Feb. 13, 1968 J. A. McKELLICK 3,368,736

CARTON CORNER REINFORCEMENT

Filed Feb. 1, 1966

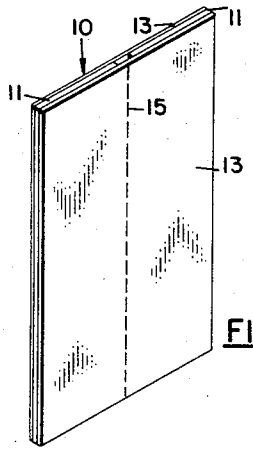

FIG. 1

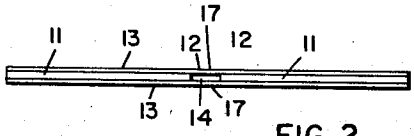

FIG. 2

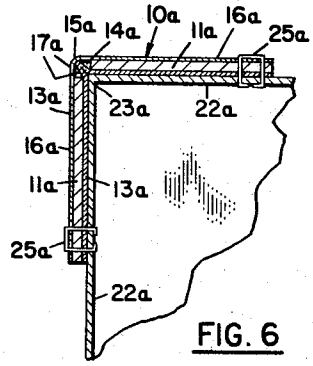

FIG. 6

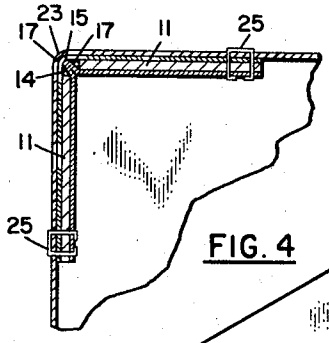

FIG. 4

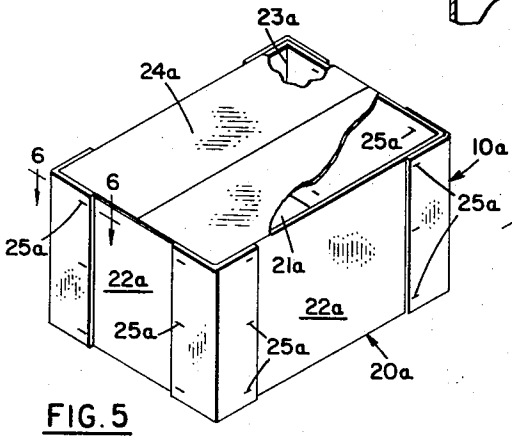

FIG. 5

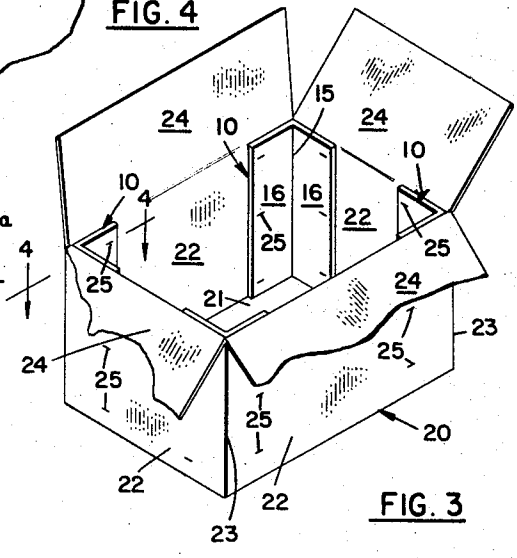

FIG. 3

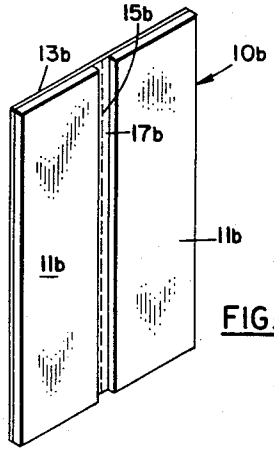

FIG. 7

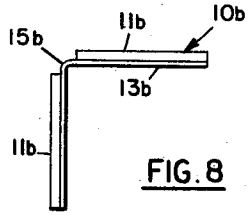

FIG. 8

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United States Patent Office 3,368,736
Patented Feb. 13, 1968

3,368,736

CARTON CORNER REINFORCEMENT

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Filed Feb. 1, 1966, Ser. No. 524,091
7 Claims. (Cl. 229—49)

ABSTRACT OF THE DISCLOSURE

A carton formed from a blank to provide a unique corner reinforcement or support for use therein, which assures effective protection of the carton contents under conditions of handling in transit and storage, therefor enabling a substantial number of these cartons to be safely stacked one upon the other without danger of collapse.

This invention relates generally to packaging, and is especially concerned with improvements in cartons and the like.

