Oct. 12, 1954 H. W. FORRER 2,691,471

PAPERBOARD BOX STRUCTURE

Filed Aug. 22, 1950 4 Sheets-Sheet 1

Fig. 1

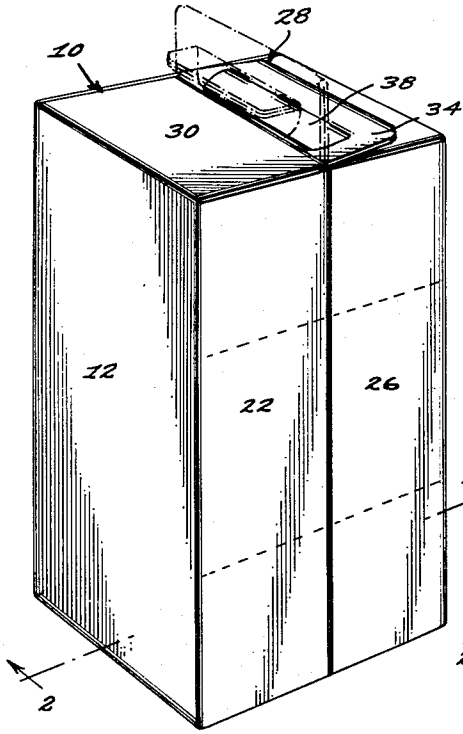
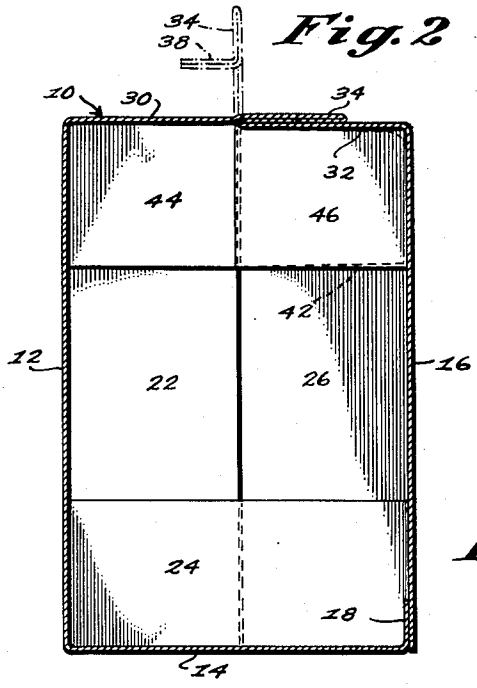


