

March 3, 1970

V. A. EDWARDS

3,498,496

END LOADING CARTON

Filed Nov. 24, 1967

2 Sheets-Sheet 1

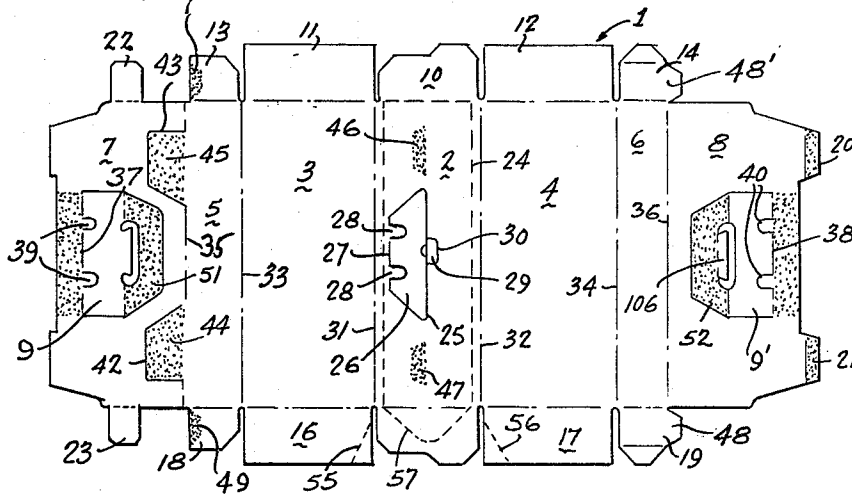


Fig. 1.

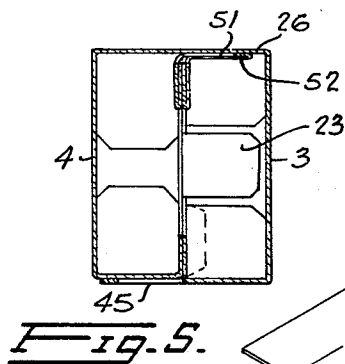


Fig. 5.

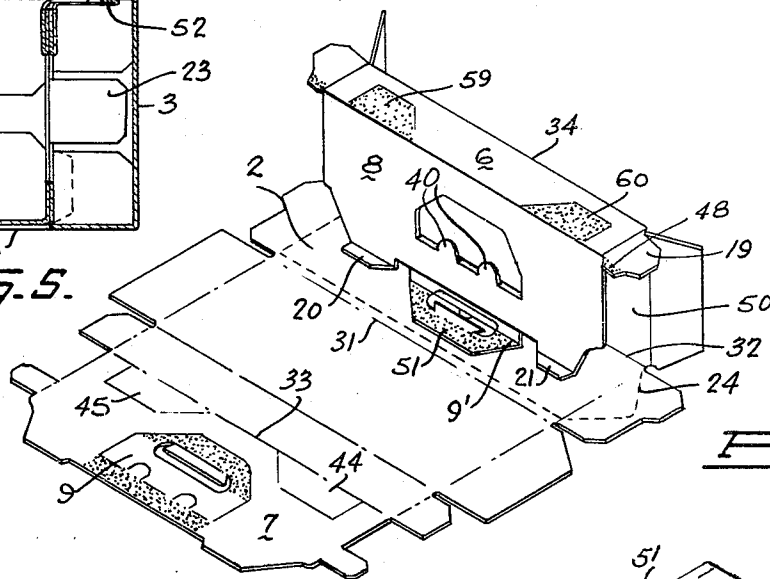


Fig. 2.

