July 7, 1964 R. E. BAUM ETAL 3,140,037

CONTAINER CONSTRUCTION AND PACKAGE

Original Filed July 26, 1960 2 Sheets-Sheet 1

Fig. 1

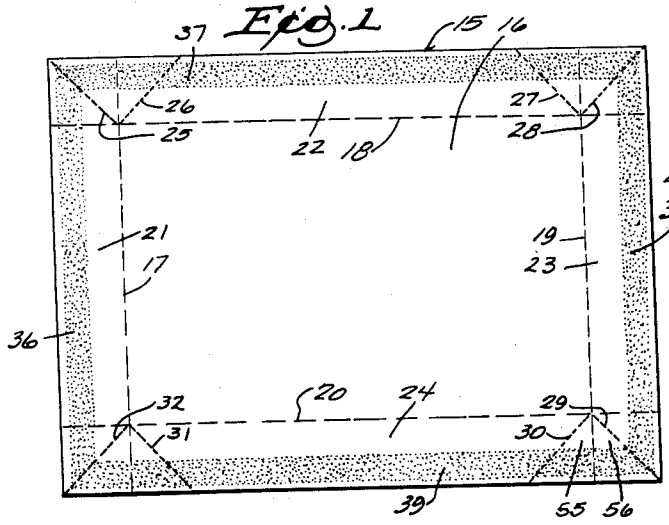


Fig. 2

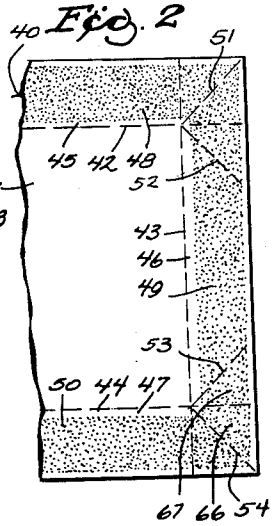


Fig. 3

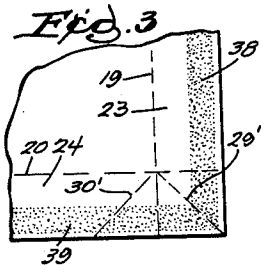
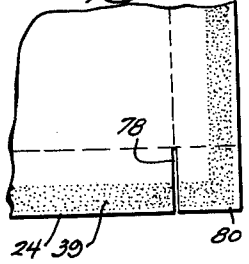
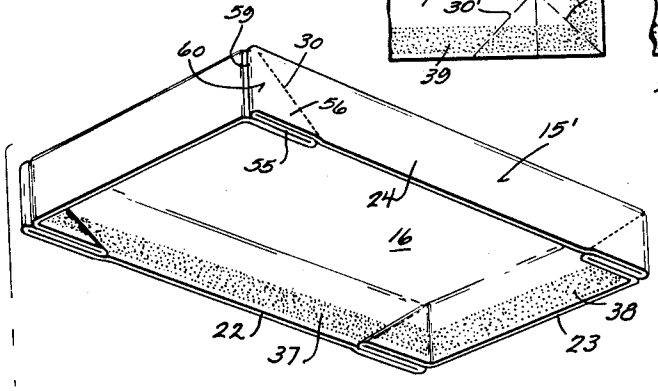