Fig. 2



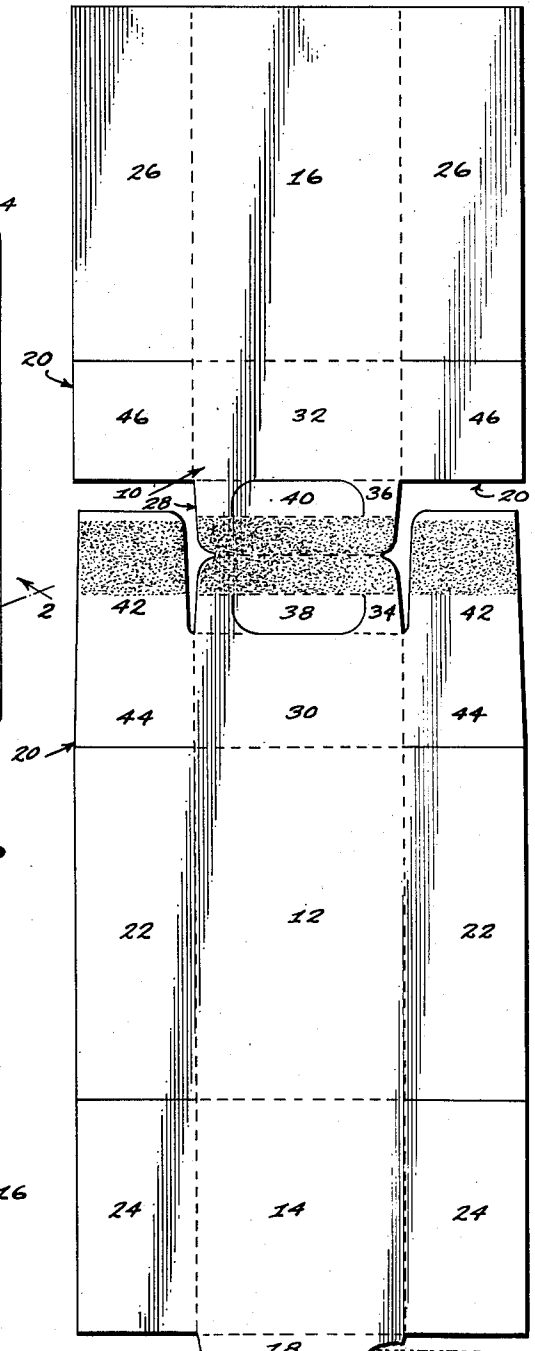


Fig. 3

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PAPERBOARD BOX STRUCTURE

Filed Aug. 22, 1950 4 Sheets-Sheet 2

Fig. 4

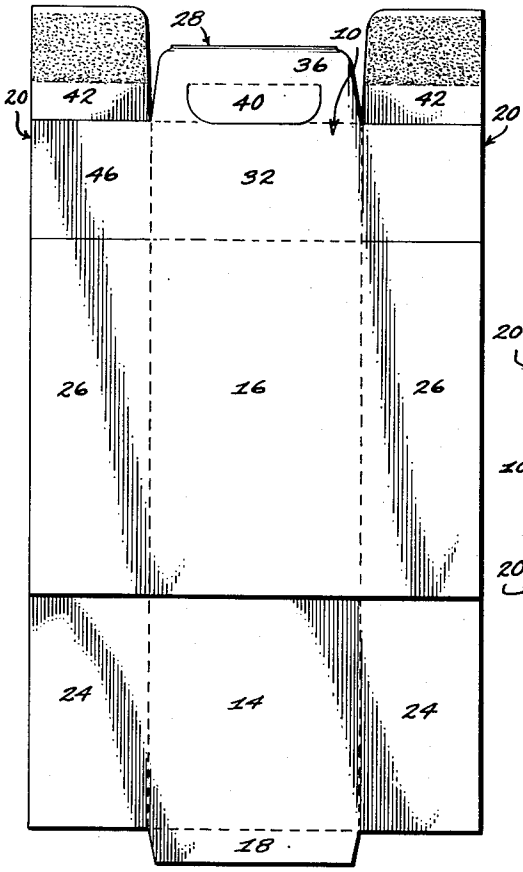


Fig. 5

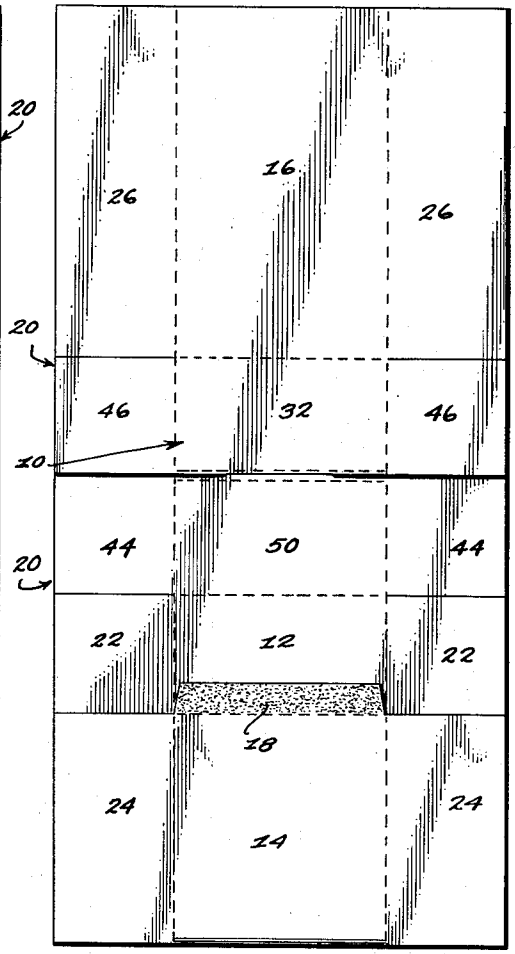
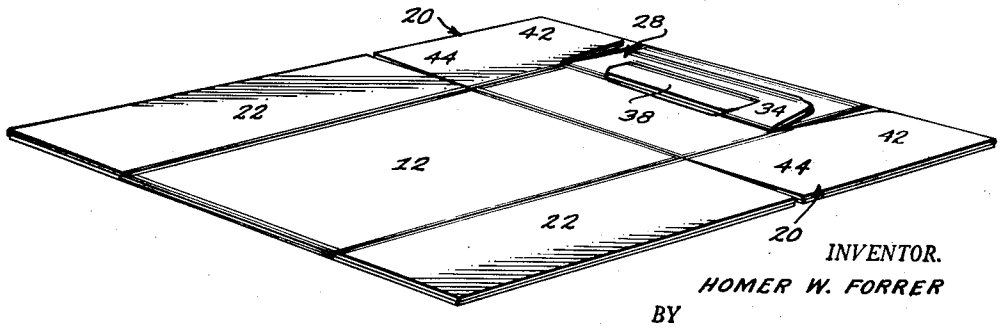


