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Collie

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[54] FOLDING CARTON

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[52] **U.S. Cl.**.....**229/39 R,** 229/17 G, 229/52 B

[51] **Int. Cl.** **B65d 5/10**

[58] **Field of Search** .....229/52 B, 39 R, 17 G, 39 B

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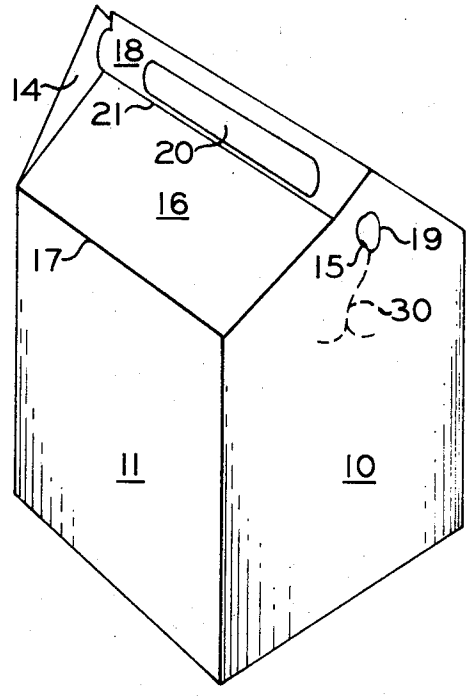
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Assistant Examiner—Stephen P. Garbe
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[57] **ABSTRACT**

A gable top carton by the shape of its top closure provides a hand grip slot of adequate size and an improved engagement of top closure locking structure. The carton can be readily collapsed and erected.

9 Claims, 4 Drawing Figures



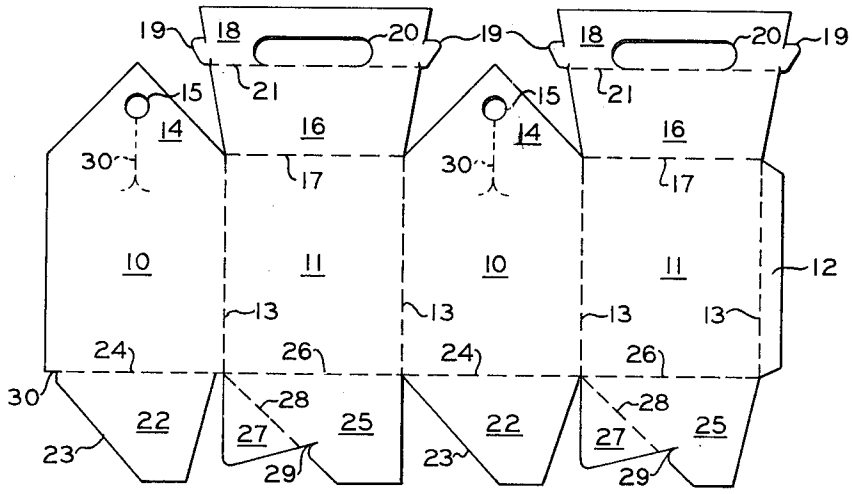


FIG. 1

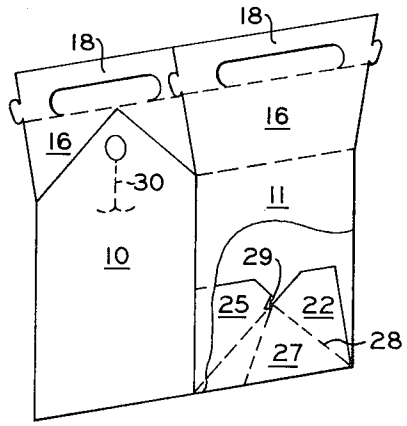


FIG. 2

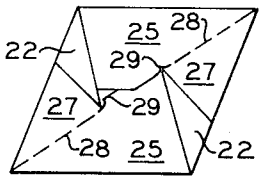


FIG. 3

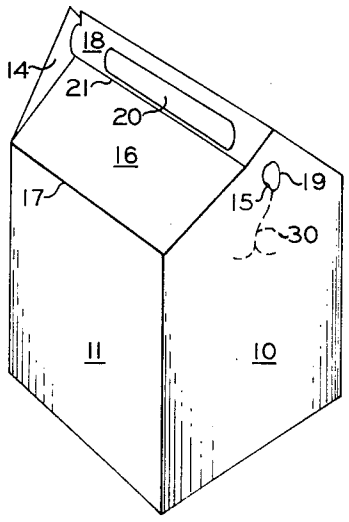


FIG. 4

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FOLDING CARTON

This invention relates to a carton. In another aspect, this invention relates to a collapsible carton. In still another aspect, this invention relates to a carton made from an integral blank. This invention relates more particularly to a carton having a handle. In yet another aspect, this invention relates more particularly to a novel top closure locking structure and gripping structure for a carton.

