Aug. 24, 1965 W. G. ATKINSON 3,202,312

CARTON CONSTRUCTION

Filed Jan. 10, 1963 3 Sheets-Sheet 1

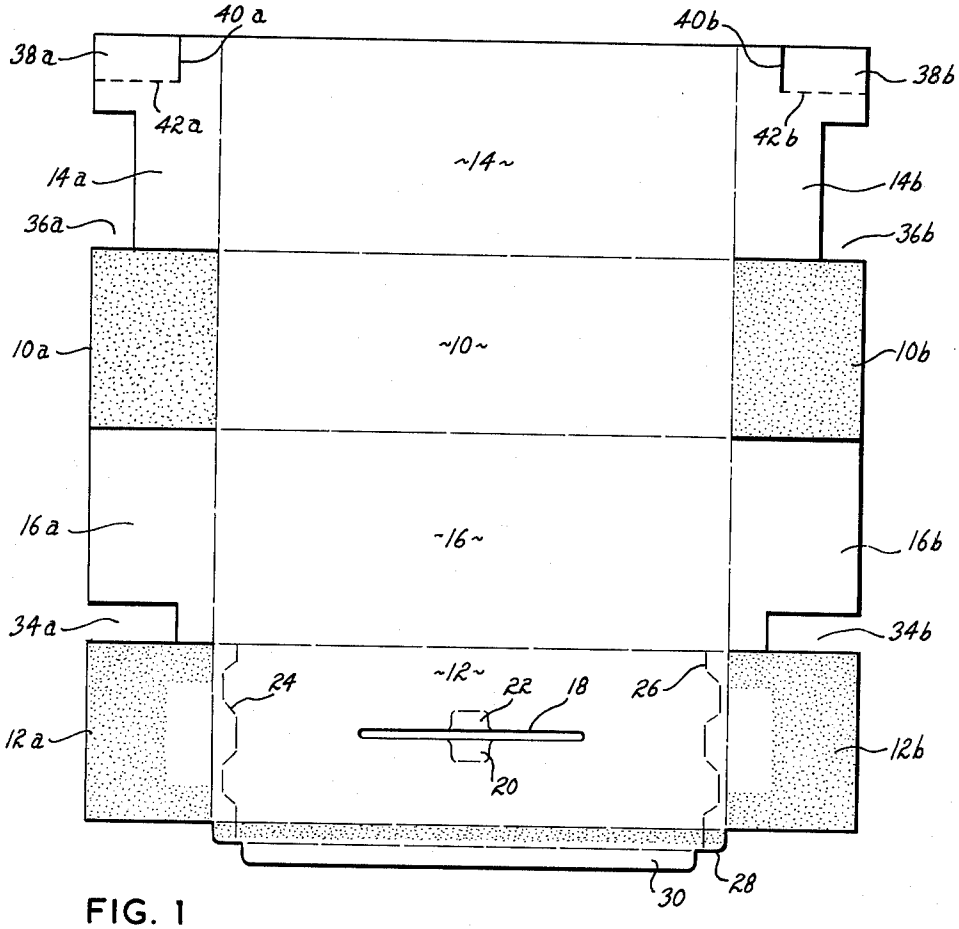


FIG. 1

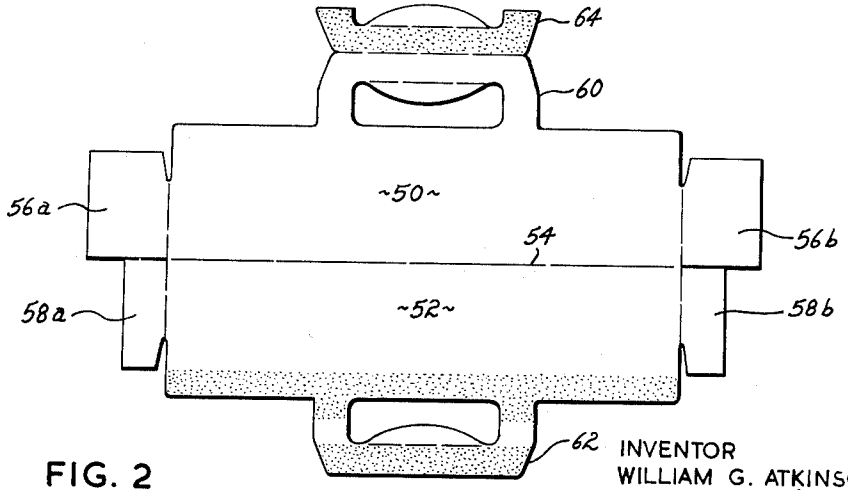


FIG. 2

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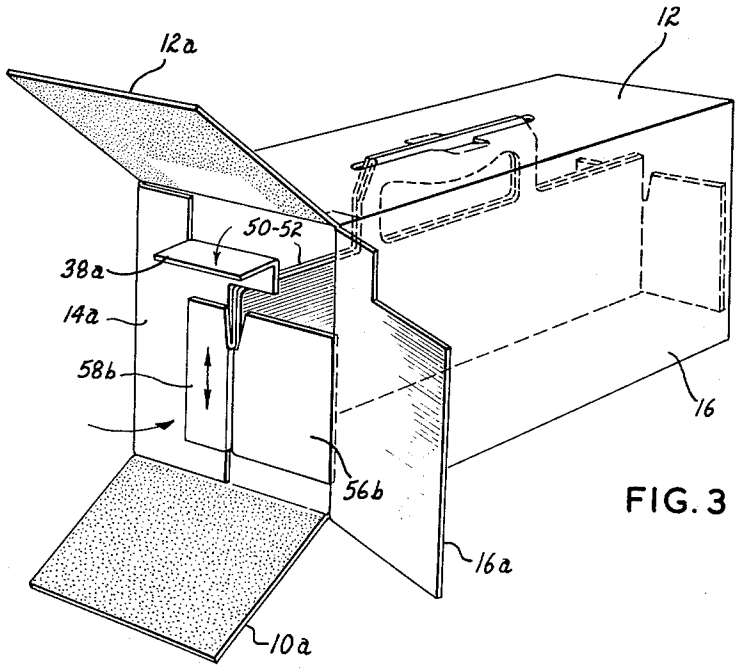


