Sept. 9, 1958 R. M. BERGSTEIN 2,851,211

BOXES HAVING REVERSIBLE HANDLES

Filed March 22, 1954 2 Sheets-Sheet 1

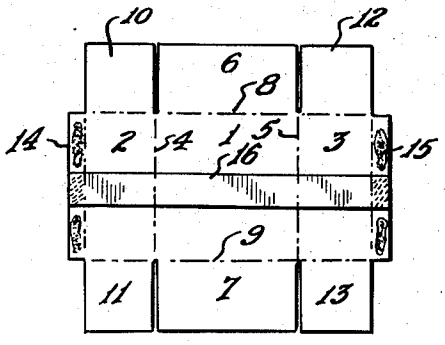


FIG. 1.

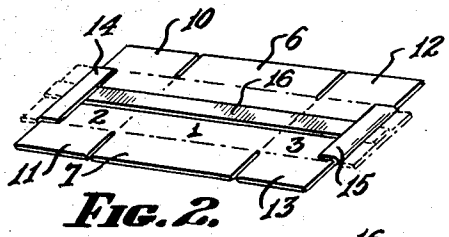


FIG. 2.

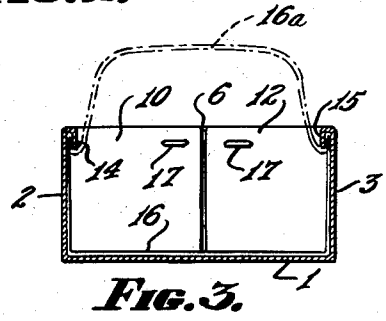


FIG. 3.

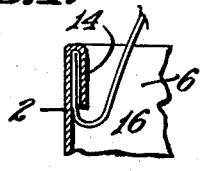


FIG. 4.

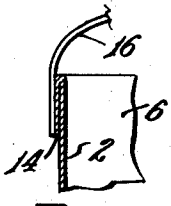


FIG. 5.

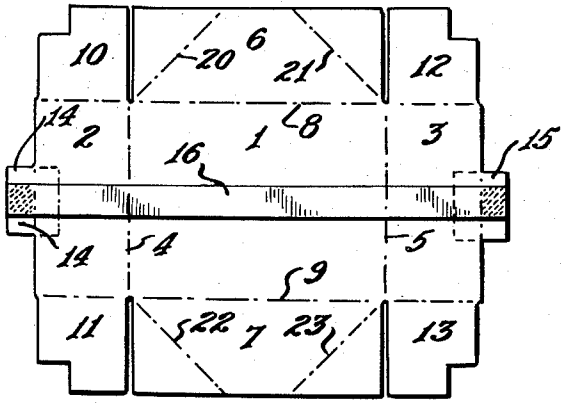


FIG. 6.

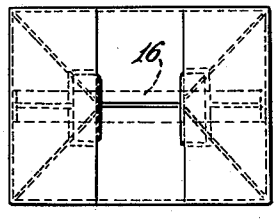


FIG. 7.

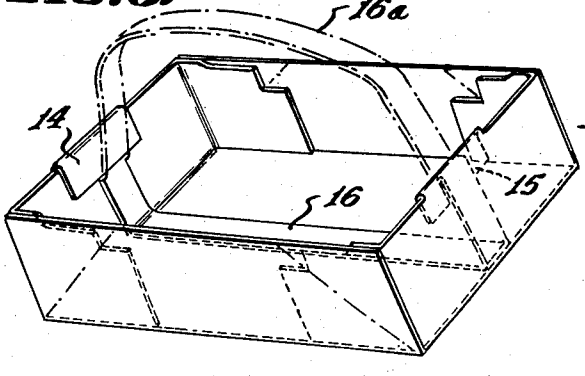


FIG. 8.

INVENTOR.
ROBERT M. BERGSTEIN,
BY
Allen & Allen
ATTORNEYS.

