

- [54] **FOLDING CARTON AND BLANK THEREFOR**

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- [51] Int. Cl. .... B65d 5/46

- [58] **Field of Search** ..... 229/52 B, 54

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[57] **ABSTRACT**

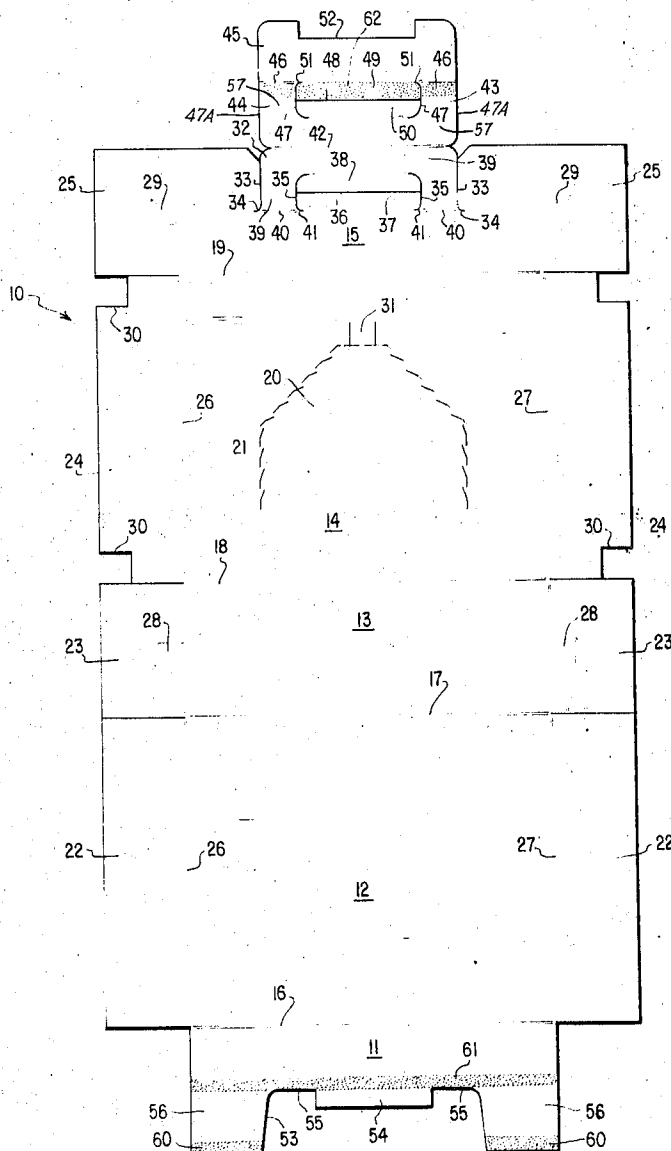
A carton blank and a carton formed therefrom, said carton having a bottom wall, a pair of opposed side wall panels and a pair of top wall panels. A folding double handle having a U-shaped opening therein extends from one of said top wall panels. The other top wall panel overlaps and is secured to said one top panel and is provided with a recess for receiving the handle. A tongue extending from the base of the recess overlaps tongues extending from each side of the base of the handle. The end of a handle element in one carton blank nests within the recess in the top panel of another blank to conserve material when forming a plurality of blanks from a paperboard sheet.