Fig. 6



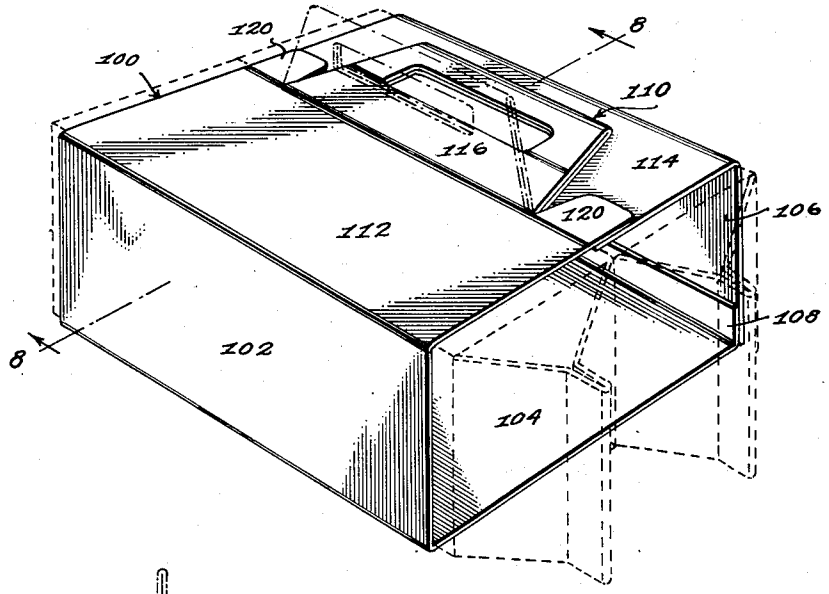
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PAPERBOARD BOX STRUCTURE

Filed Aug. 22, 1950 4 Sheets-Sheet 3

Fig. 7



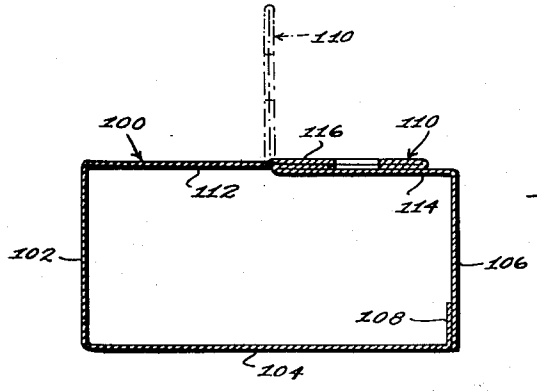
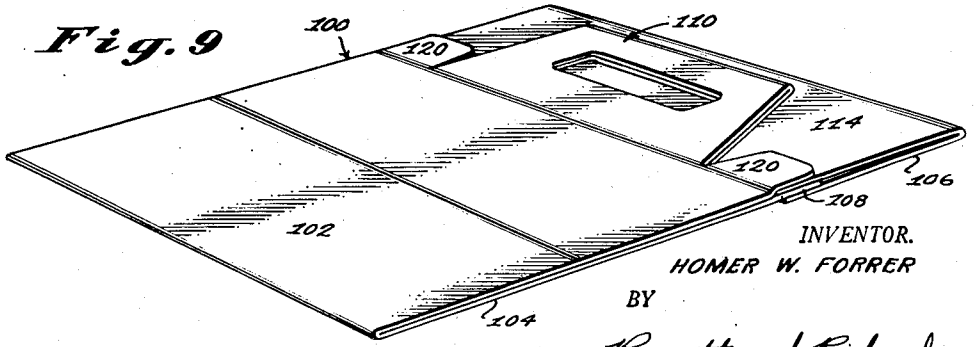