FIG. 3

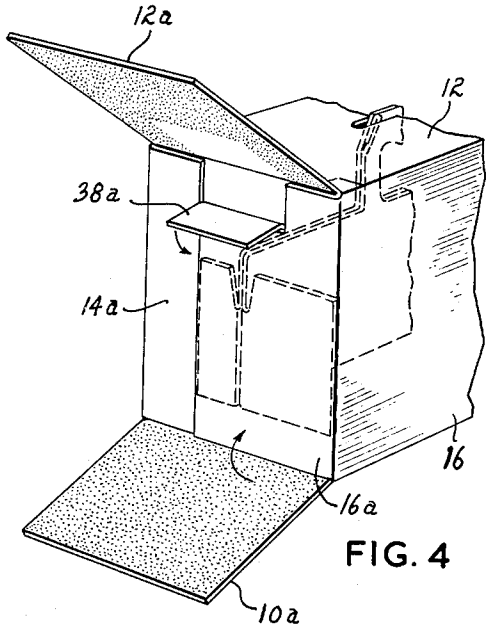


FIG. 4

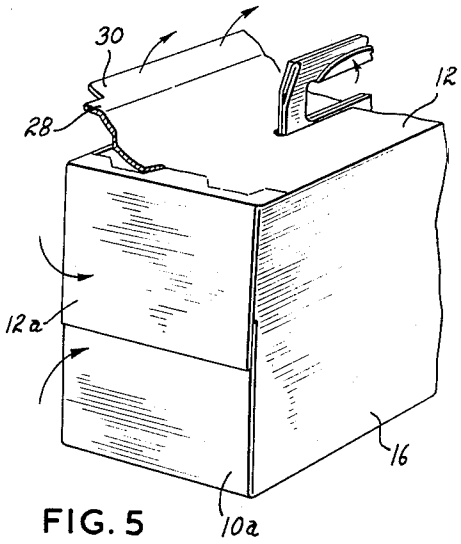


FIG. 5

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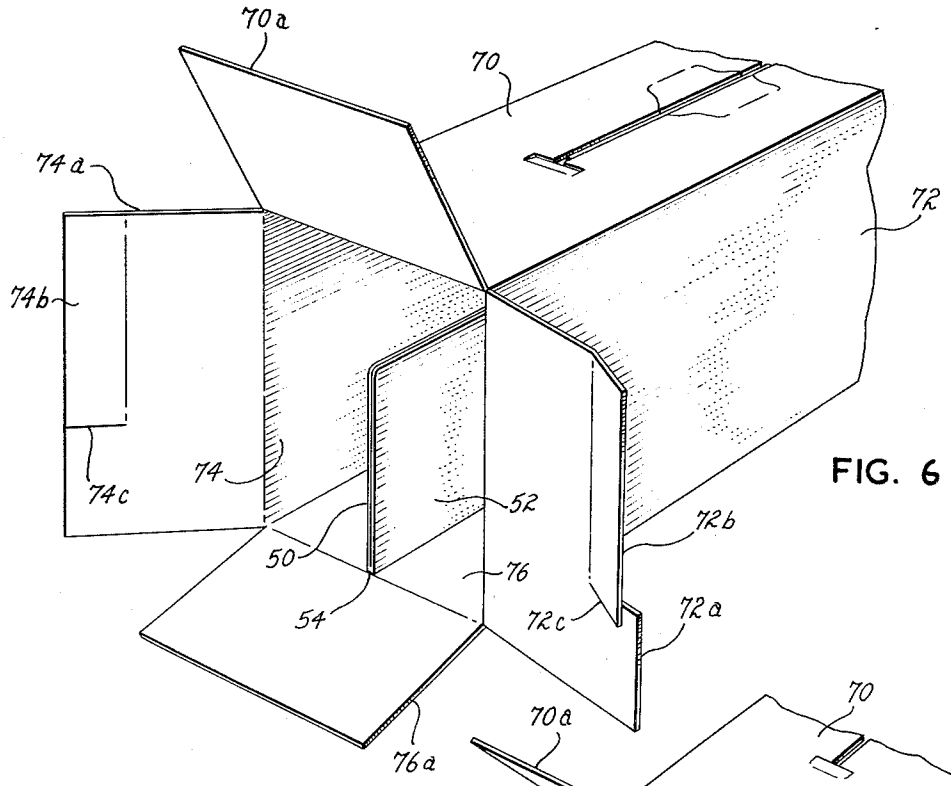


FIG. 6

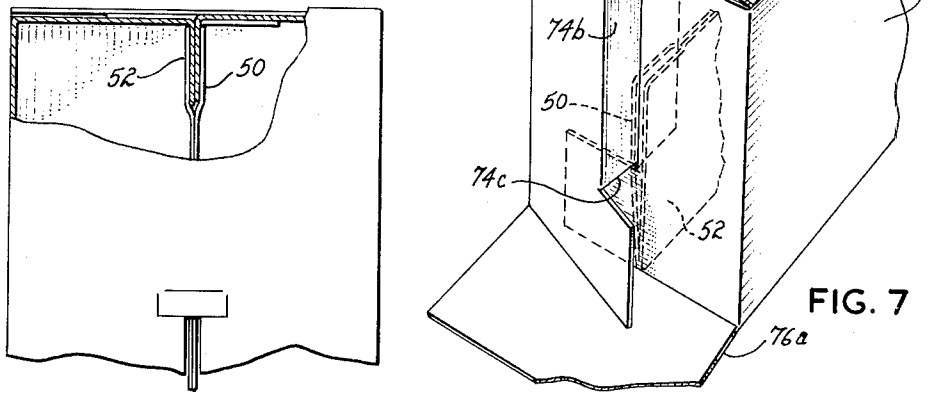


FIG. 7

FIG. 8

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CARTON CONSTRUCTION

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8 Claims. (Cl. 220—105)

This invention relates to the manufacture of cardboard cartons. It is more particularly concerned with a carton which is adapted to be end loaded while also being provided with a retractible handle.

The carton with which the present invention is concerned is particularly adapted to the merchandising of beer and other bottled products. In merchandising such goods, it is the usual practice to pack the bottles in half-dozen, one-dozen and two-dozen bottle cartons, which are specifically designed to be delivered directly to the consumer. It is also common to provide some type of handle means on the cartons whereby they may be easily carried by the customer. In the case of the small cartons, it is often the practice to provide a retractible handle which may be withdrawn from the carton by the customer. Most of the prior cartons include a main partition running lengthwise of the carton and the retractible handle is commonly associated with this partition. In this regard, it is common to form the partition of two layers of material whereby the handle may be supported between them and cooperate with them in supporting the weight of the carton. The longitudinal partition has usually been fixed to the end walls of the cartons.