As is well known to those versed in the art, cartons, such as of corrugated board, or other paperboard containers are presently being employed in the packaging of an increasing variety of articles, including larger and heavier articles than heretofore packaged in this manner. While corrugated containers or cartons are admirably well suited for a great variety of usages, certain shortcomings have been found in the packaging of extremely heavy articles, such as machine parts, and others. To satisfactorily package such heavy parts, and insure adequate protection thereof in transit and storage, it has heretofore been necessary to utilize heavier board stock in the carton construction.

Accordingly, it is an important object of the present invention to provide unique improvements in carton constructions whereby relatively heavy, fragile and other articles of contents requiring high protection, may be safely packaged in cartons of relatively lightweight card stock, to achieve substantial savings in cost.

It is a more particular object of the present invention to provide a unique corner reinforcement or support for use in conjunction with a carton construction, which assures effective protection of the carton contents under conditions of handling in transit and storage, and which enables a substantial number of cartons to be safely stacked one upon the other without danger of collapse.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings:

FIGURE 1 is a perspective view illustrating a corner reinforcement or support constructed in accordance with the teachings of the present invention;

FIGURE 2 is a top view of the reinforcement of FIGURE 1;

FIGURE 3 is a top perspective view showing a container in open condition and illustrating in operative association therewith the utilization of corner reinforcements or supports in accordance with the instant invention;

FIGURE 4 is a partial horizontal sectional view taken generally along the line 4—4 of FIGURE 3;

FIGURE 5 is a top perspective view illustrating another slightly modified embodiment of corner-reinforced carton constructed according to the present invention;

FIGURE 6 is a partial sectional view taken generally along the line 6—6 of FIGURE 5;

FIGURE 7 is a top perspective view illustrating a further embodiment of corner protector or reinforcement of the present invention; and

FIGURE 8 is a top plan view of the corner protector of FIGURE 7 illustrating a bent condition thereof.

Referring now more particularly to the drawings, and specifically to FIGURES 1 and 2 thereof, a corner reinforcement or protector is there generally designated **10**, and includes a pair of relatively stiff panels or boards **11** which may be fabricated of suitably stiff card stock or other material, as desired. The boards **11** may be substantially identical, of generally rectangular, congruent configuration, and arranged in longitudinally extending or side-by-side, spaced relation. Thus, the boards **11** are longitudinally coextensive with their inner or adjacent edges **12** in adjacent, facing, spaced relation. In practice, it has been found advantageous to fabricate the boards **11** of several plies of card stock.

As illustrated in FIGURES 1 and 2, the boards **11** are generally coplanar, and a pair of relatively flexible connection sheets **13** are adhesively secured in facing engagement with the boards, on opposite sides thereof, each sheet extending across or bridging the space **14** between the boards. More specifically, each sheet **13** may be of flexible paper stock, having a generally rectangular-outline configuration substantially identical to the combined outline configuration of the pair of boards **11** and laminated to or otherwise adhesively secured in facing engagement with one pair of coplanar faces of the boards. Thus, the boards **11** are both sandwiched between the pair of sheets **13**; and, the peripheral edges of the sheets **13** may be substantially flush with the outer edges of the boards.

By this construction, the boards **11** have their faces protectively covered and are connected together for relative swinging movement, the flexible covering sheets **13** defining a hinged connection, as along the fold line **15** extending longitudinally of the space **14**.

A carton is generally designated **20** in FIGURE 3, and is shown for purposes of illustration as being generally rectangular in configuration, but may be otherwise, if desired. The carton **20** includes a generally rectangular bottom **21**, and upstanding side walls **22** extending along respective side edges of the bottom. The side walls **22** may be generally rectangular, each adjacent pair of side walls intersecting at a generally vertical meeting edge or corner **23**. Connected to the upper edges of the side walls **22** may be top flaps **24** swingable into overlying relation with the bottom **21** to define a top for the carton **20**. As thus far described, the carton **20** may be substantially conventional.

However, located interiorly of the carton **20**, adjacent to each carton corner **23** is a corner protector or reinforcement **10**. Each corner reinforcement **10** is folded along its medial fold line **15** to define of the reinforcement a pair of angulately connected panels **16**. In the illustrated embodiment, the panels **16** of each corner protector **10** are disposed normal to each other, the panel hinge connection **15** extending closely along the respective carton corner **23**, and the panels being in facing engagement with adjacent portions of respective carton sides **22**. As seen in FIGURE 3, the corner protector **10** is vertically coextensive with the carton sides **22**, extending between the carton bottom **21** and the carton top when the flaps **24** are closed.

If desired, the corner protectors **10** may be effectively secured in their facing engagement with the interior surfaces of carton sides **22**, as by staples **25**, best seen in FIGURE 4. Of course, other suitable securing means may be employed, such as adhesive, or other.

