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COLLAPSIBLE AND REUSABLE CARTON

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2 Sheets-Sheet 1

FIG. 1.

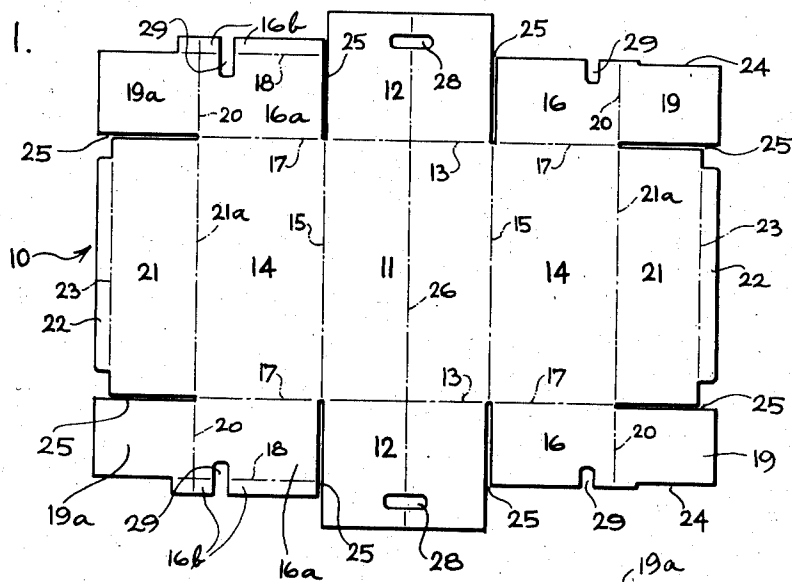
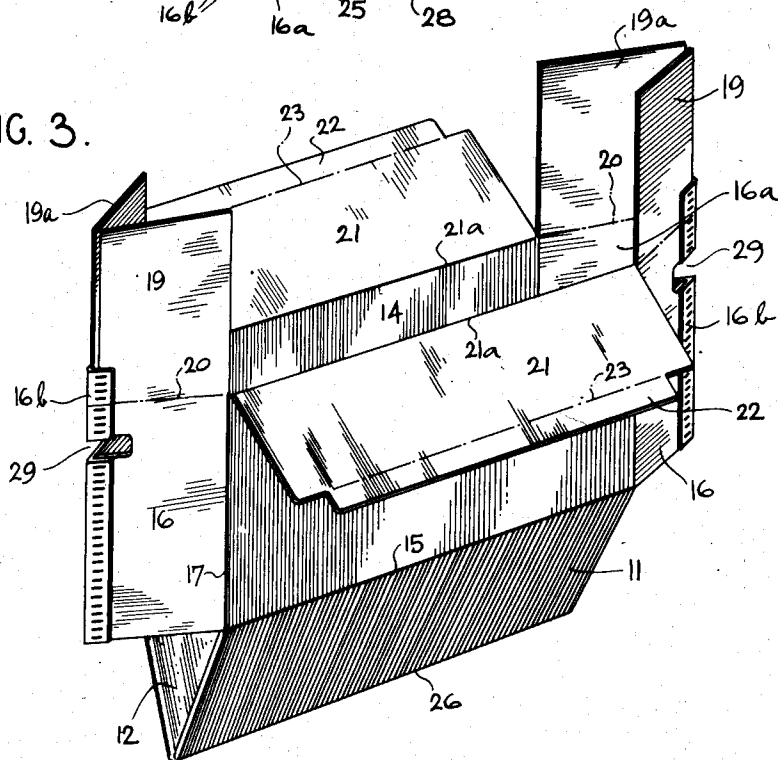


FIG. 3.



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FIG. 4.

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## UNITED STATES PATENT OFFICE

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## COLLAPSIBLE AND REUSABLE CARTON

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1 Claim. (Cl. 229—38)

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The present invention relates to improvements in carrying cases or cartons and has as its primary object the provision of a carton which is constructed and arranged in such a manner as to be readily assemblable into set-up condition and which is characterized by enhanced durability and strength in comparison with cartons of conventional construction.

Another object of the invention is the provision of a carton which may be readily collapsed into small compass pending reuse, thereby greatly conserving storage space.

A further object of the invention is the provision of a carton having an end panel construction designed for increased strength so as to allow vertical stacking without causing weakening or partial collapse of the lower members of a stacked pile. The latter object is achieved by overlapping the end subpanels and stitching along the overlap to define the end panels of the carton and further by providing inner end flaps integral with the bottom panel, which inner end flaps may be turned upon against the overlapped and stitched subpanels in order to provide an additional supporting wall at either end of the carton.

Another object of the invention is the provision of a carton of the character indicated which may be used for distributing partial contents to a number of consumers and which allows repeated closure of the carton without requiring the use of gummed sealing tape or the like. This object is achieved by providing the top panels of the carton with tuck-in flaps which may be received in die-cut slots defined between inwardly folded top flaps integral with the end subpanels of the carton.

The foregoing objects as well as additional objects and advantages will be readily apparent in the course of the following detailed description taken in connection with the accompanying drawings which illustrate a preferred embodiment of the invention and wherein:

Fig. 1 is a plan view of a blank from which the improved carton may be formed;

Fig. 2 illustrates the first step in the formation of the carton, showing the blank folded in half about a medial longitudinal fold line of the central or bottom panel and with the integral inner end flaps inwardly folded thereagainst;

Fig. 3 is a perspective view illustrating a further step in the formation of the carton; and

Fig. 4 is a perspective view of the completed carton in open set-up condition and showing one of the reinforcing inner end flaps integral with

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the bottom panel partially folded away from the respective end panel of the carton.