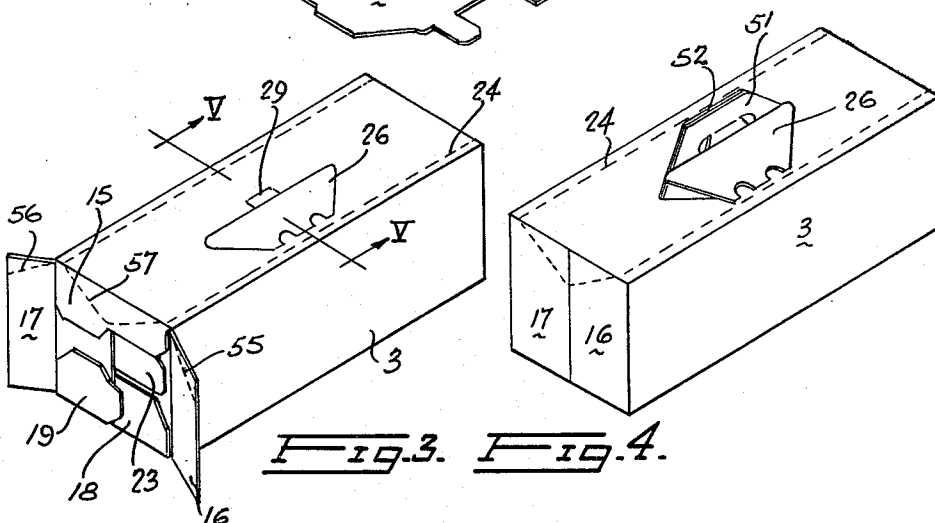


Fig. 3. Fig. 4.