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BOXES HAVING REVERSIBLE HANDLES

Filed March 22, 1954 2 Sheets-Sheet 2

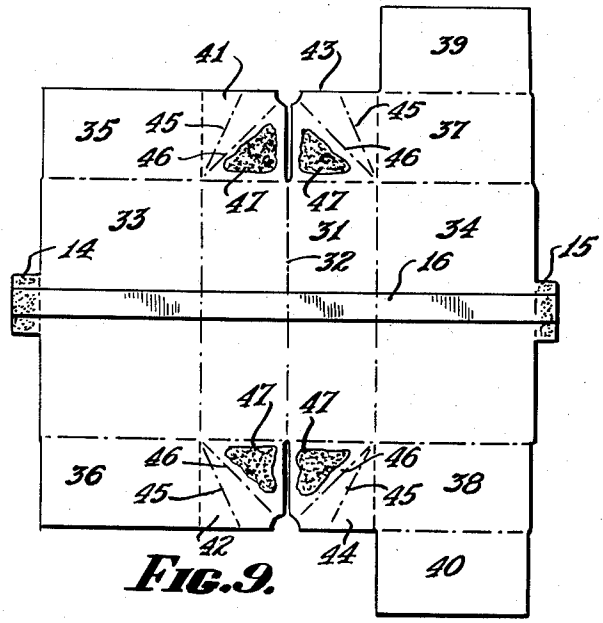


FIG. 9.

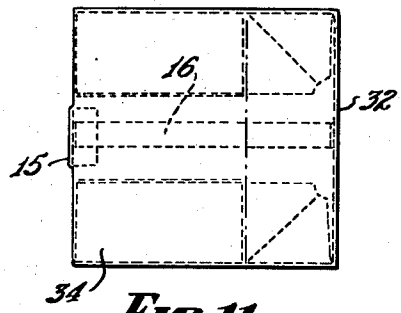


FIG. 11.

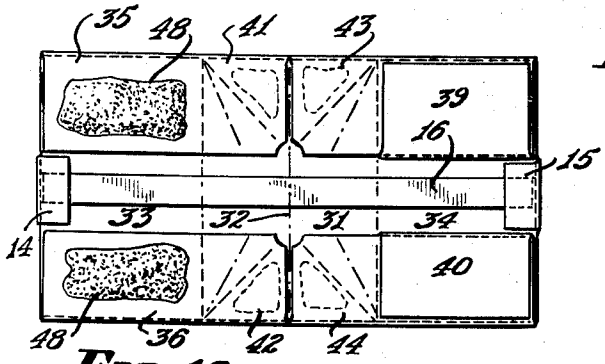


FIG. 10.

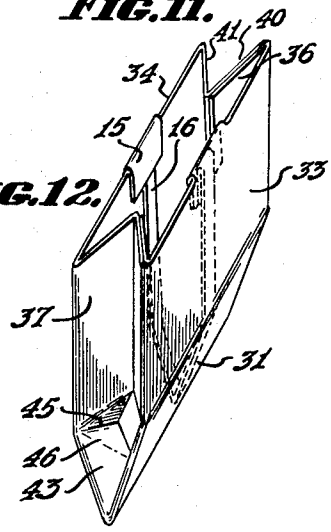


FIG. 12.

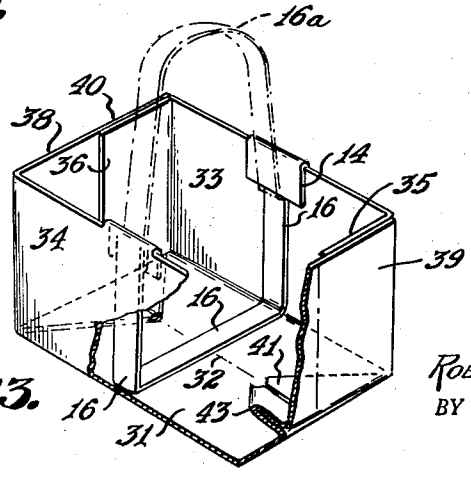


FIG. 13.

INVENTOR.
ROBERT M. BERGSTEIN,
BY
Allen & Allen
ATTORNEYS.

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BOXES HAVING REVERSIBLE HANDLES

Robert M. Bergstein, Cincinnati, Ohio, assignor to The Bergstein Packaging Trust, a trust composed of Robert M. Bergstein and Frank D. Bergstein, trustees

Application March 22, 1954, Serial No. 417,535

3 Claims. (Cl. 229—52)

My invention relates to folding boxes and more particularly to folding boxes incorporating handle members by means of which the boxes may be conveniently carried.

