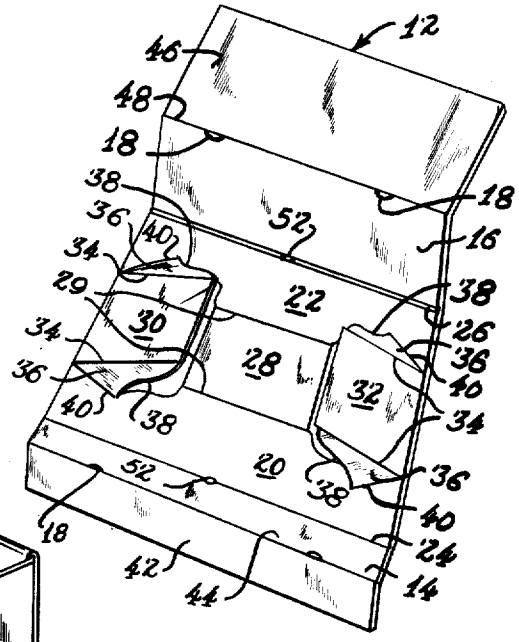
Nov. 26, 1963 D. G. LAVER 3,112,059

CARTON CONSTRUCTION

Filed Nov. 28, 1961 2 Sheets-Sheet 1

Fig 2



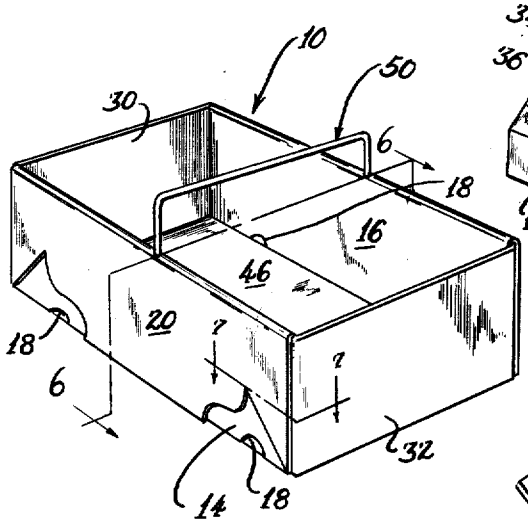


Fig 1

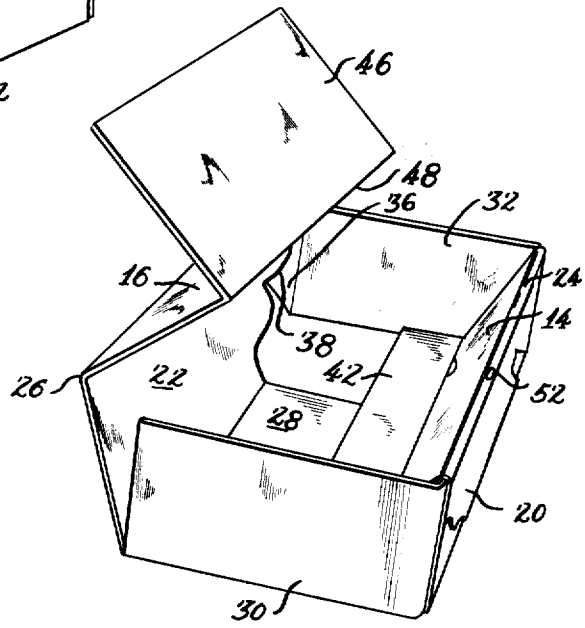


Fig 3

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CARTON CONSTRUCTION

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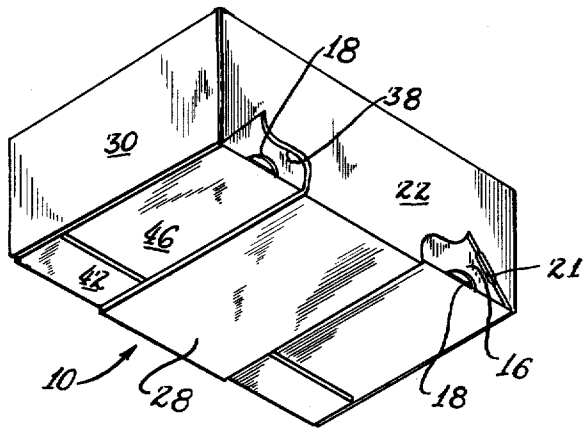
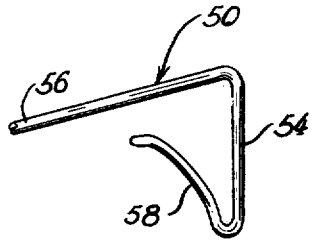


Fig 4



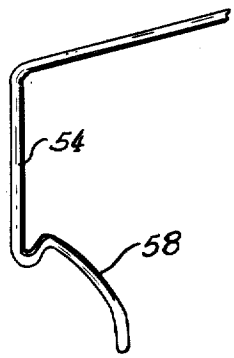
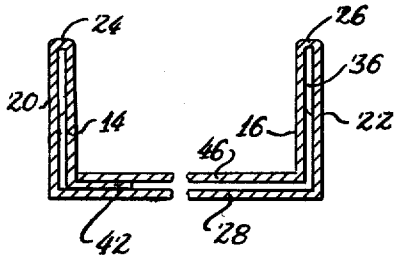


Fig 5

Fig 6



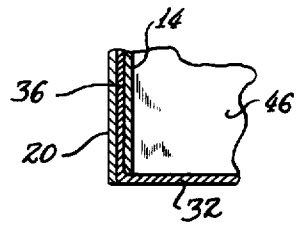


Fig 7

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3,112,059

CARTON CONSTRUCTION

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Filed Nov. 28, 1961, Ser. No. 155,390
3 Claims. (Cl. 229—52)

This invention relates to a carton construction and more particularly pertains to a novel collapsible open top carton formed from a single sheet of fiberboard material or the like.

In order to properly transport perishable produce, such as fruit and vegetables, the cartons, in which such produce is disposed, must be possessed of certain desirable and important properties. One important property is that the carton must be of sufficient strength so as to protect the contents thereof from crushing, bruising, or other damage occasioned by structural failure of such carton. Furthermore, when such cartons are arranged in stacked relationship, as is customary in the course of transport or storage thereof, each carton must not only resist crushing but, in addition, possess other desiderata, such as permitting adequate ventilation of the contents accommodated therein.

Heretofore in an attempt to provide the adequate strength for such cartons, the latter have been designed with little regard as to the amount of material utilized and thus the cost of such cartons have been substantially increased. Frequently, in such prior cartons the blank from which the carton is formed has been of intricate design and thus the setting-up of such a carton has been a complicated, awkward, and frustrating experience.

The expense and complexity of fabricating such prior cartons are oftentimes greatly increased by reason of the need for gluing, stapling, or other means to secure the various parts so as to enhance the strength of the fiberboard blank and to retain the latter in a set-up condition. In many instances, the use of such securing means requires that the carton be placed in a set-up condition at the time of fabrication, and thus be transported in such condition to the customer. The waste of valuable shipping space under such a situation is readily apparent.

Thus, it is an object of this invention to provide a blank from which a collapsible carton may be rapidly set up with a minimum of time and effort.

It is a further object of this invention to provide a collapsible carton of sturdy construction which is formed from a blank of simple configuration and requiring a minimum of material.

It is a still further object of this invention to provide a collapsible carton possessed of self-looking means and thereby eliminating additional discrete securing means, to retain same in a set-up condition.

The above and other objects of this invention will become more apparent from the following detailed discussion when read in the light of the accompanying drawings and appended claims.