Whereas the prior carton constructions briefly described above have firmly anchored the lengthwise partition to the end walls, recent packaging developments have created a need for cartons which are capable of being loaded through one or both ends rather than through the top so that the lengthwise partitions cannot be rigidly anchored at the end walls. These new packaging developments have been chiefly created through the introduction of the new "compact" bottles, which are now being packed without the benefit of transverse partitions in the cartons. The elimination of these partitions has cleared the way for very fast automatic packaging methods, including the step of loading the bottles "en masse" through one or both ends of the carton. There has thus been created a need for cartons in which the end walls are not closed until the cartons have been filled, while at the same time, the end walls cooperate with a longitudinal partition in such a manner that it is also possible to provide a retractible handle associated with the partition.

It is the primary object of this invention to provide a carton which is adapted to be end loaded while being provided with a retractible handle.

It is a further and more specific object of the invention to provide a carton having a retractible handle formed as an extension of a longitudinal partition which is held within the end walls of the carton for vertical reciprocation therein, at least one of said end walls of said carton being formed subsequent to the loading of the carton.

Other objects of the invention will become apparent from the following description of preferred embodiments thereof as read with reference to the accompanying drawings.

In the drawings;

FIGURE 1 is a plan view of a blank which is shaped and scored as to be foldable into a carton in accord with a preferred embodiment of this invention.

FIGURE 2 is a plan view of a blank which is shaped and scored as to be foldable into a longitudinal partition and handle for incorporation in the carton in accord with this invention.

FIGURE 3 is a perspective view of a carton in accord with the invention showing one end wall thereof in the process of being formed.

FIGURE 4 is a view similar to FIGURE 3 but illustrating a later stage in the folding of the end wall.

FIGURE 5 is a view similar to FIGURE 4 but showing the final stage in the formation of the end wall while also showing the manner in which the carton may be opened.

FIGURE 6 is a perspective view of a carton in accord with a second preferred embodiment of the invention and showing one end wall thereof in the process of being formed.

FIGURE 7 is a view similar to FIGURE 6 but illustrating a later stage in the folding of the end wall, and,

FIGURE 8 is a top view partly broken away of one fully formed end of a carton according to the second preferred embodiment of the invention.

Referring to FIGURE 1, it is pointed out that the long dashed lines indicate creasing, the solid lines indicate cuts, the speckled areas indicate adhesive, and the short dashed lines indicate tear strips. The blank is formed of paperboard, cardboard or the like, and consists of various portions forming a bottom wall 10, a top wall 12, and opposed side walls 14 and 16. The opposed end walls of the carton are formed of overlapped extensions of the bottom, top and side walls. Thus, one end wall is formed of portions 14*a*, 10*a*, 16*a* and 12*a*, and the other of portions 14*b*, 10*b*, 16*b* and 12*b*. The top wall is provided with a slot 18 having a pair of flaps 20 and 22 associated therewith which provide finger access to a handle which can be lifted upwardly through slot 18. Top wall 12 is also provided with a pair of tear strips 24 and 26 which conveniently may be formed by either a line of perforations or by cutting halfway through the carton material from opposite sides thereof along closely spaced parallel lines. Top wall 12 also carries a gluing strip 28 and a handle strip 30 which are used to close and open the carton respectively.

Both the top wall extensions 12*a* and 12*b* and the bottom wall extensions 10*a* and 10*b* are largely covered with adhesive.

Each of the side wall extensions 16*a* and 16*b* are provided with cutout portions 34*a* and 34*b* respectively, while the other side wall extensions 14*a* and 14*b* are provided with cutout portions 36*a* and 36*b*. The latter side wall extensions are also provided with flaps 38*a* and 38*b* demarked by the cuts 40*a* and 40*b* and the crease lines 42*a* and 42*b*. The purpose of each of these cutout portions and flaps are explained below.

The partition blank illustrated in FIGURE 2 is formed of two main portions 50 and 52 separated by crease line 54. Portion 50 carries a pair of flaps 56*a* and 56*b*, while portion 52 carries flaps 58*a* and 58*b*. A pair of handle forming parts 60 and 62 are so shaped as to mate together when the partition is formed by being folded over against itself along crease line 54. The outermost part 64 of extension 60 can be overlapped on part 62.