Fig. 8

Fig. 9



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Oct. 12, 1954 H. W. FORRER 2,691,471

PAPERBOARD BOX STRUCTURE

Filed Aug. 22, 1950 4 Sheets-Sheet 4

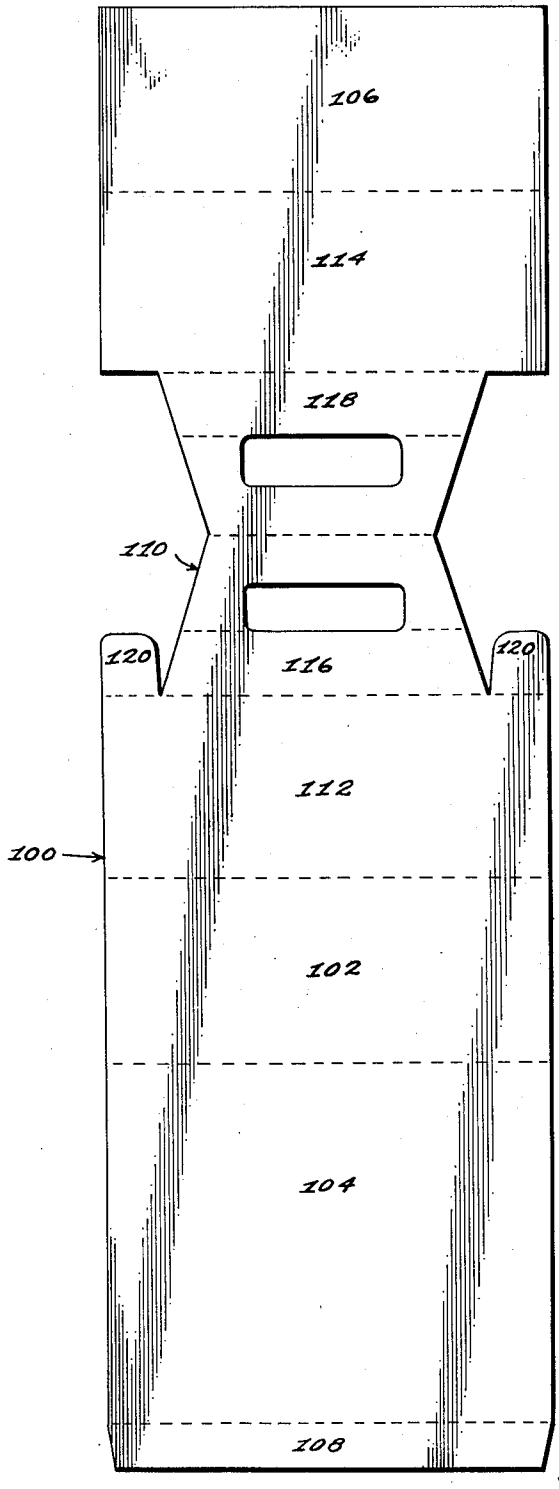


Fig. 10

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UNITED STATES PATENT OFFICE

2,691,471

PAPERBOARD BOX STRUCTURE

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Application August 22, 1950, Serial No. 180,861

2 Claims. (Cl. 224—45)

1

This invention relates to paperboard box structures, and more particularly to a unique arrangement for such box structures by which they may be provided with an integral handle portion for carrying, without in any way complicating the handling or manipulation of the box structure for filling.

