

July 12, 1960

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2,944,723

INTERLOCKED CARTON

Filed July 14, 1958

2 Sheets-Sheet 1

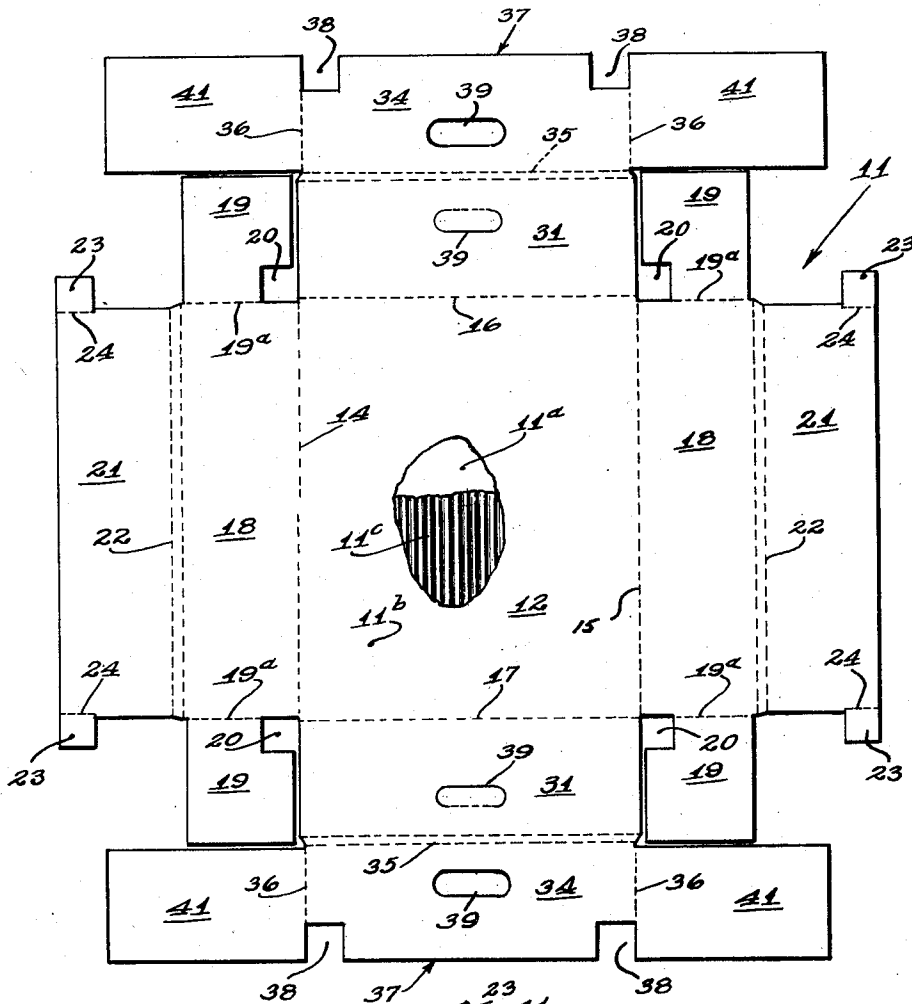


FIG. 1.

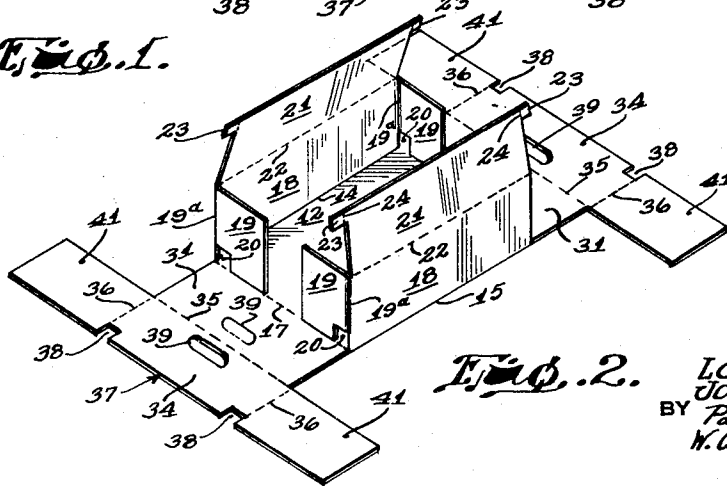


FIG. 2.