March 3, 1970

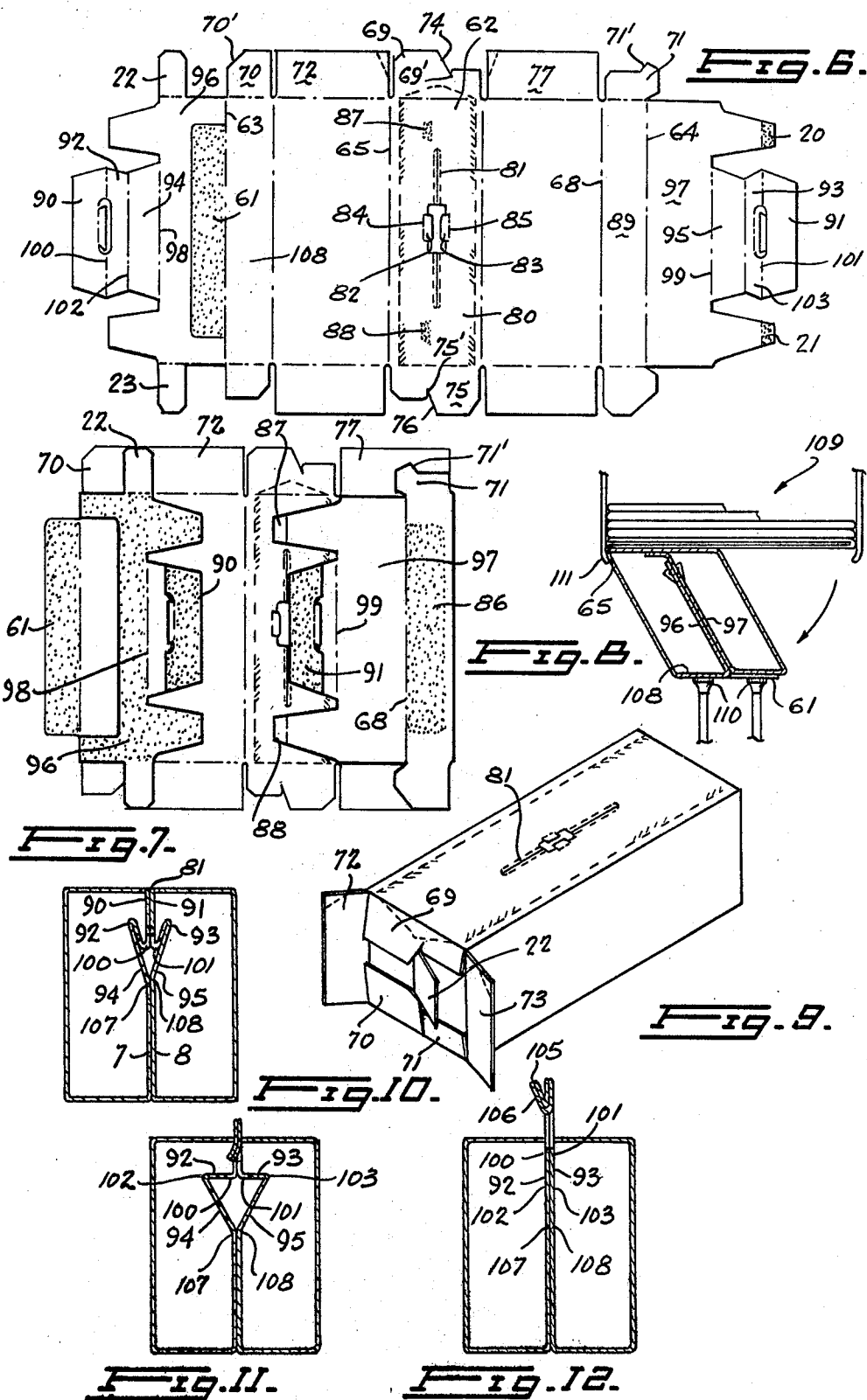
V. A. EDWARDS

3,498,496

END LOADING CARTON

Filed Nov. 24, 1967

2 Sheets-Sheet 2



1

3,498,496

END LOADING CARTON

Vernon A. Edwards, 495 W. Queen's Road,
North Vancouver, British Columbia, Canada

Filed Nov. 24, 1967, Ser. No. 685,511

Claims priority, application Canada, Nov. 25, 1966,
976,445

Int. Cl. B65d 75/00

U.S. Cl. 220—105

20 Claims

ABSTRACT OF THE DISCLOSURE

An end loading carton blank and a carton made from the blank is described consisting of an integral structure comprising a top panel, a pair of side panels connected to the top panel, a base panel integrally attached to a respective one of each of the side panels and a longitudinal partition member integrally attached to at least one of the base panels. A handle is integrally attached to the longitudinal partition member and a reinforcing tab integrally attached to one of the base panels in affixable to the other of the base panels. End flaps may be provided on the ends of each of the top, side, and base panels for closing the ends of the carton, and an end tab may be provided on the partition member for fixing to a selected end flap.

This invention relates to cartons. More particularly the invention provides an end loaded carton for the carrying of bottles, cans or other individual objects.

It is well known that cartons have become widely used for the shipment and storage of bottles in the beverage industries and in general these cartons are provided with a handle, can be top loaded, and include a sealed top for shipment. One disadvantage of top loading is that the machinery handling the bottles requires both a sideways and a downward movement. End loading is more rapid because the bottles can be pushed into the carton from the side in one movement as it passes along a conveyor.

In the past, difficulty has been experienced in constructing a satisfactory end-loaded carton which will be cheap, be easily closed, have good strength and a convenient handle for carrying the container both before and after it has been opened.

It is an object of the present invention to overcome the drawbacks experienced in the prior art and to fabricate a carton having a handle integrally formed with the material from which the carton is constructed, to provide a carton having great strength at its base where the load of the contents is applied and to provide an end closure feature which is quick to seal, neat in appearance and which adds to the strength of the overall structure.

Other advantages and features of the invention will be apparent from the description which follows:

The invention will now be described with reference to the accompanying drawings in which:

FIGURE 1 shows a plan view of a blank from which one embodiment of the invention may be formed,

FIGURE 2 shows a carton in the course of assembly to show how the interior parts fit together,

2

FIGURE 3 shows a perspective view of the erected carton in the process of having its end closed,

FIGURE 4 shows a view of the assembled closed carton with the carrying handle extended,

FIGURE 5 shows a sectional view along line V—V of FIGURE 3,

FIGURE 6 shows a plan view of a blank for forming a second embodiment of the invention,

FIGURE 7 shows the blank of FIGURE 6 partly folded for gluing,

FIGURE 8 shows a stacked arrangement of folded cartons of FIGURES 6 and 7 being erected.

