

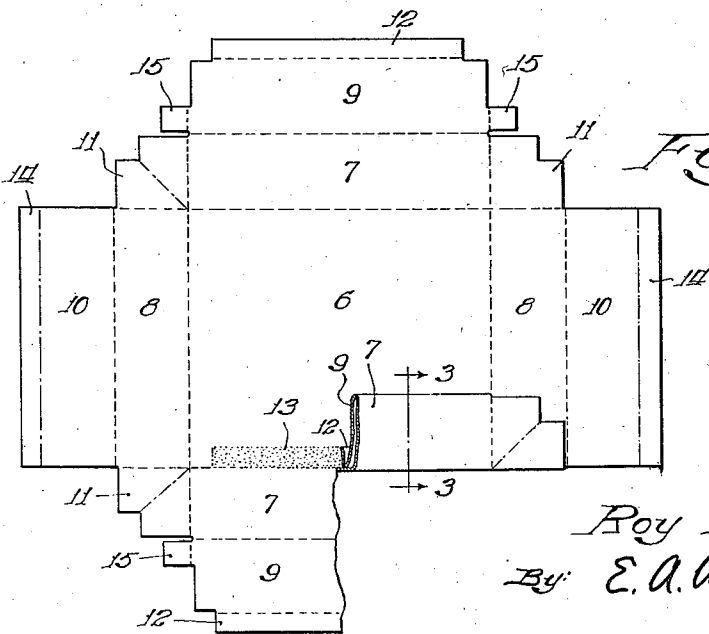
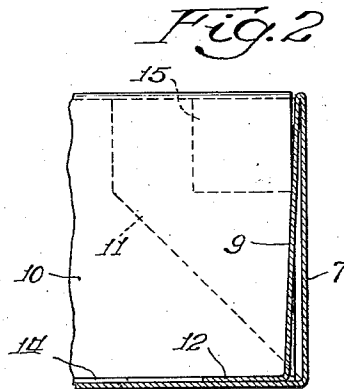
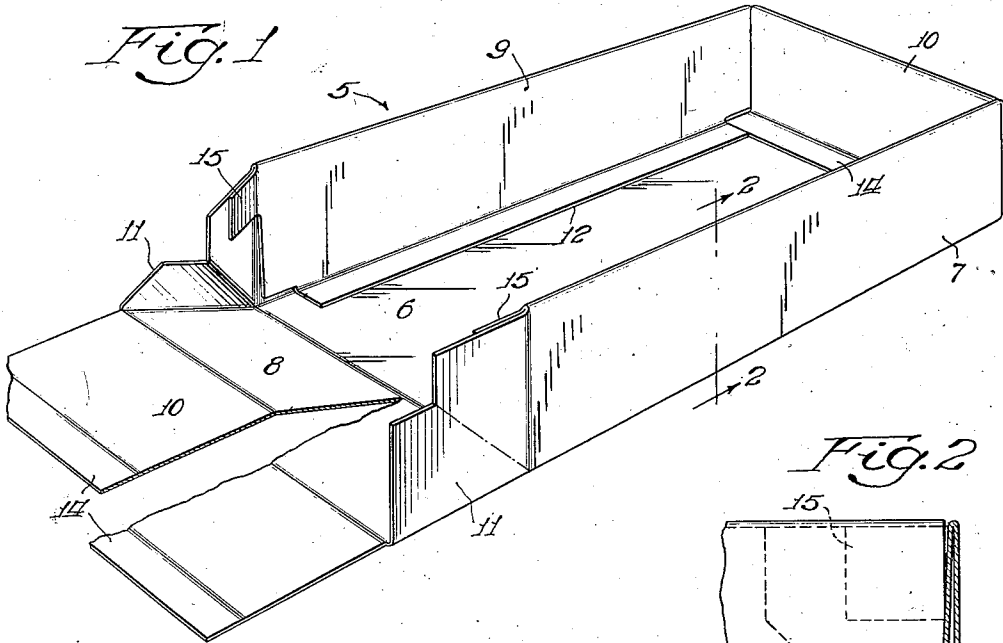
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CARTON

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## UNITED STATES PATENT OFFICE

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## CARTON

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3 Claims. (Cl. 229—34)

The present invention relates to folding cartons and more particularly to cartons of tray form constructed so as to be rapidly set up and locked in set up condition.

One object of the present invention is to provide a carton of tray form having reinforced side walls in which the reinforcing parts cause an inward bias of the side walls whereby locking parts on the side walls will be effectively maintained in operative position so as to cooperate with locking parts on the end walls.