### 14 Claims, 4 Drawing Figures

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SHEET 1 OF 2

FIG. 1

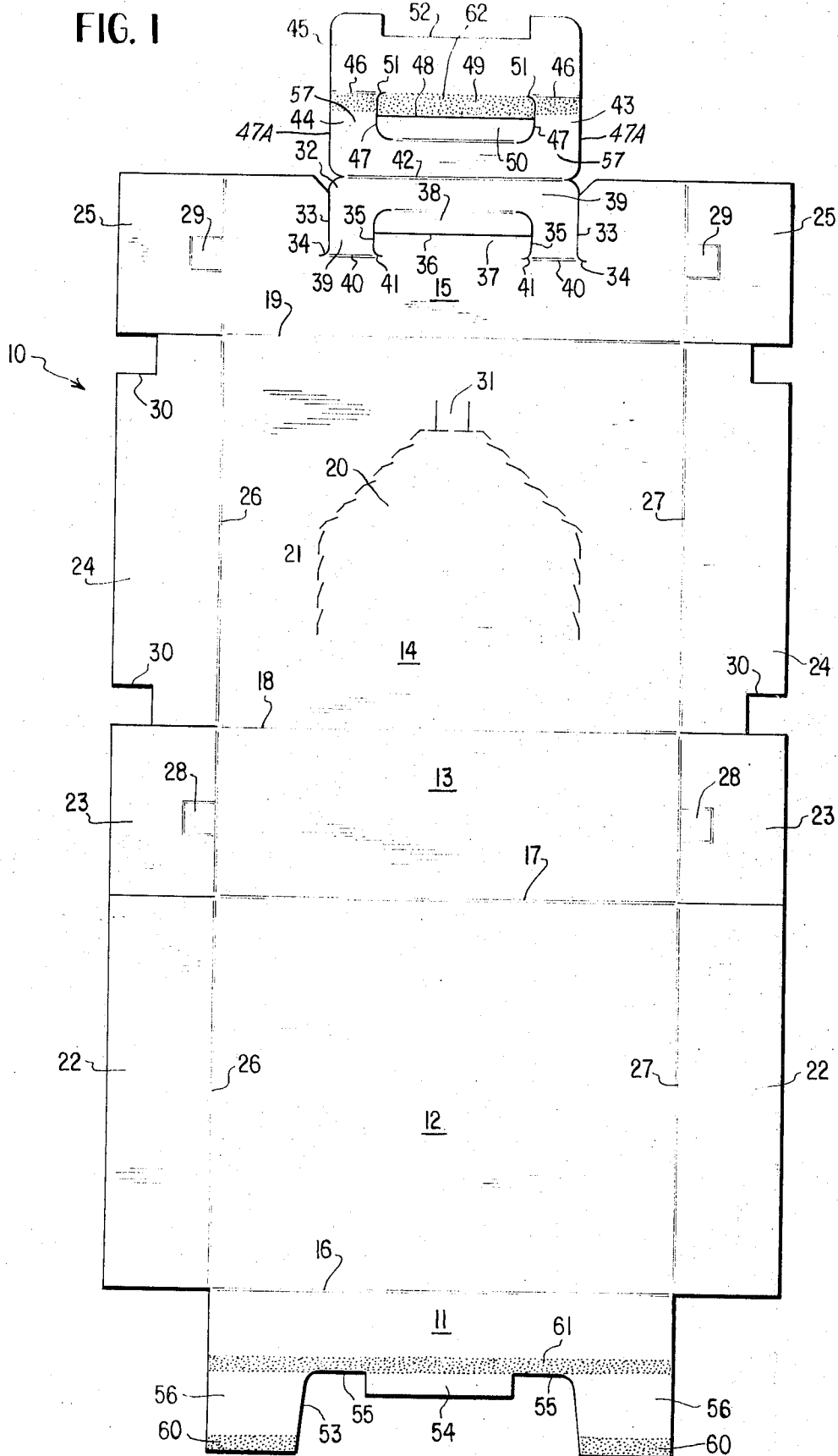


