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Eifrid

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[54] **CONTAINER WITH FOLDED PANEL PORTIONS**

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[52] **U.S. Cl.** ..... **229/40,** 206/424, 206/521, 229/14 C, 229/33, 229/44 R

[51] **Int. Cl.** **B65d 5/02,** B65d 5/22

[58] **Field of Search** ..... 229/14 C, 87 R, 40, 37 E, 229/37 R, 33, 39; 206/46 FR, 62 R; 220/6

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[57] **ABSTRACT**

An erectible panel portion is erected and held in self-sustaining relationship to another panel portion in a container by means of a projection formed on one panel portion abutting a wall in the other panel portion adjacent a fold line. The projection is formed by an offset cut at the fold line. Also, a shipping container is disclosed having a plurality of panels in which at least two panels are planar and lie flat against each other with the container in an unassembled condition. One of the two panels is provided with a fold line for folding at least one portion of the panel away from the other panel to extend transversely thereof. The folded portion of the panel is supported in the transverse condition by means of a projection provided by an offset cut at the fold line to extend from the folded portion on the opposite side of the fold line and engage the other panel.

8 Claims, 4 Drawing Figures

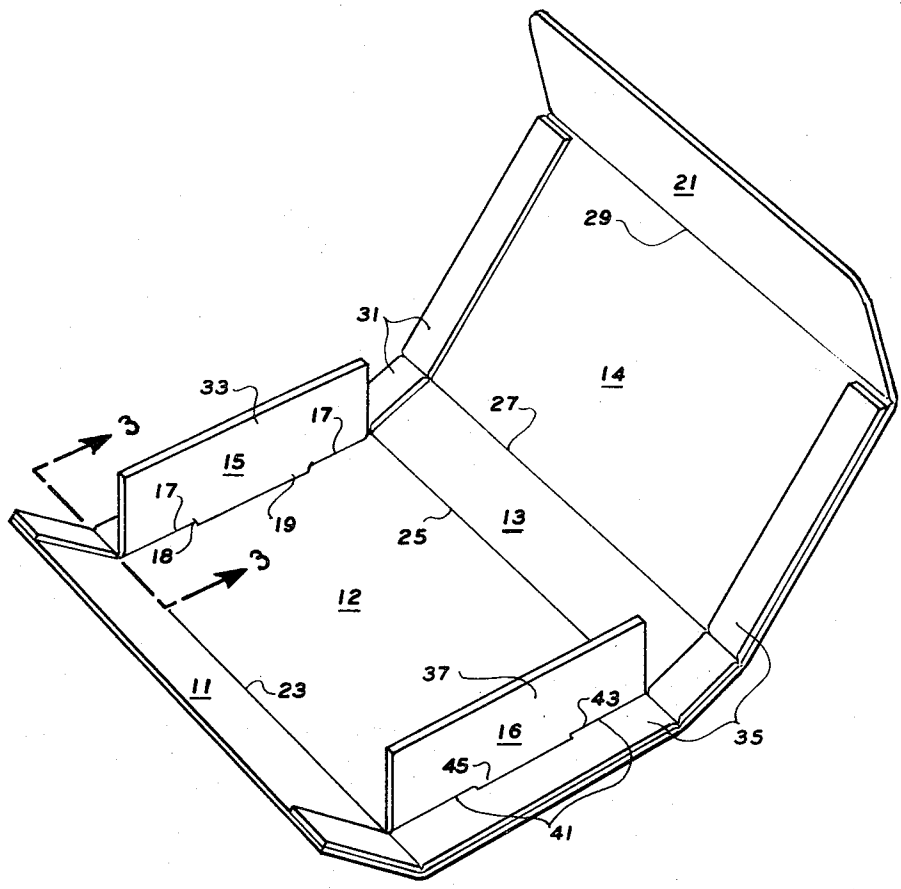


FIG. 1.

