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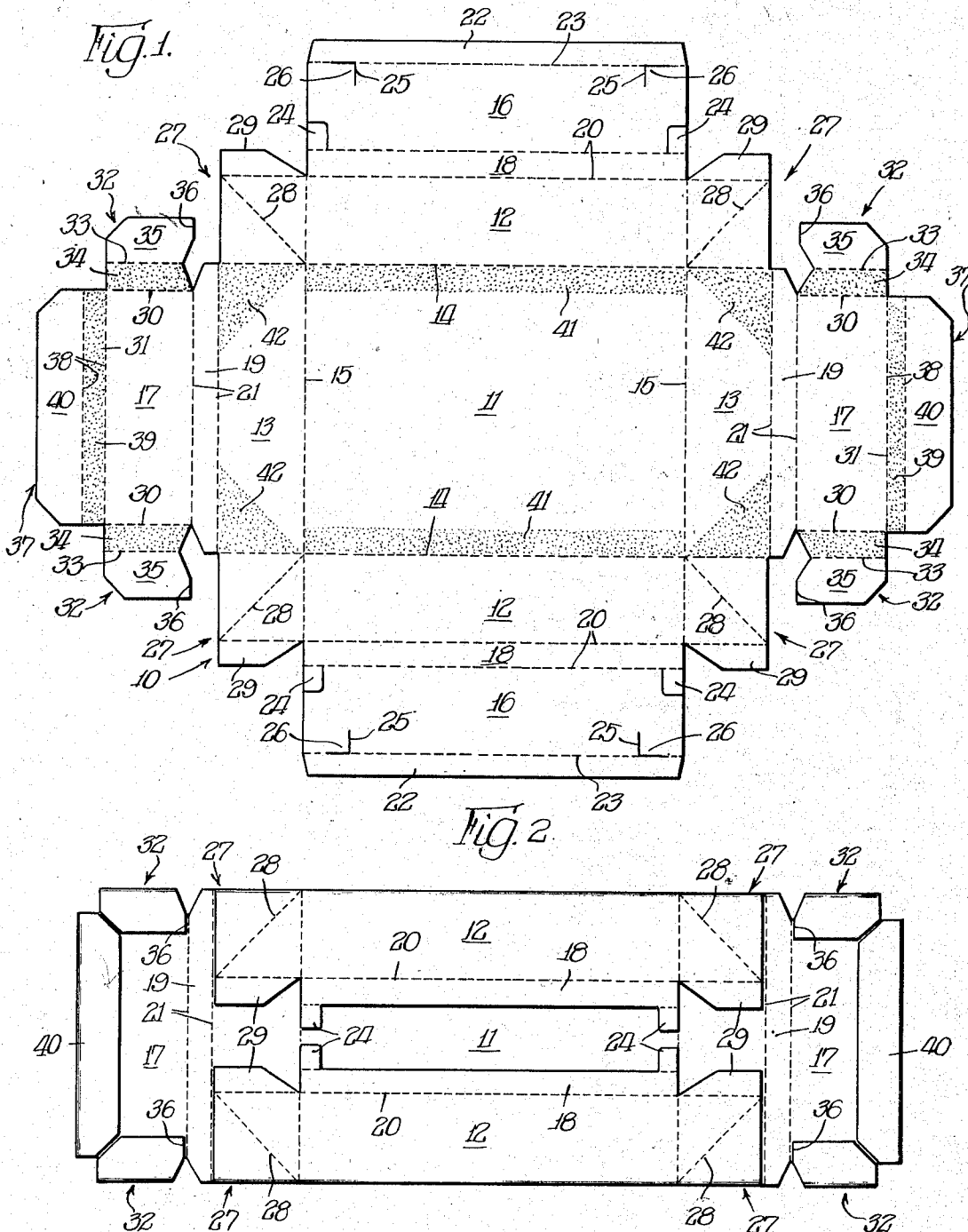
E. L. ARNESON