FIG. 2

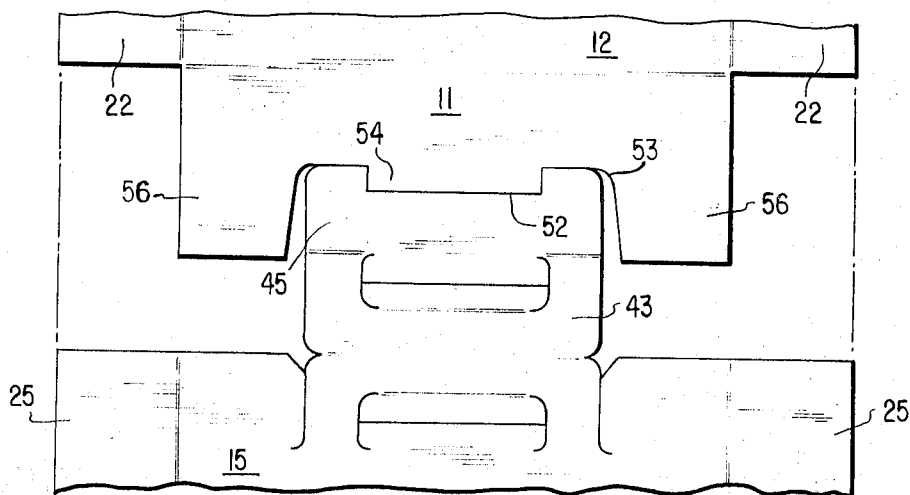


FIG. 3

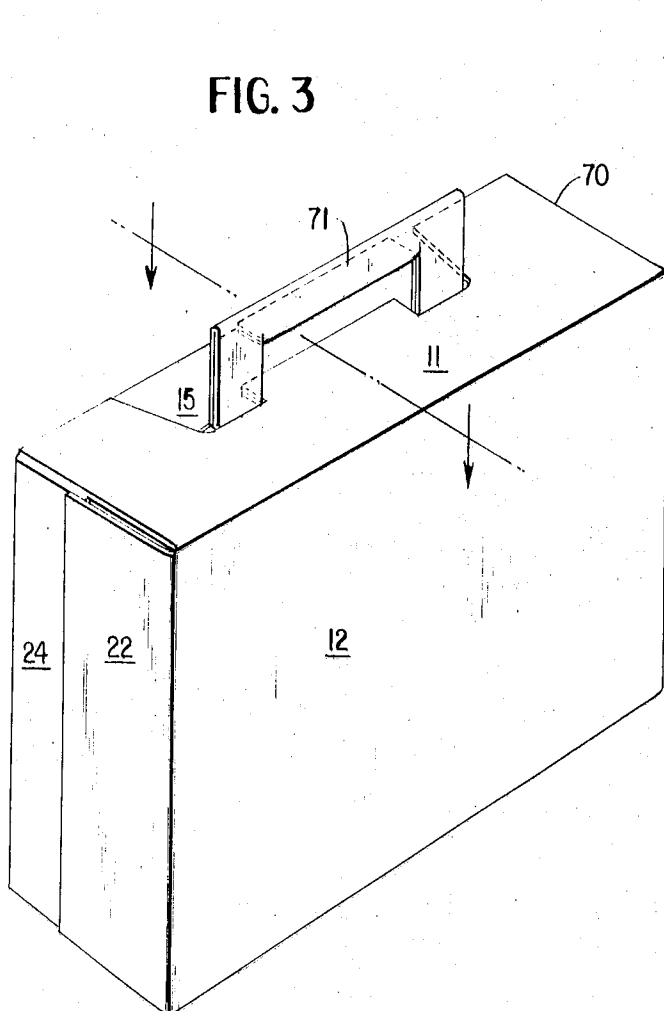
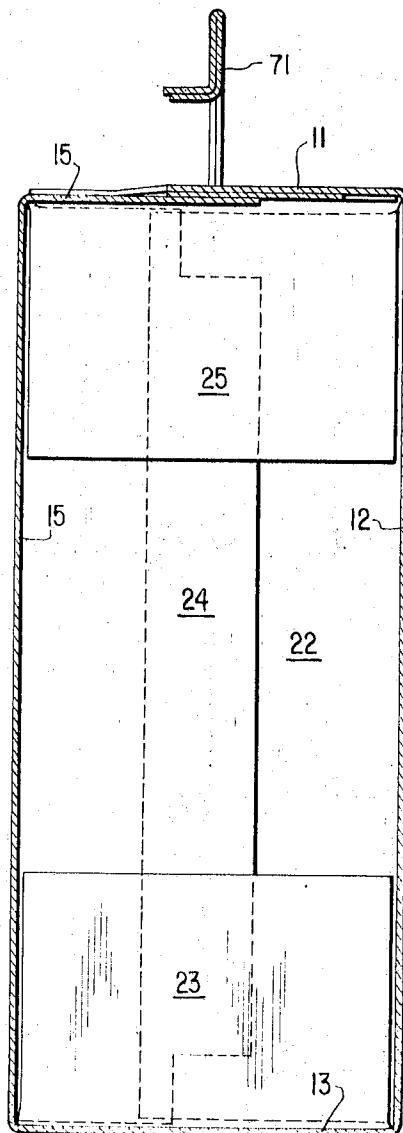