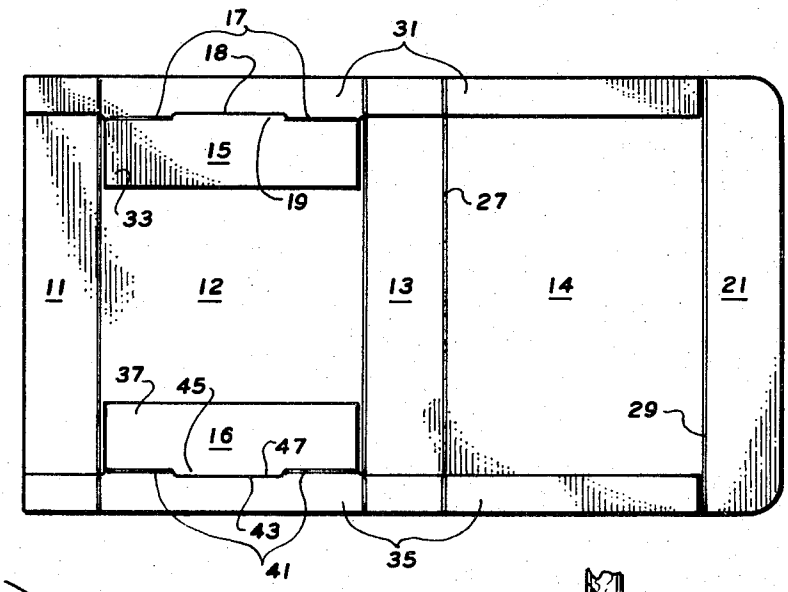


FIG. 3.

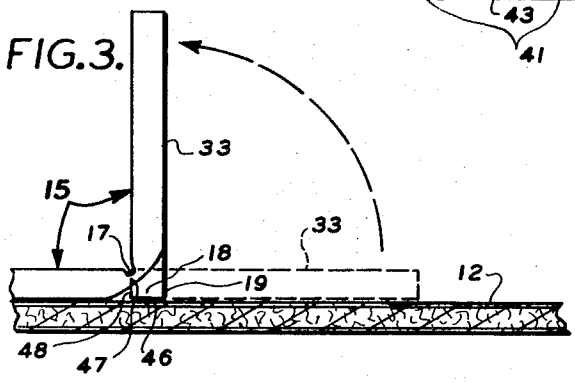


FIG. 4.

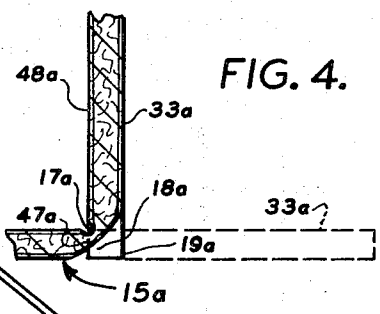
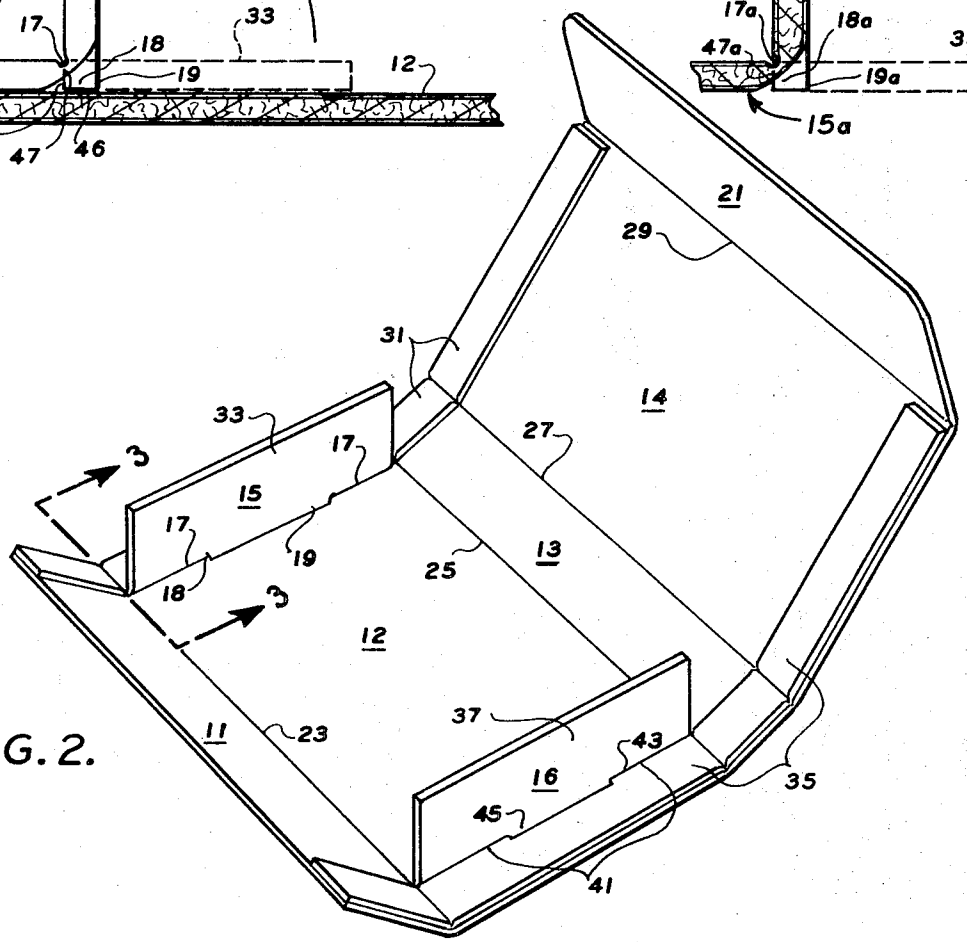