FIGURE 9 shows a perspective view of the assembled carton from the blank of FIGURE 6, with the end flaps in the process of being closed and with the handle retracted, and

FIGURES 10, 11 and 12 show transverse sectional views through the carton of FIGURE 6, in a handle withdrawing sequence, firstly with the handle in its retracted position, secondly, when the handle is half way between its retracted and its extended position and thirdly, a view of the handle in its extended position.

With reference now to FIGURES 1 and 2, a blank 1 comprises a plurality of integrally connected panels which when suitably folded can be assembled into the carton of FIGURE 4. The blank comprises a top panel 2, side panels 3 and 4, half bottom panels 5 and 6, a pair of internal longitudinal partition members 7 and 8 in which are formed handle sections 9 and 9'. The panels 2, 3, 4, 5 and 6 carry end flaps 10 to 19 of specific shape and whose structure will be described later. Longitudinal partition panel 8 carries top securing tabs 20 and 21 and longitudinal panel 7 carries end locating tabs 22 and 23 for fixing to the end flaps. Top panel 2 includes a perforation line 24 defining a tear-off top section. The top 2 also includes a severed line 25 to allow section 26 to be hinged out of the plane of the top by pivoting about hinge score line 27. Cut lines 28 are formed on the line 27 to assist in the hinging of the section 26, so shaped to prevent tearing along line 27 and to provide an anti-pilfering device by preventing the raising of the handle and subsequent removal of an article within the carton without breaking or bending the lugs defined by the lines 28. To enable section 26 to be easily lifted by the legitimate user a finger insertion section is cut into the top at 29 and hinges about score line 30. The adjacent panels 2, 3, 4, 5, 6, 7 and 8 are hinged to one another at score lines 31 to 36 and the handle portions 9 and 9' hinge at score lines 37 and 38. To make the handle portions more flexibly hinged, cut-lines 39 and 40 are formed adjacent the hinge lines 37 and 38 respectively, and shaped to provide projecting lugs which will prevent contained articles, such as bottles, touching after loading the carton. Hinge score line 35 is not continuous along the border between bottom section 5 and longitudinal panel section 7 but includes cut lines 42 and 43 to allow the formation of bottom reinforcing tabs 44 and 45.

The carton may now be assembled by adopting the procedure shown in FIGURE 2. The longitudinal partition 8 is lifted up from the plane shown in FIGURE 1, has glue placed on the faces of tabs 20 and 21 which are then affixed to the face of top 2 at 46 and 47 respectively to form an enclosed space 50 for articles to be contained

in the carton. The handle portion 9' is bent up and folded into the position shown. Flaps 19 and 14 are glued on the underface of edges 48 and 48' respectively. The underface of panel 7, as shown in FIGURE 2, is now glued and it too is folded up in the same manner as partition 8, has its handle portion 9 broken out and laid in face to face contact with portion 9'. Thus the two underfaces of panels 7 and 8 with reference to FIGURE 1 become glued together and form a longitudinal partition for a carton with open ends. The inwardly facing parts of the handle portions 9 and 9' are also glued with their upper sections 51 and 52 folded into recessed position beneath the top closure panel 26 (see FIGURE 5). At this stage the glued edges 48 and 48' of flaps 19 and 14 stick to areas 49 and 49' of flaps 18 and 13 respectively.

The strength of the bottom of the carton is greatly improved by the presence of the bottom reinforcing tabs 44 and 45. These have been glued on their upper faces as shown in FIGURE 1, and are stuck to the portions 59 and 60 of panel 6 shown in FIGURE 2 (see also FIGURE 5).

At this stage the carton may be collapsed into stacking position by pressing diagonally separated edges 33 and 32 or 31 and 34 towards one another.

Subsequently the cartons may be taken from the stacks one by one, erected by pressing on the opposite diagonal edges to those pressed for collapsing and a charge of bottles or other articles pushed into the end of the erected carton.

