

A REINFORCED CORNER CARTON

FIELD OF INVENTION

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The present invention relates to a packaging container and more particularly, to a carton with a plurality of reinforced corners.

BACKGROUND OF THE INVENTION

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Goods to be transported by ships, truck, trains or the like frequently are packed on cartons. Such packed goods or material, further, may be wrapped in a stretch film in order to protect the material from damage caused by, for example, shifting on a pallet or being bumped by goods on adjacent pallets. During process of the film stretching, a relatively higher holding
15 force from the stretch film will apply to the carton corners compared to other areas around the carton. This can cause the carton corner to collapse easily. When the carton corners collapsed, the whole carton may be starting to collapse due to lacking support.

Thus, it is important to provide improvements in order to ensure contents within the carton that can be heavy and fragile or other contents that requiring high protection may be safely
20 packaged in the cartons. Besides that, the collapsed carton is highly undesirable because it could be affected appearance of the packaging.

Many different types of way to reinforce the carton corners have been disclosed. One of the examples is US 3368736 A which has disclosed a corner reinforcement or protector which may be fabricated of suitably stiff card stock or other material as desired. The reinforcement
25 or protector attached to each corner in a box to protect the corners. 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 the corner reinforcement comprising a pair of relatively stiff boards each having at least one
30 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 there along into the space between said boards and abutting against the outer of said sheets, for mutual reinforcement thereof. However, the prior art mentioned above will increase the manufacturing cost due to the use of extra material to make the reinforcement or protector.

Therefore, the present invention aims to provide a unique corner reinforcement for use to assure effective protection of the carton or carton contents under conditions especially in film stretching process. The present invention also is to find a low cost solution and ease solution for the problem mentioned above.

SUMMARY OF THE INVENTION

In one embodiment of the invention provides a carton made of a foldable material comprising: a plurality of reinforced corners, in which at least one of the corner is folded inwardly to form a flap, wherein the flap is formed by folding the foldable material along at least three crease lines; and a top and bottom covers each having an inner surface shaped in way to accommodate the flap, wherein the flap cooperates with the top and bottom covers to strengthen the corners. Moreover, all the corners of the carton can be formed from a single sheet material.

The flap can be held together by a fastening mechanism. Preferably, the flap may be formed two same or /and acute angles with the corresponding corner.

The top and bottom covers may be formed as separate pieces unit. Preferably, the inner surface of the covers can made of a shock absorbing material.

Further, the carton comprises one corner which is formed by overlapping two edges of the foldable material and held together through the fastening mechanism.

The present invention consists of features and a combination of parts hereinafter fully described and illustrated in the accompanying drawings, it being understood that various changes in the details may be made without departing from the scope of the invention or
5 sacrificing any of the advantages of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some embodiments of the present invention, a more
10 particular description of the invention will be rendered by references to specific embodiments thereof, which are illustrated in the appended drawings. It is appreciated that these drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the accompanying drawings in which:

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Figure 1 shows an exploded view of a reinforced corner carton.

Figure 2 shows the carton flaps insert into the U-shape slots at bottom cover.

20 Figure 3 shows a detailed cross sectional view of flaps inserted into the U-shape slots.

DETAILED DESCRIPTION OF THE INVENTION

This invention relates to a packaging container and more particularly, to a carton with a
25 plurality of reinforced corners. The present disclosure concerns a carton preferably, made of paper material such as cardboard or other like foldable material, having at least one of shock absorbing material such as a polystyrene foam for the cushioning an air conditioning systems such as an air conditioning outdoor unit, or other products.

30 The carton is generally designated in Figure 1, and is shown for the purpose of illustration as being generally rectangular in configuration, but may be otherwise, if desired. The carton includes a plurality of upstanding side walls (2), and a rectangular top (1) and bottom covers

(3). Each adjacent pair of the side walls (2) is intersecting at a generally perpendicular meeting edge or corner. The side walls are preferably made of a single sheet of material folded to form a single layer rectangular tube (11). It is also being understood that the top or bottom cover may be formed of the single sheet of material together with the tube. The tube is having a top and bottom openings. The top (1) and bottom covers (3) each is having two block-like shock absorbing material (5, 6) at the inner sides of the covers (1, 3). The dimensions, features and shape of the blocks (5, 6) can be sized and configured to accommodate a particular product such as air conditioning outdoor unit.

Although the side walls (2) made from the single sheet of material is being described and illustrated, more than one sheet of material may be used to make the side walls in accordance with the present invention. For example, the side walls (2) can be formed from two sheets of materials by applying an adhesive or using other fastening mechanism to join the two materials at their edges. The joined material can be then folded into the rectangular tube.

Furthermore, although the side walls (2) in a single layer wall is being described and illustrated, double and more walls may be used to harden the carton. However, it can be understood that had difficulty to fold the multiple walls into the flap and manufacturing cost will be increased.

Shown generally in Figure 2 is a detailed view of the blocks (5, 6) inserted in the bottom cover (3) that is shown at in Figure 1. Each block comprising two concave corners being configured as U-shape slots (6), in which the position of each slot (6) shall correspond to corners of the covers. It is also being understood that the top or bottom cover may be integrally made of the block.