Referring now to FIGURE 3, the carton in accord with this invention is set up by being first formed into a tube as shown. The partition 50–52 is then inserted and the carton is ready for loading. Alternatively, one end wall of the carton can be formed prior to loading. In any case, each of the end walls are formed as follows, particular reference being made to the end wall formed of flaps 12*a*, 16*a*, 10*a* and 14*a*.

As a first step, portion 14*a* is folded inwardly, then the two flaps 56*b* and 58*b* are folded at right angles to the main body of partition 50–52 with the flap 58*b* being arranged on the outside of flap 14*a*. Subsequently, as shown in FIGURE 4, flap 16*a* is folded inwardly, followed by the downward folding of flap 38*a*. Finally, as shown in FIGURE 5, bottom wall extension 10*a* is folded up-

wardly and glued against the outside of flaps 14*a* and 16*a*, and top wall extension 12*a* is folded downwardly and glued against the outside of bottom wall extension 10*a*. The carton is now packed and sealed.

It will be readily understood that partition 50–52 is capable of vertical reciprocation with the flaps 58*a* and 58*b* acting as guides held within the end walls and capable of moving up and down therein. The flaps 58*a* and 58*b*, as well as the flaps 56*a* and 56*b*, bear the weight of the carton when the center partition is raised. Their upper edges press upwardly against the hinged areas of flap 38*a* and 38*b*.

Several variations on the above described embodiment are possible. For example, it is not essential that top wall extensions 12*a* and 12*b* be folded downwardly as a final step in sealing the carton. As an alternative, these can be folded down prior to the upward folding of bottom wall extension 10*a* and 10*b*. As a further variation, the flaps 56*a* and 56*b* could be eliminated, thereby relying solely on flaps 58*a* and 58*b* for guiding partition 50–52 and for bearing the weight of the carton. However, flaps 56*a* and 56*b* are preferably retained and so dimensioned that their width substantially equals ½ the width of the carton. Thus, the lateral outer edges of flaps 56*a* and 56*b* ride up and down against the side walls of the carton when the partition 50–52 is raised and lowered so as to retain the partition in the center of the carton and to insure that flaps 58*a* and 58*b* remain in engagement within the end walls.

As a still further variation, the flaps 58*a* and 58*b* themselves could be dimensioned to have a width substantially equal to ½ the width of the carton for the same reason described above with respect to the width of flaps 56*a* and 56*b*. In this case, since flaps 58*a* and 58*b* effectively retain the partition in the center of the carton, the flaps 56*a* and 56*b* could be eliminated.

The second preferred embodiment of the invention illustrated in FIGURES 6 to 8 is also provided with a central partition carrying a handle at its upper end. The two embodiments are also similar in that the cartons are first formed into open-ended tubes and that one or both of the end walls are formed after the cartons are packed. They are also similar in that flap means are provided to effect interconnection between the central partition and the end walls, while permitting vertical reciprocation of the central partition.

In the case of the second preferred embodiment of the invention, the flap means effecting this interconnection is actually carried by end wall forming members whereas in the first described embodiment of the invention, the flap means are carried by the partition. In both embodiments, there are provided bearing means against which the flap means abut when the partition is in the uppermost position.

Referring to FIGURE 6, the illustrated end wall of the carton is formed of overlapped extensions of the bottom, top and side walls, as is the case in the first described embodiment. However, in the second embodiment, these extensions take different shapes than those of the first embodiment. In FIGURE 6, the top, side and bottom walls of the second embodiment are assigned the reference numerals 70, 72 and 74, and 76 respectively. The side wall extensions 72*a* and 74*a* are identical in shape and carry flaps 72*b* and 74*b*.

The first two steps in forming the end wall in the second embodiment of the invention comprises the inward folding of either of the side wall extensions 72*a* or 74*a*. As this is done, the flaps 72*b* or 74*b*, as the case may be, are tucked between the two main portions 50 and 52 of the central partition. Subsequently, the second side wall extension is similarly folded and the flaps 72*b* or 74*b* also tucked between the portions 50 and 52 of the central partition. This second folding step is illustrated in FIGURE 7.