Referring now to the drawings in greater detail, 10 designates the carton blank which may be formed from cardboard, fiberboard, corrugated board or any other suitable material which may be readily die-cut and scored. Carton blank 10 is formed with a central panel 11 defining the bottom panel of the carton. Inner end flaps 12 are integral with bottom panel 11 and foldable about the transverse score lines 13. Side panels 14 are integral with bottom panel 11 and foldable about longitudinal score lines 15. End subpanels 16 and 16a are integral with respective side panels 14 and foldable about score lines 17. End subpanels 16a are each provided with an overlap 16b which is secured to a respective subpanel 16 by stitching, stapling or in any other suitable manner to form the end panels of the carton, as will be described more fully hereinbelow. Said overlaps are foldable about score lines 18.

Top flaps 19 and 19a are integral with end subpanels 16 and 16a respectively and are foldable about score lines 20. Top or cover panels 21 are integral with side panels 14 and are foldable about longitudinal score lines 21a. Said cover panels are preferably provided with integral tuck-in flaps 22 foldable about score lines 23. The outer edge (in the blank) of each top flap 19 is cut away as shown at 24 in order to define, with the opposed edge of its respective top flap 19a in the set-up condition of the carton, a slot for the reception of tuck-in flaps 22. The various cut lines which separate the respective panels and flaps of the blank from each other are designated by reference numeral 25.

A medial longitudinal fold line 26 extends across bottom panel 11 and inner end flaps 12 which are integral with said bottom panel. In the formation of the carton from blank 10, inner end flaps 12 are first inwardly folded about score lines 13 against the bottom panel 11. The blank is then folded about the medial longitudinal fold line 26 to assume the condition illustrated in Fig. 2. The overlap 16b of each end subpanel 16a is then stitched, stapled or secured in any other suitable manner to a respective subpanel 16 in order to complete the end panels of the carton. The side panels 14 are then separated and the bottom panel 11 flattened out or unfolded about the longitudinal fold line 26. Next, the inner end flaps 12 are folded upwardly against the end panels of the carton comprising the stitched, overlapped subpanels 16 and 16a. Thus when folded upwardly into vertical position

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against the outer end panels of the carton, inner end flaps 12 serve as reinforcing end walls greatly adding to the strength of the cartons. By reason of the described arrangement, a plurality of loaded cartons may be stacked vertically without causing weakening or collapse of the lowermost cartons in the stacked pile and without causing damage to the contents thereof.

In the set-up condition of the carton illustrated in Fig. 4, the opposed inner edges of each pair of inwardly folded top flaps 19 and 19a define closure slots or cut-outs 24 for the reception of the integral tuck-in flaps 22 of cover panels 21. This arrangement allows constant use and repeated closure of the carton and eliminates the necessity of using gummed sealing tape or the like as required in cartons of conventional construction. Thus the carton may be readily used as a shipping container in the distribution of a plurality of broken lots or partial contents thereof to a number of consumers and the carton may be readily closed after the withdrawal of each lot.

When not in use the carton may be readily collapsed into the small compass of Fig. 2 by first folding downwardly the inner end flaps 12 against the bottom panel 11 and then simultaneously folding said bottom panel about the medial longitudinal fold line 26 and flattening the end sub-panels 16 and 16a of each end panel against each other about the medial score lines 18.

Inner end flaps 12 are preferably formed with handle cut-outs 28 which register with cut-outs 29 appropriately disposed in the end panels 16, 16a in order to facilitate carrying the carton about.

Since certain modifications may be made in the carton of the present invention without departing from the scope thereof, it is intended that all matter contained in the foregoing specification and shown in the accompanying drawings be interpreted merely as illustrative and not in a limiting sense.

What is claimed is:

A collapsible carton comprising a longitudinally extending bottom panel, longitudinally extending side walls panels hingedly connected to said bottom panel, a front end wall comprising front end panels respectively hingedly connected to the front edges of said side panels, a front cover flap comprising front cover flap panels respectively hingedly connected to said front end panels, said front end wall having an end overlap flap hingedly connected to the inner edge of a first front-end panel and secured to a

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face of the other front end panel, said front cover flap having a front cover overlap flap hingedly connected to the front portion of the inner edge of the front cover flap panel which is connected to said first front end panel, said front cover overlap flap being also secured to a face of the other front cover flap and hingedly connected to the upper edge of said end overlap flap, said front cover overlap flap terminating forwardly of the rear edge of said front cover flap, the inner edges of said cover flap panels being spaced from each other to form a front slot located rearwardly of said front cover overlap flap, a rear end wall and a rear cover flap constructed in the same manner as said front end wall and said front cover flap, inner end walls respectively hingedly connected to the front and rear edges of said bottom panel and foldable against respective end walls to provide respective reinforcing end walls, cover panels respectively hingedly connected to the respective upper edges of said side wall panels, and adapted to be positioned over said cover flaps, tuck-in flaps respectively hingedly connected to the respective inner edges of said cover panels, each of said tuck-in flaps extending longitudinally between the front end of the front slot and the rear end of the rear slot and being adapted to be inserted in said slots whereby to lock said tuck-in flaps frictionally and releasably, said bottom panel and said inner end flaps respectively having medial longitudinal fold lines, whereby said carton is collapsible by folding said inner end flaps downwardly against said bottom panel and said cover flaps into respective alignment with said end walls and then simultaneously folding outwardly said bottom panel and said inner end panels along their respective fold lines, and said end walls and said cover flaps along the hinge lines of their respective overlap flaps.

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