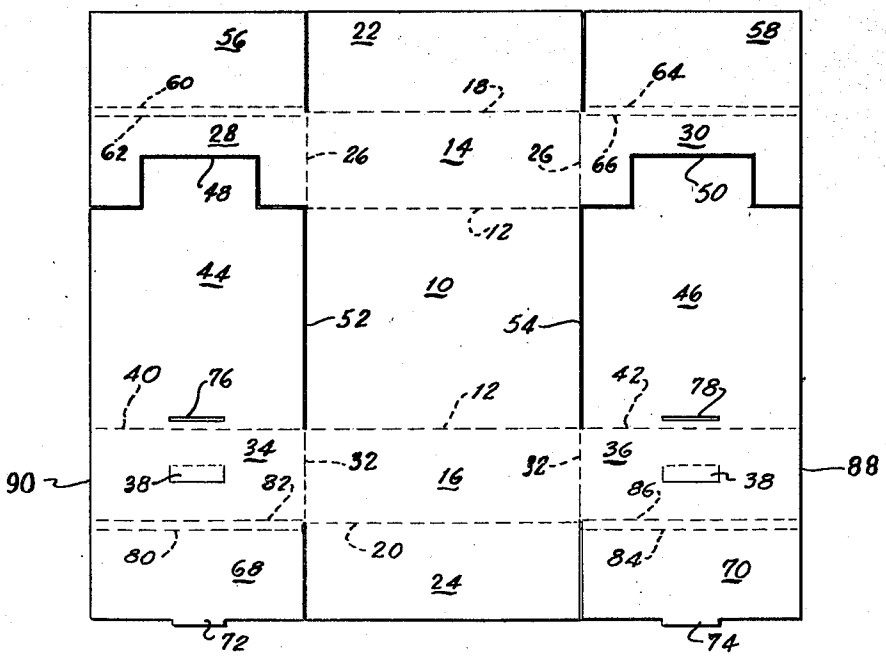
Oct. 25, 1960 G. R. KARR ET AL 2,957,615

FIBERBOARD CONTAINER

Filed Oct. 1, 1959

Fig_1



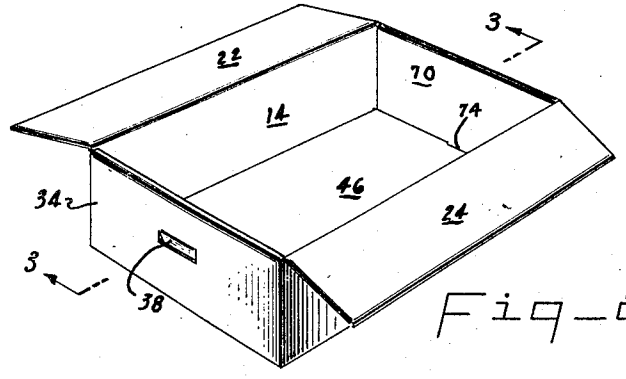
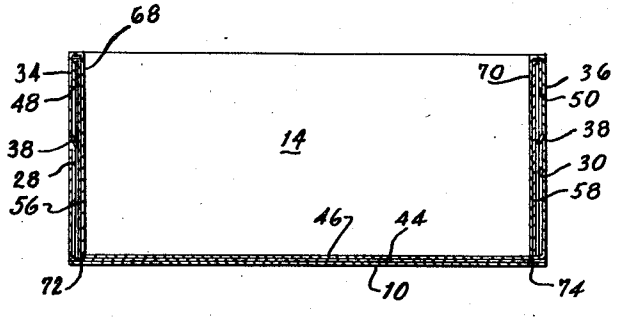


Fig_3

Fig_2



INVENTORS.
GEORGE R. KARR
PRESCOTT BLOUNT

BY Eckhoff & Slick
ATTORNEYS

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FIBERBOARD CONTAINER

George R. Karr, Portland, Oreg., and Prescott Blount, Orinda, Calif., assignors to Western Corrugated, Inc., a corporation of California

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4 Claims. (Cl. 229—16)

This invention relates to a fiberboard container which may be formed of a single, rectangular blank and more particularly to a covered fiberboard container formed of a single blank having a reinforced bottom and reinforced sides.

It is an object of this invention to provide a fiberboard container suitable for carrying relatively heavy objects and which exhibits considerable stacking strength.

Other objects and advantages of this invention, if not specifically set forth, will become apparent during the course of the description which follows.

In the drawings:

Figure 1 is a plan view of the fiberboard blank of this invention.

Figure 2 is a perspective view of the container erected from the blank of Figure 1.