2,388,243

CARTON

Filed Dec. 9, 1942

2 Sheets-Sheet 1



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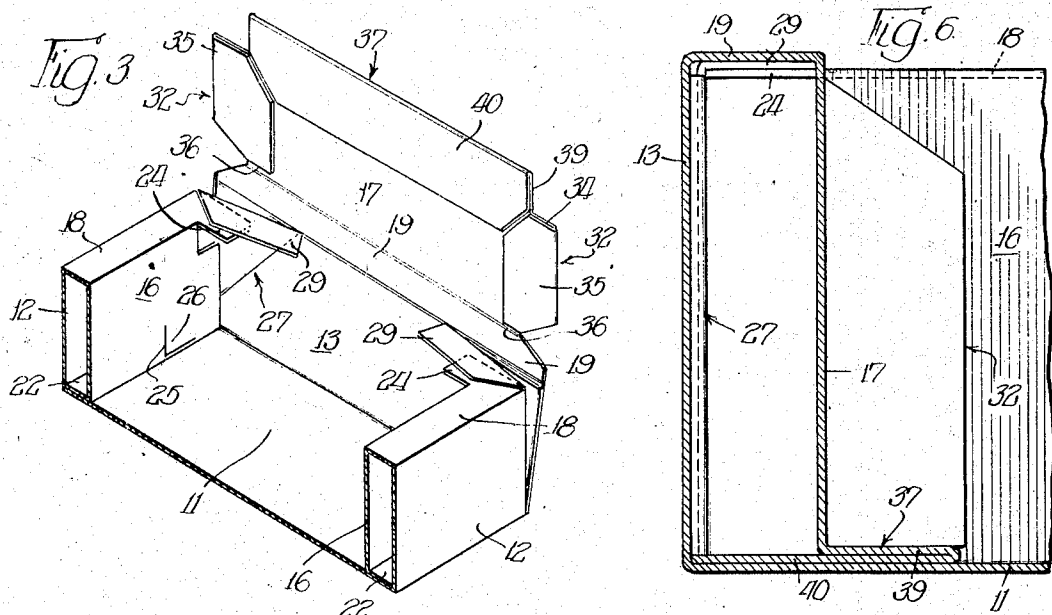
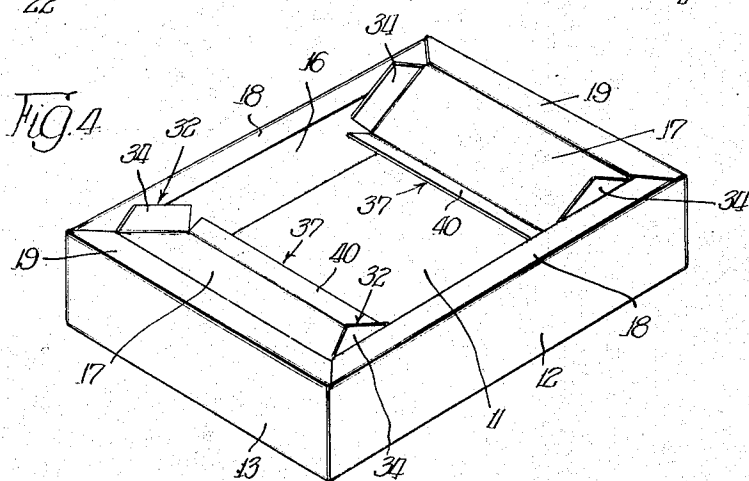
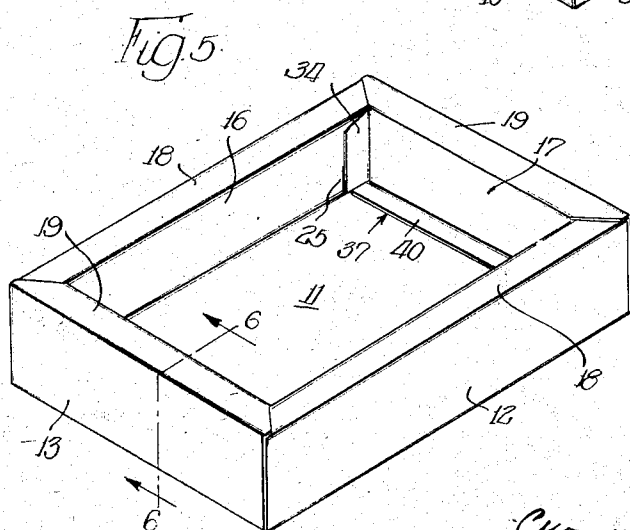
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UNITED STATES PATENT OFFICE

2,388,243

CARTON

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Application December 9, 1942, Serial No. 468,333

5 Claims. (Cl. 229—31)

This invention relates to the manufacture of cartons. More particularly, it pertains to improvements in a folding or knock-down carton or box of the double-wall type wherein a novel interlocking, bracing and spacing structure is utilized providing correlated improvements and discoveries considerably enhancing the utility and value of such cartons.

