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BOX OR CARTON

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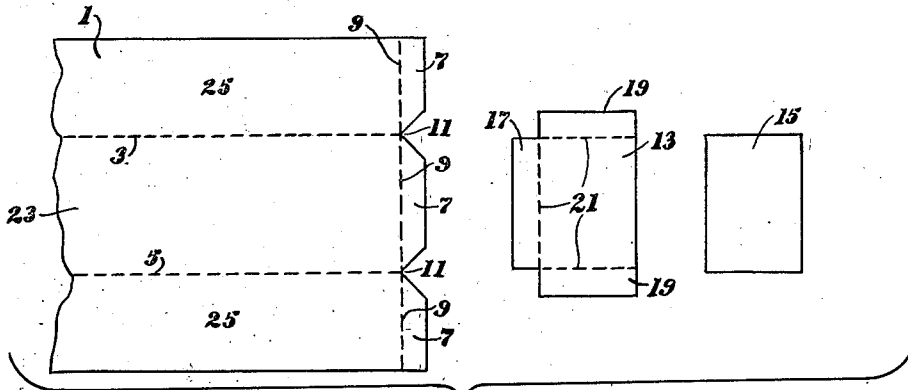


Fig. 1.

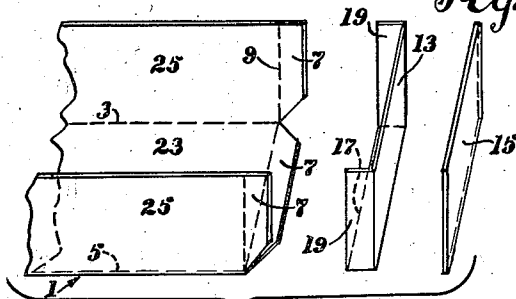


Fig. 2.

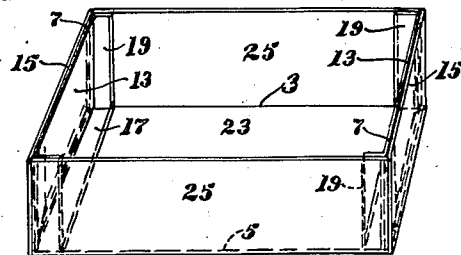


Fig. 3.

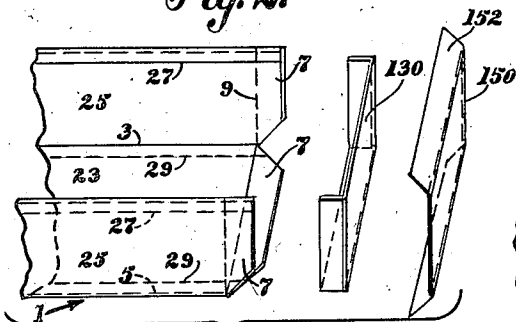


Fig. 4.

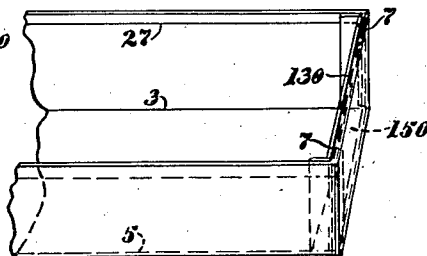


Fig. 5.

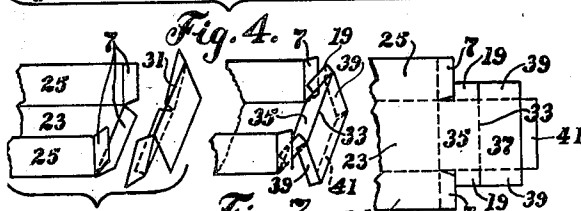


Fig. 6.

Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE

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BOX OR CARTON

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10 Claims. (Cl. 229—23)

The present invention relates to the manufacture of boxes or cartons to be used as temporary containers for various forms of merchandise during shipment, storage, and sale.