FIG. 4



# FOLDING CARTON AND BLANK THEREFOR

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates generally to folding cartons made from a one piece paperboard blank and more particularly to folding cartons having an integral folding double handle.

### 2. Description of the Prior Art

While various prior art folding cartons have heretofore been known having integral handles and formed from a one piece blank, such prior art cartons have suffered from many disadvantages. Many of such prior art cartons have been complicated in construction and therefore difficult to glue and fold. Other such prior art folding cartons have had integral handles which have been weak and tear easily. Still other prior art folding cartons have been formed from blanks which waste a lot of material when forming the blanks from a sheet of suitable material.

## SUMMARY OF THE INVENTION

Among the objects of the present invention is to avoid the disadvantages of prior art folding cartons enumerated above. Another object of the present invention is to provide a blank for a folding carton which may be cut from a sheet of suitable material in conjunction with a plurality of other blanks in such a manner as to conserve the sheet material from which the blank is formed. A further object of the invention is to provide a blank for forming a folding carton wherein the handle portion of one blank nests within a panel portion of the next succeeding blank to conserve sheet material in forming the blanks. Still another object of the present invention is to provide a folding carton having an integral folded handle structure which possesses considerable strength and great resistance to the handle tearing from the remainder of the carton. Another object of the invention is to provide a folding paperboard carton that may be very easily processed through production due to its simplicity in style of folding and glueing. A still further object of the invention is to provide a folding carton adapted for folding between a collapsed position for shipping or storage and an erect position for filling with an end product.

According to the present invention, there is provided a blank for a carton comprising a first top wall panel, a first side wall panel, a bottom wall panel, a second side wall panel and a second top wall panel connected together in seriatim along their adjacent edges. The first top wall panel has a recess formed in its free edge while a handle is formed in the second top wall panel and extends inwardly therefrom. An auxiliary handle panel connected to the handle has its free end with a configuration which is adapted to fit or nest inside of the recess in the first top wall panel whereby during manufacture of a plurality of blanks from a sheet of material the free end of the handle panel of one blank nests in the recess of the first top wall panel of another blank.

A carton formed from the blank comprises a bottom wall panel, a pair of opposed side wall panels extending upwardly from the bottom wall panel, and a pair of top wall panels extending inwardly from the side wall panels. A first handle element is formed in one of the top wall panels and is integrally attached at its base to the top wall panel. A first tongue extends from the base of

said first handle element. A second handle element is folded over on the first handle element and is provided at its base with a second tongue which extends through an opening in the first handle element and overlaps and is secured to the first tongue. The other top wall panel overlaps and is secured to the one top panel and is provided with a third tongue overlapping the first and second tongues. A flap integrally connected to the base of the second handle element is secured to and underlies the other top wall panel. The other top wall panel further defines a recess on its free edge in which the handle elements are received. Cuts are provided at the base of both the handle elements to prevent tearing.

## BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent by reference to the more detailed description of the invention in the accompanying drawings which follow wherein:

FIG. 1 is a plan view of a blank for forming a carton according to the present invention showing the location of the glue strips;

FIG. 2 is a top plan view showing the end of handle portion of one blank nested within a recess in a top wall panel portion of another blank;

FIG. 3 is a perspective view of an erected carton constructed according to the principles of the present invention; and

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3.