Hitherto in boxes of the character contemplated herein, the handle elements have been in the form of separate members adapted to be attached to the boxes subsequent to their erection or else have been of such character that they have had to be applied to the boxes by separate, generally hand operations subsequent to the formation of the complete box blanks. Thus, in many instances boxes of this character have been provided with wire handle elements in the form of a bail having hooks at the opposite ends thereof adapted to be received in suitable openings or the like in the walls of the box. Where paper or cloth straps have been employed, they are generally applied to the box by hand subsequent to their formation. If the handles were applied to the blank, they were generally of an excessive length due to the allowances necessary to permit the blanks to be erected. If not excessive in length, the handles had to be folded or otherwise manipulated apart from the blank in order to prevent them from interfering with the erection of the blank.

In accordance with my invention, I provide handle members which may be associated with the box blank as an incident to the folding and gluing of the blanks and which do not require any special handling or manipulation in attaching them to the boxes.

It is, therefore, a principal object of my invention to provide a handle construction for knocked-down boxes in which the handle is applied to the box blank as a flat or taut strip contacting the blank throughout the length of the handle and in which the blank may be subsequently folded and glued without interfering with the handle or having the handle interfere with the folding and gluing.

It is a further object of my invention to provide handle boxes in which the handle member overlies three adjacent walls of the box blank and is adapted to be folded jointly with the walls so that when the outermost walls are erected with respect to the intermediate wall, a bail will be automatically created, which bail may then be reversed to bring it to the carrying position.

It is a further object of my invention to provide handle box constructions in which the ends of the handle are secured beneath flanges which serve to anchor the handle in position.

Yet a further object of my invention is the provision of procedures whereby the handle elements are applied to the blanks as an incident of the folding and gluing of the blanks.

These and other objects of my invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, I accomplish by those constructions and arrangements of parts and by those procedures of which I shall now describe certain exemplary embodiments.

Reference is now made to the accompanying drawings wherein:

Figure 1 is a plan view of a simple form of carton blank incorporating my handle construction.

Figure 2 is a perspective view of the blank of Figure 1 with the handle gripping extensions infolded.

Figure 3 is a vertical sectional view of an erected box formed from the blank of Figure 2.

Figure 4 is an enlarged partial vertical sectional view illustrating the manner in which the handle member is secured to the box.

Figure 5 is a view similar to Figure 4 illustrating an alternative mode of attachment of the handle to the box.

Figure 6 is a plan view of a knock-down infolded box blank incorporating my invention.

Figure 7 is a plan view showing the blank of Figure 6 in flat-folded condition.

Figure 8 is a perspective view illustrating the box of Figure 7 in the erected condition.

Figure 9 is a plan view of another form of box blank incorporating my handle construction.

Figure 10 is a plan view illustrating the blank of Figure 9 in partially assembled condition.

Figure 11 is a plan view illustrating the blank of Figure 9 in flat-folded condition.

Figure 12 is a perspective view illustrating the flat-folded carton of Figure 11 in partially expanded condition.

Figure 13 is a perspective view with parts broken away illustrating the carton of Figure 12 in the fully erected condition.

Referring now to Figure 1 of the drawings, I have therein illustrated a simple box blank comprising a bottom panel **1**, side wall panels **2** and **2** articulated to the bottom panel along score lines **4** and **5**, and end walls **6** and **7** articulated to the bottom panel along the usual score lines **8** and **9**. From the outset it will be understood that the terms "side walls" and "end walls" are terms of convenience only and may be used interchangeably.

In the embodiment illustrated, the side wall is provided with end flaps **10** and **11**, and similarly the side wall **3** is provided with end flaps **12** and **13**, which are adapted in the erected structure to be secured to the end walls **6** and **7** to maintain the structure in the erected condition.

In accordance with my invention, the side walls **2** and **3** are provided with flanges **14** and **15**. These flanges may extend the full length of the side walls or they may be confined to lesser areas thereof, as will be apparent. The handle member comprises an elongated strip **16** of flexible material overlying the bottom panel **1** and the side wall panels **2** and **3** with its end portions secured to the flanges **14** and **15**. The handle member **16**, it will be noted, is applied to the blank as a flat strip and it may be applied as by means of a conventional window machine or as part of the same machine which folds and glues the blank.