A folding carton for general purposes, such as a carryout container for prepared food delivery should be easily assembled, of light weight construction, and most importantly, convenient and safe to carry. Carrying containers having locking tabs and carrying slots have been deficient in carrying convenience and safety because of a lack of ease in engaging the top locking tab with its lock port, the corresponding ease with which the locked tabs disengage from the lock ports at inopportune moments often being pushed apart by a hand inserted in the grip slot, and the further inconvenience of the grip slots caused by the cramped size of the slots.

It is therefore an object of this invention to provide a folding carton which has an integral locking structure for the top closure of improved facility and security in use.

Another object of this invention is to provide a folding carton with an easily accessible integral handle.

It is a still further object of this invention to provide a folding carton that can be assembled, collapsed, shipped flat and then easily erected at the point of use.

It is a further object of this invention to provide a folding carton with a distinctive shape.

Other aspects, objects and advantages of this invention will be apparent to those skilled in the art upon reading the specification and claims of this invention.

The invention comprises a gable-top four-sided container formed of an integral blank. The container has opposing top closure panels of trapezoid shape which are surmounted by panels containing a grip slot and, on either end, locking tabs which engage locking ports which are located in the extended adjacent side panels. In the preferred embodiment of this invention the trapezoidal top closures cause the extended side walls of the carton to flex out around the point of engagement of the closure tabs and the closure locking port thus insuring more secure engagement of the locking tabs in the ports. This shape also provides a wider space for the handgrip without interference from the side walls. In a further embodiment the facility of the operation of securing the lock tabs in the lock ports is enhanced by the circular shape of the ports.

For a fuller understanding of the nature and objects of the invention, reference should be made to the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a plan view of the blank sheet material from which the carton is formed;

FIG. 2 is a perspective view of the blank of FIG. 1 partially assembled and in collapsed condition ready for shipment or storage;

FIG. 3 is a bottom view of the blank as shown in FIG. 2 during a stage of erection showing the bottom flaps in partial engagement with each other;

FIG. 4 is a perspective view of an erected carton with the top closure completed.

Referring now to FIG. 1, the embodiment of my invention illustrated comprises side walls **10** and **11** and an end tab **12** by which joining of the side walls is completed. Each of the side panels are connected by longitudinal scored hinge lines **13**. Two opposing side panels **11** are generally rectangular, and the other two opposing side panels **10** are extended on their upper extremity into a side panel lock flap **14**. This lock flap may be of any size and shape sufficient to accommodate the cutout lock port **15**, and to assure that the lock tabs **19** can engage the lock ports. The size is usually determined by the length necessary to reach the top edge of the grip panels **18** when the carton is erected and the base width is equal to the width of the side panel. The shape of the lock flap can be rectangular, trapezoidal, arcuate, triangular or the like. In the preferred embodiment the side panel lock flap **14** is triangular in shape to conform roughly to the gabled top of the carton: The lock ports can be of any shape, rectangular, oval, circular, and are sized to be slightly smaller than the lobes of the lock tabs so that the lobes securely lock the closed carton. The preferred shape for the ports is circular.

The side panel and extended lock flap section may optionally contain a score line **30** extending from the lock port **15** down the center of the side panel as an aid in bending the lock flap to conform to the roof line of the container. Attached to the upper extremity of the unextended, rectangular opposed side panels **11** is a trapezoidal top closure panel **16**. The top closure panel transverse hinge score line **17** that joins the top closure panel to the side panel is the shorter parallel side of the trapezoid shaped top closure panels. It is the shape of this closure panel that causes the flexing outward of the extended side walls giving this carton its unique shape and improved qualities.

Attached to the longer parallel side of the top closure panel **16** is a grip panel **18** which contains on its two lateral edges lobed lock tabs **19** which must be spaced to engage lock ports **15** of the extended side panels **14**. The grip panel also contains a cutout grip slot **20**. At the juncture of the grip panel and the top closure panel is a transverse grip panel hinge score line **21**.

Attached to the bottom of the extended side panels **10** are bottom closure panels **22** which have inclined edges **23** extending from the transverse bottom panel hinge score line **24**. One of the extended side panels has a closure notch **30** at the transverse hinge line for use in assembling the carton.

The rectangular side panels **11** have appended at their bottom edge a folding bottom panel **25** joined to the side panel at the folding bottom panel hinge score line **26**. A hinged attaching flap **27** is joined to the folding bottom panel **25** along a hinged score line **28** which corresponds to the inclined edge **23** of the adjacent bottom closure panels **22**. The folding bottom panel **25** is lobed at the end of the score line by which it is attached to the hinged attaching flap **27**, to form a bottom panel lock notch **29** which locks the bottom of the erected carton into place.

Referring now to FIG. 2 in which a partially erected carton is shown. Here the collapsed carton shows one face comprised of an extended side wall panel **10**, a rectangular side wall panel **11**, a top closure panel **16**, and a grip panel **18**. In the figure the wall of the rectangular side panel **11** has been cut away to show the un-

folded bottom panels of the collapsed carton. The hinged attaching flap **27** of the folding bottom panel **25** has been secured to the bottom side of the adjacent bottom closure panel **22** so that there is a 360° fold in the folding bottom panel along the hinged score line **28** of the hinged attaching flap.