## DESCRIPTION OF THE INVENTION

Referring to the drawings, there is shown in FIG. 1 a carton blank 10 according to the present invention comprising in seriatim from bottom to top, a first top wall panel 11, first side wall panel 12, bottom wall panel 13, second side wall panel 14 and second top wall panel 15. These panels are integrally connected together along fold lines 16, 17, 18 and 19 as shown in FIG. 1. When these panels are folded and secured together in a manner described more fully hereinafter, they form a tubular sleeve or body which may be folded between a collapsed position for shipping or storage and an erected position for filling.

End closure flaps 22, 23, 24 and 25 are provided on each end of panels 12, 13, 14 and 15 which constitute end wall forming means for closing the ends of a carton formed from the blank 10 if desired. The end closure flaps are integrally connected to the panels along fold lines 26 and 27. End closure flaps 23 are each provided with a raised or embossed square portion 28 centrally located of the flaps along fold lines 26 and 27. Similar raised or embossed squares 29 are centrally located on end closure flaps 25 along fold lines 26 and 27. End closure flaps 24 are provided with a cutout portion or notch 30 on each outer corner. When the carton is erected from the blank 10 to the closed position as shown in FIG. 3, the flaps 23 and 25 are folded in first whereupon the flaps 24 are then folded over the flaps 23 and 25 so that the notches 30 fit around each of the raised portions 28 and 29. As a result, when end closure flaps 22 are folded over as shown in FIG. 3, a portion of each of the flaps 22 may be secured to the raised portions 28 and 29 as well as to the flaps 24 to insure a tight seal of all the end closure flaps forming the end walls of the carton.

The second side wall panel 14 may be provided with an access flap 20 formed by a generally U-shaped perforated tear line 21. A finger tap 31 may be provided at the top center of the access flap 20 to facilitate tearing open the flap.

Referring back to the carton blank 10 shown in FIG. 1, second top wall panel 15 has a first handle element 32 formed therein and extending inwardly from the free edge of the panel. Handle element 32 is defined at its outside ends by cut lines 33. Partial loop cuts 34 which extend from cut lines 33 outwardly towards the outside ends of panel 15 are provided at the bottom of cut lines 33. A pair of spaced generally U-shaped cut lines 35 are provided in the interior of handle element 32 and have an additional cut line 36 extending therebetween to define a tongue 37 and a hand hole flap 38. The inner end of U-shaped cut lines 35 is in the form of a partial loop cut 41 which extends from the outside end of tongue 37 inwardly towards the center of the tongue 37. The cut lines 33 and 35 thus define a pair of handle straps 39 integrally attached at their base to panel 15 along fold lines 40. It will be noted that tongue 37 extends from the base of handle element 32 towards the free edge of panel 15 and in effect constitutes an extension of panel 15.

Integrally connected to the outer edge of panel element 32 along fold line 42 is an auxiliary handle panel 43. Handle panel 43 is comprised of a handle element or section 44 and a reinforcing flap or section 45 integrally connected to handle element 44 along fold line 46. Handle element 44 is provided with a pair of spaced generally U-shaped cuts 47 on the interior thereof connected by a straight cut line 48 which together define a tongue 49 and a hand hole flap 50. Cut lines 47 and 47A further define a pair of handle straps 57 which mate with straps 39. The portions of cut lines 47 at the base of handle element 44 are in the form of partial loop cuts 51 extending towards the center of the handle element 44. Tongue 49 forms an inwardly extending continuation of flap 45. The outer edge of reinforcing flap 45 of auxiliary handle panel 43 is provided with an inwardly extending recess 52.

The first top wall panel 11 also is provided with a central recess 53 extending inwardly from the free edge of the panel. Recess 53 is provided with a central tongue 54 extending outwardly from the base of the recess. Tongue 54 further defines a pair of notches 55 at the ends of the recess 53 for receiving the straps of the carton handle when the carton is formed. The recess 53 further defines a pair of tabs 56 at either end of panel 11 which are of substantially the same width as the second top wall panel 15.

