United States Patent

Johnson

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[54] ADJUSTABLE CORRUGATED SHIPPING CONTAINER AND/OR ADJUSTABLE CARDBOARD SHIPPING CARTON

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[52] **U.S. Cl.** .....**229/37 R,** 229/41 R

[51] **Int. Cl.** **B65d 5/08**

[58] **Field of Search** .....229/21, 33, 34 B, 37 R, 41 R, 229/41 B; 206/45.21

[56] **References Cited**

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[57] **ABSTRACT**

Each of the four panels, and the upper and lower flaps associated therewith, of a shipping carton incorporate a full height foldable section which enables a selective reduction in the length and/or width of the carton, in conjunction with an increase in the rigidity of the carton and without affecting the ability of the flaps to close and seal the opposed ends of the carton.

1 Claim, 9 Drawing Figures

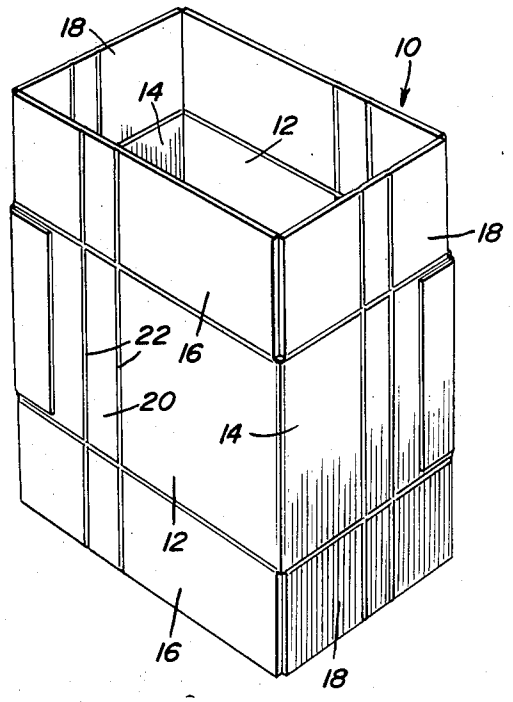


Fig. 1

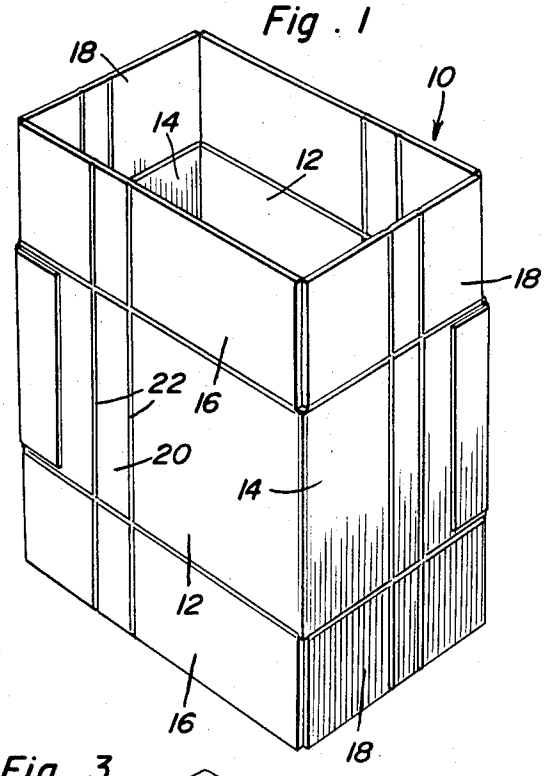


Fig. 2

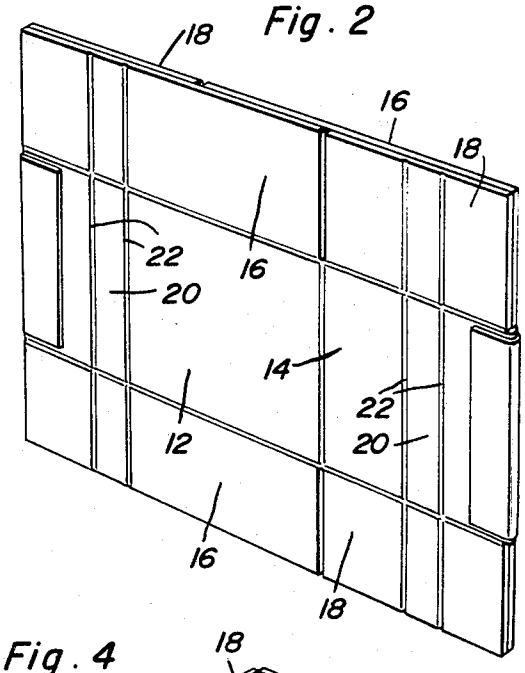


Fig. 3

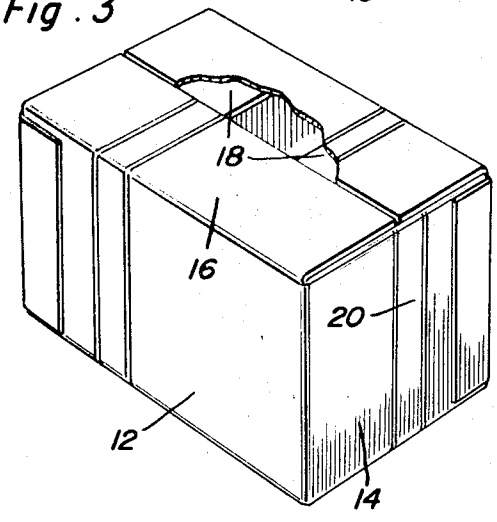


Fig. 4

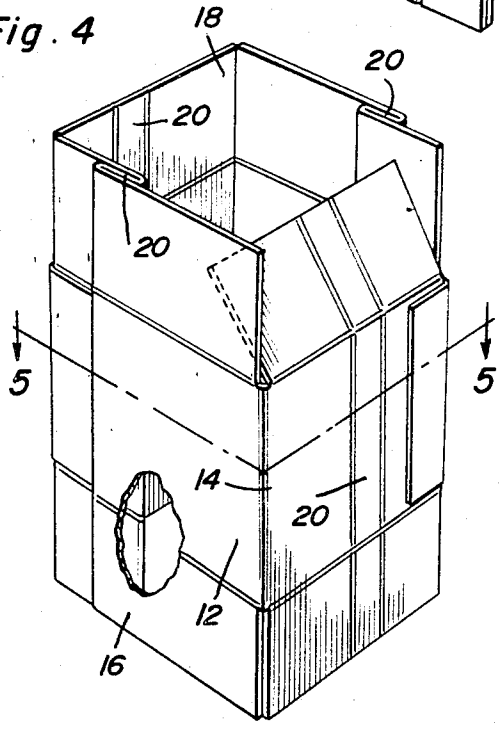
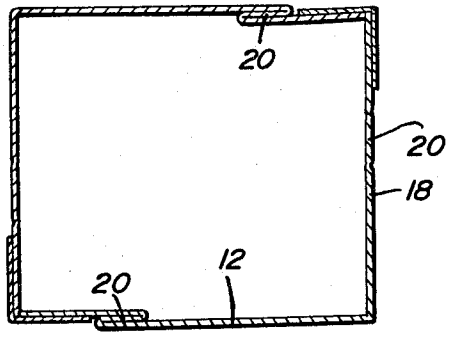