The nature of the flexible material forming the handle member does not constitute a limitation on my invention and it may comprise either kraft or reinforced kraft paper, paperboard, the non-fibrous films of commerce, plastic, cloth, creped paper, glass fiber, or any other strong, durable and yet fairly flexible material. Irrespective of the material employed, it will be noted that it is applied in flat condition and need not be looped, bunched or otherwise gathered to define a bail. Subsequent to the application of the handle member **16** to the blank, adhesive may be applied to the flanges **14** and **15**, as indicated by the shaded areas in Figure 1, and those elements thereafter infolded to the position illustrated in

Figure 2, thereby bringing the flanges into engagement with underlying portions of the side walls **2** and **3** with the ends of the handle member folded and secured therebetween. It is in this condition that the blank may be shipped to the user who has only to erect the blank and secure the parts thereof together.

In the hands of the user, the box will be erected and the side and end walls secured together, as by means of the staples **17** seen in Figure 3 of the drawings. Alternatively, the parts may be adhesively secured together or otherwise fastened in ways customary in the art. In comparing Figures 2 and 3, it will be noted that as the side walls **2** and **3** are erected with respect to the bottom panel **1**, the handle member **16** conforms to the interior surface of the box as defined by the side wall **2**, the bottom **1** and the opposite side wall **3**. In this position the box may be used as if the handles were not present. Were it desired to use the handle for carrying purposes, it is simply reversely folded or lifted upwardly so as to assume the position illustrated at **16*a*** in Figure 3. As will be apparent from Figure 4, the ends of the handle are firmly locked beneath the in-turned and secured flanges, such as the flange **14**, thereby assuring a positive connection to the walls of the box.

As seen in Figure 5, instead of infolding the flanges to clamp the ends of the handle member against the side of the box, the flanges may be out-folded and adhesively secured to the outer surfaces of the side walls. This construction is preferred wherein the contents placed in the box are to be covered with cellophane or similar covering material since it removes the handle from the interior of the box. Of course, if desired, the flanges **14** and **15** may be omitted entirely and the handle strip adhesively secured to marginal portions of the side walls **2** and **3**.

In Figure 6 I have illustrated my invention as it applies to a knock-down infolded type box, and for purposes of simplicity, like parts have been given like reference numerals. In this embodiment the end walls **6** and **7** are provided with pairs of diagonal score lines **20**, **21** and **22**, **23**, respectively, and the arrangement of parts is such that the end flaps **10—13** are adapted to be secured to the triangular portions of the end walls lying beyond the diagonal score lines. The flat-folded condition of the blank is shown in Figure 7 wherein it will be apparent that the various parts of the box may be infolded and adhesively secured without interfering with the handle member **16** or having it interfere with the folding and gluing of the blank. As seen in Figure 8, upon erection of the box, the handle member **16** will lie along the bottom of the box and will extend upwardly along the opposite sides thereof, with the ends of the handle engaged beneath the inturned flanges **14** and **15**. As before, when it is desired to use the handle, it may be reversely folded and lifted to the position indicated in dotted lines at **16*a***.

Figures 9 through 13 of the drawings illustrate my invention as it applies to a collapsible box of the type incorporating medially scored bottom and end walls. This blank comprises a bottom panel **31** divided by a medial score line **32** and side wall panels **33** and **34** are articulated to the opposite side edges of the bottom panel along the usual score lines. Partial end wall panels **35**, **36**, **37** and **38** are articulated to the ends of the side wall panels and the partial end wall panels **37** and **38** carry extensions **39** and **40**. Articulated to the ends of the bottom panel **31** are end flaps **41**, **42**, **43** and **44**, the end flaps being additionally articulated to the adjacent partial end walls. Each of the end flaps is divided by angular lines of fold **45** and **46** into three sections each, as shown.

As in the preceding embodiments, flanges **14** and **15** are connected to the outer side edges of the side wall panels, in this instance the side walls **33** and **34**, and the handle member **16** overlies the bottom panel **31** and the side wall panels **33** and **34**, being adhesively secured to the flanges **14** and **15**.