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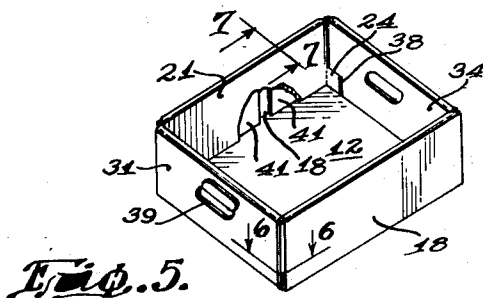
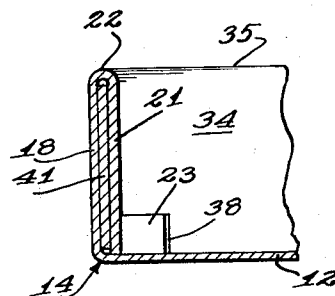
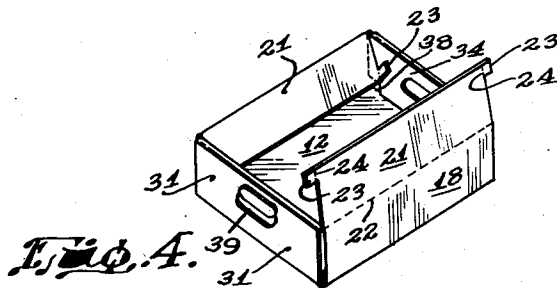
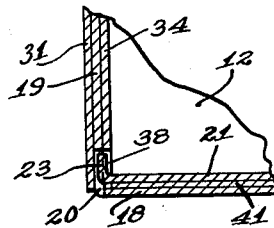
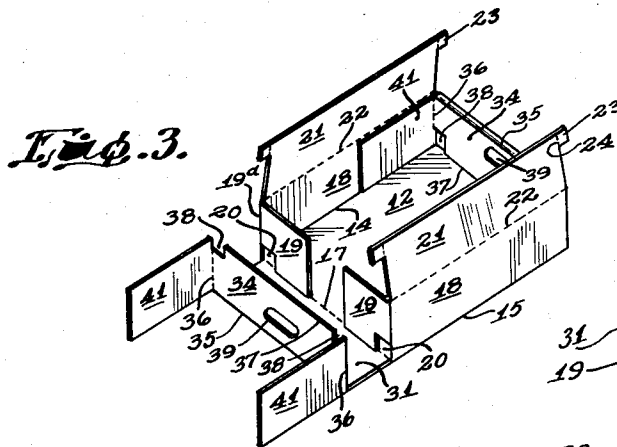
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2,944,723

Filed July 14, 1958

2 Sheets-Sheet 2



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2,944,723

INTERLOCKED CARTON

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Filed July 14, 1958, Ser. No. 748,315

4 Claims. (Cl. 229—34)

The present invention relates to a carton construction and, more specifically, to a carton construction which provides a self-locking feature.

It is a principal object of the present invention to provide a carton which is formed of a single piece of the desired material, and which is of such design that it is capable of maintaining its assembled configuration without the use of auxiliary fastening arrangements such as adhesive, tape, stitching, or stapling.

It is also an object of the present invention to provide a carton having upstanding walls which are formed of a plurality of plies of the material of construction.

It is also an object of the present invention to provide a die-cut slotted and scored sheet of said material which is capable of simple and uncomplicated assembly.

It is also an object of this invention to provide such a blank which is economical in that it involves a minimum of waste.

