Sept. 18, 1962 O. M. GOLDRING 3,054,527

KNOCK DOWN BOTTLE CARTON CONSTRUCTION

Filed May 28, 1959 2 Sheets-Sheet 1

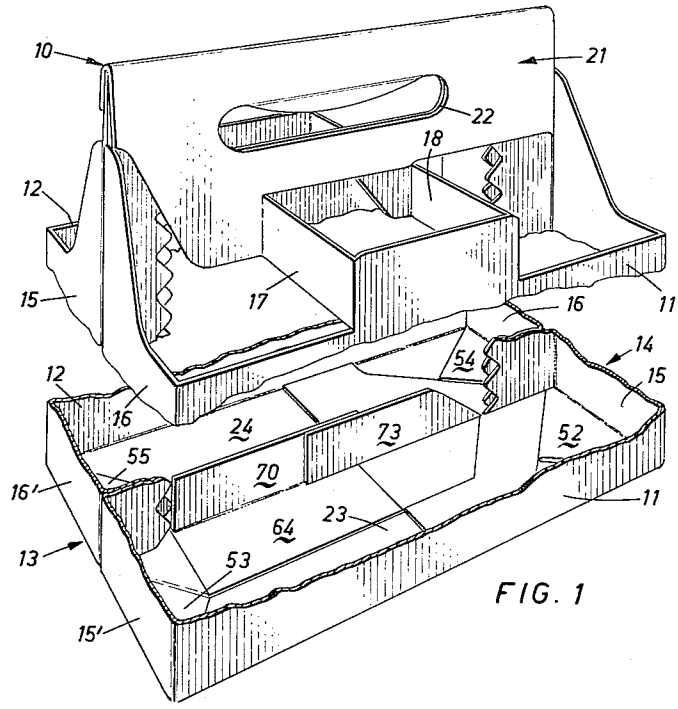


FIG. 1

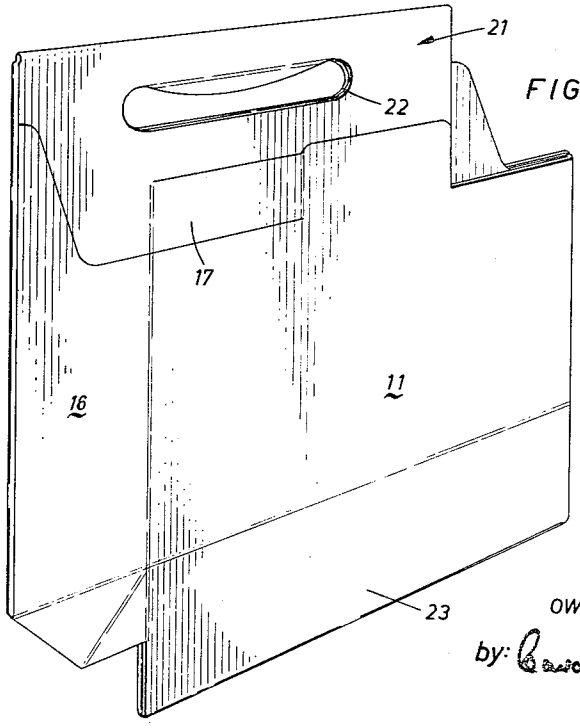


FIG. 2

Inventor
OWEN M. GOLDRING
by: Cushman, Darby & Norman

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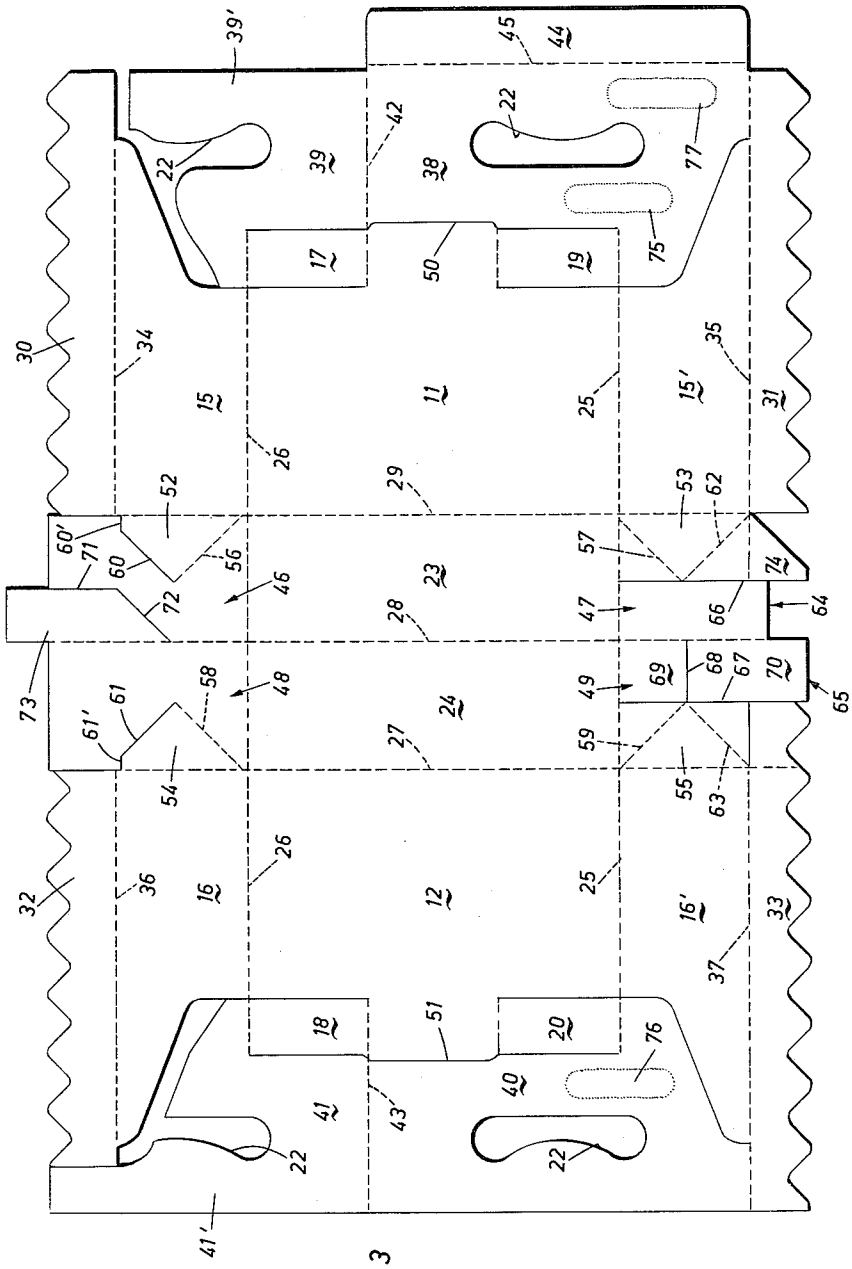


FIG. 3

Inventor
OWEN M. GOLDRING

by: Bacon & Thomas

United States Patent Office

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KNOCK DOWN BOTTLE CARTON CONSTRUCTION

Owen Macdonald Goldring, 915 Henry St., Whitby, Ontario, Canada

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This invention relates to knock down bottle cartons.

In the construction of bottle cartons it is necessary to produce a light-weight carton which is economical in materials and yet which possesses sufficient strength in the in-use position to support a number of filled bottles. It is also desirable that the carton should be one which can be folded so that a number of cartons may be stored in a small space. To use the cartons, they should be easy to set up without additional gluing or stapling.

Attempts have been made to produce cartons of fairly thin cardboard but this has resulted in a loss of strength when the carton is in the set-up position. Particularly it has been found that the bottom of such cartons tends to be weak and that when bottles (usually but not necessarily six) are placed in the carton there is a tendency for the centre to collapse imposing additional strain on the carton resulting in eventual rupture of the base.

The present invention envisages a carton construction provided with strengthening portions for the base which in turn permits the use of slightly thinner stock and utilizing a carton blank of somewhat smaller total area whilst at the same time permitting easy folding of the carton for storage purposes.

It is amongst the objects of this invention to provide a knock down bottle carton construction which may be made of comparatively thin cardboard or the like and which possesses relatively good strength features in its set-up position.

It is further amongst the objects of this invention to provide a knock down bottle carton construction possessing improved economy in the size of the carton blank.

It is further amongst the objects of this invention to provide a knock down bottle carton which may be folded flat and which is readily opened to a set-up position.

Further objects and advantages of the invention will become apparent from a consideration of the drawings in which:

FIGURE 1 shows a perspective view of a carton of the invention being partially broken away to show the construction at the bottom thereof.

FIGURE 2 shows a carton in its folded position.