Fig. 4





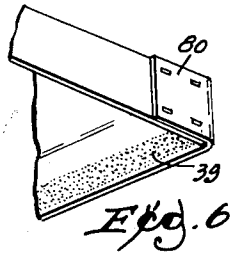


Fig. 6

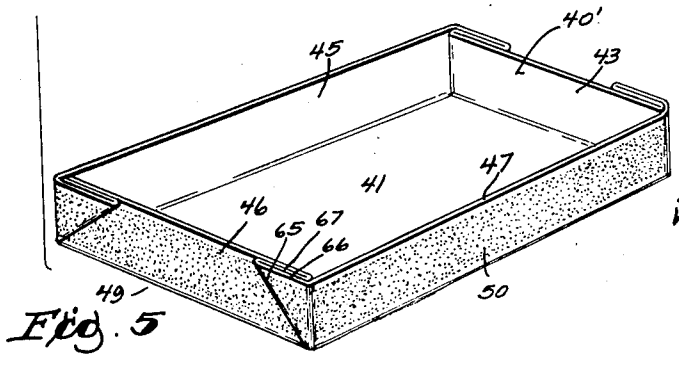


Fig. 5

INVENTORS
RICHARD E. BAUM
WILBERT P. DANIELS

July 7, 1964 R. E. BAUM ETAL 3,140,037

CONTAINER CONSTRUCTION AND PACKAGE

Original Filed July 26, 1960 2 Sheets-Sheet 2

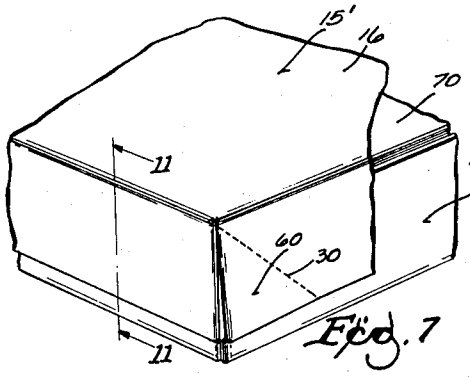


Fig. 7

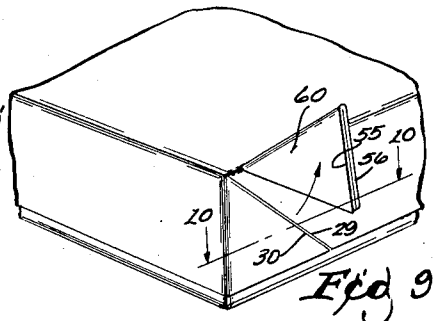


Fig 9

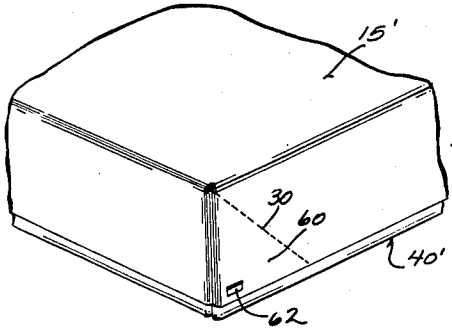


Fig. 8

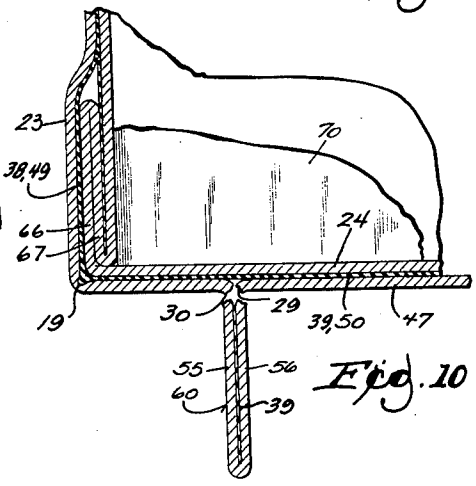


Fig. 10

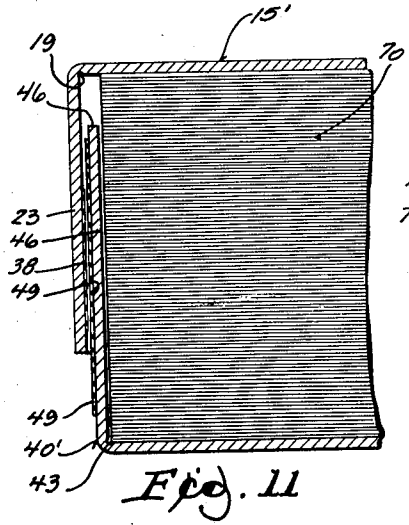


Fig. 11

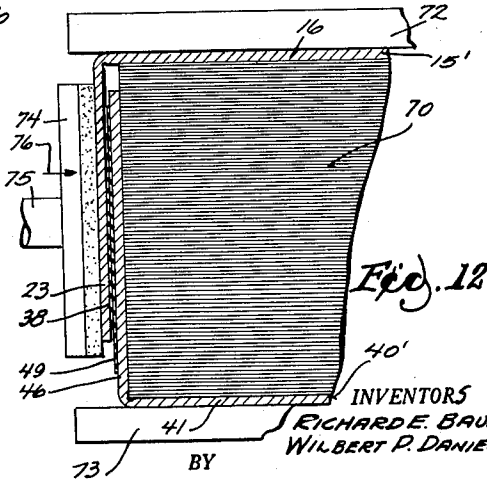


Fig. 12

INVENTORS
RICHARD E. BAUM
WILBERT P. DANIELS
BY
ATTORNEYS

United States Patent Office

3,140,037
Patented July 7, 1964

3,140,037

CONTAINER CONSTRUCTION AND PACKAGE

Richard E. Baum, Appleton, and Wilbert P. Daniels, Green Bay, Wis., assignors to Green Bay Packaging Inc., a corporation of Wisconsin