The temporary nature of the use to which a large class of boxes and cartons are put makes it undesirable to use anything but the least expensive materials and methods in their manufacture. However, where the goods contained in the boxes are of relatively heavy nature such as shoes, candy, or stationery, for example, the box must be strong enough to remain unbroken in shipment and handling in order to protect the contents thereof, and where the merchandise is intended for the personal use of the purchaser, and reaches his hands in the original container, the box must be presentable to the eye.

The weakest points in the ordinary rectangular carton or box made out of cardboard or other form of paper and familiarly used in commerce everywhere are its "corners", the meeting lines of the sides or the bottom with the ends, these corners being the points in the box at which breakage first occurs in practically all cases where the mass or weight of the contents causes the failure of the carton in transit or handling, and in the case of shoe boxes when the salesman removes the box from a stack on the shelf by inserting his fingers inside the box and pulling upon the end. The next weakest points are ordinarily the ends themselves of the box or carton.

The invention aims to strengthen these weak points of such boxes or cartons, and aims to do so without increasing materially, or even while reducing, the cost of manufacture, at the same time producing a container that presents a neat and finished aspect to the eye of the purchaser.

To these aims, the invention comprises in its basic aspect a cardboard box having integral single-thickness sides and bottom, combined with ends which are made of a plurality of thicknesses of one or more preferably separate pieces, with the material forming the sides and bottom extended and bent into the planes of the ends and secured between two of the thicknesses which form the ends. In an amplified form, the inner one of the separate pieces forming the ends is provided with tabs which are bent at right-angles and secured to the inside surfaces of the bottom and sides, so that there is a double thickness of material extending along the three dihedral angles at each end.

Other objects of the invention, and the manner in which they are attained, are as set forth hereinafter.

An illustrative embodiment of the invention is shown in the accompanying drawing in which,—

Fig. 1 shows in flat relation the several blanks or parts used in making one end of the improved box.

Fig. 2 shows in perspective the same parts in readiness for assembly.

Fig. 3 shows the finished box.

Fig. 4 shows in perspective the parts of a paper-covered box embodying the invention features.

Fig. 5 is a perspective view of one end of the finished box according to Fig. 4.

Fig. 6 is a similar view of another alternative construction.

Fig. 7 is a similar view of another alternative construction which is shown in development in Fig. 8.

The material of the box may be any suitable or desired flexible material having the necessary attributes. Preferably both ends of the box are of similar construction. The main or body blank 1 is formed of this material in the needed or desired shape and dimensions to form the bottom and two opposite sides of the box or carton, the blank being later folded along the creased or scored lines 3, 5, to define these three faces. Extensions or tabs 7 are provided on both ends of the blank, in the forms shown in Figs. 1 to 5, to be folded inward at right-angles to the respective faces to which they are attached, along scored or creased lines 9, right-angle V's being cut out at 11 in usual manner in line with fold-lines 3, 5, to avoid overlapping of the tabs with each other and permit their lying in a common plane when the box is folded up.

The end of the box is composed of two separate end-portions 13, 15, comprising respectively the inner and the outer end portions. These may be made of stock of the same or different strength from the main portion. While the outer end-portion 15 of Figs. 1 to 3 is a rectangle of exactly the size and shape to be had by the end of the finished box, the inner end-portion 13 is of approximately this same area plus the addition on its bottom and two side edges of tabs 17, 19, laid off from the end-portion proper by scored or creased fold-lines 21. These tabs 17, 19, are bent inward at right-angles to the plane of the main portion, as shown in Fig. 2, and in this shape are secured by gluing or otherwise respectively to the inside surfaces of the bottom 23 and the two sides 25 formed as the blank 1 is bent up along lines 3 and 5. The tabs 7 formed as extensions of the bottom and sides of the box are

then bent inward into a common plane and similarly secured to the outer surface of the inner end-portion 13, and the rectangular outer end-portion 15 thereupon attached to the outward surfaces of these same tabs 7, hiding the latter and giving the end of the box a smooth and finished appearance. The space between the adjacent surfaces of the inner and outer end-portions 13 and 15, may be left empty to receive a ticket or tag, or a part thereof while the remainder of the tag is bent down over the outside of the end to remain exposed, or to receive a portion of the top or cover of the box, (not shown,) or may be pressed into contact and glued together. Or the three tabs 7 will be made of sufficient length to meet and butt together without overlapping, so that they will completely fill the space between the inner and outer end-portions 13, 15.