Double-wall cartons of this type have been attaining a place of increasing importance in the industry. Such cartons have many desirable features and advantages in that they give added strength to the finished carton, use thinner and therefore less paper, provide cushioning and insulating qualities and give better display characteristics. To exploit all of these features to their greatest advantage it is desirable that such cartons be so constructed that they will permit of rapid and ready assembly and thereafter remain firmly locked and braced in that position.

Generally, it is an object of the present invention to provide a double-wall carton which is economic of manufacture, simple yet sturdy and durable of construction, and which can readily and easily be erected into interlocking and bracing position with substantially no manipulative fingering of any articulated appendages associated with its wall structures.

A principal object of the invention is the provision of such a carton with walls having articulated extensions which simultaneously are brought into operative position with the erection of the carton walls and in which said extensions are automatically brought into interlocking engagement and adapted to brace as well as space and hold the carton walls in locked position.

More specifically, it is an object of the present invention to provide a folding box carton having double walls with end wall sections, preferably of the bellows fold type, having extension members which can be locked to side walls having locking extensions thereon, and additional extensions on the inner of said double walls with projections which automatically bring them into operative locking position by means of inwardly directed portions contacting the side walls and outwardly directed portions similarly joined and abutting and bracing the inner and outer double walls and holding them in spaced apart and locked relationship.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be

exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a plan view illustrating a preferred form of a die-cut, scored and adhesively treated blank;

Fig. 2 is a plan view of the blank in Fig. 1 adhesively secured in folded position in condition for shipping and ready for use;

Fig. 3 is a perspective view of one corner of a container partly in erected position illustrating the relative position of parts;

Fig. 4 is a perspective view of the blank shown in Fig. 2 and as partly shown in Fig. 3 illustrating an advance stage of folding the walls just prior to bringing them into locked position;

Fig. 5 is a perspective view showing the container completely folded and in interlocked position; and

Fig. 6 is a transverse sectional elevation taken along the lines 6—6 of Fig. 5 and looking in the direction of the arrows.

Referring more particularly to Fig. 1 of the drawings there is illustrated generally at 10 a preferred type of die-cut and scored blank. This constitutes a bottom panel 11, duplicate outer side walls 12, 12 and duplicate outer end walls 13, 13. These walls are joined to the edges of the bottom 11, the perimeter of which is defined by score lines 14, 14 for the side walls and score lines 15, 15 for the end walls. In viewing the present figure it should be observed that the inside portions generally of the box appear and that all score lines preferably are on the under side of outer face of the carton.

Inner side walls 16, 16 and inner end walls 17, 17 are joined together by top side spacing portions 18, 18 and top end spacing portions 19, 19 respectively. The top side spacer portions or bridging members 18, 18 are defined by score lines 20, 20 and the top end spacer or bridging members 19, 19 are defined by score lines 21, 21.

Joining each inner side wall 16, 16 are glue flaps 22, 22 defined by score lines 23, 23.

Adjacent the top side spacers 18, 18 and at the ends of the inner side walls at their upper portions are cut-out members forming tongues 24—24.

Also on the inner side walls adjacent the bottom of the glue flap 22 and inwardly of the ends

of the inner side walls 16, 16 are angularly cut portions 25—25 forming angular shoulders 26—26.

Joining the side walls 12, 12 at each end as well as the end walls 13, 13 at each end are square portions indicated generally at 27—27. Each of these portions are bisected by diagonal score lines 28—28 dividing each area into triangles to form a so-called "bellows fold," the particular function of which as utilized by the present invention is more fully explained hereinafter. Each bellows fold has one triangular portion equipped with an extending portion 29 defined by the score lines 20 extending therebetween.

Each inner end wall has score lines 30—30 defining its vertical edges and another score line 31 defining its horizontal bottom edge when in erected position. Extending from each edge 30 are extension members indicated generally at 32—32 each of which has cut score lines 33—33 dividing each into separate portions 34 and 35. The portions 35 each have a locking edge 36. The combined functions of the portions 34 and 35 are to provide spacing, bracing and locking elements as will presently be explained.

