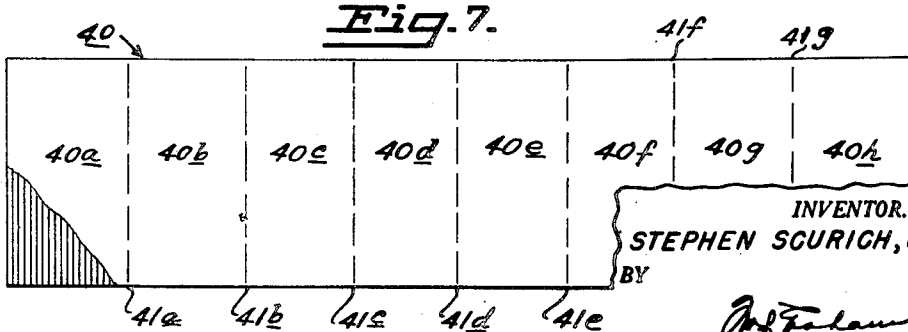
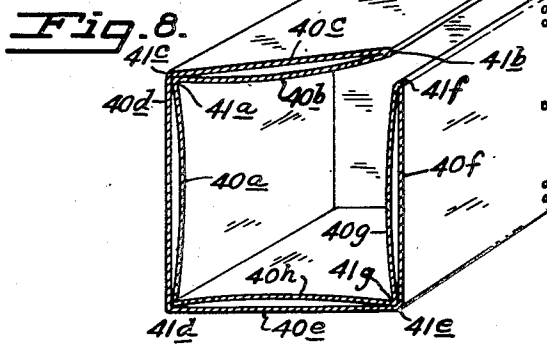
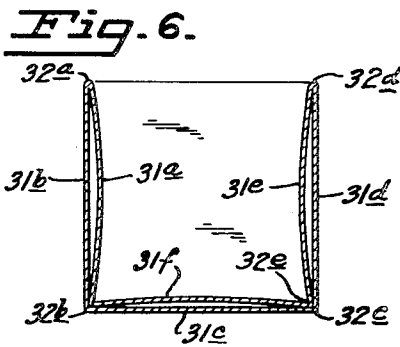
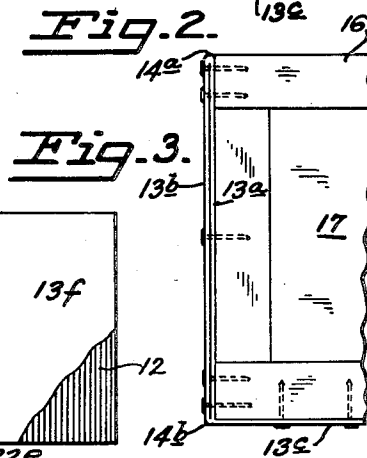
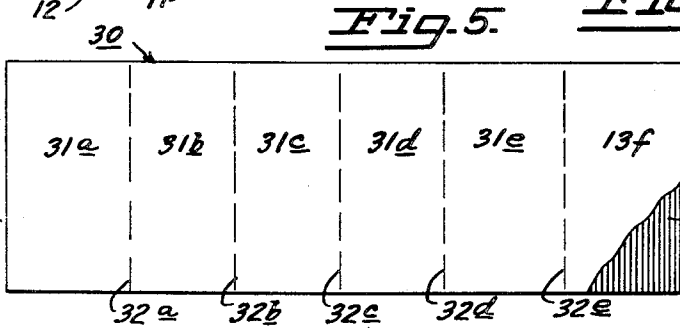
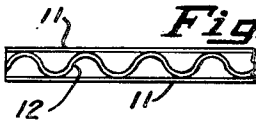
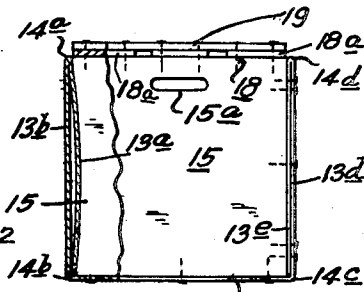
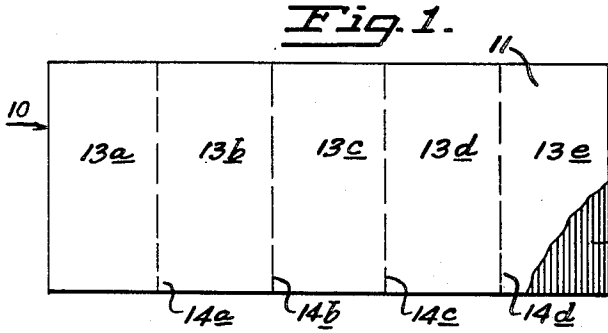