Other objects of the present invention are to provide a strong, sturdy form of carton which can be collapsed to a flattened condition for storage and shipment, which can be set up with little effort and which will have good stacking qualities and offer satisfactory resistance to rough handling.

To these and other ends the invention resides in certain combinations and arrangement of parts described below, the novel features of which are defined in the claims hereto appended.

In the drawing:

Fig. 1 is a perspective view of the carton of the present invention illustrating one end in secured position and the other end in outwardly folded position;

Fig. 2 is a fragmentary sectional view taken along line 2—2 of Fig. 1 illustrated in slightly exaggerated way the manner of associating the side wall and side wall flap;

Fig. 3 is a fragmentary sectional view taken along line 3—3 of Fig. 4 illustrating the positions of the side wall and side wall flap in collapsed position over the bottom panel of the carton; and

Fig. 4 is a view illustrating the blank from which the carton is formed and also illustrating, in fragmentary form, the association between the side wall and attached parts and the remainder of the blank.

The present invention provides a carton having reinforced side walls formed in such a way as to allow advantage to be taken of the reinforcement to provide an effective locking arrangement for holding the carton in its set-up condition. This is accomplished by the provision of flaps on the side walls which are of slightly less height than the side walls, together with means for securing the flaps to the bottom panel to cause a definite tendency of the side wall to swing inwardly. Due to the slight separation of the side wall and attaching flap adjacent the bottom panel, a stout arrangement is formed giving maximum stacking strength to the set-up cartons.

Referring more particularly to the drawing, the carton, designated as a whole at 5, is preferably formed from a single blank of folding paper board suitably cut and scored to provide a bottom

panel 6, side wall panels 7, 7, end walls 8, 8, side wall flaps 9, 9 and end wall flaps 10, 10. Corner elements are provided herein illustrated as diagonally foldable corner connections 11, 11 secured integrally to the ends of the side and end walls.

The side wall flaps 9, 9 are formed of a width slightly less than the height of the side walls and the edges of the flaps 9, 9 are provided with attaching flaps 12, 12 arranged to be secured flat against the surface of bottom panel 6 as by means of adhesive indicated at 13 in Fig. 4. The attaching flaps 12, 12 are made shorter than the side wall flaps to provide a free end section at the lower corners of the side wall flaps for a purpose presently to be brought out.

The end wall flaps 10 are provided with short flaps 14 at their free edges arranged to contact flat against the bottom panel 6.

The side wall flaps, as herein illustrated, may also be provided with tabs 15, 15 to provide for increased strength at the corners of the carton.

In the manufacture of the carton the blanks are formed and suitable areas 13 are coated with adhesive, as illustrated in Fig. 4. The side wall flaps are then folded inwardly upon the flat blank so that the flaps 9, 9 will come into contact with the adhesive areas. Before the adhesive has time to set the side walls and attached flaps are folded inwardly, as shown in Fig. 3, so that they will overlap the bottom panel. The parts are held in this position until the adhesive has set. Since the flap 9 is of less width than the side wall 7, it is apparent that there will be a certain amount of resistance produced when the wall is swung to upright position. This is due to the fact that the radius for flaps 9 is shorter than for the side wall 7, but since the upper edge of the side wall is formed by the fold between the wall 7 and flap 9 each part will tend to cause the edge to swing upon its own radius. The described movement is permitted by the resiliency of the paper board and by the tendency of the fold lines to yield in both compressive and extensive manners as well as by a certain amount of loosening of the inner edge portions of the adhesively attached flaps 9.

The end wall flaps 10, 10 are preferably made substantially the full width of the interior of the carton between side walls 7, 7 and these flaps are therefore wider than the distance between the flaps 9, 9 when the side walls are in upright position. Thus, when the flaps 10, 10 are swung inwardly after the side walls are in upright position, the edges of these flaps will contact the faces of the flaps 9, 9 somewhat forcibly causing a deflection of the flaps 10, 10 until the point is reached where the flaps 10, 10 have swung past the ends of the attaching flaps 9, 9. The lower corners of the side wall flaps will then be deflected inwardly to permit or facilitate further swinging of the end wall flap until it comes to its

final position substantially against the end wall 8. When the parts are in this position it is to be understood that the corner elements and the adjacent tabs 15 will be received in between the end wall and the end wall flap.

When the flap 10 clears the extremity of the flap 9 the outer corner portion of the flap will snap back into its original position after being deflected by the edges of the flap 10. The ends of flap 9 will thus serve as locking means by reason of their engagement with the end portions of flap 10.