Briefly described, this arrangement of the present invention comprises the formation of a handle portion directly in a wall panel of the box structure involved by forming the wall portion of component panel portions with a handle portion foldably interposed between these wall panel portions, and with flap members associated with one of the wall panel portions for securing in association with the other wall panel portion to strengthen the wall panel at the handle portion so that it is fully as strong as any of the other wall panels of the box structure. This arrangement can be used to particular advantage in collapsible box structures of the type adapted for folding between a collapsed position for shipping or storage and an erect position for filling, because it allows the handle portion to be formed as an integral part of the collapsible box structure so that it does not have to be rearranged in any way in erecting the box structure, and so that it does not interfere in any way with the erection.

The present invention is described further below in connection with the accompanying drawings in which:

Fig. 1 is a perspective view of a paperboard box structure in erect position that is arranged to incorporate a handle portion in accordance with the present invention;

Fig. 2 is a sectional detail taken on the line 2—2 in Fig. 1;

Fig. 3 is a plan view of a blank from which a paperboard box structure as shown in Figs. 1 and 2 may be formed in accordance with the present invention;

Figs. 4 and 5 are further plan views corresponding generally to Fig. 3 and illustrating the manner of folding and securing a blank as shown in Fig. 3 to provide a collapsible box structure suitable for erection in the form shown in Figs. 1 and 2;

Fig. 6 is a perspective view of the completed box structure in collapsed position as formed from the blank shown in Fig. 3;

Fig. 7 is a perspective view illustrating a further embodiment of the present invention in a modified form of box structure;

Fig. 8 is a sectional detail taken substantially on the line 8—8 in Fig. 7;

2

Fig. 9 is a further perspective view showing the box structure illustrated in Fig. 7 in collapsed position; and

Fig. 10 is a plan view of a blank adapted for forming a box structure as shown in Figs. 7, 8 and 9 in accordance with the present invention.

Referring now in detail to the drawings, and more particularly at first to Figs. 1 and 2, the box structure shown in these figures of the drawing is of generally conventional form and comprises a series of wall panels, as at 10, 12, 14 and 16, foldably joined in series and secured by a glue flap or the like, as at 18, to form the walls of the box structure. Each of these wall panels 10, 12, 14 and 16 are formed with foldably disposed closure flaps, as at 20, 22, 24 and 26, which are adapted for sealing to close the remaining faces of the box structure in the usual manner when desired as illustrated in Figs. 1 and 2.

This more or less conventional form of box structure, however, is further arranged according to the present invention with an integral handle portion 28 foldably associated directly with one of the wall panels (as the wall panel 10) for disposition in either a flat position at which it is depressed against the wall panel 10, or in an erectly extending position for carrying as illustrated by dotted lines in Figs. 1 and 2.

The handle portion 28 is incorporated in the box structure in this manner by forming the wall panel 10 with component panel portions 30 and 32 which are proportioned to meet substantially midway of the reach of the wall panel 10 between the adjacent wall panels 12 and 16, and by interposing between these wall panel portions 30 and 32 a pair of handle panels 34 and 36 which are disposed and secured in face contacting relation to form the handle portion 28, and each of which is foldably joined to one of the wall panel portions 30 or 32 at their adjacent edges. In this way the component wall panel portions 30 and 32 are arranged in the completed box structure with aggregate dimensions corresponding exactly with those of the opposed wall panel 14, but with the handle portion 28 integrally and foldably associated with the wall panel 10 as already noted above. The handle panels 34 and 36 forming the handle portion 28 may each be formed in any suitable manner, as with the flaps 38 and 40, to provide hand hold apertures.

In order to strengthen the wall panel 10 adequately at the handle portion 28, lateral glue flaps are arranged in association with one of the component panel portions 30 adjacent the base of the handle portion 28 and at each side thereof, and these lateral glue flaps are secured in association

with the other panel portion 32. In the embodiment illustrated in Figs. 1 and 2 of the drawings, these lateral glue flaps are formed as at 42 in the closure flaps 20 for the wall panel 10, these closure flaps 20 being likewise formed with component portions 44 and 46 associated respectively with the component wall panel portions 30 and 32, and the lateral glue flaps 42 being formed on one pair of the closure flaps 44 and secured to the other pair 46. As a result, the wall panel 10 is greatly strengthened at the handle portion 28 against tension stresses and made fully as strong in this respect as any of the other wall panels.