The end flaps are next closed and having reference to FIGURE 3 the sequence for one end is: to fold in joined flaps 18 and 19 together; fold in flap 15, which in turn folds tab 23 into position, attached to panel 7 across into the position shown; then to spray glue onto the faces of flaps 18 and 19, 15 and tab 23; and fold in the flaps 16 and 17. The perforation lines 55 and 56 on flaps 16 and 17 correspond with the line 57 on tab 15 to enable easy removal of the part of top section defined by perforation line 24.

It can be seen that this assembly produces very rigid tying between the longitudinal partitions of the carton and further strengthens them by fixing them to the end section of the carton by virtue of tabs 22 and 23, and finally secures them to the top portion by means of tabs 20 and 21. If desired tabs 20 and 21 may be increased in size and scored at the junction lines between the stippled and plain areas in FIGURE 1. This improves the bond to top 2, and ensures that the tabs remain affixed to the top when it is subsequently torn off. The rim around the top of the carton between lines 24 and edges 31 and 32 gives extra strength to the carton against side forces when it is being handled after opening. If line 24 coincided with edges 31 and 32 this reinforcement would be absent.

In the embodiment of the invention shown in FIGURES 6 and 7 the bottom reinforcing tabs 44 and 45 are replaced by a single tab 61.

A tear-off top part 80 is also employed in the top panel 62 and the top is slit partially along its central longitudinal axis to form an opening 81 with small fold-down portions 82 and 83 which hinge about lines 84 and 85 respectively. The fold-down portions create small finger recesses firstly to allow handy pick-up of the entire carton by inserting two fingers under the top, and secondly to allow easy access for handle erection.

The handle structure is however different and includes an upper handle member 90 and 91, an intermediate panel 92 and 93, and hinge panels 94 and 95.

The carton may be assembled in a similar manner to that described for the embodiment of FIGURE 1, but the most convenient method of gluing however is shown in FIGURE 7 in which the central partition members 96 and 97 have been folded up from the position of FIGURE 6.

The sequence of assembly is to apply glue to the blank

of FIGURE 6 from both above and below to all the areas shown stippled in FIGURES 6 and 7 whilst the blank is laid out as shown in FIGURE 6.

A fold is then made about line 68 to bring the right hand side of the blank to its position in FIGURE 7 at the same time folding the intermediate panel 93 to bring handle member 91 into the retracted position. The top securing tabs 20 and 21 become affixed to the top.

The blank is then folded at line 63, and simultaneously intermediate panel 92 is hinged on lines 100 and 102 to bring handle portion 90 to the position of FIGURE 7.

The blank now in the condition of FIGURE 7 is folded about line 65 to produce the complete but unerected carton.

The carton may subsequently be stacked flat with other cartons, in a hopper 109 as shown in FIGURE 8, and placed adjacent the machine which is to fill it with articles. When erection is required the cartons can be pulled down one at a time by gripping with suction cups 110 against the smooth under surface of tab 61, and engagement of edge 65 against lip 111 of the hopper 109. One advantage of the large tab 61 is that the suction cups can easily be placed so that they will not overlap a step between tab 61 and an uncovered portion of base panel 89. As the base is pulled down the carton swings to erect position. The central partition being double and being integral with each half 89 and 108 of the base is prevented from bowing during this phase.

The carton may then be end-filled with articles and its end flaps closed as shown in FIGURE 9. The edges 74, 70' and 71' of flaps 69 and 70 and 71, are so shaped that as flaps 69 and the glued pair 70 and 71 are folded down and up respectively, the end tab 22 enters into camming cooperation with edges 74, 70' and 71' and swings across to lie parallel with the end of the carton. In practice the end closing machine may swing, say, flap 69 before the other two. If so it may be desirable to include a locking notch shown at 69' in broken lines with which the edge of tab 22 will engage. Glue is then sprayed onto the faces of flaps 69, 70, 71 and 22 as seen in FIGURE 9 and the flaps 72 and 73 are folded in. The flaps 69, 70 and 71 are of such size that they help protect the contents of the carton from being splashed with glue and the gap between them is covered by the partition tab 22.