The foregoing and other objects of the present invention will become apparent to those skilled in the art by reference to the attached drawings on which there is presented for purposes of illustration only a particular embodiment of the invention.

In the drawings:

Fig. 1 is a plan view, partially broken, of the single piece blank which may be used in forming the carton of the invention.

Fig. 2 is a three-quarter perspective view of the blank of Fig. 1 in an intermediate stage of its erection into the carton of the invention.

Fig. 3 is similar to Fig. 2, but showing a further stage in the erection of the carton.

Fig. 4 is like Fig. 3, but showing still a further stage in the erection of the carton.

Fig. 5 is a perspective view of the carton in its final assembled form but with a portion broken away.

Fig. 6 is an enlarged section taken on the line 6—6 of Fig. 5.

Fig. 7 is an enlarged section taken on the line 7—7 of Fig. 5.

Basically, the present invention is concerned with a carton construction which includes a bottom wall having upstanding walls foldably connected thereto, said upstanding walls each being composed of a pair of panels serially connected to the bottom wall and folded face-to-face with each other and normal to the bottom wall, flaps extending laterally and foldably from certain of said panels, said flaps interfitting between panels in an adjacent wall, certain of said flaps and panels being provided with a notch which will register when assembled to define a recess, and tabs on certain of said panels being receivable in said recesses to provide an interlocked or self-locking construction.

Referring now more specifically to the drawings, there is shown in Fig. 1 a generally rectangular piece of corrugated board 11 composed of outer liner sheets 11a and 11b, and an inner corrugated medium 11c. The board

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as shown has been slitted and scored so as to define a central panel 12 outlined by spaced score lines 14 and 15 serving as fold lines, and spaced score lines 16 and 17 also serving as fold lines and being perpendicular to the score lines 14 and 15. A pair of panels 18 extend laterally beyond the score lines 14 and 15. Each of the panels 18 have a flap 19 foldably connected to each end and separated therefrom by a fold line 19a. Fold lines 19a are in alignment with the score lines 16 and 17. The flaps 19 are each provided with a notch or a cut-out 20 along the fold line 19a and adjacent the bottom wall panel 12. A pair of panels 21 extend respectively from the panels 18 and are separated therefrom, respectively, by a fold line 22. Minor tabs 23 extend from each end of the outermost or remote panels 21 and are separated therefrom by a score line fold line 24.

A pair of end wall panels 31 extend respectively beyond the spaced score lines 16 and 17. Similarly, a pair of end wall panels 34 are connected to the panels 31 and separated therefrom by a score fold line 35. The ends of the panels 34 are defined by fold lines 36 which are in alignment with the score lines 14 and 15 of the central panel 12. The outer free edges 37 of the panels 34 are provided with cut-outs or notches 38 adjacent the ends 36. Each end of the outermost or remote panels 34 has foldably attached thereto flaps 41 which are separated from the panel 34 by the aforementioned fold score line 36. Each pair of respective end wall panels 31 and 34 is provided with hand-hold cut-outs 39 which are spaced to provide registration thereof when the end wall panels are brought into face-to-face relationship and the carton is assembled.

The aforementioned score or fold lines 22 (between the panels 18 and 21) and 35 (between the end wall panels 31 and 34) are most preferably composed of a pair of spaced score lines so as to permit the side and end wall panels to assume more definite spaced parallel relationship when the blank is assembled into carton configuration. This will permit the various lateral flap extensions to be located between the panels in the manner described hereinafter without distortion and irregularity of the contour of the carton.

It will thus be seen that the blank as described comprises a central panel, a plurality of first or adjacent panels foldably secured to the edges outlining the central panel, a like plurality of remote panels foldably secured to the first panel and a plurality of lateral flap extensions on certain of said panels being adapted to be received between the first adjacent and remote panel of an adjacent wall when assembled, certain of said flaps and panels as more specifically described hereinabove being provided with notches serving to define a recess for a tab extending laterally from opposed remote panels forming an inner ply of opposed walls.