The width of the end flap 14 is so determined that when the flap 10 is in its final locked position the edge of flap 14 will engage the secured down edges of the flaps 12, 12, while the end of flap 14 will extend beneath the extremity of the flap 9 to provide further engagement with the side wall flap and the attaching flap and will be securely held in such position against accidental disengagement therefrom by said extremity of flap 9. This arrangement serves to provide a supplemental locking means and at the same time gives a finished appearance to the bottom part of the carton.

It is to be understood that a suitable cover may be provided for the present carton. The cover could be formed substantially as the tray illustrated or it could be of any conventional form.

It is also to be understood that reference to side and end walls is primarily for convenience of designation, it being within the scope of the invention to reverse the length relationship between these walls.

From the foregoing it is apparent that the present invention provides a neat appearing, reinforced carton in which the reinforcement feature materially contributes to provide an effective form of locking means. In the event it is desired to dispense with the locking relationship between the end flaps 10 and the ends of the side wall flaps 9, this may be done without completely impairing the efficiency of the carton as the flaps 14 will engage the ends of flaps 12. At the same time, however, the side walls will have all of their strength characteristics even though their function as a locking means is eliminated.

While the present description sets forth a preferred embodiment of the invention, numerous changes may be made in the construction without departing from the spirit of the invention, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A carton having a bottom panel, side walls and end walls hinged thereto, side wall flaps having a width slightly less than the inside height of the side walls, attaching flaps hingedly carried on the free edges of the side wall flaps, said attaching flaps being each secured to the bottom panel with the hinge line between the attaching flap and side wall flap spaced somewhat inwardly from the hinge line between the side wall and bottom panel, whereby outward swinging movement of each side wall beyond the vertical with respect to the bottom panel will be resisted, the side wall flaps having their ends terminating somewhat short of the ends of the side walls, flaps on the end walls, and corner flaps on the ends of the side walls adapted to be received between the end walls and end wall flaps when the latter are downturned against the inside surface

of the end wall, the end wall flaps each having portions adapted to lock against the ends of the side wall flaps when said end wall flaps are swung to an inner, downturned position, the attaching flaps on the side wall flaps terminating short of the ends of the side wall flaps whereby a resilient free corner portion is provided over which the locking portions on the end wall flaps can move causing outward deflection of said free corner portions until the locking portions have cleared the edges of the corner portions whereupon such corner portions will snap into locking engagement in front of the downturned end wall flaps.

2. A carton having a bottom panel, side walls and end walls hinged thereto, side wall flaps having a width slightly less than the inside height of the side walls, attaching flaps hingedly carried on the free edges of the side wall flaps, said attaching flaps being each secured to the bottom panel with the hinge line between the attaching flap and side wall flap spaced somewhat inwardly from the hinge line between the side wall and bottom panel, whereby outward swinging movement of each side wall beyond the vertical with respect to the bottom panel will be resisted, the side wall flaps having their ends terminating somewhat short of the ends of the side walls, flaps on the end walls, corner flaps on the ends of the side walls adapted to be received between the end walls and end wall flaps when the latter are downturned against the inside surface of the end wall, the end wall flaps each having portions adapted to lock against the ends of the side wall flaps when said end wall flaps are swung to an inner, downturned position, the attaching flaps on the side wall flaps terminating short of the ends of the side wall flaps whereby a resilient free corner portion is provided over which the locking portions on the end wall flaps can move causing outward deflection of said free corner portions until the locking portions have cleared the edges of the corner portions whereupon such corner portions will snap into locking engagement in front of the downturned end wall flaps, and edge flaps on the end wall flaps adapted to engage the ends of the attaching flaps on the side wall flaps, said edge flaps being also adapted to extend beneath the free corner portions whereby the free corner portions will tend to prevent accidental disengagement of the edge flaps.

3. A carton having a bottom panel, side walls and end walls hinged thereto, side wall flaps having a width slightly less than the inside height of the side walls, attaching flaps hingedly carried on the free edges of the side wall flaps, said attaching flaps being each secured to the bottom panel with the hinge line between the attaching flap and side wall flap spaced somewhat inwardly from the hinge line between the side wall and bottom panel, flaps on the end walls, corner flaps on the ends of the side walls adapted to be received between the end walls and end wall flaps when the latter are downturned against the inside surface of the end wall, and edge flaps on the end wall flaps extending to the side walls, the attaching flaps on the side wall flaps terminating short of the ends of the side wall flaps whereby free corner portions are provided, the edge flaps being adapted to engage the ends of the attaching flaps, said edge flaps also being adapted to extend outwardly beneath the free corner portions whereby the edge flaps will be secured against accidental disengagement.

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