The opposite end of the carton is closed in a similar manner, and the contents of the carton are likewise protected from spray of glue. Notch 75' may be included if desired for locking tab 23.

The sectional views of FIGURES 10, 11, and 12 show the operation and structure of the carrying handle for this embodiment. In the position shown in FIGURE 10 the handle is in its retracted position. In this position the hinge panels 94 and 95 are generally in the plane of their integrally attached partition sections 96 and 97 (in FIGURES 10 to 12 the parts of the handle are drawn slightly distorted for the purposes of clarity). If the handle is now raised by reaching into the top of the carton as shown in FIGURE 11, the intermediate sections 92 and 93 hinge about lines 100 and 101 and 102 and 103 respectively. To allow this action, the hinge panels 94 and 95 move apart hinging along lines 107 and 108 respectively. When the handle goes beyond the position of FIGURE 11 into the position of FIGURE 12 the hinge panel members by continued rotation of the intermediate members 92 and 93 about their hinge lines 100 and 102 and 101 and 103 respectively, fall into the plane of the partitions 96 and 97. The user then places his hand through the slot in the handle bending back the tabs 105 and 106 to allow a comfortable grip.

Many advantages flow from the structures of the invention. The longitudinal partition is of double thickness giving it strength and resistance to bending when the carton is erected. The partition includes end tabs which fasten it rigidly to the closed end and both strengthen it and hold it accurately located beneath the handle opening in the

5

top of the carton. Since each half of the partition is integrally attached to one half of the base the load of the articles in each side of the carton is transferred directly to its adjacent partition (when the carton is lifted by the handle). Also because each half base is integrally connected to its adjacent side wall and the top, there is a wrap-around action tending to nest the articles against the partition.

The formation of the tear off top so that a vestigial rim remains after the tear out portion has been removed enhances the sideways crushing resistance of the carton after it has been opened.

The bottom tab formed from material of the adjacent partition firmly unites the two halves of the base but leaves a smooth surface both inside and outside the base. There is thus no interference between the base and articles being pushed into it, and the erecting pull down apparatus also finds a smooth surface to be engaged.

The handle being integral with the partition receives the load from the partition directly and is less likely to tear than if slidably or otherwise engaging the partition or other internal structure of the carton. Being collapsible the handle can be pushed down whenever it is not required.

By the avoidance of all internal structure except the partition end loading is possible.

I claim:

1. A one-piece blank for constructing a carton, said blank being scored and incised to provide a top panel, a pair of side panels integrally connected with said top panel, a base panel integrally attached to a respective one of each of said side panels, a longitudinal partition member integrally attached to each of said base panels, a handle portion integrally attached to each said longitudinal partition member,

and a bottom reinforcing tab integrally formed with a selected one of said base panels and cut from the partition member integrally attached to said selected one base panel, said reinforcing tab being affixable to the other of said base panels.

2. A blank as defined in claim 1 comprising an end flap integrally attached to at least one of said top, side, and base panels for forming an end wall to said carton, and an end locating tab integrally attached to at least one of said partition members for adhesion to said end flap.

3. A blank as defined in claim 1 at least one of said longitudinal partition members having at least one end locating tab;

each of said top, side and base panels having an end flap integrally attached thereto,

chosen ones of said end flaps being shaped to define, upon folding of said blank and erection of said carton and inward folding of said end flaps, a relieved space for accommodation and fixing of said partition end locating tab to a chosen other of said inwardly folded end flaps.

4. A blank as defined in claim 3 comprising a tear out perforation line defined in said top panel said perforation line being inwardly of the scored lines defining the junction of said side panels and said top.

5. A blank as defined in claim 3 comprising an incised opening in said top panel for withdrawal of said handle portion therethrough, said incised opening defining a lug in said top panel preventing withdrawal of said handle portion without mutilation of said lug.