As shown in Figure 1 and 2, located at the interior of the carton, adjacent to each carton corner is a double layer flap (7, 8, 9). Each flap (7, 8, 9) is formed by fan-folding along three parallel lines along the corner to define the double layer flap with three crease lines. The flaps (7, 8, 9) are vertically extending with the carton sides from the top to bottom openings. The flaps are advantageously vertical coextensive with the carton corners, so as to provide effective vertical stacking support, as well as lateral protection. However, for ease of manufacture, one of the corners is formed by overlapping two edge of any two side wall

through a fastening mechanism such as stapling. Thus, the carton has three double layer flaps (7, 8, 9) and a double side wall (10).

If desired, the double layer flaps (7, 8, 9) may also be effectively secured in their facing engagement, as by staples. Staple is the most preferable securing method. This is because the staple is able to attach multiples paper together at the same time and not easily to detach or affect by temperature and humidity. Thus, staples provide an inexpensive, quick and secure way of tagging the flaps (7, 8, 9). It will be appreciated that the flaps (7, 8, 9), when secured by stapling, serve to protect the carton corner from being crushed or indented. Of course, other suitable fastening mechanism may be employed, such as adhesive, or other.

Although the U-shape slots (6) is being described and illustrated, various shape other than U-shape, providing that the shape of the slot is able to accommodate the flap when the top and bottom covers are housing over the top and bottom openings of the tube. For example, each corner of the foam may comprise a C-shape slot. However, the other shapes of the slot must be able to accommodate the double layer flaps (7, 8, 9) when the top cover (1) and bottom cover (3) are closing the top and bottom openings of the tube (11).

In other aspect, a triple layer or multilayer flap formed by fan-folding more than three parallel lines may be employed in conjunction with the cartons by similar manner as described in any of the preceding description, to achieve many of the same advantageous results. There is additional benefit. The increased number of layer of the flap provides an additional reinforcement on the carton corners.

An alternative embodiment of the invention, which is similar to the carton shown in Figure 1, is described in the following description, there being designed, and including upstanding wall sides with intersecting corners, a bottom cover (3) and a top cover (1). The side walls (2) are made of a single sheet of material. The top (1) and bottom covers (3) are formed as two separate piece units. Each of the covers has at least one foam block with U-shape slot (6) corners. A plurality of double layer flaps (7, 8, 9) is formed by fan-folding to define three crease lines and disposed inwardly of respective carton corners and each layer of the flap in facing engagement with each other. A modification in one of the corners is formed by folding one edge of two side walls into an angulate relation and disposed inwardly to the

carton corner and in facing engagement with each other. Thus, the cartons contained four double layer flaps. The flaps may be suitably secured by fasteners or other securing means, such as adhesive, or other.

- 5 To assemble the carton, the bottom opening is closed by the bottom cover (3), the flap of each corner will insert into U-shape slot (6) of the block at bottom cover. Next, the top opening is closed by the top cover (1). The block located at top side with same U-shape slot (6) will be inserted into the flaps (7, 8, 9). All corners with the flaps (7, 8, 9) will be fixed position into U-shape slot (6) on the foam located at top (1) and bottom covers (6) of as shown in detail in
- 10 Figure 3. Cooperation of the flaps (7, 8, 9) and foams will be able increase the strength of corner in a situation such as withstanding the compression strength generated from the film stretching process in logistic handling. During process of the film stretching, a uniform and relatively high holding force that stretch film applies to the carton especially for the carton corners. The present of the slots that accommodated the flaps (7, 8, 9) will hold the flaps (7,
- 15 8, 9) in position to withstand the holding force. Besides that, the reinforced corner also can withstand some other forces acted to the carton in many other conditions such as transit and storage, therefor enabling a substantial number of the cartons to be safely stacked one upon the other without danger of collapse.
- 20 From the foregoing, it can be 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. As compared with the option of having addition reinforcement parts insert or attach to the carton corner, the use of the flaps (7, 8, 9) and the slots (6) formed from only those material originate from the carton in packaging is the most
- 25 vulnerable reduces the cost.

In addition, the weight of the carton is not markedly increased for this invention. So, the shipping weight, and therefore the shipping cost, of the unit are not marked by the present of the flaps and slots to reinforce the carton corner.

- 30 The present invention may be embodied in other specific forms without departing from its essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore indicated by the

appended claims rather than by the foregoing description. All changes, which come within the meaning and range of equivalency of the claims, are to be embraced within their scope.

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CLAIMS

1. A carton made of a foldable material comprising:
a plurality of reinforced corners, in which at least one of the corner is folded inwardly
5 to form a flap (7, 8, 9), wherein the flap (7, 8, 9) is formed by folding the foldable
material along at least three crease lines;
a top (1) and bottom covers (3) each having an inner surface shaped in way to
accommodate the flap (7, 8, 9) and hold the flap (7, 8, 9) in position;
wherein the flap (7, 8, 9) cooperates with the top (1) and bottom covers (3) to
10 strengthen the corners.
2. A carton according to claims 1, wherein the flap (7, 8, 9) is held together by a
fastening mechanism.
3. A carton according to claims 1 or 2, wherein two angles between the flap (7, 8, 9) and
the corresponding corner are same and/or acute angles.
- 15 4. A carton according to any one of claims 1 to 3 further comprising one corner which is
formed by overlapping two edges of the foldable material and held together through
the fastening mechanism.
5. A carton according to any one of claims 1 to 4, wherein the inner surface is made of a
shock absorbing material.
- 20 6. A carton according to any one of claims 1 to 5, wherein all the corners of the carton
are formed from a single sheet material.
7. A carton according to any one of claims 1 to 6, wherein the top (1) and/or bottom
covers (3) are formed as separate pieces unit.

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