# United States Patent [19]

**Jacobson**

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[54] **SEALABLE CARTON**


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[52] **U.S. Cl.**.....**229/38**, 229/14 BL, 229/51 WB

[51] **Int. Cl.**.....**B65d 5/08**

[58] **Field of Search**.....229/37 R, 38, 51 TS, 51 TC, 229/51 WB, 51 R, 14 BL



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[57] **ABSTRACT**

A foldable carton capable of being completely sealed by means of inner end flaps which are notched for transferring adhesive from outer end flaps during closing to the edges of fold-back panels between the flaps.


**6 Claims, 7 Drawing Figures**

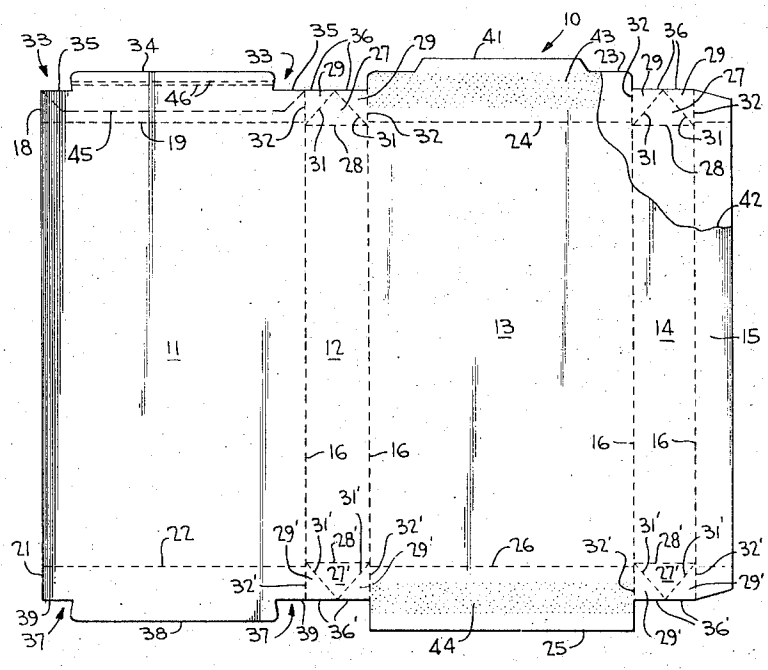