FIG. 2.



CONTAINER WITH FOLDED PANEL PORTIONS

This invention relates to containers or the like and more particularly to containers having panels with portions folded and erected to form the container.

Various containers such as shipping cartons, closed containers or display containers, are manufactured in a flat blank to facilitate shipment and storage. Typically, such containers are comprised of paperboard or corrugated board which is suitably creased, scored, cut or slotted to define fold lines and panels or portions thereof and to facilitate folding and erection of panel portions relative to one another.

Particularly in packaging operations, portions of the panels are often desired to be folded and erected and held in an erected position without an external support such as the packer's hands so that the packaging operation is simplified. In the case of hand packing of shipping containers, free standing folded panel portions allow a packer complete freedom of hands to fill and complete packing and assembling of the container without having to use one or more hands to hold the panels in the upright position. Also in automated packaging operations, the ability of panel portions to be self-sustaining in an upright position makes it unnecessary to design elaborate fixtures to hold them upright thereby greatly facilitating and simplifying the packing operations.

The present invention will be described hereinafter in connection with, although is not limited to, a shipping container for books which has panel portions folded and erected into an assembled condition from a flat blank. The illustrated container is relatively low in cost and simple to manufacture and assemble.

Accordingly, a general object of the invention is to provide an improved container of the foregoing kind.

Other objects of the invention will become apparent to those skilled in the art from the following description, taken in connection with the accompanying drawings wherein:

FIG. 1 is a plan view of a cardboard container constructed in accordance with the invention and in an unassembled condition;

FIG. 2 is a perspective view of the container of FIG. 1 in partially assembled condition; and

FIG. 3 is a sectional view, enlarged, taken along the line 3—3 of FIG. 2;

FIG. 4 is a cross sectional view of a panel having one portion held at angular dispositions by another portion of the same panel and embodying the invention.

As shown in the drawings for purpose of illustration, the invention is embodied in a container having a plurality of panels **11, 12, 13, 14, 15** and **16** erected from a flat blank. The panel **15** has a crease or fold line **17** therein for folding a first portion of the panel away from the panel **12** to extend transversely thereof, as shown in FIGS. **2** and **3.** The panel **15** also has a cut **18** therein offset from and interrupting the fold line **17** to provide an edge projection **19** extending from the folded portion of the panel **15** on the opposite side of the fold line **17** therefrom. In this embodiment of the invention, the projection **19** engages the panel **12** as shown in FIG. **3** and retains the folded portion of the panel **15** in a position transverse to the panel **12.**

More particularly, the illustrated embodiment of the invention comprises a container formed of double faced corrugated board in the general shape of a parallelopipe in which two of the sides are recessed. When in an unassembled condition, the container is comprises of a flat blank having the outline shown in FIG. **1** and comprising a front panel **11,** a bottom panel **12,** a back panel **13,** a top panel **14,** and a top flap **21.** A fold line or crease **23** separates the front panel **11** from the bottom panel **12,** and a fold line or crease **25** separates the bottom panel **12** from the back panel **13.** A fold line or crease **27** separates the back panel **13** from the top panel **14,** and the top flap **21** is joined to the top panel **14** along a fold line **29.**

In unassembled or blank condition, the corrugated board container illustrated is completed by two additional panels **15** and **16** which are planar and which lie flat against the remainder of the blank to form a double thickness. The panel **15** includes a first portion in the form of an elongated strip **31** which extends along the one edge of the flat blank and which is contiguous with a second portion **33** of the panel **15.** Similarly, the panel **16** comprises a first portion in the form of an elongated strip **35** which extends along the edge of the flat blank opposite that from the strip **35** and which is contiguous with a second portion **37** of the panel **16.** As will be explained, the second portions **33** and **37** of the panels **15** and **16,** respectively, are eventually folded upwardly to comprise the sides of the container when the container is in assembled condition.