At the bottom or horizontal edge of the end panels 17 are extensions 37 having score lines 38—38 which define portions 39—39 and 40—40 on each such extension. Their combined functions will also presently appear.

After the blank has been die-cut and scored as above indicated, it is adhesively treated in certain of its areas preferably by passing the same through a gluing machine. These glued areas preferably consist of glue stripes 41, 41 on the bottom panel, triangular glue stripes 42—42 on the end panels and glue stripes on the extending portions 34 and 39 of the inner end panels 17, 17. While additional glue spots could be placed on any of the articulated appendages to which the indicated glue spots are intended to be affixed, or in adjacent areas, it is believed that for purposes of illustration the presently described arrangement will suffice.

Referring now to Fig. 2, it will be seen that after the application of the glue spots as above described, the outer and inner side walls 12 and 16 respectively of the blank are folded over together with the bellows fold portions so that the glue flaps 22 fall on their reverse sides along the glue stripes 41 and the triangular portions of the bellows folds fall along the triangular glue spots 42 lying adjacent thereto. Simultaneously with this folding and securing operation the portions 35 are folded against the glue portions 34 and the portions 40 are folded against the glue-applied portions 38 on the end walls 17. In this condition the blank appears as illustrated in Fig. 2 and in this manner these blanks are shipped to packers for erection into double-wall or frame-view cartons or containers.

In erecting such a container the end walls are brought into upstanding position and this operation by virtue of the bellows fold arrangement also brings the side walls into erect position. It will be observed that the tongues 24 adjacent the top spacers 18 at the ends of the inner wall 12 are brought into a lateral position and as the end walls are urged downwardly, the extensions 29 will overlie these laterally projecting tongues and be brought into a position adjacent thereto. As the inner end walls are folded inwardly toward each other, the adhesively combined portions 34 and 35 indicated generally at 32 will strike the

top spacers and inner side walls. As the end walls are urged downwardly toward the bottom of the carton and swung outwardly toward vertical position, the projections 32 will automatically be cammed into a position flush with the inner side walls. As this occurs and the pivoting movement of each inside end wall 17, 17 is being brought to completion, the locking edges 36 frictionally engage the bottoms of the lateral tongues 24, the tops of which in turn contact the bottoms of the extensions 29 on the bellows fold and a continued pressure outwardly of the inner wall locks the tongue and bellows fold extension against the under side of the end wall top spacers 19.

The other extension of the combined portions 34 and 35 directly beneath the locking edge 36 abuts the inside of the outside wall to act as spacing and bracing elements. The adhesively combined portions 39 and 40 along the bottom edge of the inner walls assume positions flush with the bottom panel and the outwardly extending unglued portion thereof is also brought into contact with the inside of the outer wall similarly acting as a bracing and spacing element for the end walls. As the inside end walls with their associated articulated structural appendages are respectively inwardly and outwardly directed, the portions remaining exposed within the inner area of the box urge inwardly the triangular cut-out portions 25 and come to rest against the angular shoulders 26.

This entire operation takes place substantially simultaneously and automatically merely by having an operator swing the panels constituting the outer end walls inwardly toward each other and then the inner end walls downwardly and outwardly away from each other, using the score lines defining these panels as hinge lines, and continuing this rotation until the respective panels have come to rest in spaced apart, locked and braced position.

It will be observed that the articulated appendages associated with the inner end walls, particularly the vertically arranged structures indicated generally at 32, each performs a plurality of functions. That is, each locks the laterally extending tongue 24 and the extension 29 of the bellows fold in position against the top spacer of the end wall 19. In addition to this, the same structure acts as a bracing and spacing member, and where the extension contacts the inner side walls, serve automatically to bring these structural parts into operative position.

Where only two spaced apart double walls are used and the remaining walls consist of single or double plies of paper board, the present arrangement can nevertheless be utilized, that is, the locking, bracing, spacing and automatic development of these parts into position is contemplated as being applied to other types of boxes than those here specifically illustrated.

It is also within the purview of the invention to utilize other types of end folds suitably joined, for example, to the outer side walls other than the bellows fold herein set forth as preferable.