Original application July 26, 1960, Ser. No. 45,456, now Patent No. 3,056,245, dated Oct. 2, 1962. Divided and this application Jan. 29, 1962, Ser. No. 169,374

2 Claims. (Cl. 229—45)

This invention relates to an improved container construction and package disclosed and claimed in application 45,456, filed July 26, 1960, now Patent Number 3,056,245, whereof the present application is a divisional filed pursuant to requirement for restriction.

We provide blanks for the box and its cover having similar corner and flange scoring which may, in some instances, take the form of perforations or the like to facilitate the removal of some of the material. With the respective blanks flat, the flange portions of each are coated in any appropriate manner with a seal of self-adherent pressure-sensitive adhesive such as latex. The adhesive will not adhere to anything other than a surface coated with a similar adhesive. In the case of the box blank, the flange portions which are coated are the portions which will provide the outer surfaces of the sides of the erected box. In the case of the cover blank, the flange portions which are coated are the portions which will provide the interior surfaces of the erected cover. One or the other of the flanges has a relatively wide band of adhesive, this desirably being the box. In the case of the other blank, the flange portions may have relatively narrow bands of adhesive.

The respective blanks with their adhesively coated flange portions are now erected, pleats being formed at the corners of the box blank and at the corners of the cover blank so that all four sides of the erected box provide coated surfaces at the exterior of the box while all four sides of the cover provide coated surfaces at the interior of the box.

The several pleats are, of course, triangular. Moreover, each of the pleats includes coated surfaces as a result of the single coating operation performed on the blank prior to the direction of the box or cover. The tips of the respective pleats may also be connected with adjacent side margins of the box or cover, as by means of a single staple.

Assuming that the pleat of the cover is defined by perforations rather than mere scoring, such pleat need not be stapled or otherwise fastened to the adjacent side wall of the cover because, upon assembly of the cover and box as hereinafter described, the projecting pleats can simply be torn free of the cover. This will expose the diagonal slit between contiguous portions of the side wall but the margins of the side wall will be anchored to the box at both sides of the slit.

With the box and cover erected as described, and the box filled with the material to be shipped, the cover will be telescoped over the box in contact with the material, which preferably has a depth exceeding the height of the side walls of the box. The procedure and product are particularly serviceable for boxes for shipment of sheets of paper. The sheets are normally separated slightly by air and considerable pressure is required to compact the sheets in such a way as to expel the air. With the box

packed full of sheets of paper to a depth exceeding the height of its side wall, and the cover applied on top of the sheets of paper with its side flanges lapping those of the box, vertical pressure is applied to telescope the cover more deeply over the box and at the same time to compress the contents of the box. When maximum compression is reached in a direction to compress the contents, lateral pressure is exerted at all four sides of the cover to force the coated surfaces of the cover into intimate contact with the coated surfaces of the box throughout the respective perimeters of the box and cover. This brings about immediate adhesive connection of the cover to the box, thereby maintaining the contents under pressure. At this point, if a pleat of the cover is to be torn free of the cover, this is done.

The box may be opened by introducing a tool in the nature of a blunt knife or like blade between the coated surfaces of the box and cover and moving it along between such surfaces to free the respective coatings from adhesive connection with each other. If the box is to be re-closed, this will usually be done with staples or conventional fastening means, as the opening operation will normally destroy the capacity of the coatings to adhere the cover to the box.

In the drawings:

FIG. 1 is a plan view of a cover blank scored and coated in accordance with the invention.

FIG. 2 fragmentarily illustrates one end portion of a complementary box blank similarly scored and coated.

FIG. 3 is a fragmentary detail view showing a slightly modified embodiment similar to FIG. 1, the pleats being defined entirely by score lines rather than partially by perforation lines.

FIG. 4 is a fragmentary detail view similar to FIG. 3 and showing a further modification of the cover blank.

FIG. 5 is a view in perspective showing in separated position an erected box and cover made from the blanks comparable to those of FIG. 1 and FIG. 2.

FIG. 6 is a fragmentary detail view in bottom perspective showing a portion of a cover erected from the blank of FIG. 4.