In accordance with one embodiment of this invention, an improved carton is provided which is adapted to accommodate produce, such as fruits or vegetables, for transport, storage or display purposes. The carton, formed from a blank of fiberboard sheet material is possessed of opposed side walls of double thickness having foldably connected inner and outer portions, a floor having overlapping floor-forming sections foldably connected to the side wall inner portions, and a reinforcing section foldably connected to the side wall outer portions and subtending said overlapping floor-forming sections.

End walls are interposed the side walls and are foldably connected to the end limits of the side wall outer

portions by gussets. The gussets are disposed between the side wall inner and outer portions and retained thereby in such position when the carton is in set-up condition.

For a more complete understanding of this invention, reference should be made to the drawings wherein:

FIGURE 1 is a perspective view of the improved carton in set-up condition;

FIG. 2 is a perspective view of the carton blank in one stage of being set up;

FIG. 3 is a view similar to FIG. 2, but showing a further stage of set-up;

FIG. 4 is a perspective bottom view of FIG. 1;

FIG. 5 is a fragmentary enlarged perspective view of the carrying handle shown in FIG. 1;

FIG. 6 is a fragmentary sectional view taken along line 6—6 of FIG. 1; and

FIG. 7 is a fragmentary sectional view taken along line 7—7 of FIG. 1.

Referring now to the drawings, and more particularly to FIG. 1, an open top carton **10** is illustrated which, in this instance, is adapted for accommodating fresh produce, such as fruit (i.e. peaches) or vegetables (i.e. tomatoes), although it may also be manufactured to contain a plurality of small individual containers customarily used in packaging strawberries, blueberries or the like. It is to be understood that the invention hereinafter described is not limited specifically to the form of carton construction illustrated in the drawings, but such form has been illustrated and will be described hereinafter merely as one embodiment of the invention so as to facilitate understanding thereof.

Carton Structure

Carton **10** is preferably formed from a rectangularly-shaped blank **12** of inexpensive double-faced corrugated fiberboard sheet material. Blank **12**, if desired, may be treated so as to have water resistant characteristics. The blank may also be treated so as to provide an improved cushioning effect for the accommodated contents and thus reduce, or eliminate entirely further packing, such as liners or pads, to protect the contents against bruising and the like.

The configuration of blank **12** is such that when transported in bulk, it will be in a flat condition, whereupon at the site of use, each individual blank is easily folded to form the set-up carton **10** shown in FIG.1.

Blank **12**, as seen as in FIG. 2, is provided with a plurality of foldlines, certain of which define inner side wall panels **14** and **16** of similar configuration, each panel is preferrably provided with spaced ventilating openings **18** along its outer elongated margin. Panels **14** and **16** are foldably connected along their inner elongated margins to respective outer side wall panels **20** and **22** by means of relatively wide foldlines **24** and **26**, respectively. In carton set-up condition (FIG. 1) the respective inner and outer side wall panels **14—20** and **16—22** are disposed in face to face parallel relation and define upright side walls of double thickness.

As is more clearly seen in FIG. 2, the corresponding central segments of the opposed inner marginal portions of panels **20** and **22** are integrally connected by a floor-reinforcing panel **28**. Panel **28** has marginal portions theref defined by foldlines **29** which separate panel **28** from outer side wall panels **20** and **22**. Panel **28**, as viewed in the blank FIG. 2, is interposed end wall panels **30** and **32**, the latter having their inner marginal portions die cut from opposite marginal segments of panel **28**, which are disposed perpendicular to foldlines **29**.

The end wall panels **30** and **32** are foldably connected, along opposed parallel side edges **34**, to gussets **36** which

have the inner marginal edges **38** thereof die cut from opposed end segments of the inner marginal portions of outer wall panels **20** and **22**, see FIG. 2. The die cutting lines forming edges **38** extend generally divergently outwardly from the end limits of foldlines **29** and terminate at foldlines **40** the latter commencing at approximately the mid-height of outer wall panels, see FIG. 1 and extending to the elongated peripheral edges of the blank, see FIG. 2.