FIG. 1

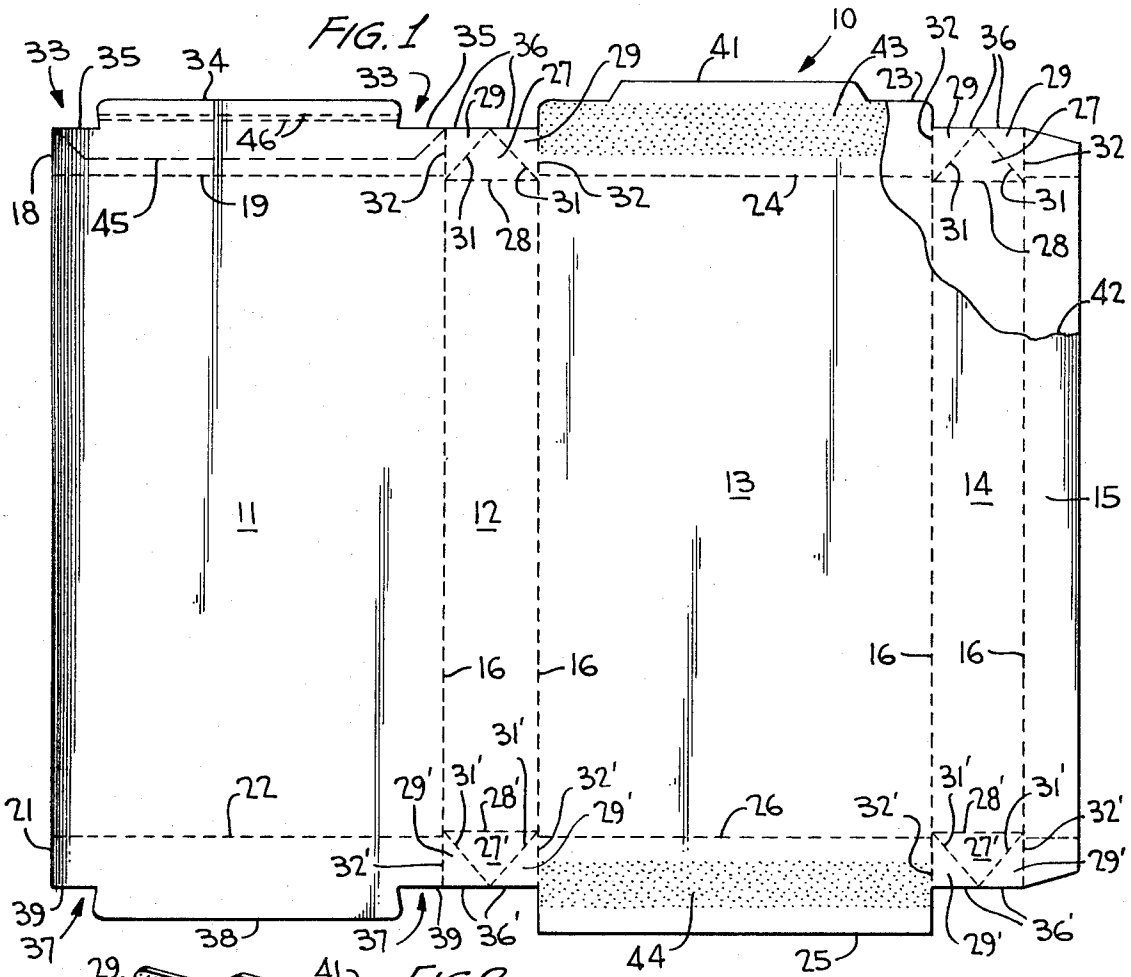



FIG. 2

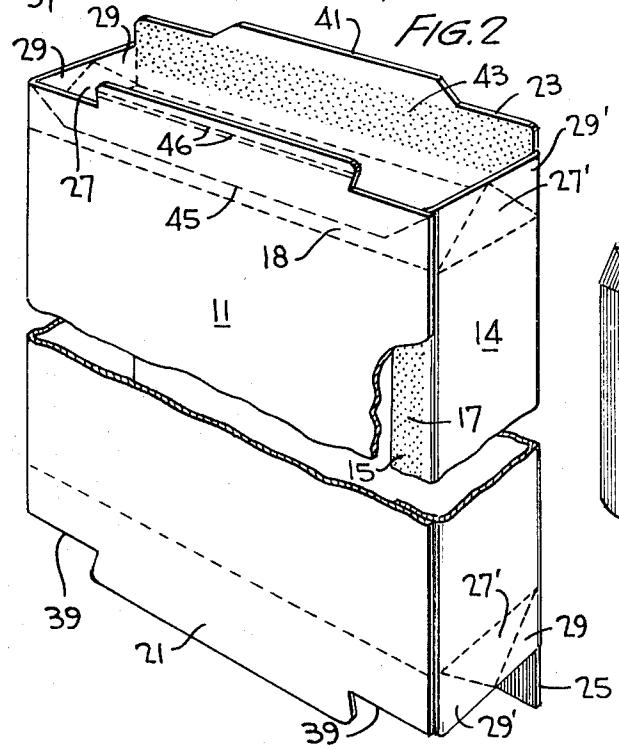



FIG. 3

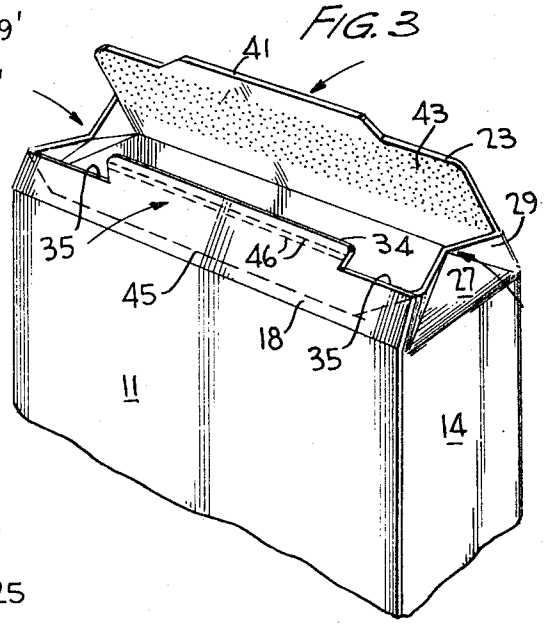


FIG. 4

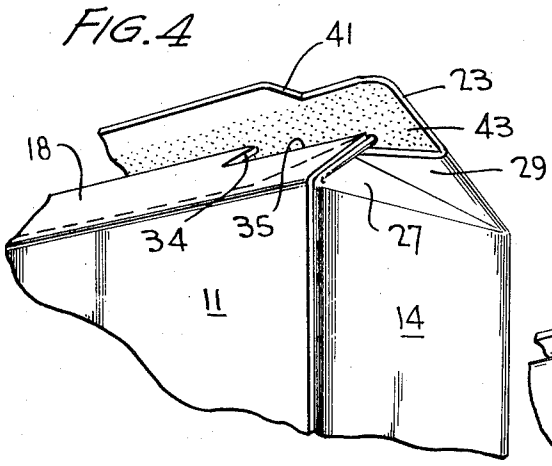



FIG. 5

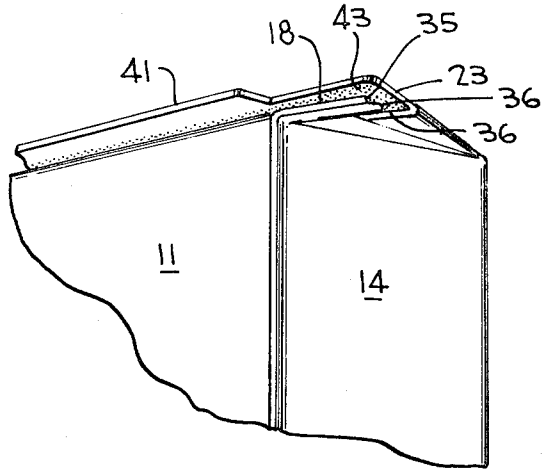



FIG. 6

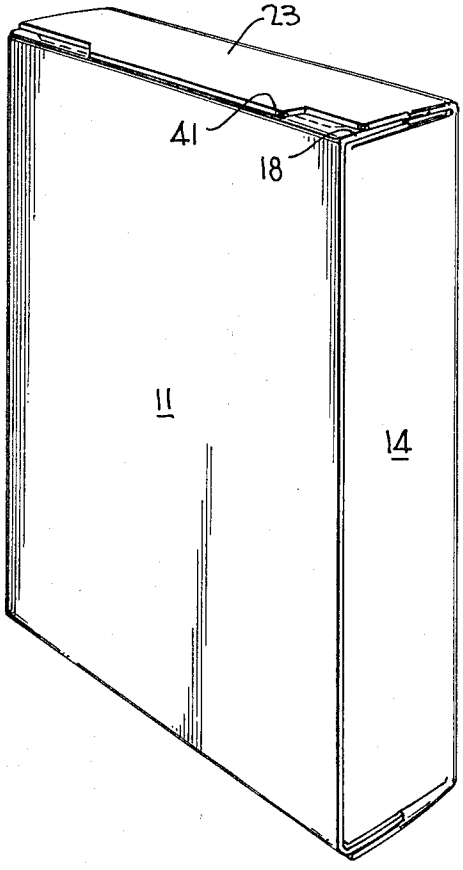
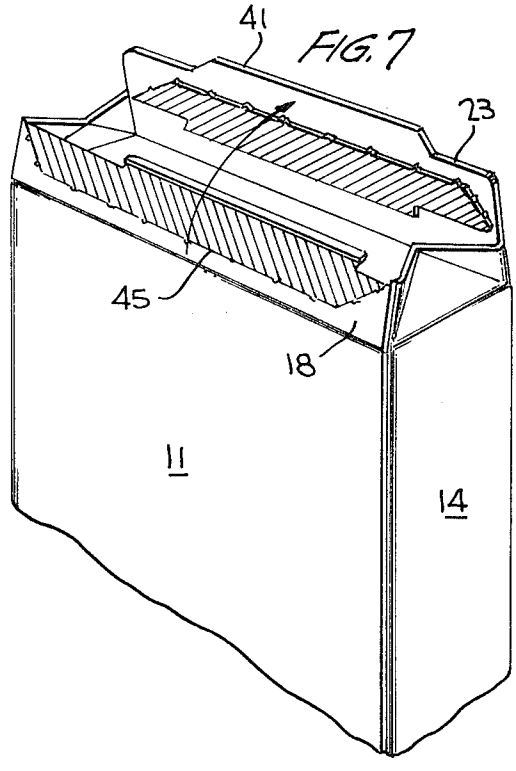