FIG. 7 is a fragmentary detail view in perspective showing a preliminary assembly of a box and contents and cover.

FIG. 8 is a view similar to FIG. 7 showing the corner pleat anchored by a staple.

FIG. 9 is a view similar to FIG. 7 showing the corner pleat severed.

FIG. 10 is an enlarged detail view in horizontal section on the line **10—10** of FIG. 9.

FIG. 11 is an enlarged detail view in transverse section on the line **11—11** of FIG. 7.

FIG. 12 is a similar view showing the relative position of the parts as the cover is sealed to the box by lateral pressure exerted during continued vertical pressure which compresses the contents.

The cover blank **15** (FIG. 1) and a central panel **16** defined by fold lines **17**, **18**, **19** and **20**, are usually made by scoring the material of the blank. Between the fold lines and the respective margins of the blank are side flanges **21**, **22**, **23** and **24**, respectively, the ends of which are defined by extensions of the fold lines as above described. Fold lines **25** and **26** which are desirably made up by rows of perforations are symmetrically disposed to extend at forty-five degrees with reference to fold line

17 from the point of its intersection with fold line 18. Similarly, rows of perforations providing fold lines at 27 and 28 are disposed symmetrically with reference to the extension of fold line 19 from the point of its intersection with fold line 18.

At the other side of the blank there are similar fold lines at 29 and 30 desirably comprising rows of perforations leading obliquely from the point of intersection of fold lines 19 and 20 and rows of perforations 31 and 32 extending obliquely from the intersection of fold lines 20, 17.

Completely outlining the blank 15 and preferably spaced slightly inwardly from its side and end margins are strips of adhesive 36, 37, 38 and 39 which are respectively disposed on flanges 21 to 24. In a cover of the respective proportions indicated, these strips are only about half as wide as the respective flanges. By way of illustration, and not by way of limitation, this strip or band of adhesive might be approximately one and one-quarter inches wide and located one-quarter inch from the outer margin of the blank on a flange having a total width of approximately three and one-quarter inches. On a blank for a shallower cover, the entire flange might be coated.

The box blank 40 is in most respects comparable to the cover blank 15, having a central panel at 41 defined by fold lines such as those shown at 42, 43, 44 in FIG. 2. These fold lines define similar side flanges such as those shown at 45, 46 and 47. The bands of adhesive such as those shown at 48, 49 and 50 are desirably wider in the case of the box, the relative width being three inches as compared with an inch and a quarter in the foregoing example. Diagonal or pleat fold lines such as those shown at 51 and 54 are used in the box, as in the cover. However, the oblique fold lines 52 and 53 are in the end panels 46, rather than the side panels, to enable the resulting pleats to fold out along the ends as shown in the erected box illustrated in FIG. 5. Moreover, the fold lines 51–54 are ordinarily made by scoring rather than by rows of perforations, since it is not ordinarily contemplated that the pleats resulting from erection of the box blank will be severed in the manner which is preferred in the case of the cover blank.

It is also possible that the oblique fold lines at the corners of the cover blank be made of score lines instead of rows of perforations, this being indicated at 29′ and 30′ in FIG. 3.

When the cover is erected as shown in FIG. 5, the face of the panel 16 which is viewed in FIG. 1 constitutes the inside of the cover. Two triangular areas 55 and 56 outlined by the perforated fold lines 29 and 30 are folded upon each other on extension 59 of fold line 19 to make a pleat designated by reference character 60. That portion of the adhesive band 39 which extends across the triangular panels to adhere to each other as shown, for example, in FIGS. 7 to 10 inclusive, particularly FIGS. 9 and 10. However, the surfaces of the triangular areas 55 and 56 which are exposed when the pleat is formed have no adhesive coating and will either have to be anchored by means of a staple or the like as shown at 62 in FIG. 8 or the entire pleat 60 may be torn away from the cover upon the rows of perforations 29 and 30 as shown in FIGS. 9 and 10, this being possible after the cover has been cemented to the box as hereinafter described.

The bands of adhesive applied to the box and cover are desirably of a pressure-sensitive material which is virtually non-adherent except when pressed into contact with like coatings. Latex is used in practice and is a preferred example.