Fig. 5



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Fig. 6

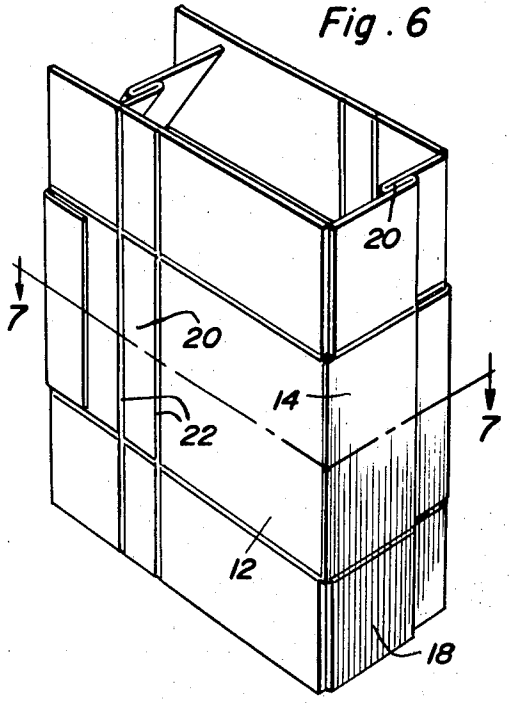


Fig. 7

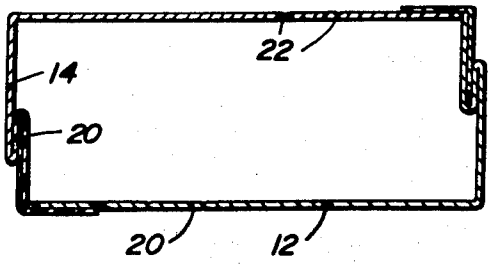


Fig. 8

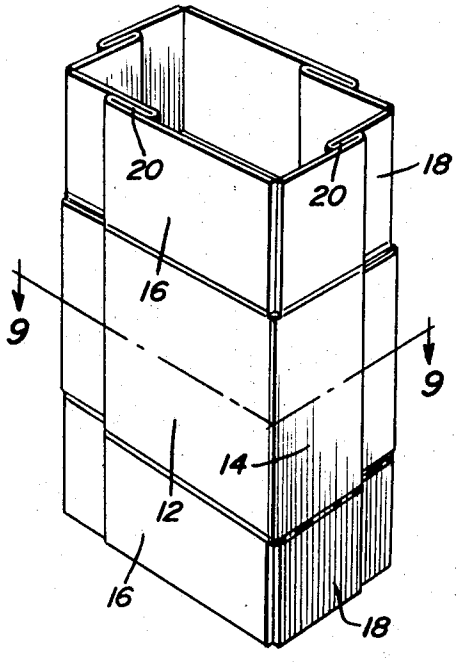
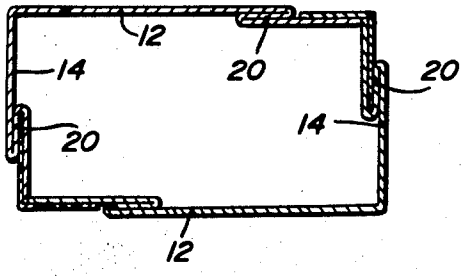


Fig. 9



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ADJUSTABLE CORRUGATED SHIPPING CONTAINER AND/OR ADJUSTABLE CARDBOARD SHIPPING CARTON

The instant invention is generally concerned with shipping containers or cartons of the corrugated/cardboard type, and more particularly relates to a unique carton adjustable both lengthwise and widthwise so as to enable an effective variation in the size thereof for the accommodation of particular size goods.

It is a primary object of the instant invention to provide a shipping container which is adjustable, and more particularly contractible, along both the length and width thereof whereby, through a selective contraction of the carton along the length and/or width, four different sizes of container can be formed.

Likewise, it is a significant object of the instant invention to provide a shipping container which, due to the adjustable nature thereof, enables a manufacturer or user of shipping containers for a variety of different size products to actually stock only one size container with the container easily adapting to a relatively wide range of different size products. The necessity of maintaining a separate stock or inventory of containers for each particular size product is eliminated. By the same token, the carton producer or manufacturer, rather than being required to manufacture cartons for each size product, can standarize his production by producing a relatively small number of different size adjustable cartons, each size being capable of selective adjustment to define three sizes, each smaller than that of the non-contracted basic carton.

In conjunction with the foregoing, it is significant that the adjustable nature of the shipping container can be provided for in a manner which will in no way interfere with the conventional manufacturing processes, requiring only the addition of a step for defining four sets of parallel lines of weakness, by scoring the formation of depressions, or the like.

Also of particular significance in regard to the instant invention is the fact that the manner of contracting the container results in the simultaneous provision of panel and flap rigidifying overlays of material so as to in effect substantially strengthen the container as the size thereof is reduced.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a perspective view of an unfolded and uncollapsed carton constructed in accordance with the instant invention;

FIG. 2 is a perspective view of the carton blank flattened in the normal shipping and storage state;

FIG. 3 is a perspective view of the fully expanded carton of the instant invention with the flaps thereof closed and with a portion of one flap broken away for purposes of illustration;

FIG. 4 is a perspective view of the container of the instant invention wherein the opposed lengthwise panels and associated flaps have been contracted so as to reduce the length of the box;

FIG. 5 is a cross-sectional view taken substantially on a plane passing along line 5—5 in FIG. 4;

FIG. 6 is a perspective view wherein the widthwise panels, and associated flaps, have been contracted or collapsed so as to reduce the width of the box;

FIG. 7 is a cross-sectional view taken substantially on a plane passing along line 7—7 in FIG. 6;

FIG. 8 is a perspective view of the container with all four panels contracted or collapsed so as to reduce both the length and width of the container; and

FIG. 9 is a cross-sectional view taken substantially on a plane passing along line 9—9 in FIG. 8.