Figure 3 is a longitudinal section through the erected container taken on line 3—3 of Figure 2.

Generally, the carton of this invention is particularly designed for containing foods and produce and is characterized by its triple reinforced bottom and its quadruple reinforced ends. The container thus has extreme strength and rigidity, both when stacked and when filled.

Referring to the drawings wherein like characters refer to like parts throughout, there is shown a single, rectangular blank wherein many of the score lines thereof which divide the various panels form continuous, straight lines. This makes possible the formation of many of the score lines with rotating scoring equipment beneath which the blanks may be moved. The outer (lowermost) bottom **10** of the container has score lines **12** running longitudinally thereof, providing hinges for side panels **14** and **16**. These side panels may have one or more ventilating holes therein. Score lines **18** and **20** run along the topmost longitudinal edges of the box and articulated therealong are cover panels **22** and **24**. In a preferred embodiment of the invention, large ventilation holes are spaced along score lines **18** and **20**. Side panel **14** is provided with score lines **26** along which a pair of generally U-shaped internal end panels **28** and **30** are hinged. Similarly, the opposite side wall **16** is provided with score lines **32** along which external end panels **34** and **36** are hinged. As shown, these external end panels may be provided with a tab **38** therein, shown cut on three sides and hinged on the fourth (alternatively, the rectangle shown may be cut entirely free) whereby to provide means for gripping the assembled carton with the fingers.

Each of the exterior end panels **34** and **36** has hinged thereto along lines **40** and **42**, respectively, a bottom reinforcing panel designated **44** or **46**. In its longest dimension, extending, in the case of panel **44**, from score line **40** to cut line **48** and, in the case of panel **46**, extending from the score line **42** to the cut line **50**, each bottom reinforcing panel is of a dimension substantially equivalent to the dimension lying at right angles thereto of the bottom **10**. Thus, when the carton is folded, the panels **44** and **46** will overlie the bottom **10** and will

be long enough to cover substantially the entire surface thereof. The relationship of the bottom panel sizes also may be stated as follows: the length of main bottom panel **10** measured from cut line **52** to cut **54** must be no greater than the sum of the width of the bottom panel **10**, plus the height of side panel **14**. Should the distance between cut lines **52** and **54** be greater than this, it will be seen that there will be insufficient fiberboard material available in the interior end panels **28** and **30** to permit the bottom reinforcing panels **44** and **46** to be of sufficient size to overlie the entirety of the bottom **10**.

Self-evidently, the legs at either side of U-shaped end reinforcing panels **28** and **30** may be of any desired width, though, as they decrease in size, the stacking strength of the box decreases. It would also be possible to eliminate entirely the left-hand leg of U-shaped end panel **28**, as seen in Figure 1, or the right-hand leg of panel **30**, as seen in Figure 1 (again, with attendant loss in stacking strength) but it is also evident that the interior legs of the panels must be maintained to some extent so as to provide means of securing in place end panels **56** and **58** which, when the carton is assembled, represent the third thickness in the ends thereof. End panel **56** is hingedly connected to panel **28** by means of spaced score lines **60** and **62**, while end panel **58** is hingedly connected to end panel **30** by means of spaced score lines **64** and **66**.

End panels **68** and **70** represent the inner-most end walls of the assembled carton, and each is provided with a tongue, designated **72** and **74**, respectively, of a size and location to register with slot **76** or **78** of the bottom reinforcing panels **44** and **46**. It will be appreciated that the inner-most of the bottom panels, whether panel **44** or **46**, should be slightly shorter than the panel beneath it or, in any event, of a length slightly less than the distance between cuts **52** and **54** of bottom panel **10**, thus to expose the slot **76** or **78** for receipt of tongue **72** or **74**. The other of the panels **44** or **46** which is used as the intermediate reinforcing panel may be substantially the length of the main bottom panel **10**.

Only a single one of the tongues **72** and **74**, together with the corresponding slots **76** and **78**, is absolutely necessary, since, e.g., if panel **44** represents the middle panel of the bottom three, innermost panel **46** will have a tendency to maintain the internal end wall **68** in position, the lower-most edge of end wall **68** abutting the lead edge of panel **46** formed by line **50**.

Internal end wall **68** is hinged to supporting panel **34** along spaced score lines **80** and **82** and wall **70** is hinged along spaced score lines **84** and **86** to supporting panel **36**.