The marked advantage of this construction is that there are two thicknesses of the component cardboard, pasteboard, or other material at the three "corners" or edges, at the sides and bottom where the planes of the sides and bottom intersect the plane of the end, so that these vulnerable points are reinforced by being made of two plies instead of one as usual hitherto. Additionally, the strain of resisting a blow delivered by the contents of the box in a direction to knock out the end of the box is exerted lengthwise of the surfaces of the inner end-portion 13 and of the main or body blank 1 which are attached to each other. This is an important gain wherever materials made of paper stock are used for making the box, as these materials are practically always of laminated construction, and in the widely used former type of box comprising merely the outer end-portion 15 glued to the outward faces of the tabs 7 of blank 1 a blow from within against the end of the box frequently caused the surface layer of the glued-together area of the end-portion or the tabs to strip off and release the end, because a substantial portion of the force of the blow acts at right-angles to the surfaces involved in a direction to tear them apart. In the invention, however, the action of this component is reversed, because the inner end-portion 13 is inside of the tabs 7, while additionally the integral extensions formed by the tabs 17 and 19 transmit the strain in the direction in which the material is strongest, namely along the surfaces involved.

Figs. 4 and 5 illustrate the general principles involved when it is desired to provide the box with a coating or finish of white or colored paper to improve its appearance. This outer coating is applied to the two side-portions 25 of the blank 1 in usual manner before bending the latter, being wrapped around what will be the top edges of the sides 25 as indicated at 27, and extending to 29 under the bottom. The outer end-portion 150 is prepared by pasting the covering 152 over its outer surface, with extensions of the covering beyond the top and bottom edges of this end-portion. After the two end-portions are in place with the tabs 7 included between them, the top extension of the covering 152 is folded down within the box and pasted to the inward surface of inner end-portion 130, while the corresponding lower extension of covering 152 is pasted to the bottom of the box. As thus applied, the covering aids in compelling the outer end-portion to conform to the surface of the tabs 7 when the end of the box is bulged outwardly by a blow from within, thereby impeding the stripping of the material where the surfaces of the outer end-portion and the tabs are glued together. The

same method of covering is of course applicable to all forms of the invention.

Fig. 6 shows an alternative construction differing from that of Fig. 1 only in that the inside and outside end-portions are formed in one piece and folded along the line 31 which forms the top edge of the end of the box when completed. Figs. 7 and 8 show an alternative construction related to Fig. 2, differing therefrom in that the plies forming the inside and outside end-portion are integral with the body of the box, being in effect an extension of the bottom of the box replacing the tab 7 on the bottom in Fig. 2. The extension is folded along the line 33 which eventually becomes the top edge of the end of the completed box, the tabs 19 being glued to the inside surfaces of the sides 25 as in the previously described forms of the invention, the tabs 7 being glued between the proximate surfaces of the inside end-portion 35 and outside end-portion 37 after folding along the line 33, and the additional tabs 39, 41, respectively on the sides and end of the ply forming the outside end-portion 37 being glued to the outside surfaces of the sides 25 and bottom 23 respectively. In this form, the side corners are of three-ply structure and the bottom corners of two-ply structure, giving a very high degree of strength.

An important feature and advantage of the improved construction is that in its several forms it lends itself with great facility to automatic manufacture on standard types of box-making machines with very slight adaptations of the machines, since the entire box may be assembled into finished form during a single cycle or operation, thereby making the box cheap and practicable to manufacture.