6. A blank as defined in claim 3 comprising a handle portion respectively attached to each of said longitudinal partition members,

each said handle portion comprising a hinge panel portion, an integrally attached intermediate section and an integrally attached gripping portion, said gripping portions being affixable to one another in mutual side by side arrangement, said longitudinal partitions also being affixable to one another in mutual side by side

6

arrangement, said handle thereby being movable from a retracted to an extended position and vice versa by hinging of said intermediate and said hinge panel portions.

7. A blank as defined in claim 3, selected ones of said end flaps including a camming surface for engagement of said partition end locating tab upon folding of said selected end flaps, for swinging said end locating tab into alignment with the end of said carton and at right angles to the plane of its partition member.

8. A blank as defined in claim 1, comprising a pair of bottom reinforcing tabs integrally attached to said one of said base panels.

9. A blank as defined in claim 1, a selected one of said longitudinal partition members having at least one top securing tab affixable to said top.

10. A blank as defined in claim 7, said camming surface including a locking notch defined therein for engaging the edge of said end locating tab.

11. An end loading carton which comprises a top panel, a pair of side panels integrally connected with said top panel, a base panel integrally attached to a respective one of each said side panels, a longitudinal partition member integrally attached to each said base panels, a handle portion integrally attached to each said longitudinal partition member,

and a bottom reinforcing tab integrally formed with a selected one of said base panels and cut from the partition member integrally attached to said selected one base panel, said reinforcing tab being affixed to the other of said base panels.

12. A carton as defined in claim 11 comprising an end flap integrally attached to at least one of said top, side, and base panels for forming an end wall to said carton, and an end locating tab integrally attached to at least one of said partition members and affixed to said end flap.

13. A carton as defined in claim 11, at least one of said longitudinal partition members having at least one end locating tab,

each said top, side, and base panels having an end flap integrally attached thereto,

chosen ones of said end flaps being shaped to define a relieved space for accommodation of said partition end locating tab and means fastening said partition end locating tab to a chosen other of said end flaps.

14. A carton as defined in claim 13 comprising a tear-out perforation line defined in said top panel said perforation line being inwardly of the scored lines defining the junction of said side panels and said top.

15. A carton as defined in claim 13 comprising an incised opening in said top panel for withdrawal of said handle portion therethrough, said incised opening defining a lug in said top panel preventing withdrawal of said handle portion without mutilation of said lug.

16. A carton as defined in claim 13 comprising a handle portion respectively attached to each of said longitudinal partition members, each said handle portion comprising a hinge panel portion, an integrally attached intermediate section and an integrally attached gripping portion, said gripping portions being affixed to one another in mutual side by side arrangement, said longitudinal partitions also being affixed to one another in mutual side by side arrangement, said handle thereby being movable from a retracted to an extended position and vice versa by hinging of said intermediate and said hinge panel portions.

17. A carton as defined in claim 13, selected ones of said end flaps including a camming surface for engagement of said partition end locating tab for swinging said end locating tab into alignment with the end of said carton and at right angles to the plane of its partition member.

18. A carton as defined in claim 11, comprising a pair of bottom reinforcing tabs integrally attached to said one of said base panels and affixed to the other base panel.

19. A carton as defined in claim 11, a selected one of said longitudinal partition members having at least one top securing tab affixed to said top.

20. A carton as defined in claim 17, said camming surface including a locking notch defined therein for engaging the edge of said end locating tab.

5

FOREIGN PATENTS

735,744	6/1966	Canada.
736,358	6/1966	Canada.
736,809	6/1966	Canada.
737,787	7/1966	Canada.

DAVIS T. MOORHEAD, Primary Examiner

References Cited

UNITED STATES PATENTS

2,354,528	7/1944	Lowry et al. -----	220—105	¹⁰	224—52
3,258,152	6/1966	Cameron -----	220—105		

U.S. Cl. X.R.