FIG. 7



# SEALABLE CARTON

This invention relates generally to a foldable carton and more particularly to a carton capable of being completely sealed at opposite ends thereof.

Foldable cartons are known as having a construction including inner and outer foldable flaps at at least one end thereof, and end panels bounded by fold-back panels interconnected therewith so as to be foldable against the inner surfaces of the inner and outer flaps during closing thereof. An adhesive sealing means is normally provided for sealing the closed flaps together. However, the seal is oftentimes not completely effective because of the inward fold of the fold-back panels presenting folded layers and gaps which become difficult to seal by reason of the raw or free edges of the fold-back panels. Many types of folds and overlaps of end panels have therefore been devised with the use of adhesive or other sealants in various locations at the carton ends in an attempt to completely seal these gaps. While some of these constructions may be suitable for the purpose, few of them completely seal the carton ends in a simple, efficient and economical manner. It is therefore an object of the present invention to provide a means for sealing such carton ends by sealing together the raw edges of the fold-back panels of the carton end closures in a simple, practical and improved manner.

Another object of the present invention is to provide such a sealable carton wherein an inner end flap of at least one of the top and bottom closures is provided with cut-out portions in a manner as to define cut-out edges facing an outer flap of the end closure so that a portion of adhesive disposed on said outer flap will be transferred by the cut-out edges onto the free or raw edges of the fold-back panels during a closing of the flaps. The flaps are therefore not only sealed together but the raw edges of the fold-back panels are also completely sealed together.

A further object of the present invention is to provide such a sealable carton wherein the length of each cut-out edge equals the length of the raw edge of each fold-back panel.

A still further object of the present invention is to provide such a sealable carton wherein the inner flap is provided with lines of weakening so as to permit the inner flap to be torn away during carton opening.

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

FIG. 1 is a plan view of a blank used in constructing the carton in accordance with the present invention;

FIG. 2 is a perspective view, partly broken away, showing the blank of FIG. 1 folded in tubular form;

FIG. 3 is a perspective view showing the top closure of the carton in the process of being initially folded;

FIG. 4 is a perspective view showing the top closure of the carton in a further step of closing;

FIG. 5 is a perspective view showing the top closure of the carton in a still further step of closing and commencing to be sealed together;

FIG. 6 is a perspective view showing both the top and bottom closures of the carton fully closed and sealed, and



FIG. 7 is a perspective view showing the top closure of the carton in an open condition.

Turning now to the drawings wherein like reference characters refer to like and corresponding parts throughout the several views, there is shown a blank **10** in FIG. 1 having panels **11**, **12**, **13**, **14** and a side seam flap **15** which, when folded along fold lines **16**, constitute a tubular body, as shown in FIG. **2**, secured together by means of a quantity of adhesive **17** along the flap **15**.

Upper and lower flaps **18** and **21** are connected, respectively, to body panel **11** along fold lines **19** and **22**, while upper and lower flaps **23** and **25** are connected, respectively, to body panel **13** along fold lines **24** and **26**. End panels **27** and **27'** are, respectively, connected along the top and bottom of both end body panels **12** and **14** along their respective fold lines **28** and **28'**, while fold-back panels **29** and **29'** are connected in pairs to end panels **27** and **27'**, respectively, along their respective fold lines **31** and **31'**. Also, one pair of fold-back panels **29** are connected, respectively, to flaps **18** and **23**, while the other pair of fold-back panels **29** are connected, respectively, to flaps **23** and **15**; and one pair of panels **29'** are connected, respectively to flaps **21** and **25**, with the other pair of panels **29'** being connected, respectively, to flaps **25** and **15**.