The manner in which a box structure as shown in Figs. 1 and 2 of the drawings may be constructed in accordance with the present invention is illustrated in Figs. 3 to 6, inclusive, of which Fig. 3 shows the unitary form of blank used. The first step in forming the box structure consists in applying glue to the lateral glue flaps 42 and to the handle panels 34 and 36 as indicated by stippling in Fig. 3, and then folding the handle panel 36 with the wall panel portion 32 and wall panel 16 over the remainder of the blank to double the handle portions 34 and 36 as shown in Fig. 4 and thereby secure them in face contacting relation.

Next, the wall panel component 32 and the wall panel 16 are folded back as shown in Fig. 5 so that the closure flap components 46 are secured to the lateral flaps 42 extending from the closure flap components 44; and the wall panel 14 is folded over the remaining portion of the blank as also shown in Fig. 5 and glue is applied as indicated by stippling to the glue flap 18 attached to the wall panel 14. It is only necessary then to fold back the wall panel 16 so as to secure it at the glue flap 18 to the wall panel 14 to complete the collapsible box structure, as shown in Fig. 6, in a form ready for erection with the disposition illustrated in Figs. 1 and 2.

Figs. 7 to 10, inclusive, illustrate a further embodiment of the invention in a modified form of box structure comprising a plurality of wall panels 100, 102, 104 and 106 foldably joined as before in series, and secured by a glue flap, as at 108, in a tubular arrangement open at both ends and adapted for receiving articles such as the milk cartons illustrated by dotted lines in Fig. 7. In this case too, the box structure shown is provided with a carrying handle portion 110 by forming one of the wall panels (as wall panel 100) with component panel portions 112 and 114 proportioned to meet substantially midway of the reach of the wall panel 100 between the adjacent wall panels 102 and 106, and with a pair of handle panels 116 and 118 disposed and secured in face contacting relation and interposed between the component wall panel portions 112 and 114 with one of the handle panels 116 or 118 foldably joined respectively to one of the wall panel portions 112 or 114 at their adjacent edges.

As no closure flaps are used in this modified form of box structure, lateral glue flaps 120 are formed directly on one of the component wall panels 112 to extend adjacent the base of the handle portion 110 at each end thereof, and these lateral glue flaps 120 are secured directly to the other component wall panel 114. The handle portion 110 resulting from this arrangement is likewise disposed, as in the previously described embodiment, for folding between a flat position at which it is depressed against the wall panel 100, and in an erectly extending position for carrying as indicated by dotted lines in Figs. 7 and 8. The box structure of this embodiment is also adapted for collapsing as illustrated in Fig. 9, and is readily constructed from a unitary blank of the form illustrated in Fig. 10.

In a similar manner, an integral handle portion may be incorporated in comparable paperboard box structures generally for adapting them easily for carrying conveniently after they are erected and filled.

I claim:

1. In a paperboard box structure of the type adapted for folding between a collapsed position for shipping or storage and an erect position for filling, the improvement which comprises a handle portion formed integrally in a wall panel of said box structure for disposition in either a flat position depressed against said wall panel or an erect position extending at right angles therefrom, said handle portion being composed of a pair of handle panels disposed and permanently secured in face contacting relation, said wall panel being formed with component panel portions proportioned to meet substantially midway of the reach of said wall panel between adjacent wall panels and having one of said handle panels foldably joined to each of said component wall panel portions at the adjacent edges thereof, and flap members extending from the adjacent edge of one of said component wall panel portions adjacent the base of said handle panels at each end thereof and permanently secured in overlapping relation with the other of said component wall panel portions for strengthening said wall panel at said handle portion.

2. In a paperboard box structure of the type adapted for folding between a collapsed position for shipping or storage and an erect position for filling, the improvement defined in claim 1 and further characterized in that the parts of said component wall panel portion from which said flap members extend and the parts of said other component wall panel portion overlapped by said flap members are foldably disposed at hinge lines arranged in said component wall panel portions perpendicular to the adjacent edges thereof and adjacent the base of said handle panels at each end thereof for providing closure flaps on the wall panel formed by said component panel portions.

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