The sinuous configuration of the cutting line forming edge **38** of each gusset obviates, or materially reduces, any tendency of a tearing separation being effected between the gussets **36** and wall panels **20** and **22**.

Foldlines **40**, in the illustrated embodiment, are disposed at an angle of approximately **45** degrees relative to the end wall panel edges **34**. Such an angular relationship readily permits the outer side wall panel and adjacent end wall panel to assume a right angle relation when the carton is in a set-up condition. Furthermore, it will be noted that each gusset **36** is disposed between the inner an douter side wall panels and is rigidly held in such position by the side wall panels, when the carton is in set-up condition. To facilitate folding along each foldline **40**, an elongated perforation **21**, see FIG. 4, may be provided therein.

Referring again to blank **12**, FIG. 2, it will be seen that the outer marginal elongated edge of inner side wall panel **14** is foldably connected along a foldline **44** to a floor or bottom-forming panel **42**. Panel **42**, in the illustrated embodiment, has a width which is substantially less than the width of bottom panel **28**, see FIG. 4.

The outer marginal elongated edge of inner side wall panel **16**, as shown in FIG. 2, is also foldably connected to a second floor or bottom-forming panel **46** along a fold line **48**. Panels **42** and **48** overlap one another, when the carton is set-up and span the distance between opposed inner side wall panels **14** and **16**. If desired however, panel **42** or **48** may be eliminated entirely, or both panels **42** and **46** may be of the same width and shape.

Foldlines **24** and **26**, as heretofore mentioned, are relatively wide so as to permit the gussets **36** to be readily sandwiched between the corresponding inner and outer side wall panels. Disposed at approximately mid-length of foldlines **24** and **26** are provided apertures or slots **52** to accommodate a convenient bail or handle **50**; the latter to be more fully described hereinafter.

Folding Operation

The blank **12** in various stages of folding is shown in FIGS. 2 and 3. The blank **12**, as aforenoted, is normally transported and/or stored in a flat condition so as to conserve shipping or storage space. Because of the fact that no separate retaining means, such as staples, adhesive tape or the like are required, blank **12** may be readily set-up in the field or factory with a minimum of time and manual effort.

In setting up the improved carton the opposed end walls **30** and **32** are initially urged upwardly so as to assume upright poistions. Simultaneously with the movement of the end walls to such positions the outer side panels **20** and **22** are moved to upright right-angle positions because of the gussets **36** interconnecting the end walls and outer side wall panels. Once outer side wall panels **20** and **22** assume their upright positions, gussets **36** will be disposed in face to face relation therewith.

Inner side wall panels **14** and **16** are then folded inwardly along foldlines **24** and **26** into parallel substantially face to face relation with the outer panels to which they are attached. This disposition of each inner side wall panel effects locking of the gussets between the inner and outer side wall panels, see FIG. 7.

FIG. 3 illustrates that inner side wall panel **14** is normally folded so that the floor-forming panel **42**, connected thereto, will be overlapped by the floor-forming

panel **46** connected to inner side wall panel **16**. The overlapping floor-forming panels **42** and **46** are caused to rest upon the central reinforcing panel **28**. The width of the panel **46** in this instance is such that when it is folded into overlapping relation with panel **42**, the outer elongated edge of panel **46** will frictionally engage the exposed surface of innerside wall panel **14**.

Handle Construction

A carrying handle or bail **50** is provided in the illustrated embodiment and has portions thereof disposed within apertures **52** which, as heretofore indicated, are formed in foldlines **24** and **26**, at substantially the central transverse plane of the carton.