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S. SCURICH, JR
CUSHIONED PACKING BOX

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CUSHIONED PACKING BOX

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5 Claims. (Cl. 229-6)

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This invention relates to cushioned packing boxes or containers and more particularly relates to packing boxes for fruit in which side wall and bottom are made in a continuous strip of material which is infolded upon itself to provide a cushioning wall within the box, and in which the opposite ends of the box are formed of wooden supporting panels, either of single shook or as closed wooden frames.

In packing boxes, and more particularly boxes for packing fruit for shipment, it has been customary to form the side walls and bottom of relatively thin slats or shook, and relatively thick wooden panel end members. Usually the top is closed by a lengthwise slatted lid having transverse end cleats to which the slats are stapled or nailed. To facilitate economy of space in shipment and storage the shook ends and tops are usually shipped to the packer in knock-down form to be assembled by him as needed. Boxes so made have numerous disadvantages, including assembly costs, weight, slivers in handling, liability to bruising of the packed fruit, and breakage or other damage of the thin shook, which breakage in the normal operation would amount to 5% or more of the shook pieces. The crate or box of the present invention overcomes these difficulties, providing a box which, for equal cubic volume, is lighter in weight, is free of slivers, requires less manufacturing cost, is substantially free of loss by breakage, is internally cushioned, and has greater advantages of thermal insulation.

Broadly, the object of the invention is to provide a packing box having rigid supporting ends and having side walls, and if desired, also a cover, formed from a single integral strip of heavy bendable paper sheet material of uniform width throughout its length, and which by infolding of the sheet provides cushion walls within the box and facilitates thermal insulation of the packed fruit.

The invention contemplates several forms of boxes so cushioned, as shown by the accompanying drawing and described in this specification as illustrative of advantageous forms in which the invention may be embodied, it being understood that by changes of details the invention may be embodied in other forms without departing from the spirit and scope of the invention which is defined in the appended claims.

In the drawing:

Fig. 1 is a plan view of a blank from which one form of the box of the invention may be made, partly broken away to show internal portion of the blank.

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Fig. 2 is an end view of box of blank of Fig. 1, partly broken away

Fig. 3 is a fragmentary end view of modified form of an end panel of box.

5 Fig. 4 is a fragmentary enlarged end view of a portion of the blank.

Fig. 5 is a plan view of form of blank for making a modified form of the box of the invention, partly broken away to show internal corrugations.

10 Fig. 6 is a transverse section of box made from the blank of Fig. 5.

Fig. 7 is a plan view of form of blank for making another modified form of the box of the invention, partly broken away.

15 Fig. 8 is a transverse section of box made from the blank of Fig. 7.

The number of walls which are cushioned at the interior of the box will depend on the uses to which the box is put, and may therefore have only the wall of the two opposing sides cushioned, or may also include a cushioned bottom or both the bottom and cover, as shown in several figures of the drawing.

20 Referring to Figs. 1 and 2 of the drawing, as illustrative of the more simple form of the invention, 10 indicates an elongated blank of relatively stiff fibreboard preferably having smooth opposite faces 11 and having corrugated center 12 therebetween. The blank in this form of the invention comprises five panels 13a, b, c, d, and e, of equal size consecutively connected at adjacent longitudinal edge portions by relatively narrow score lines 14a, b, c, and d for allowance of area for bending without consuming the actual area of the panel in the bend. If the panels are approximately 11 to 12 inches wide, the scored bending area may be between $\frac{1}{8}$ to $\frac{1}{4}$ inch in width. The corrugations 12 between the smooth faces of the blank are conventional, and are parallel with the bending or score lines longitudinally of the wall panels.

