor panels and each having:

i. a locking ear adapted to enter a related slit of said inner end flap and to move into locking engagement therewith;

ii. an edge on said intermediate end flap coextensive with a related crease score and movable into abutting relationship with the related shoulder of said crease score upon locking engagement with said locking slit;

c. said intermediate end flaps when in such locked

position lying upon said side areas of said inner end flap and being co-planar with said central area;

d. an outer end flap hingedly attached to the other of said major panels and foldable into overlapping sealing engagement with portions of said intermediate flaps and said central area of said inner end flap.

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