In the formation of this blank into a knocked-down box construction, the flanges **14** and **15** are first infolded and adhesively secured to the side walls **33** and **34**, whereupon the partial end walls and the end flaps are infolded to overlie the side walls and bottom walls respectively, with the extensions **39** and **40** reversely folded to overlie the partial end walls to which they are articulated. Prior to the unfolding of the end flaps **41—44**, adhesive will be applied to the innermost portions thereof as indicated by the shaded areas **47**. The blank thus assumes the condition illustrated in Figure 10 wherein it will be noted that the infolding and adhesive attachment of the parts does not interfere with the handle and vice versa. Adhesive is next applied to the partial end wall panels **35** and **36** as indicated by the shaded areas **48**, whereupon the infolded blank is folded along the medial score lines **32** to bring it to the condition illustrated in Figure 11, which is the flat-folded condition of the structure.

The blank is erected by moving the side walls outwardly and pressing downwardly, whereby causing the end wall panels and the bottom to expand to the erected condition illustrated in Figure 13, the arrangement of end flaps serving to lock the walls in the erected condition. Again, as in the preceding embodiments, the handle member extends across the box bottom and up the side walls thereof, and by reversely folding it to the position illustrated in dotted lines at **16*a***, the box is readied to be carried.

The above modifications represent various types of box structures to which my invention will be applicable and it will be understood that the invention will be applicable to any structure wherein an assembly of three articulated panels is present and the outermost panels ultimately raised upright with respect to the intermediate panel. In other words, where the handle element is applied in flat, substantially taut condition overlying the three adjoining panels and intersecting the score lines therebetween, the act of setting up the panels to define the bottom and opposite sides of the box automatically creates the slack or bail of the handle which then is simply reversed and pulled upwardly to bring it to the carrying position.

It will be evident also that my constructions require a minimum of shipping space since there are no extending handles to take up additional room and the handles are protected by the box-board blanks. In the embodiment illustrated in Figures 6 and 9 of the drawings, the handle is completely enclosed during shipment within the folded walls of the box.

Modifications may, of course, be made in my invention without departing from the spirit of it. Having, however, described my invention in certain exemplary embodiments, what I desire to secure and protect by Letters Patent is:

1. In a knocked-down box structure formed from a flat blank having a side wall panel, a bottom wall panel and a side wall panel in articulation in the order named, flanges articulated to the outer edges of the side wall panels, and a flat elongated flexible handle member overlying said blank and traversing the lines of articulation between said wall panels and said flanges, said handle member being secured at its end portions only to the upper surfaces of said flanges, with said flanges and the end portions of said handle members secured thereto infolded and secured to the underlying surfaces of the said side wall panels, whereby in the erected condition of the structure, said flanges will lie to the inside of the box so formed and said handle member will lie along the inner surfaces of the said side and bottom walls, said handle member being liftable from contact with the side and bottom walls of the box to form an upwardly extending bail the ends of which are secured beneath said inturned and secured flanges.

2. In a knocked-down box structure formed from a flat blank having a side wall panel, a bottom wall panel and a side wall panel in articulation in the order named, flanges articulated to the outer edges of said side wall panels, and a flat elongated handle strip overlying said blank and traversing the lines of articulation between said wall panels and said flanges, with end portions of said flat handle strip overlying said flanges, the end portions only of said handle strip being secured to the upper surfaces of said flanges, said flanges and the ends of the handle strips secured thereto being folded along the lines of articulation between said side wall panels and said flange and secured to the surfaces of the side wall panels contacted thereby, whereby when said side wall panels are erected with respect to said bottom wall panel, said handle strip will lie along the inside wall surfaces of said box from which position it may be lifted to form an upwardly extending bail the ends of which are secured to the side wall panels by means of said reversely folded and secured flanges.

3. In a knocked-down box structure formed from a flat blank having a side wall panel, a bottom wall panel and a side wall panel in articulation in the order named, flanges articulated to the outer edges of the said side wall panels, and a flat elongated flexible handle member overlying said blank and traversing the lines of articulation between said wall panels and said flanges, with the opposite end portions of said handle member overlying said flanges, said handle member being secured at its

opposite end portions only to the upper surfaces of said flanges, with the said flanges and the end portions of said handle members secured thereto folded along the lines of articulation between said flanges and said side wall panels and secured to the under surfaces of the adjoining side wall panels, whereby in the erected condition of said structure, said flanges and the end portions of said handle member will lie to the outside of the box so formed and the remainder of said handle member will lie along the inner surfaces of said side and bottom wall panels, said handle member being liftable from contact with said side and bottom wall panels to form an upwardly extending bail the ends of which are secured to the said flanges.

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