FIGURE 3 shows a carton blank of the invention.

Referring now to the drawings, there is shown generally a carton 10 having side walls 11 and 12 and end walls 13 and 14 comprised of flaps 15 and 16. Cross partition members 17, 18, 19 and 20 are provided and are joined between the side walls 11 and 12 and the centre divider 21 which also forms the carrying handle portion and is provided with cut out portion 22. As can be seen from FIGURE 2, the carton is capable of being folded by collapsing side walls 11 and 12 parallel with centre divider 21.

Referring now to FIGURE 3, it will be seen that the carton blank is constructed in one piece. The side walls 11 and 12 and base portion comprising sections 23 and 24 are defined by parallel spaced apart lines of fold 25 and 26. The portions 23 and 24 are also defined by lines of fold 27 and 28 and 29. The end flaps 15 and 16 and 15' and 16' are provided with additional joining tabs 30, 31, 32 and 33 defined by lines of fold 34, 35, 36 and 37. The centre divider 21 is formed of portions 38, 39, 40 and 41. Portions 38 and 39 are separated by line of fold 42 which extends to define the juncture

of cross partition member 17 with side wall 11. Similarly line of fold 43 divides sections 40 and 41 and defines the juncture of cross partition member 18 with side wall 12. Cross partition members 17 and 19 are divided from portions 38 and 39 by line of cut 50 and portions 18 and 20 are divided from portions 40 and 41 by line of cut 51. Portions 39 and 41 serve the dual function of supporting cross partition members 17 and 18 and when folded along the lines of fold 42 and 43 serve to strengthen the centre divider 21 in the manner to be described hereinafter. Sections 38, 39, 40 and 41 are provided with cut out portions corresponding to cut out portions 22 to form a finger space for the purpose of carrying the carton. Additional material is saved by forming extra handle strengthening portions 39' and 41' from portions of flaps 39 and 41 within the overall dimensions of the blank thus obviating the necessity of providing an additional flap similar to flap 44 which would result in an increase in the overall dimensions of the carton blank with attendant wastage of material. Portion 38 is provided with flap 44 defined by line of fold 45.

In order to provide base strengthening means, the base portions 23 and 24 are provided with outwardly extending flap portions generally defined by fold lines 25 and 26 and extensions of folds lines 27, 28 and 29. These flap portions generally designated 46, 47, 48 and 49 are provided with further folds and cuts to define irregular shaped but interlocking tab means in the manner hereinafter described in further detail.

Portions 46, 47, 48 and 49 form the base strengthening flaps and are further divided by being provided with substantially triangular portions 52, 53, 54 and 55. Each of these triangular portions has its base defined by one of the extension lines of fold 28 or 29. The depth of the triangular portion is approximately half that of the flaps 46, 47, 48 and 49 and the inner side of each portion is defined by fold lines 56, 57, 58 and 59 extending at substantially 45 degrees from the junction of fold lines 26 and 29; 25 and 29; 26 and 27; and 25 and 27 respectively. In the case of portions 52 and 54, the remaining side is defined by cut lines 60 and 61, the major portion of which is at right angles to fold lines 56 and 58 respectively. It will be noted that to gain additional strength, fold lines 56 and 58 may be extended to be a little longer than fold lines 57 and 59 and additional cut lines 60' and 61' are provided parallel with lines of fold 34 and 36 and placed slightly inside lines of fold 34 and 36 to permit clearance when the carton is set up in the manner hereinafter described. In the case of flaps 53 and 54, the remaining sides are completed by fold lines 62 and 63 at right angles to lines 57 and 59.

The central portions 64 and 65 of flaps 47 and 49 are further separated by cuts 66 and 67. Lateral cut 68 further divides flap 65 into two portions 69 and 70 and cut lines 71 and 72 form a tab portion 73 in flap 46 for purposes which will become apparent as the description proceeds.

In order to consider the functions of the various parts of the carton in further detail, it is convenient to consider the folding and assembly of the carton:

Stage (1).—Flaps 64 and 65 are folded inwardly, fold 25 and portions 64 and 69 are fixed to base portions 23 and 24 respectively by any suitable means, for example, gluing.

Portions 39 and 41 are bent along fold lines 42 and 43 and are fixed to portions 38 and 40.

Stage (2).—The portions outside fold line 26 are folded inwardly towards the centre, along line 26. The central flaps 46 and 48 except for portions 52, 54 and 73 are fixed as by gluing.