When the central partition 40–52 is raised, the lower

edges 72*c* and 74*c* of flaps 72*b* and 74*b* bear the weight of the carton when the partition 50–52 has reached its uppermost position, so that the crease line 54 separating the partition portions 50–52 catches these lower edges 72*c* and 74*c*. Thus, in the second embodiment of the invention, it is the crease line 54 which constitutes the bearing means against which the flaps interconnecting the central partition and the end walls abut. In the first described embodiment, it is the hinged areas of flaps 38*a* and 38*b* which constitute the bearing means.

As the final folding steps in forming the end walls of the second embodiment, the top and bottom wall extensions 70*a* and 76*a* are folded upwardly and downwardly, in that order, in the same manner as is followed in closing the end walls of the first embodiment. The inner faces of these extensions 70*a* and 76*a* also are glued to the outer surfaces of extensions 72*a* and 74*a*.

What I claim as my invention is:

1. A carton having a top wall, a bottom wall, two side walls and two end walls, said end walls being formed of overlapped extensions of said top, bottom and side walls, a vertically shiftable internal partition extending lengthwise of said carton, a handle extending upwardly from said partition, a slot in the top wall through which said handle protrudes while said partition is shifted upwardly, at least one guide flap carried at either end of said partition and held within said end walls for vertical reciprocation therein, bearing means within each of said end walls against which the upper edges of said guide flaps are juxtaposed when said partition is shifted vertically to its uppermost position, said bearing means comprising a hinged flap cut from one of said end wall forming extension members and folded downwardly over one of said guide flaps, the said upper edges of said guide flaps bearing against the underside of the hinge portions of said hinged flaps.

2. A carton as claimed in claim 1, in which the central portion of each of said end walls comprises at least three layers of carton material, the two innermost layers being formed of overlapped portions of said side wall extensions, said guide flaps being disposed between said overlapped portions.

3. A carton as claimed in claim 2, in which said hinged flap is cut from the innermost one of said side wall extensions and in which the other of said side wall extensions is provided with a cutout portion in its top wall, said hinged flap of the innermost side wall extension being folded over the other of said side wall extensions through the cutout portion in said other side wall extension.

4. A carton as claimed in claim 3, in which said side wall extensions are covered by overlapped extensions of said top and bottom walls, the latter extensions being glued to the outer surfaces of said side wall extensions.

5. A carton having a top wall, a bottom wall, two side walls and two end walls, said end walls being formed of overlapped extensions of said top, bottom and side walls, a vertically shiftable internal partition extending lengthwise of said carton and formed of two thicknesses of carton forming material and carrying an integral handle extending from its upper edge, said partition having two flaps at either end thereof extending generally at right angles therewith, a slot in the top wall of said carton through which said handle protrudes while said partition is in a raised position, each of said end walls being formed of a first side wall extension folded at right angles to the longitudinal axis of the carton and inwardly of one of said flaps carried by the partition, with the other side wall extension also folded at right angles to the longitudinal axis of the carton outward of the other of said flaps carried by the longitudinal partition, the side wall extension folded inward of said first partition flap having a hinged bearing flap folded downwardly over said side wall extension folded outward of said second partition flap and said top wall and bottom wall extensions being folded downwardly and upwardly, respectively, and glued to said side wall extensions as to seal the end of the carton, while

permitting the vertical reciprocation of said partition flaps within said formed end wall.

6. A carton having a top wall, a bottom wall, two side walls and two end walls, said end walls being formed of overlapped extensions of said top, bottom and side walls, a vertically shiftable internal partition extending lengthwise of said carton, said partition being formed of two juxtaposed partition forming elements connected together along their lower edges, a handle extending upwardly from said partition, a slot in the top wall through which said handle protrudes while said partition is shifted upwardly, at least one guide flap carried at the outer end of at least one of said side wall extensions at both ends of the carton, said guide flaps being held between the said juxtaposed partition forming elements, and bearing means constituting portions of the connected lower edges of said partition forming elements against which the lower edges of said guide flaps abut when said partition is shifted vertically to its uppermost position.

7. A carton as claimed in claim 6 in which each side wall extension carries a guide flap at its outer end as to provide a total of four guide flaps, all of which are held between the said juxtaposed elements of the partition.

8. A carton as claimed in claim 7 in which said partition is formed of one piece of carton forming material, the said juxtaposed elements being brought into their side-by-side relationship by folding the said one piece of material about a hinged line extending along the bottom edge of the partition.

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