At the opposite ends of the box are rigid closure panels 15 which are preferably wooden panels, either of integral single piece shook, as in Fig. 2 or a wooden frame 16 having a central panel 17 mounted therein as at Fig. 3. Finger grip openings 15a may be provided in the end panels if desired. The boxes of Figs. 2, 3, and 6 are intended for employment with a separate lid closure 18 which consists of relatively spaced slats 18a longitudinally of the box and nailed at opposite ends to the rigid supporting end panels 15. Since it is customary that the boxes be filled centrally above the upper free edge of the side wall panels, 55 whereby the top closures are upwardly crowned or

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bowed at the longitudinal central portion, a transverse cleat 19 is provided overlying the ends of the slats at each end of the cover closure panel 18, both for reinforcing the nailing of the closure cover and furring out the end portions of the box substantially the amount which the closure panels are crowned upwardly, so that in stacking the boxes, pressure is removed from the fruit, and also the boxes are levelled relatively in stacking.

In forming the box of the invention the end panels 13a and 13e of the blank are first retroverted or infolded upon the bend or scored lines 14a and 14d to parallel the plane of the respective adjoining panels 13b and 13d, the corrugations 12 paralleling the bend and thus facilitating the bending substantially through an arc of 180 degrees whereby the adjoining panels overlie in face to face relation. With the end panels of the blanks thus infolded, the overlying panels 13a and 13b at one end and the panels 13d and 13e at the opposite end are bent on the score lines 14b and 14c perpendicularly, or through an angle of 90 degrees, relative to central panel 13c. The blank, as so bent, is then formed around three side edges of the end panels 15, or the modified panel 16, 17, so as to provide side walls and bottom to a box, and the opposite ends of the folded blank are nailed to the abutting side edges of the end panels. Due to the resistance of the blank material to bending, the infolded panels have a tendency to spring back and away from contact with the overlying side wall panels, and this tendency provides a cushion effect at the face of the wall inside the box. After the box is filled with fruit the top closure may be applied in the manner above set forth.

In the modification of Figs. 5 and 6, the paper blank 30 is provided with six wall panels 31a, b, c, d, e, and f, thus providing an infolded or introverted cushion wall for the bottom as well as the side walls. Score lines 32a, b, c, d, and e are provided between the panels. In this modification, the panel 31a at one end of the blank is infolded upon bend line 32a to overlie the next adjoining panel 31b; and at the opposite end of the blank the two relatively adjoining panels 31e and 31f are infolded as a unit upon score line 32d to overlie the two central panels 31c and 31d, the infolding being through an arc of 180 degrees. The blank which by such infolding becomes of double panel thickness throughout its area, is bent upon the score line 32b and 32c through an arc of 90 degrees, providing two thicknesses of overlying panels of the blank at both side walls and bottom. The opposite ends of the panels, as so formed, are mounted around the perimeter of three side edges of the wooden end panels of end shoo 15, or similarly mounted around frame 16, 17, and the ends of the relatively overlying panels are nailed to the wooden end panels similarly as previously described.

In the modification of Figs. 7 and 8 provision is made for a cover panel formed of the material of the blank. In this modification, there would be eight panels to form side walls, bottom and cover, the panels being indicated 40a, b, c, d, e, f, g, and h, and the score lines therebetween being 41a, b, c, d, e, f, and g. The infolding of the wall panels of this modification may be along any of several selected fold lines, depending on the longitudinal interior corner of the box in which it is desired to have the opposite free ends of the blank meet within the box. In the example of blank illustrated in Fig. 7 the selected bending of

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the wall panels is initially upon the score lines 41b and 41f, through an arc of 180 degrees whereby panels 40a and 40b are caused to overlie panels 40c and 40d; and panels 40g and 40h are caused to overlie panels 40e and 40f with the panels so overlying, the blank is then bent through an arc of 90 degrees upon the overlying score lines 41e and 41g to provide a bottom and one side wall; and is likewise bent upon the overlying score lines 41a and 41c to provide an opposite side wall and a cover, each elongated panel of the formed box having the characteristic of overlying panel walls, the inner wall providing a bulge as elsewhere described herein. Wooden end panels in like manner as previously described, may be inserted at the opposite ends of the relatively overlying panels, and the marginal ends of the side walls and bottom are initially nailed to the end panels, as hereinbefore set forth. After the box is filled, the cover panel may be similarly nailed to the end panels or closed by a wire binder around the box. In this form of modification it is preferred that cleats, similar to the cleats 19 of Fig. 2 shall be nailed transversely over the ends of the cover panel and aligned with the plane of the wooden end closures, for the same purposes as set forth in describing the box in Fig. 2 of the drawing.