As shown in the drawings, the preferred structure results in the U-shaped panel members **28** and **30** appearing as mirror images of one another on opposite sides of the rectangular fiberboard blank, as shown in Figure 1. This places the two tongues **72** and **74** on one side of the rectangular blank, and results in less fiberboard being consumed than if the tongues were on opposite sides of the blank. However, it is evident that it is possible to cut the blank in such a fashion that one of the U-shaped panels, e.g., **28**, occupies the position of the corresponding exterior wall, here **34**, thus to place the U-shaped end wall panels in positions diagonally opposite one another when the blank is laid out as in Figure 1. This has certain advantages in that the exposed edge **80** of exterior wall **34** and the exposed edge **84** of exterior wall **36** will then lie diagonally opposite one another in the folded box. At the corners where edges **80** and **84** lie are the weakest corners of the assembled carton, the overall stacking strength is increased somewhat by placing these two edges diagonally opposite one another, rather than along a single longitudinal edge where, when cartons are piled one on the other, failure may occur.

A conveniently sized commercial embodiment of this carton results from a blank 37½" by 44½". The preferred sizes of the individual panels may be determined from the drawing, which represents the aforementioned 37½" by 44½" blank drawn to scale.

In erecting the container into the form shown in Figure 2, each of panels **46**, **36** and **70** is bent upwardly about hinged crease **32**, while the intermediate bottom reinforcing panel **46** is bent at right angles to end wall panel **36** about crease **42**. Simultaneously, side wall **16** is bent at right angles to exterior bottom panel **10** and the opposite end wall **34** is bent at right angles to the interior-most bottom panel **44** about crease **40**. Panels **30** and **58** are then bent inwardly about crease line **26** and side wall **14** is bent upwardly at a right angle to bottom **10** about crease line **12**. U-shaped panel **30** is placed flush against the interior of end wall **36**, and the two panels **58** and **70** which at this point are adjacent one another, are folded downwardly and tongue **74** inserted into slot **78**.

The process is repeated at the opposite end of the box the inner-most bottom panel **44** being swung inwardly as end panel **34** is bent at right angles to side wall panel **16** about crease line **32**. U-shaped panel **28** is folded inwardly so that it lies flush against side wall panel **14** and panel **44** is pressed down so that it is directly superposed on panel **46**, which is now sandwiched between bottom **10** and inner reinforcing panel **44**. Panel **28** is then folded outwardly so that it lies flush against exterior end wall panel **34**. The two panels **56** and **68** are thereafter swung inwardly and the tongue **72** inserted into slot **76**. The cover panels **22** and **24** are folded into place after the carton has been filled with produce or the like.

This carton has been specifically designed to provide a container which is a proper balance between the desiderata of maximum stacking strength, maximum weight capacity and minimum uneven surfaces, particularly as a part of the inner-most bottom panel which, it has been observed, will damage tomatoes, peaches and the like.

Obviously, many modifications and variations of this invention may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

We claim:

1. A rectangular, fiberboard blank suitable for being folded into a container for produce and the like comprising: a rectangular main bottom panel having free ends; a side panel articulated along each longitudinal edge of said main bottom panel, each of said side panels having articulated thereto along one longitudinal edge thereof a second panel of a size substantially equivalent to that of the said side panels, each of said second side panels serving as a top flap and together comprising the top for said container, each of said side panels having articulated to each lateral edge thereof an end wall panel whereby four end wall panels are articulated to said side panels, two of said four end wall panels serving as exterior end wall panels when the said blank is assembled into a container, each of the said exterior end wall panels having articulated thereto along a first longitudinal edge a first reinforcing end wall panel of substantially equivalent size and shape, said first reinforcing end wall panel having free lateral edges and a free longitudinal edge, each of said two exterior end wall panels having articulated along a second longitudinal edge thereof a bottom reinforcing panel, the other two of said four end wall panels articulated to said side panels having quantities of fibreboard cut out therefrom, said cut out quantities being contiguous with and integral parts of adjacent bottom reinforcing panels, said portions being cut out to a sufficient depth into said end wall panels to supplement the said bottom reinforcing panels to an extent sufficient that the said bottom reinforcing panels are each substantially the length of said main bottom panel as measured between the free ends of said main bottom panel, each of said other two of said four end wall panels having articulated along a longitudinal edge thereof a second reinforcing end wall panel of a size and shape substantially equivalent to that of said first reinforcing end wall panel.

2. The structure of claim 1 wherein the said end panels having cut out portions therein are generally of a U-shape whereby said bottom reinforcing panels have centrally-disposed tongues integral therewith.

3. The structure of claim 1 wherein said cut out portions are so positioned as to appear as mirror images of one another when the unassembled blank is laid flat.

4. The structure of claim 1 wherein the said cut out portions are so positioned as to appear at diagonally opposite corners when the unassembled blank is laid flat.

No references cited.