The blank as described is erected into the carton of this invention by first folding it on the score line edges 14 and 15 to bring the panels 18 and 21 into upstanding relationship with respect to the bottom wall 12. Next, the flaps 19 are folded inwardly as best shown in Fig. 2. In this position, they will be normal to the bottom wall panel 12 and in alignment above the score line edges 16 and 17.

Next, the blank is folded about the score lines 35 (Fig. 3) to bring the panel 34 and its attached flaps 41 into normal relationship with the panels 31 at each end of the carton, following which the panels 41 are folded outwardly away from the carton into alignment with the side panel 18. The just-described end wall assembly is then folded about the score line edge 16 so that end wall panel 31 will abut flaps 19, and end wall panel 34 will fit down within the carton spaced from the end

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wall panel 31 with the flaps 19 therebetween. The flaps 41 will then lie in face-to-face contact with the inner surface side wall panels 18. The same procedure is followed at the other end to yield the construction of Fig. 4. The flaps 19 will thus be interfitted between the spaced panels 31 and 34. It will be seen that, as so assembled, the notches 20 in flaps 19, and notch 38 in end wall 34 will be in registry and define a recess in the end wall (Fig. 6). Finally, the sidewall panel 21 is folded inwardly and down within the confines of the carton while at the same time the tabs 23 are folded reversely so that they will be inclined inwardly as the panel 21 approaches overlapping relationship with the panel 18. As the panel 21 is swung down within the carton, the tab 23 will slide in facing contact with the end wall panel 34 (Fig. 4). When the panel 21 is finally in normal relationship to the bottom wall, the inwardly folded tabs 23 will snap into the recess defined by the notches 20 and 38, and thus lock the carton in its assembled form.

The carton of the invention which has been erected as described will thus be composed of a bottom wall which is composed of a single thickness of the material of construction. The side walls will be composed of an outer ply formed by the panel 18 and an inner ply formed by the panel 21. They will embrace therebetween the flaps 41 attached to the end wall panel 34. The end walls will be composed of an outer ply formed by the panel 31, and an inner ply formed by the end wall panel 34. These end wall plies will embrace between them the side wall flaps 19 foldably attached to side wall panel 18.

The open-topped, multiple-ply walled carton thus formed is completely self-locked, and possesses superior strength by reason of the interfitting relationship provided by the flap extensions within the panels forming the respective side and end walls. The interlocking provided by the cooperative engagement of the tab 23 and the recess cannot be disengaged by accident, although it may be readily disengaged by the proper manipulative step of squeezing the panels 18 and 21 at the base of the carton, while at the same time pulling the tab 23 out of the recess. It will be appreciated that this combination of steps could not be accomplished by accident, although its ready adaptability to purposeful disengagement permits the user of such a carton to accomplish substantial economy of space in storing the cartons during periods of non-use.

Cartons of the invention are most conveniently manufactured of either corrugated board or chipboard. Corrugated board may be described as a laminate formed of a pair of outer liner or facing sheets and an inner corrugated or fluted medium. Chipboard is composed of a single sheet of paper of quite heavy caliper of appreciable strength. The carton of this invention may, of course, be manufactured of either of the above types of materials, as well as other materials having similar characteristics.

We are, of course, aware that similar carton constructions have been produced which have attempted to incorporate a locking feature by providing downwardly extending projections on the inner ply of the side wall, and at the same time providing corresponding slits in the base of the carton. These, however, have not proved entirely satisfactory because they have been subject to disengagement, thus destroying any attendant locking. In addition, the projections have been found generally to extend beyond the bottom plane of the box and thus interfere with the normal shipping and utilization of the carton in its erected form due to the fact that the projections catch on edges of boxes therebeneath when in stacked form, or on edges of tables, desks, and the like. It is also apparent that the type of box described having slits in the bottom wall thereof necessarily is of less strength due to the zone of weakness induced by these slits.