Folding of the box blank 40 is similar to the folding of the cover blank except that the respective flanges are folded in such a manner that the adhesive bands 48, 49 and 50 are exposed externally on the respective flanges in the manner shown in FIG. 5. Pleats such as that shown at 65 are formed in each corner by folding upon

each other the triangular areas such as those shown at 66 and 67 in FIGS. 2 and 5. The adhesive coated surfaces of the triangular areas 66 will be exposed and the coated surfaces of the areas 67 will be adherent to the box wall 46 to hold the pleat 65 and the same will be true at each of the other four corners of the box.

While it is possible to anchor the corner pleats of the box in a manner similar to that suggested in FIG. 8, where the staple 62 is shown for this purpose, it is unnecessary to anchor the pleats at the box corners by staples or the like because these will be held by the adhesive.

With the contents in the completed box 40′, the completed cover 15′ is telescoped over the box and contents as shown in FIG. 11. This will present the generally planiform inner faces of the cover flanges to the generally planiform external faces of the corresponding box flanges as is here illustrated by the cover end flange 23 and the box end flange 46 in FIG. 11. The coating bands of the cover flanges will slide down over the adhesive coating bands of the box flanges as represented in FIG. 11 by the adhesive coatings 38 and 49.

As stated in the introductory disclosure, paper sheets as stacked contain considerable air between the successive sheets. Accordingly, the first step in completing the package according to the present invention is to exert pressure between platens 72 and 73 which engage the top panel 16 of the cover 15′ and bottom panel 41 of the box 40′, such pressure being sufficient to compact the contents 70 and to complete the telescoping movement of the cover flanges with respect to the box flange.

As soon as the contents have been compressed to the maximum practical extent, pressure is applied both longitudinally and laterally to engage the pressure-sensitive coatings of the cover with the complementary pressure-sensitive coatings of the box. This step is represented in FIG. 12 by the showing of platen 74 forced toward the contents by ram 75 as indicated by the arrow 76, it being understood that similar platens will engage the other sides of the package. At the ends of the box the cover ends will be deformed inwardly by the cushioned platens to engage the box end wall between the box corner pleats, whereby to adhere as shown in FIG. 10 to the box end wall as well as to the exposed adhesively coated surfaces of the pleats.

The pressure of these platens at the four sides of the package will instantly effect adhesion between the cover flanges and box flanges to retain the contents 70 under continued pressure until such pressure is released by the opening of the package.

Usually, if one or all of the triangular pleats 60 are to be removed, this will be done as shown in FIGS. 11 and 12 immediately following the closing of the package. At that time, the flange portions of the cover contiguous to the perforated lines 29 and 30 will be securely cemented to the outer faces of the box flange so that removal of the pleat 60 will simply leave a diagonal line on the package as shown in FIGS. 9 and 10.

If it is not desired to tear off the pleat, it may simply be stapled or otherwise fastened to the cover as shown in FIG. 8 as already described.

Either the box or the cover may be made without a pleat as suggested in the modified construction shown in FIGS. 4 and 6. Here the corner of the blank has been deeply notched at 78 to provide a tab 80 which is folded outwardly and stapled to engage the cover but would correspondingly be folded inwardly and stapled to engage the box.

We claim:

1. A box and telescoping cover comprising prefabricated box and cover portions each provided with fold lines which define side flanges and further define corners including triangular pleat-forming areas, each of said portions having a coating of pressure-sensitive adhesive which is adherent to like adhesive but not substantially adherent to other materials, the said coating being substantially con-

tinuous about the box on the external surfaces of its flanges and pleat-forming areas and about the cover on the internal surfaces of its flanges and pleat-forming areas, the coatings of contiguous triangular pleat-forming areas of the respective portions being mutually adherent maintaining the pleats at the respective corners of the box and cover, the box having the adhesive coating exposed on the completed pleats as well as on said flanges, said box and cover being permanently connected by pressure engagement of their respective coatings following telescopic association of their flanges.

2. The device of claim 1 in which the pleat at each corner of the cover portion is defined by rows of perforations upon which the pleat is not merely foldable but severable respecting contiguous side wall portions of the cover.

References Cited in the file of this patent

UNITED STATES PATENTS

1,165,860	Fairchild et al.	Dec. 29, 1915
1,926,366	Bergstein	Sept. 12, 1933
2,072,371	Kaplan	Mar. 2, 1937
2,078,446	Grigg	Apr. 27, 1937
2,197,739	Bensel	Apr. 16, 1940
2,688,434	Udel	Sept. 7, 1954
2,880,866	Van Dyck	Apr. 3, 1959