Referring now to FIG. 2, it will be observed that flap 45 of auxiliary handle panel 43 of one blank is nested with the recess 53 of top wall panel 11 of a preceeding blank when forming a plurality of carton blanks 10 from a single sheet of suitable material such as paperboard. Thus, in forming the blanks from a single sheet of paperboard material, the same cutting operation which forms tongue 54 in panel 11 of one blank forms recess 52 in the end of reinforcing flap 45 of a succeeding blank. By nesting a portion of one blank within a cutout portion of a preceeding blank, a great savings in sheet material is thus achieved since there is less scrap material resulting from the blank forming operation.

An important feature of the carton according to the present invention is that the blank as just described

may be folded and glued into a completed carton using a minimum number of folding and glueing operations. As shown in FIG. 1, it is only necessary to provide three glue lines on the entire carton blank 10. The first top wall panel 11 is provided with a first glue strip 60 on the inside at the outer edges of each tab 56 and a second glue line 61 is provided across a center portion of top wall panel 11 at the base of the recess 53. Finally, a third glue strip 62 is provided across the base on the inside of handle element 44 of the auxiliary handle panel 43 in such a manner that the glue extends across the tongue 49 of the handle element.

The glue strips are applied to the carton blank during the folding operation after the blank has first been formed from the sheet of paperboard material as will be explained hereinafter. It will further be noted that the location of each glue strip is such that the glue extends all the way across the particular portion or panel of the carton upon which it is located. This is extremely advantageous in that it eliminates the necessity for precise timing and the complicated machinery and other operations necessary for spot glueing. Thus, the carton blank of the present invention may be glued in a simple manner on standard straight line glue equipment.

When constructing a completed carton from a blank formed as described above, the carton is initially formed into an open ended tube or sleeve which may be collapsed into a folded flat position for shipping or storage. The folding and glueing operation to form a completed carton 70 such as that shown in FIG. 3 may be described with respect to the carton blank shown in FIG. 1 which is a view looking at the inside of the carton.

Initially, second top wall panel 15 is folded over 180° to lie flat against the inside of panel 14. During this process, however, handle element 32 and auxiliary handle panel 43 are held back so that the inside of the element and the handle panel remain exposed and lay extended outwardly. At this point, glue strip 62 is applied to the inside base portion and tongue 49 of handle element 44 of the auxiliary handle panel. Auxiliary handle panel 43 is then folded over 180° so that its inside is in face-to-face contact with and secured to the inside of handle element 32. Thus, the base of handle element 44 is adhesively secured to the base of the handle element 32 and tongue 49 is adhesively secured to tongue 37.

In the next operation, the two strips of glue 60 and 61 are then applied to the first top wall panel 11, and first side wall panel 12 and top wall panel 11 are then folded over 180° whereby panel 12 is folded completely over bottom wall panel 13 and partially over the second side wall panel 14. In the same folding operation, the top wall panel 11, at completion of the 180° fold, then overlaps the outside face of top wall panel 15 whereby the inside of tongue 54 of panel 11 overlaps the outside face of tongue 49. In this position, the glue strips 60 and 61 adhesively secure the top wall panel 11 to the second top wall panel 15. Upon completion of the latter folding operation, the carton is then in the position of a collapsed tube with the integral folded over handle lying flat against the outer surface of the second top wall panel 15.

Normally, cartons formed as described above are shipped and stored in an open end collapsed position. When it is desired to fill the carton, the collapsed tube is then erected, the inside of the carton is filled and the end closure flaps folded over and secured by suitable

means such as glueing to close the carton. An erected closed carton 70 is shown in FIGS. 3 and 4.

As shown in FIG. 4, the handle 71 of the carton may be folded from a collapsed position flat against the top of the carton to an erected position where it is perpendicular to the top of the carton. The flaps 38 and 50 may be bent to one side to form a hand carrying hole in the handle. It will further be noted that the box in the portion underneath the handle has at least three layers of paperboard material, thus contributing greatly to the overall strength of the carton and diminishing the chances of the handle 71 tearing loose from the carton 70 when the carton is loaded. Moreover, the partial loop cuts at the base of both of the handle elements 32 and 44 tend to give a spring action to the base of the handle when the carton is being carried to make it easier for the carton to withstand bumps and jars and therefore guard against the handle tearing. Moreover, the double top panels 11 and 15 of the carton, by being glued together, add strength which prevents buckling of the carton.