As is illustrated by FIG. **3**, as the container side walls are opened to partially erect the carton, the hinged attaching flap **27** moves in the same plane as the adjacent bottom closure panel **22**, eventually to lie flat in a plane with the folding bottom panel **25** when the erection of the carton is completed. When the carton has been erected the bottom panel lock notches **29** which are moving toward each other, in this illustration, will meet and lock.

Referring now to FIG. **4** of the drawing which is an illustration of the completely assembled, erected and closed carton of this invention. Here is shown the flexing of the extended side panels **10** as the lock port **15** in the side panel lock flap **14** is engaged with a lock tabs **19** on the grip panels **18** to close the top of the carton. The outward flexing increases the pressure of the lock port **15** against the lock tabs **19** particularly as the weight of the object carried in the carton pushes down on the bottom of the carton and force is exerted upward on the grip slot **20** as the carton is carried. This figure also illustrates that the outward flexing of the extended side panels allows the convenience of a larger grip slot **20** in the grip panel **18** and increases the security of the locking device because the side panel lock flap **14** slants away from the grip slot **20** making it less likely that a hand inserted in the grip slot will tend to push the side panel lock flaps outwardly and disengage the lock tabs from the lock port.

The material of construction for the carton of this invention can be any material that will form into a flexible sheet from which the blank can be made. Particularly suitable are thermoplastics, paper products, and laminates of paper products and thermoplastics or microcrystalline waxes. At present the preferred material of construction is polyethylene coated paperboard.

Reasonable variation and modification are possible within the scope of the foregoing disclosure, the drawing and the appended claims of the invention.

I claim:

1. A gable-top four-sided container formed of an integral blank comprising four hingedly connected side panels wherein each of two opposed side panels are extended above the hinged connections accommodating within the side panel extension a lock tab opening and wherein each of the unextended opposed side panels have hingedly connected thereto the shorter of the parallel sides of a trapezoidal top closure panel said trapezoidal top closure panel forming a gable with the opposing top closure panel; a grip panel hingedly attached to the longer parallel side of said top closure panel, said grip panel containing a grip slot and, at opposing lateral edges, a lobed lock tab which cooperates with a lock tab opening in the adjacent extended side panel to fasten the container top panels forming an outward flexing gable; a bottom panel hingedly connected to each side panel interlocking with the other bottom panels forming a weight supporting bottom; and an end tab hingedly attached to one of the side panels and extending the longitudinal length of said side panel with said end tab attached to another side panel, aligned with the side panel to form a four-sided container.

2. The gable-top container of claim **1** wherein said extended length of said opposed side panels is of triangular shape with the base of the triangle corresponding to the width of the side panel.

3. The gabled-top container of claim **2** wherein the lock tab opening is circular.

4. The gable-top container of claim **1** wherein said container is made collapsible by each of a pair of opposed bottom panels having inclined edges provided with hinged attaching flaps, the attaching flaps being secured to the underside of the bottom panel, next adjacent to said attaching flap whereby the bottom members are automatically swung from a collapsed to an erected position.

5. The gable-top container of claim **4** wherein said bottom panels contain an attaching flap having extending on the inclined edge a lobe which forms a notch at its conjunction with an attaching flap whereby the bottom panels are locked in an erected position.

6. The gable top container of claim **1** wherein said extended side panels contain a score line which extends from said lock tab opening to a position between said hinged connections.

7. The gable-topped carton of claim **1** made of a material which can be formed into a flexible sheet which sheet can be cut and scored to form a blank adapted to be folded into a self supporting container.

8. A blank formed from a single sheet of material adapted to be folded into a self-supporting box comprising:

a. a first side comprising a panel having a bottom panel attached to one end along a transverse scored hinge line and at the other end an extension provided with a cutout portion centered on the longitudinal center line of the panel;

b. a second side comprising a panel attached to said first side panel along a longitudinal scored hinged line, a top panel attached to one end of said second side panel along a transverse scored hinge line and a bottom panel attached to the opposite end of said second side panel along a transverse scored hinge line, said top panel comprising a trapezoidal section joined to the side panel along a transverse scored hinge line which is the shorter parallel side of the trapezoid and joined along the longer parallel side of the trapezoid by a transverse scored hinge line to a section containing a cutout portion and having lobed tabs on its two lateral edges said tabs extending outwardly of a line which is an extension of each of the nonparallel sides of the trapezoidal section, said nonparallel sides of length sufficient to permit alignment of the lobed tab with the longitudinal center line of the adjacent side;

c. a third side which matches (a), attached to said second side panel along a longitudinal scored hinge line;

d. a fourth side which matches (b) attached to said third side panel along a longitudinal scored hinge line; and

e. an end tab attached by a longitudinal scored hinge line along the edge length of a side (d) which is not attached to another side.

9. The blank of claim 8 wherein said first side and third side panels each contain a score line extending from said cutout portion along the center line of the panel to a position sufficiently removed from said cutout portion to permit conformation of the side panel extension to the lobed tabs of the top panel.

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