The panels **15** and **16** are secured to the flat blank by any suitable means, such as an adhesive or staples. Suitable fold lines are provided along the strips **31** and **35** coinciding with the creases **23, 25** and **27** to allow the container to be folded into an assembled condition. The manner of folding is illustrated in FIG. **2,** the container being in a partially assembled condition.

In order to allow the foldable second portion **33** to be folded upwardly from the plane of the paper as shown in FIGS. **2** and **3,** the fold line **17** is provided. A similar fold line **41** is provided between the foldable second portion **37** and the strip **35** in the panel **16.** A cut **18** is provided in the panel **16.** A cut **18** is provided in the panel **15** and interrupts the center portion of the fold line **17.** A similar cut **43** is provided in the panel **16** interrupting the center portion of the fold line **41.** Each of the cuts is offset from the fold line, having a pair of short segments at each end extending transversely to the fold line and having a longer segment joining the short segments and extending parallel with the fold line but spaced therefrom. Each cut therefore provides an edge projection **19** and **45,** respectively. The fold line is interrupted by the cut in each case, that is, the fold line does not extend across the base of the projections **19** and **45** formed by the cuts **18** and **43,** respectively.

As the foldable second portions **33** and **37** and projections **19** and **45** are not adhered to the underlying panel **12,** these second portions **33** and **37** may be folded upwardly as shown in FIGS. **2** and **3.** As is illustrated in FIG. **3,** when the foldable second portion **33** of the panel **15** is folded relative to the first portion **31** to be disposed at an angle thereto, a bottom wall **46** of the edge projection **18** moves into engagement with a panel **12** and aids in supporting the foldable second portion **33** in an upright condition. The cuts are formed so that the projections **19** and **45** extend a slightly greater distance than the thickness of the respective panels **15** and **16.** In this manner, the projections are

forced to have their bottom walls **46** abutted against the bottom panel **12.** Also, as will be explained in greater detail in connection with FIG. **4,** the cuts **18** and **43** form in the first portion a stop wall **47,** which may abut against face wall **48** of the second portion at the projection **19** for holding the second portion erect.

Once the sides of the container are erected to the upright position as shown in FIG. **2,** assembly of the container is readily completed. The container is shown in partially assembled condition in FIG. **2.** To complete assembly, the front panel **11** is moved up so that it abuts the adjacent edges of the sides, and the back panel **13** is moved to a similar condition. The top panel is then pressed downwardly against the top edges of the sides, and the top flap **21** is folded over against the outside of the front panel. The top flap may be secured in such position by any suitable means.

The container of the invention affords a number of significant advantages. The container is rigid, and has strong support for the sides, particularly against forces tending to urge the sides outwardly. This is because of the hinges **17** and **41,** and because of the resistance provided by the inner edge of the strips **31** and **35** once the container is in the assembled condition.

The present invention has been described above in connection with a shipping container for books in which the erected second panel portion **33** or **37** is a portion of a reinforcing strip panel **15** or **16** which is a panel separate from the main blank panel **12.** In other types of containers including display containers, the container may comprise but a single piece blank such as the panel **12** and hence there will not be present an underlying panel against which the bottom wall **36** of the upright second portion **33** may abut so that the entire holding of the second portion **33** in the upright position would be due to the engagement of a stop wall **47** formed by the cutting operation at the cut **18** abutting against face wall **48** of the projection **19** as best seen in FIG. **3.** This will be better understood after consideration of the embodiment of the invention illustrated in FIG. **4** as will be described hereinafter.