Handle **50**, as seen more clearly in FIG. 5 is preferably formed of bent wire and comprises a central portion **56**, which spans the distance between the side walls **14** and **16**, and leg portions **54** extending transversely from the end limits of said central portion. The leg portions **54** are parallel to one another and project through apertures **52**. The lower free ends of one of the leg portions **54** is laterally offset in one direction and the corresponding end of the other leg portion is laterally offset in the opposite direction. The offset end in each instance takes the form of an elongated arcuate hasp **58**. The hasps are disposed within the intervals defined by the inner and outer side wall portions and are adapted to prevent accidental disengagement of the handle from the carton when the latter is loaded and is being carried by the handle.

The arcuate configuration of hasps **58** insures the absence of any sharp handle end portion piercing the foldline **24** or **26** and also such configuration facilitates the insertion of the hasps through the apertures during assembly of the carton and handle.

The length of leg portions **54** should be such that, when the handle **50** is in retracted position, the central portion **56** will be disposed within the plane of the open top of the set-up carton. It may be desirable to have the length of each leg portions **54** substantially equal to the height of the side wall panels, so that, when the handle is retracted, a rigid reinforcement against crushing will be provided for the side wall panels. The laterally projecting hasps **58** will function as stabilizing feet and prevent tilting of the leg portions **54** when the central portion **58** is used for reinforcement purposes. Various other types of handles may be employed or the handle eliminated entirely, if desired, without departing from the broad aspects of this invention.

It is seen, therefore, that a novel carton has been provided which is formed from a simple blank of fibreboard sheet material and is capable of being readily set-up with relatively few simple manual folding operations. The set-up carton is extremely strong and is adapted to remain in a set-up without the use of separate fastening devices such as staples, tape, etc.

The size and shape of the blank and resulting carton, as well as the number of ventilating openings, and the type of the handle may be varied to suit the particular needs of the carton user. Accordingly, while only one embodiment of this invention is shown in the drawings, it is to be understood that the invention herein disclosed is not to be limited thereto since many obvious modifications may be made, and it is contemplated, therefore, by the appended claims to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A set-up carton formed from a blank of sheet material, comprising opposed side walls of double thickness, opposed end walls angularly disposed with respect to said side walls, gusset means foldably connected to one thickness of each side wall and to the adjacent marginal portion of each end wall, said gusset means being disposed between said side wall thicknesses, floor-forming means foldably connected to the other thickness of at least one

side wall, and reinforcing means integrally connected to the outer thickness of each side wall and subtending said floor-forming means; said reinforcing means being separated from said end walls and having a width less than the spacing between said end walls.

2. In a carton construction having inner and outer wall portions forming opposed side walls of double thickness, and opposed end walls interposed corresponding end limits of said side walls, the improvement comprising means for maintaining said end walls in a predetermined angular relationship with said side walls, said means comprising a plurality of gussets each having a first peripheral segment thereof struck out from a side wall outer wall portion, a second peripheral segment foldably connected to said side wall, and a third peripheral segment foldably connected to the edge portion of an adjacent end wall; each gusset being disposed intermediate the thickness of a side wall.

3. A blank of foldable sheet material adapted to be set up to form an open top carton having a floor and side and end walls extending upright therefrom, said blank being of a substantially rectangular configuration and comprising a plurality of spaced parallel foldlines extending transversely of the elongated side edges of said blank and forming a central panel, end wall panels laterally disposed relative to and severed from said central panel

and disposed intermediate the foldlines defining said central panel, a pair of elongated outer side wall panels disposed on opposite sides of and foldably connected to said central panel and said end wall panels, a pair of elongated inner side wall panels straddling said central, end wall, and outer side wall panels and being foldably connected to said outer side wall panels, and a floor-forming panel foldably connected to one of said inner side wall panels; each outer side wall panel having formed therein a pair of gussets disposed at opposite ends thereof, each gusset having a first side thereof foldably connected to the contiguous end wall panel, a second side thereof foldably connected to the remainder of said outer side wall panel along a foldline angularly disposed to said first side, and a third side thereof severed from the remainder of said outer side wall panel and interconnecting said first and second sides.

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