Upper flap **18**, serving as an inner flap, as shown in FIGS. **3** through **7**, is provided with cut-out portions **33** defining both an upwardly extending tongue portion **34** and cut-out edges **35**, each of which lie in substantially the same plane as the raw or free edges **36** of fold-back panels **29** disposed along the tops of end body panels **12** and **14**. Cut-outs **37**, similar to cut-out portions **33**, are provided on the lower flap **21**, which, as can be seen in FIG. **6**, constitutes an inner lower flap of the carton. Cut-outs **37** define both a downwardly extending tongue portion **38** as well as cut-out edges **39**, each of which is coplanar with raw edges **36'** of fold-back panels **29'** disposed at the bottoms of end body panels **12** and **14**.

Upper flap **23**, which is shown in FIGs. **3** through **7** as a top outer flap, is provided with an outwardly extending tongue portion **41** of an extent slightly greater than the width of the carton so as to permit easy opening thereof, to be described hereinafter.

A layer of foil **42** is laminated along the inner surface of the carton blank **10**. The carton thusly lined may therefore be used for containing photographic film which, to be hereinafter described, will be fully protected and sealed against light rays without the need of a separate foil or some other type of protective pouch. The laminated foil layer will also protect the film against moisture or vapor in accordance with standard film-packaging specifications.

An adhesive layer **43** is applied along the inner surface of the top outer flap **23**, and an adhesive layer **44** is applied along the inner surface of the bottom outer flap **25**. The adhesive is applied in either a spot or pattern-application, or a combination of both.

After the carton blank is initially folded into a tube as shown in FIG. **2**, it is filled with its intended contents in accordance with normal filling procedures whereafter the top and bottom carton closures are, respectively, folded together to close the carton in a manner to be now described.

Since the top closure, constituted by flaps **18,23**, end panels **27** and fold-back panels **29**, is substantially the same as the bottom carton closure, constituted by flaps **21, 25**, end panels **27'** and fold-back panels **29'**, only a detailed description in connection with folding the top closure will be described.

Referring to FIG. **3** of the drawings, it can be seen that the opposing end panels **27** are merely moved inwardly of the carton toward one another in the direction of the side arrows, whereafter inner panel **18** is first moved inwardly of the carton in the direction of the arrow, after which the outer flat **23** is moved in the direction of its arrow. Continued movement of the inner and outer flaps **18,23** brings the tongue portion **34** of the inner flap into contact with the inner surface of outer flap **23**, while the fold-back panels **29** are moved more closely toward the inner surfaces of their respective inner and outer flaps **18,23**, as seen in FIG. **4**. Continued closing movement of the inner and outer flaps brings the cut-out edges **35** on the inner flap **18** closer toward the inner surface of flap **23** and in contact therewith just before a full closing of the flaps. In other works, as the outer flap **23** continues to be folded downwardly over inner flap **18**, as seen in FIG. **5**, cut-out edges **35** will be brought into contact with the inner surface of the outer flap **23** just before the raw edges **36** of the respective pairs of fold-back panels **29** come into contact with one another. This type of contact occurs because of the outer flap **23** and the inner flap **18** each lying in respective planes directly above the planes of their respective fold-back panels **29**. Therefore, cut-out edges **35** will first come into contact with adhesive **43** on the inner surface of outer panel **23** before the raw edges **36** of the respective pairs of fold-back panels make contact with one another so that the cut-out edges **35** will serve to transfer a portion of this adhesive from the inner surface of the outer panel **23** in between the raw edges **36** of the respective pairs of fold-back panels **29**. Continued closing movement of the panels **18** and **23** into their fully closed position of FIG. **6** therefore tightly presses together raw edges **36** along both sides of the carbon and, with an amount of adhesive material now disposed between these raw edges, a tight adhesive seal is effected therebetween. Also, a seal is effected between the outer surface of the inner panel **18** and the remainder of the inner surface of outer panel **23** by reason of the adhesive material **43**.

It should be noted that the opposite or lower end of the carton is closed and sealed in a similar manner as described above since the inner and outer bottom flaps **21,25**, the bottom end panels **27'**, and the bottom fold-back panels **29'** are folded with respect to one another in substantially the same manner as their corresponding upper flaps and panels.