In the embodiment illustrated in FIG. **4,** reference characters with the suffix "*a*" added are used to describe a panel **15***a* similar to the panel **15** except that the panel **15***a* may comprise an entire container blank such as the blank **12.** In any event, the panel **15***a* and folded erected panel portion **33***a* lack any underlying panel such as the panel **12** described in connection with FIGS. **1–3.** More specifically, the panel portion **33***a* has a projection **19***a* formed by the cut line **18***a* which is offset relative to the fold line **17***a*. When the cut **18***a* was made, the cut formed a stop wall **47***a* along substantially the length of the cut so that the face wall **48***a* on the upstanding projection **19***a* abuts the stop wall **47***a* to prevent it from pivoting downwardly to a generally flat position. When the panel portion **33***a* is folded, the projection **19***a* is forced through the slot formed by the cut **18***a* with the projection and stop wall **48***a* deflecting and staying in abutting relationship. It is the abutment of the projection **19***a* with the stop wall **47***a* of the first panel portion which holds the second panel portion **33***a* upright thereby eliminating the need for separate fixtures or the use of one's hands when erecting or filling the container. Thus, in each of the above embodiments of invention illustrated in FIGS. **1–3** and FIG. **4,** the ability of the panel portions to stand up independently and without further support, either by fixtures or by hand, simplifies the erecting operation and also facilitates the packaging operation. In the case of hand packing, it allows a packer complete freedom of the hands to complete packing and assembly of the container without having to maintain the sides in an upright position. In automated filling and assembly operations, it is unnecessary to design fixtures for holding a portion of a panel erect. Accordingly, the container of the invention is readily assembled and greatly facilitates and simplifies the packing operations.

It may therefore be seen that the invention provides an improved cardboard container of the type which may be folded into an assembled condition from a flat blank. The container of the invention is relatively low in cost and is simple to manufacture and assemble.

Various modifications of the invention in addition to those shown and described herein will become apparent to those skilled in the art from the foregoing description and accompanying drawings. Such modifications are intended to fall within the scope of the appended claims.

What is claimed is:

1. In a partially assembled container being erected from corrugated board material or like material, the improvement comprising a panel located in a plane, a fold line in said panel dividing said panel into first and second portions, said first portion being folded at said fold line to be disposed angularly relative to the plane of said second portion, one of said portions having a cut therein offset from and interrupting said fold line, an edge projection formed by said cut and extending at said fold line, and a stop wall formed by said cut abutting said edge projection which is projecting angularly relative thereto and holding said first and second portions at said angular disposition against the return of the first portion toward the plane of said second portion.

2. A container in accordance with claim **1** in which a flat, planar second panel is secured to said first panel in face-to-face engagement and in which a bottom wall on said edge projection abuts said second panel to assist in retaining said first and second portions at said angular disposition.

3. A container in accordance with claim **2** in which said edge projection has a height which is larger than the thickness of said panel from which said edge projection is formed to insure abutment with said second panel.

4. A container made of corrugated board or the like comprising a plurality of panels, at least two of said panels being planar and secured flat against and in engagement with each other with said container in an unassembled condition, one of said two panels having a crease therein for folding one part of said one panel away from another part of said one panel and away from the other of said two panels to extend transversely thereof with said container in an assembled condition, said one panel having a cut therein offset from and interrupting said crease to provide an edge projection, said edge projection having a bottom wall formed by said cut, said edge projection extending from said folding part of said one panel on the opposite side of said crease therefrom to engage said bottom wall with said other of said two panels and to retain said folding part in a position transverse to said other of said two panels, and an adhesive means securing said panels flat and in

engagement with each other adjacent the location of said crease and holding them against separation by a force applied thereto by said edge projection.

5. A container according to claim **4** wherein said cut comprises first and second segments transverse to said crease and a third segment parallel with said crease and connecting said first and second segments, said crease being interrupted between said first and second segments.

6. A container according to claim **4** wherein said projection is slightly greater than the thickness of said one panel.

7. A container according to claim **4** wherein said foldable part of said one panel is adapted to extend perpendicularly of the unfolded part with said container in the assembled condition.

8. A partially assembled multi-panel assembly of corrugated board or the like for erection into a container comprising, a plurality of panels including a bottom panel, a pair of planar strips secured at opposite ends of said bottom panel flat against said bottom panel, a pair of sides, each of said sides being planar and being contiguous with a respective one of said strips, means securing first portions of said sides flat against said bottom panel with said container in a partially assembled condition, said sides being joined to said strips at a crease and being folded away from said bottom panel to extend transversely thereof, each of said sides having a cut therein offset from and interrupting said crease to provide an edge projection extending from said side on the opposite side of said crease therefrom, and each of said sides having a free end wall opposite said edge projection, said edge projection abutting said bottom panel and serving as the sole means for retaining the sides in upright position transverse to said bottom panel with said container in a partially assembled condition.

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