In all forms of the invention it will be observed that the width of the infolded panel is crowded into a dimension which is slightly less than the width of the exterior panel which overlies the infolded panel; that is, if the panels of the blank are of equal width, then when the two thicknesses of overlying wall panels are formed around the edges of the wooden end panels, the width of the infolded panels must be crowded into a width-dimension of the exterior panel less than the full width of the infolded panel, at least to the extent of the thickness of the material of the blank. This differential of width dimension into which the infolded panels must be crowded, provides a bulge in the infolded panel relative to the opposed exterior panel, and the tendency of the bulged portion to assume its normal flat form pushes its side edges toward the longitudinal corners of the box as at 42, and provides a lock of the edge of the infolded panel in that corner. The bulge thus not only provides a cushion and a lock, but also provides an air space between the panels which serves as thermal insulation and delays decay when the boxed fruit is exposed to heat, as well as maintaining refrigeration when the fruit is removed from refrigerated storage for transportation to the market, serving thirdly as an automatic buffer in the event that the exterior wall of the box is struck against an object which would normally penetrate a more rigid paper wall and thereby injure the contained fruit. The idea of providing an automatic cushion, buffer and insulation space between the wall panels may be further carried into effect by providing varying widths of exterior and interior wall panels, in which event the infolded interior wall panels would purposely be made somewhat wider than the exterior wall panels. The greater the differential of width dimensions between width of the inner and the width of the outer relatively overlying panels, the greater will be the bulge of the infolded inner panels, the tighter the lock in the longitudinal corner of the box, and the greater the insulation space, when the panels are in box-forming relation about the perimeter of the end panels, assuming, of course, that the differential of width provides the greater

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width to the infolded panel. For example, in the last mentioned modification of Figs. 7 and 8 the infolded panels 40a, 40b, 40g and 40h would be the wider panels, whereas the exterior panels 40c, 40d, 40e and 40f would be the narrower panels. This differential of width may vary in boxes of varying sizes, but for an example, in the fruit packing box of usual size, 19 to 20 inches long by 11 to 12 inches in width and depth, the infolded panels may be conveniently made one-eighth to one-quarter inch wider than the overlying exterior panels.

Having described the invention, what is claimed as patentable is:

1. A packing box comprising an elongated integral rectangular sheet of bendable material of substantial thickness having transverse score lines extending entirely across said sheet dividing it into a plurality of panels, the opposite end panels of the sheet each being infolded and overlying the next adjoining panel, said relatively overlying panels at each end of the sheet being bent substantially perpendicular to the panel therebetween whereby there is provided a bottom panel and perpendicular opposed side wall panels which latter have double thickness of panel material, and a rigid end panel at each opposite end of said bent panels, the ends of bent panels overlying and being rigidly secured to the edge portions of the rigid end panels, the infolded panels being at least as wide as the distance between the score lines defining the panels over which they are infolded, whereby a longitudinal edge of each of the infolded panels seats in a longitudinal corner bent between two outer panels and bulges the plane of the infolded panel to provide a cushioned inner panel in the box.

2. A packing box having the elements of claim 1 and in which the bendable sheet is of uniform transverse width throughout its length and has smooth opposite exterior faces and a center of corrugations therebetween parallel to the bends in the sheet.

3. A container of the character described including an elongated integral rectangular sheet of bendable material of substantial thickness comprising a plurality of panels joined along transverse fold lines extending entirely across

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said sheet, the panels of opposite end portions of the sheet being infolded and overlying a similar number of next adjoining panels, the relatively overlying panels at each end of the sheet being bent as a unit substantially perpendicular to an intermediate panel therebetween, whereby there is provided a bottom panel and perpendicular opposed side wall panels which have double thickness of panel material, and a rigid end panel at each opposite end of said relatively bent panel units, the ends of said bent panels overlying and being rigidly secured to the edge portions of the rigid end panels, the infolded panels being at least as wide as the distances between fold lines at the edges of the panels over which they are infolded, whereby a longitudinal edge of each of the infolded panels seats within the box in a longitudinal corner between two outer panels, and thereby bulges the plane of the infolded panel to provide a cushioned inner panel in the box.

4. A packing box having the elements of claim 3 and in which the bendable sheet is of uniform transverse width throughout its length and has smooth opposed exterior faces and a center of corrugations therebetween parallel to the bends in the sheet.

5. A packing box having the elements of claim 3 and in which there are eight consecutively joined panels in the sheet whereby four units of overlying panels are provided for the box, one of which is a cover panel.

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