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In contrast, the carton of this invention requires no slitting, and the attending weakening of the bottom wall, and at the same time provides superior locking.

Modifications may be resorted to without departing from the spirit and scope of the invention defined in the appended claim.

We claim:

1. A carton construction formed of a single piece of relatively stiff, sheet-like material, said construction comprising a bottom wall of rectangular configuration defined by opposed parallel side edges and opposed parallel end edges, multiple thickness side and end walls formed by a pair of serially connected panels extending from each side and end edge being foldable normal to said bottom wall, and then the uppermost of said pair folded down into abutting relationship with the lower of said pair, said uppermost becoming the innermost ply of said respective walls, a first set of major flaps extending laterally and foldably from each end of the outermost ply panel of said side wall, said major flaps being provided with a notch adjacent its associated ply panel and being adapted to be embraced by the panels forming an end wall, a second set of major flaps foldably attached to each end of the innermost ply panel of said end wall being adapted to be embraced by the panels forming a side wall, said innermost ply panels of the end walls each being provided with a notch adjacent the flap connected thereto, said notches in said inner end wall and in said first set of major flaps embraced by said end wall panels being located to be in assembled registry, and a tab extending laterally and foldably from the inner ply panel forming said side wall, said tab being located in the same vertical plane as said notches, whereby it will snap into the recess formed by said notches in said end wall and hold said carton in assembled, interlocked relationship.

2. In a one-piece carton formed of relatively stiff, sheet-like material, said carton having a bottom wall and multiple ply, upstanding side and end walls formed by a serially connected pair of panels connected to each edge of said bottom wall and being folded inwardly into abutting relationship normal to said bottom wall, the improvement which comprises flaps foldably connected to the outer ply panel of said side wall adapted to interfit between panels forming said end walls, said flaps being provided with a notch adjacent their associated panel, said innermost ply panel of said end wall being provided with a notch in registry with said notch in said flap, flaps connected to the outermost ply panel of said end wall being adapted to interfit between panels forming said side walls, and tabs extending laterally and foldably from the innermost panel of said side wall and being adapted to assume parallel relationship with said end wall and snap into the recess formed by said notches to provide an interlocked construction.

3. A one-piece blank of relatively stiff, sheet-like material, said blank being formable into an open-topped box of multiple wall thickness, interlocked construction, said blank comprising a sheet of said material scored and slotted to define a central panel having, respectively, opposed side and end edges, a panel extending from each of said end edges, said panel having a score area spaced from said end edges to divide said panel into two substantially equal portions, flaps extending laterally from each end of the outermost of said portions, and said outermost portions being provided with a notch adjacent the attachment of said flaps, a panel extending from each of said side edges, said panel having a score area spaced from said side edges to divide said panel into substantially equal portions, flaps extending laterally from each end of the innermost of said portions, said flaps being provided with a notch adjacent the point of attachment to the inner portion and on the edge nearest the central panel, and minor tabs extending laterally from the outer-

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most of said portions, said tabs being of a size closely approximating the size of said notches.

4. In a carton construction having a bottom wall and a plurality of upstanding walls foldably secured thereto about the periphery, said upstanding walls being composed of a first panel foldably secured to said bottom wall and a remote panel foldably secured to said first panel, said first and remote panels assuming abutting relationship normal to said bottom wall, the improvement in the corner construction which includes a lateral flap extension foldably secured to one end of one first panel, said flap being receivable between a first panel and a remote panel forming an adjacent upstanding wall and being provided with an opening adjacent the corner, a

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lateral tab foldably secured to the same end of the associated remote panel and the remote panel of an adjoining wall being provided with an opening in registry with said first-mentioned opening when said remote panel is folded into overlapping relationship with its associated first panel and enclosing said flap, said openings defining a recess accommodating said tab.

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