To facilitate opening of the top end of the panel, the top inner flap **18** is provided with partial-depth cuts along a perforation line **45** at the outer surface thereof. Such cuts permit a portion of the inner flap **18** which is covered by the adhesive material **43** to delaminate when the outer flap **23** is pulled up in the direction of the arrow shown in FIG. **7**. The tongue member **41** on the outer flap **23** provides an easy fingerhold to facilitate the upward pull of outer flap **23**.

Also, it should be noted that a pair of spaced, weakened lines **46** are provided along the outer surface of tongue member **34** on inner flap **18** so that the tongue portion may bend inwardly therealong as it comes in contact with the inner surface of outer flap **23** during the flap-closing operation, as described above. Accordingly, the closing operation may be carried out substantially without interference from the inner flap. Moreover, the portion of flap **18** which is covered by the adhesive **43** delaminates only between lines **45** and **46**, as shown in FIG. **7**.

It should be also noted that the length of each cut-out edge **35** and **39** is substantially equal to the length of each raw edge **36** or **36'**, and that the length of each such raw edge is substantially the same. In other words, the length of each cut-out edge **35** and **39** is substantially equal to one-half the thickness of the carton or one-half the width of the side body panels **12,14**. Accordingly, only an amount of adhesive material **43** necessary for sealing together the respective pairs of raw edges **36** is swept or transferred by the respective cut-out edges.

From the foregoing, it can be seen that a simple and economical, yet highly effective foldable carton has been devised in which both the top and bottom closures may be folded and sealed not only along the inner and outer flaps but also sealed along the abutting raw edges of respective pairs of fold-back panels. A complete and effective seal results for protection of the carton contents against moisture loss or gain, bacterial transferance, silting, light ray penetration, aspiration, or insect infestation. The carton may therefore be effectively used for the packaging of, for example, frozen foods, powders and granules, drugs and pharmaceuticals, and confectionery items. Also, with the use of a protective film-coating laminated along the entire inner surface carton blank, a photographic film may be effectively packaged without the need for a separate foil or some other protective pouch arrangement.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:

**1.** In a carton comprising: a tubular body; a top and a bottom closure on opposite ends of said body; said top closure including a top inner flap connected to said body, a top outer flap connected to said body, triangular end panels connected to said body, two pairs of top triangular fold-back panels, each pair of which is connected to a respective one of said top end panels and to respective ones of said top flaps, said top fold-back panels being foldable against the inner surfaces of said top inner and outer flaps, the improvement comprising:

a quantity of adhesive on said inner surface of said top outer flap; said top inner flap having a cut-out portion along its side edges defining cut-out edges facing said top outer panel whereby a portion of said adhesive is transferred, during the closing of said top flap, from said outer flap inner surface by said cut-out edges onto the free edges of said triangular fold-back panels, thereby sealing together respective ones of each said pair of fold-back panels and said top outer flap to said top inner flap.

2. The carton according to claim 1 wherein the length of each said cut-out edge equals the length of each said free edge of said top fold-back panels.

3. The carton according to claim 1 further including a layer of foil disposed along the entire inner surface of said tubular body and said top and bottom closures.

4. A carton according to claim 1 wherein said top inner flap is provided with lines of weakening thereon to permit said inner panel to be torn away during opening of said outer flap.

5. The carton according to claim 1 wherein said bottom closure includes a bottom inner flap connected to said body, a bottom outer flap connected to said body, triangular bottom end panels connected to said body, two pairs of bottom triangular fold-back panels, each pair of which is connected to a respective one of said bottom end panels and to respective ones of said bottom flaps, said bottom fold-back panels being foldable against the inner surfaces of said bottom inner flaps, a quantity of adhesive on said inner surface of said bottom outer flap, said bottom inner flap having a cut-out portion along its free side edges defining cut-out edges facing said bottom outer panel, whereby a portion of said adhesive is transferred, during closing of said bottom flaps, from said bottom outer flap inner surface by said cut-out edges onto the free edges of said triangular fold-back panels, thereby sealing together respective ones of each said pair of bottom fold-back panels and said bottom outer flap to said bottom inner flap.

6. The carton according to claim 5 whereof the length of the bottom cut-out edge is equal to the length of each said free edge of said bottom fold-back panels.

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