The carton may be used to package any desired material such as food, or articles of manufacture which may be loaded through an open end of the carton.

Although the present invention has been illustrated and described with reference to a specific embodiment, it will be understood that various modifications may be made by persons skilled in the art without departing from the spirit of the invention which is defined solely by the appended claims.

I claim:

1. A blank for a carton comprising a first top wall panel, a first side wall panel, a bottom wall panel, a second side wall panel, a second top wall panel, said panels being connected together, said first top wall panel having a recess extending in from its free edge, a handle formed in said second top wall panel and extending inwardly from the free edge thereof, and an auxiliary handle panel connected to said handle, the free end of said auxiliary handle panel having a configuration adapted to fit inside of said recess in said first top wall panel whereby during manufacture of a plurality of said blanks from a single sheet the free end of the handle panel of one blank nests in the recess of the first top wall panel of another blank.
2. A blank for a carton as defined in claim 1 wherein said auxiliary handle panel comprises a handle flap and an extended reinforcing flap.
3. A blank for a carton as defined in claim 2 which includes a tongue extending from the base of each of said recess, said handle and said handle flap.
4. A blank for a carton as defined in claim 2 which includes cuts at the base of said handle and said handle flap.
5. A blank for a carton as defined in claim 1 which includes end closure flaps connected to opposite ends of both of said side wall panels, said bottom wall panel and said second top wall panel.
6. A carton comprising a bottom wall panel, a pair of opposed side wall panels extending upwardly from said bottom wall panel, a pair of top wall panels extending inwardly from said side wall panels,

a first handle element formed in one of said top wall panels and integrally attached at its base to said one top wall panel,

a first tongue extending from the base of said first handle element,

a second handle element folded over on said first handle element,

a second tongue extending from the base of said second handle element through an opening in said first handle element and overlapping and secured to said first tongue, and

the other of said top wall panels overlapping and secured to said one top panel,

said other top wall panel having a third tongue overlapping said first and second tongues.

7. A carton as defined in claim 6 which includes a glue strip applied to the underside of said second handle element and a pair of glue strips applied to the underside of said other of said top wall panels.

8. A carton as defined in claim 6 which includes a reinforcing flap integrally connected to the base of said second handle element and secured to and underlying said other top wall panel.

9. A carton as defined in claim 6 wherein said other top wall panel defines a recess on its free edge, said third tongue extends centrally from the base of said recess, and said handle elements are received in said recess.

10. A carton as defined in claim 9 wherein the end portions of said other top wall panel overlap substantially the entire width of said one top wall panel.

11. A carton as defined in claim 6 which includes end closure flaps hingedly connected to opposite ends of both of said side wall panels, said bottom wall panel and said one of said top wall panels.

12. A carton as defined in claim 6 which includes cuts at the base of both said first and said second handle elements.

13. A blank for a carton as described in claim 5 wherein

said end closure flaps are cut free along two lateral edges and an outer edge and are hingedly connected to said respective wall panels along the inner edge of each said end closure flap,

said bottom wall panel end closure flaps and said second top wall panel end closure flaps are each further provided with an embossment disposed centrally of the lateral edges of said end closure flaps and adjacent said hinged connection, and

said second side wall panel end closure flaps are provided with notches corresponding in size to said embossments and located at each corner formed by said lateral edges and said outer edges of said second side wall end closure flaps.

14. A carton as defined in claim 11 wherein said hinged connection is along the inside edge of said closure flaps with the two lateral edges and outside edge being free,

said bottom wall panel end closure flaps and said top wall panel end closure flaps being provided with outwardly projecting embossments disposed centrally of said lateral edges of said closure flaps and adjacent said hinged connections, and

said second side wall panel end closure flaps are provided with cutouts at their outer corners, said cutouts corresponding in size and position, when said second side wall panel end flaps are folded in position to said embossments whereby, when said second side wall end flaps are folded over said bottom wall and second top wall end flaps, said cutouts will partially surround said embossments.

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