Stage (*3*).—Portions **31**, **33** and **74** are folded inwardly along fold lines **35** and **37**.

Stage (*4*).—Adhesive is applied to the upper overlapping portion of flaps **70** and **73** and embossed portions **75** and **76**. It will be noted that embossed portions **75** and **76** are pressed into the blank and are of a thickness approximately equal to the blank, thus compensating for the thickness of portions **39** and **41** ensuring that a better glue contact will be made. In this way a more uniform distribution of the glued portions of the handle section is obtained which minimizes failure and tearing of the handle section in transport.

Stage (*5*).—The blank is then folded along line **28** and the reverse of portions **30** and **32**, **31** and **33** and **74** and **63** are joined together in any convenient manner as by gluing.

Stage (*6*).—Finally flap **44** is folded over along fold line **45** and fixed in any convenient manner.

The carton is now carefully assembled in its flat position. Simple pressure at the edges will serve to bring the carton into its set-up position.

Referring now to FIGURE 1, the strengthening portions in the base can be clearly seen and it will be noted that when bottles are placed in the carton, the base of each bottle will rest at least on a portion of one of the strengthening members, thus aiding in maintaining the carton in its set-up position.

In this way it will be noted particularly that the corner bottles will rest respectively on portions **52**, **53**, **54** and **55**, all of which are direct extensions of end portions **15**, **15'**, **16**, **16'**, and thus the corner bottles at least in part exert direct pressure on the vertical end walls of the carton rather than on the bare flaps.

Moreover, it will be noted that the extensions **46**, **47**, **48** and **49** serve to reinforce the lateral and longitudinal rigidity of the carton in its set-up position.

In addition, it will be noted that the fastening of flaps **70** and **73** causes these flaps when the carton is set up to stand vertically providing a central dividing portion separating the bases of the bottles in the same manner as divider **21** and preventing the tendency of them from sliding towards the centre of the carton. Thus the weight of the bottles is more uniformly distributed and they are prevented from banging together in transport.

In this regard it will be noted that flaps **70** and **73** are formed on opposite sides of central line of fold **28**, thus ensuring that the centre section will stand upright when the carton is set up.

It will be appreciated that in any carton construction of the type contemplated in the instant invention, it is feasible in many cases to join respectively parts together by means other than gluing and that in reading the specification, the term "gluing" be construed to mean gluing or any other suitable means.

The carton blank shown and described is constructed in the normal manner, i.e., the fold lines, cuts and embossing are all placed in the blank before any of the stages of assembly are undertaken. It will be further noted that the edges of portions **30**, **31**, **32** and **33** may be serrated thus permitting a saving of material in cutting out adjacent blanks whilst maintaining the width of the bottle supporting flanges formed by these portions.

It will be appreciated that variations and modifications may be made both in relation to the size and configuration of the various cut and fold lines without departing from the scope of the invention as defined by the following claims.

What I claim is:

1. A collapsible bottle carton construction formed from a generally rectangular one-piece blank having one side larger than the other and comprising: parallel lines of fold spaced inwardly a short distance from each of the longer edges and defining joining flaps over at least part of the length of said longer edges; lines of fold parallel with said first mentioned lines of fold and disposed inwardly therefrom and defining in part end walls for said carton between said first and second mentioned lines of fold; further lines of fold at right angles to said first and second mentioned lines of fold to define in part a base portion and side portions for said carton; lines of cut defining in part carrying handle and central portions for said carton, said lines of cut being at least over a portion of their length substantially parallel with said further lines of fold; lines of fold on said carrying handle and central portions parallel to said first mentioned lines of fold defining an inwardly folding strengthening portion of said carrying handle portion and extending over part of the area of said carrying handle portion to strengthen same by doubling the thickness; an inwardly embossed portion on the remaining area of said carrying handle and central portion, said embossed portion being of substantially the same thickness as said blank thereby defining a fastening contact area on said remaining area at the same level as said double thickness area; and strengthening portions defined in part by extensions of said lines of fold defining said base and side walls; lines of fold and cut defining triangular portions in said strengthening portions whereby upon assembly of said carton blank said strengthening portions extend between said end walls and said base portion in collapsible relationship thereto; said strengthening portions thickening said base when said carton is set up.

2. A collapsible bottle carton construction as claimed in claim 1 in which said strengthening portion of said carrying handle portion is provided with a flap extending more than half way across the top of said carrying handle portion.

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