While we have illustrated and described certain forms in which the invention may be embodied, we are aware that many modifications may be made therein by any person skilled in the art, without departing from the scope of the invention as expressed in the claims. Therefore, we do not wish to be limited to the particular forms shown, or to the details of construction thereof, but

What we do claim is:—

1. A box made out of cardboard or the like comprising in combination a body-portion forming the bottom and two sides and also forming tabs at the extremities of at least two of the latter faces, an end-portion adhesively secured to the inward surfaces of the tabs after the latter have been bent inward into a common plane, and a second end-portion adhesively secured to the outward surfaces of such tabs when thus bent one of such end-portions having flanges bent at right angles and adhesively secured to such faces.

2. A box made out of cardboard or the like comprising in combination a body-portion forming the bottom and two sides and also forming tabs at the extremities of these faces, an end-portion adhesively secured to the inward surfaces of the tabs after the latter have been bent inward into a common plane, the end-portion itself having flanges bent at right-angles and adhesively secured to the sides of the body-portion, and a second end-portion adhesively secured to the outward surfaces of the tabs when thus bent.

3. A box made out of cardboard or the like comprising in combination a body-portion forming the bottom and two sides and also forming tabs at the extremities of these faces, an end-portion adhesively secured to the inward surfaces of the tabs after the latter have been bent inward into a common plane, the end-portion

itself having flanges bent at right-angles and adhesively secured to the bottom and sides of the body-portion, and a second end-portion adhesively secured to the outward surfaces of the tabs when thus bent.

4. An open-top cardboard box having integral single-thickness sides and bottom and separate plural-thickness ends, with the material of the sides and bottom extended and bent into the planes of the ends and adhesively secured between two of the thicknesses of the ends, and the material of the inner end piece extended and bent into the planes of the sides and bottom and adhesively secured to the sides and bottom.

5. A box made out of cardboard or the like comprising in combination a body-portion forming the bottom and two sides and also forming tabs at the extremities of at least two of these faces, an end-portion adhesively secured to the inward surfaces of the tabs after the latter have been bent inward into a common plane, the end-portion itself having flanges bent at right-angles and adhesively secured to the sides of the body-portion, and a second end-portion integral with the first end-portion adhesively secured to the outward surfaces of the tabs when thus bent.

6. A box made out of cardboard or the like comprising a single blank cut and bent to form the bottom, two sides, and a two-ply end, the latter forming an integral extension of the bottom, the sides having tabs at their extremities, one ply of the end being secured to the inward surfaces of the tabs after the latter have been bent into a common plane, such ply having flanges bent at right-angles and secured to the box sides, and the other ply being secured to the outward surfaces of the tabs.

7. A box made out of cardboard or the like comprising a single blank cut and bent to form the bottom, two sides, and a two-ply end, the latter forming an integral extension of the bottom, the sides having tabs at their extremities, one ply of the end being secured to the inward surfaces of

the tabs after the latter have been bent into a common plane, such ply having flanges bent at right-angles and secured to the box sides, and the other ply being secured to the outward surfaces of the tabs when bent as stated and also having flanges secured to the outside surfaces of the sides and bottom.

8. A box made out of cardboard or the like comprising in combination a body-portion forming the bottom and two sides and also forming tabs at the extremities of at least two of the latter faces, an inside end-portion and an outside end-portion adhesively secured to the respective surfaces of such tabs after the latter have been bent into a common plane, with the material of one end-portion extended and bent around the angle formed between one of these faces and its tab and adhesively secured to such face to provide a two-ply structure at such angle.

9. A box made out of cardboard or the like comprising a single blank cut and bent to form the bottom, two sides, and a two-ply end, the latter forming an integral extension of the bottom, the sides having tabs at their extremities, one ply of the end being secured to the inward surfaces of the tabs after the latter have been bent into a common plane, and the other ply being secured to the outward surfaces of the tabs, at least one of such plies having flanges bent at right-angles and secured to the box sides.

10. A box made out of cardboard or the like comprising a single blank cut and bent to form the bottom, two sides, and a two-ply end, the latter forming an integral extension of the bottom, the sides having tabs at their extremities to which tabs at least one ply of the end is adhesively secured after the tabs have been bent into a common plane, at least one ply having flanges bent at right-angles and adhesively secured to the box sides beyond the tabs.

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