In FIGURE 4 it will also be seen the configuration of hinged joint **15**, wherein the connection-sheet material **17**

on the inner side of the boards **11** is folded into the space **14** between the boards to engage the connection-sheet portion **17** of the outer sheet **13** and maintain the latter distended toward the carton corner **23**. Thus, not only are the carton walls **22** reinforced by the relatively stiff boards **11**, but the carton corner folds **23** are effectively reinforced by the hinged board-connecting portions **17**.

A similar carton is shown in FIGURE 5, there being generally designated **20***a*, and including a bottom **21***a*, upstanding sides **22***a* extending along respective sides of the bottom and intersecting at corners **23***a*. A carton top **24***a* is spaced over the carton bottom **21***a* and extends between the sides **22***a*. A plurality of corner protectors **10***a* are folded into their angulate relation and disposed exteriorly of respective carton corners **23***a* and in facing engagement with adjacent portions of the carton sides **26***a*. This modification is shown in greater detail in FIGURE 6, the boards **11***a* being sandwiched between covering connecting sheets **13***a*, the boards being spaced apart, as at **14***a* and the sheet portions **17***a* between the boards defining a hinged connection **15***a*. In the right-angular relationship of panels **16***a*, each being disposed in facing engagement with the exterior of a respective carton wall **22***a*, and the hinged connection **15***a* extending along the carton corner **23***a*, the protector may be suitably secured to the carton, as by fasteners **25***a* or other securing means, such as adhesive, straps, or other.

Here again, the protectors **10***a* are advantageously vertically coextensive with the carton corners **23***a*, so as to provide effective vertical stacking support, as well as lateral protection. Also, the inner connection-sheet portion **17***a* is folded into the space **14***a* between the boards **11***a*, with its fold engaging the inner side of the sheet portion **17***a* of the outer connection sheet to maintain the latter distended and afford effective protection to the carton corner **23***a*.

It will also be appreciated that the corner protectors, when secured by strapping, serve to protect the carton corners from being crushed or indented by the strapping. For such purpose the protective corners may be employed over horizontal as well as vertical corners of the carton.

While the corner protectors **10** and **10***a* have been illustrated as employing a pair of outer covering or sandwich sheets **13**, it is appreciated that a corner protector of the present invention may be employed utilizing only a single outer or covering sheet. Such a modification is shown in FIGURES 7 and 8, wherein a corner protector **10***b* includes a pair of relatively stiff panels or boards **11***b* of generally congruent rectangular configuration and arranged in side-by-side, longitudinally coextensive adjacent, spaced relation. As illustrated in FIGURE 7, the panels **11***b* are generally coplanar, and a single connection sheet **13***b* is secured, as by adhesive or other suitable means, in facing engagement with one pair of coplanar faces of the boards. The connection sheet **13***b* is advantageously of a rectangular-outline configuration substantially congruent to that of the combined outline configuration of boards **11***b*, so that the edges of sheet **13***b* are flush with the outer edges of boards **13***b*. In this manner, the boards **11***b* are connected together by a relatively flexible hinge **15***b* defined by the portion **17***b* of sheet **13***b* intermediate the boards **11***b*. By this hinged connection, the boards **11** are swingable relative to each other, say to the condition shown in FIGURE 8, wherein the sheet **13***b* is on the inner side of the angulate arrangement of boards. The boards **11***b* are also swingable relative to each other

to place the connection sheet **13***b* on the outer side of the angulate board configuration.

The corner protector **10***b* may be employed in conjunction with cartons in substantially the same manner as described in connection with the corner protectors **10** and **10***a*, to achieve many of the same advantageous results.

From the foregoing, it is seen that the present invention provides an improvement in cartons which fully accomplishes its intended objects and is well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. The combination with a carton including a generally polygonal bottom, a plurality of upstanding sides extending along respective side edges of said bottom and intersecting with each other to define upstanding corners, and a top spaced over said bottom and extending between said sides; of a corner reinforcement comprising a pair of relatively stiff boards each having at least one straight side edge and arranged with their straight side edges in generally parallel adjacent spaced relation, and a pair of relatively flexible connection sheets extending across the space between said boards and each having one face secured in facing engagement with both of said boards, said boards being located in respective facing relation with respect to an adjacent pair of carton sides with said connection sheets extending about the corner defined by said pair of carton sides, at least the inner of said sheets having a fold line spaced medially between said boards and being folded therealong into the space between said boards and abutting against the outer of said sheets, for mutual reinforcement thereof.

2. The combination according to claim **1**, in combination with securing means securing said boards in said respective facing relation.

3. The combination according to claim **1**, said pair of boards being generally coextensive with the adjacent corner, for both lateral and vertical reinforcement thereof.

4. The combination according to claim **3**, said boards being interiorly of said corner.

5. The combination according to claim **3**, said boards being exteriorly of said corner.

6. The combination according to claim **3**, said boards being generally rectangular, and said connection sheet substantially completely covering the faces of said boards.

7. The combination according to claim **6**, said connection sheet being adhesively secured to said boards.

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