Referring now more specifically to the drawings, reference numeral 10 is used to generally designate the shipping container comprising the instant invention. This container includes peripherally arranged panels, normally two lengthwise

or side panels 12 and two widthwise or end panels 14 defining a rectangular carton. Each of the panels 12 and 14 includes integral upper and lower flaps, the side or lengthwise flaps being designated by reference numeral 16 and the widthwise or end flaps being designated by reference numeral 18. The flaps of the adjacent panels are of course independent of each other so as to enable a selective inward folding of these flaps in a conventional manner so as to seal the top and bottom of the formed container.

The invention herein resides in the provision of a full height contractible section 20 extending vertically along each of the panels 12 and 14 and the associated flaps 16 and 18. Each of the sections 20 is defined by a pair of laterally spaced parallel fold lines or lines of weakness 22. These lines 22 can be in the nature of scorelines, grooves formed in one or both faces of the corrugated cardboard, or of any other suitable nature enabling a folding of the material about the lines in conjunction with some degree of rigidity so as not to affect the basic strength of the carton to any substantial degree.

FIGS. 1 and 3 illustrate the fully expanded or non-contracted form of the container 10 in both the open and closed positions thereof, the closing of the container 10 being effected in the conventional manner by a selective folding of the flaps 16 and 18 on each other. Should the container 10 be too long for particular product to be packaged therein, the opposed sides 12, and associated flaps 16 can be collapsed, through the corresponding folding sections 20 associated therewith, as illustrated in FIGS. 4 and 5.

The contracting of the opposed sides of the container 10 is effected by folding each of the associated sections 20 about the corresponding lines of weakness 22 whereby each section 20 overlies one adjacent portion of the corresponding side 12 and underlies the other adjacent portion. Folded in this manner, the fold likewise extending through the corresponding flaps 16, it will be noted that a triple layer of material is provided at the side contracting area with the actual length of the side 12 being reduced by an amount equal to twice the width of the corresponding section 20. In other words, if the section 20 is 5 inches wide, the length of the carton will be reduced 10 inches.

In order to maintain the symmetry of the box, it will of course be appreciated that the opposed sides 12 are both collapsed. Once the sides are collapsed, the carton can be closed in an obvious manner by inwardly folding the top and bottom flaps as suggested in FIG. 4. The contracted flaps 16 will fold in the same manner as the fully expanded flaps with the folded sections extending along both the side panels 12 and the associated flaps 16 adding a substantial degree of additional rigidity thereto, and in fact to the entire carton. Incidentally, as will be appreciated from the drawings, it is contemplated that the opposed sections 20, whether located on the sides 12 or on the ends 14, be laterally offset from each other so as to both distribute the lines of weakness and the ultimate reinforcing strips.

FIGS. 6 and 7 illustrate the carton contracted so as to reduce the width thereof, this being effected by a folding of the sections 20 associated with the end panels 14. The actual collapsing involves a "breaking" of the end panels 14 about the lines of weakness 22 so as to move each of the associated sections 20 between the adjacent overlying portions of the end panel 14 itself, the adjacent portions moving inwardly toward each other. The container, collapsed or contracted in this manner, will similarly fold into a closed container through an inward selective folding of the associated flaps, both the full length side flaps 16 and the shortened end flaps 18.

FIG. 8 and 9 illustrate the container 10 with all of the panels 12 and 14, and the associated flaps 16 and 18, contracted so as to reduce both the length and width of the container 10 while maintaining the height thereof and the ability of the flaps 16 and 18 to fold in the conventional manner. As will be appreciated, the arrangement in FIGS. 8 and 9 actually constitutes the fourth size to which the basic container 10 can be adjusted, this size being both the smallest and the most rigid

due to the provision of the vertical reinforcing areas, due to the folded sections **20**, on each of the four container panels and their associated flaps.

From the foregoing, it should be appreciated that a highly unique adjustable container has been defined, the container being particularly distinct in view of its ability to contract from its full size selectively into three lesser sizes by means of folding sections defined in the peripheral panels and associated flaps.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

I claim:

1. In a shipping container or carton, four rigid vertical panels orientated in two pairs of opposed panels and defining an enclosed rectangular area, each of said panels incorporating means for enabling a selective contracting of the panel whereby a reduction in the size of the container can be effected, said means including an elongated contractable strip defined in and vertically along each panel, each pair of panels being selectively contractable as a unit both independent of and in conjunction with the other pair of panels for enabling a selective reduction in the size of the container in three manners, each of which defines a different size rectangular area, each of said panels being provided with an integral flap at both the top and bottom thereof, the flaps of each opposed pair of panels folding inwardly toward each other and defining closures for the top and bottom of the container, the strip associated with each panel extending through the associated flaps for enabling a selective contracting thereof in conjunction with a contracting of the corresponding panel.

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