Any suitable form of cover may be used in connection with the present construction depending on the particular use for which the structure is intended.

It will thus be seen that the objects hereinbefore set forth may readily and efficiently be attained and since certain changes may be made in the above article and different embodiments of the invention could be made without departing from

the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A carton of the class described, which comprises a bottom panel, outer side and end walls extending from the edges thereof, inner side and end walls separated from said outer walls by spacer portions joining said walls at their tops, the inner side walls having extensions secured to said bottom and laterally projecting tongues at their upper ends in the same plane as said spacer portions, the outer side walls having extensions forming end wall sections, said end wall sections each having an extension lying adjacent each of said laterally projecting tongues, and said inner end walls having means interlockingly to secure the extensions on the end wall sections to each adjacent laterally projecting tongue to hold the box in erected position, and inwardly directed extending portions connected to said means automatically operable to bring the latter into operative position upon erection of the carton walls.

2. A double-wall box, which comprises a bottom having outer side and end walls extending from the perimeter thereof, inner side and end walls separated from said outer walls by spacer portions joining said walls at their tops, the inner side walls having extensions secured to said bottom and laterally projecting tongues at their upper ends in the same plane as said spacer portion, the outer side walls having extensions forming bellows folds, said bellows folds each having an extension lying contiguous each of said laterally projecting tongues, and said inner end walls having outwardly directed extensions interlockingly engaging the extensions on the bellows folds with each adjacent laterally projecting tongue to hold the box in erected position, and said outwardly directed extensions each buttressing an outer end wall from top to bottom to brace and hold the inner end walls in spaced apart relationship with respect to the outer end walls, and inwardly directed extending portions connected to said outwardly directed extensions automatically operable to bring the latter into operative position upon erection of the carton walls and to hold the erected carton in said braced and interlocked position.

3. A carton of the class described, which comprises a bottom, outer side and end walls hingedly affixed to the edges of said bottom, inner side and end walls separated from said outer walls by spacer portions joining said inner and outer walls at their tops, the inner side walls having extensions secured to said bottom and laterally projecting tongues at their upper ends in the same plane as

said spacer portions, the outer side walls having extensions forming bellows folds, said bellows folds each having an extension lying adjacent each of said laterally projecting tongues, said inner end walls having outwardly directed extensions interlockingly securing the extensions on the bellows folds to each adjacent laterally projecting tongue to hold the box in erected position and to brace and hold the inner end walls in spaced apart relationship with respect to the outer end walls, and inwardly directed extending portions connected to said outwardly directed extensions automatically operable to bring the latter into operative position upon erection of the carton walls and to hold the erected carton in said braced and interlocked position.

4. A double-wall carton, which comprises a bottom, outer side and end walls extending from the edges of said bottom, inner side and end walls spaced from said outer walls by bridging portions joining said walls at their tops, the inner side walls having extensions outwardly directed and secured to said bottom, laterally projecting tongues at the upper ends of the inner side walls, the outer side walls having extensions forming bellows folds, a portion of each bellows fold being secured to an adjacent outer end wall portion in face-to-face relationship simultaneously to bring the side walls into box-forming position upon erection of the end walls, said bellows fold also having extensions on their remaining portions and which extensions lie adjacent each of said laterally projecting tongues, and said inner end walls having outwardly directed members interlockingly securing the extensions on the bellows folds to each adjacent laterally projecting tongue to hold the box in erected and locked position, and inwardly directed extending portions connected to said members automatically operable to bring the latter into operative position upon erection of the carton walls.

5. In a folding carton having spaced apart inner and outer side walls with inwardly directed lateral tongues at upper ends of said walls, and the ends of said outer walls having bellows folds connecting them to the outer of spaced apart outer and inner end walls whereby simultaneously to bring said walls into upstanding position upon the erection of one of said walls to set up said carton, the improvement which comprises extensions on said bellows folds which lie contiguous said lateral tongues when said walls are erected, outwardly directed extensions on said inner end walls interlockingly securing the extensions on the bellows fold to each adjacent laterally projecting tongue to hold the box in erected position and to brace and hold the inner end walls in spaced apart relationship with respect to the outer end walls, and inwardly directed extending portions connected to said outwardly directed extensions automatically operable to bring the latter into operative position upon erection of the carton walls and to hold the erected carton in said braced and interlocked position.

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