United States Patent [19]

Langen et al.

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[54] **CARTON DIVIDER**

[76] Inventors: **Marinus J. M. Langen,** 21 Chilcot Ave.; **Jacobus J. Langen,** 10 Ringway Cres., both of Rexdale, Ontario, Canada

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[52] **U.S. Cl.** **229/15,** 229/42

[51] **Int. Cl.** **B65d 5/48**

[58] **Field of Search** ..... 229/15, 27, 28 BC, 42; 217/7; 206/190

[56] **References Cited**

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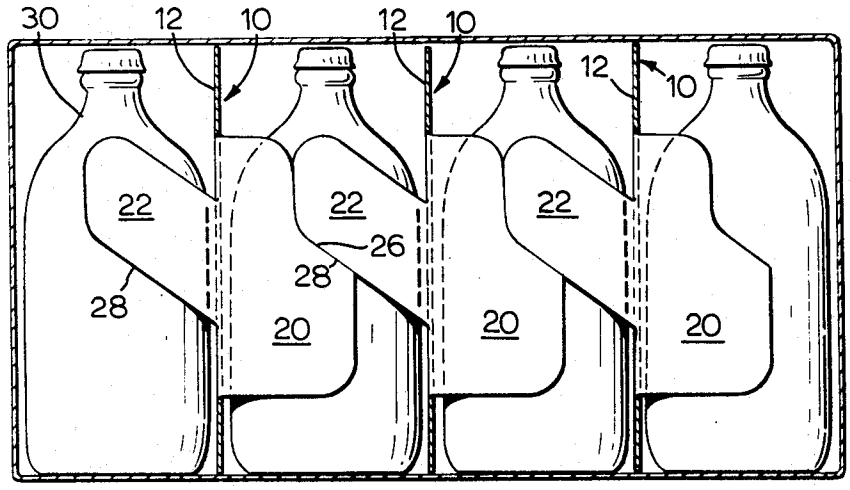
Primary Examiner—Edward J. McCarthy

Attorney, Agent, or Firm—Fetherstonhaugh & Co.

[57] **ABSTRACT**

An improved sub-divider panel construction for dividing or sub-dividing the space within a carton. The sub-divider panels which are adapted to project outwardly from opposite sides of the main body of the main divider panel are proportioned so that the sub-divider panels of adjacent panels may be arranged one above the other and extending inwardly from opposite sides of the space defined between adjacent main body panels. This construction prevents the dividers to be located in sequence between the articles which are to be spaced thereby by lowering from above the articles which are to be spaced.

1 Claim, 5 Drawing Figures



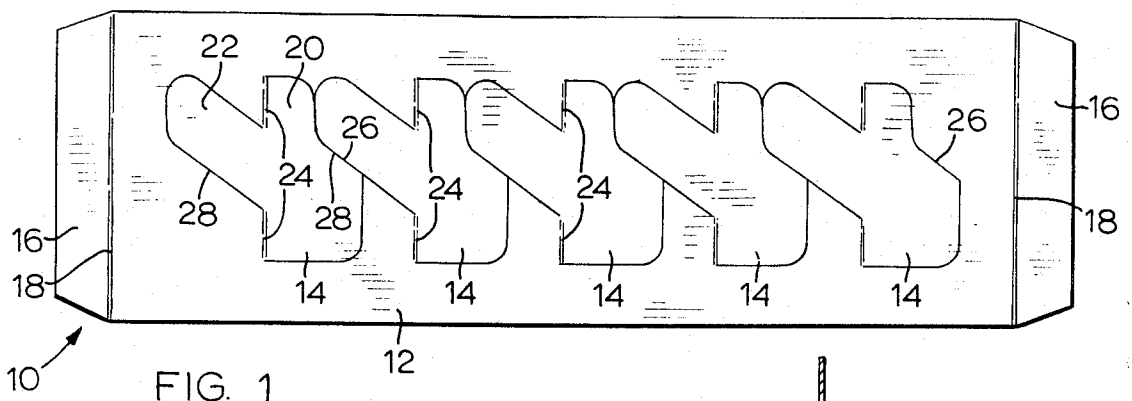
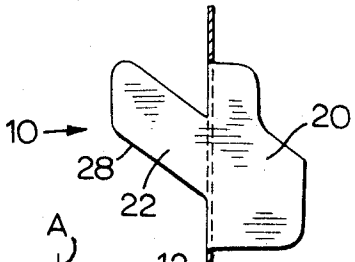


FIG. 1



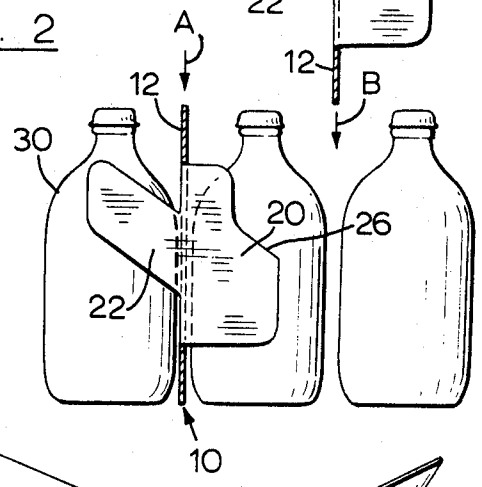


FIG. 2

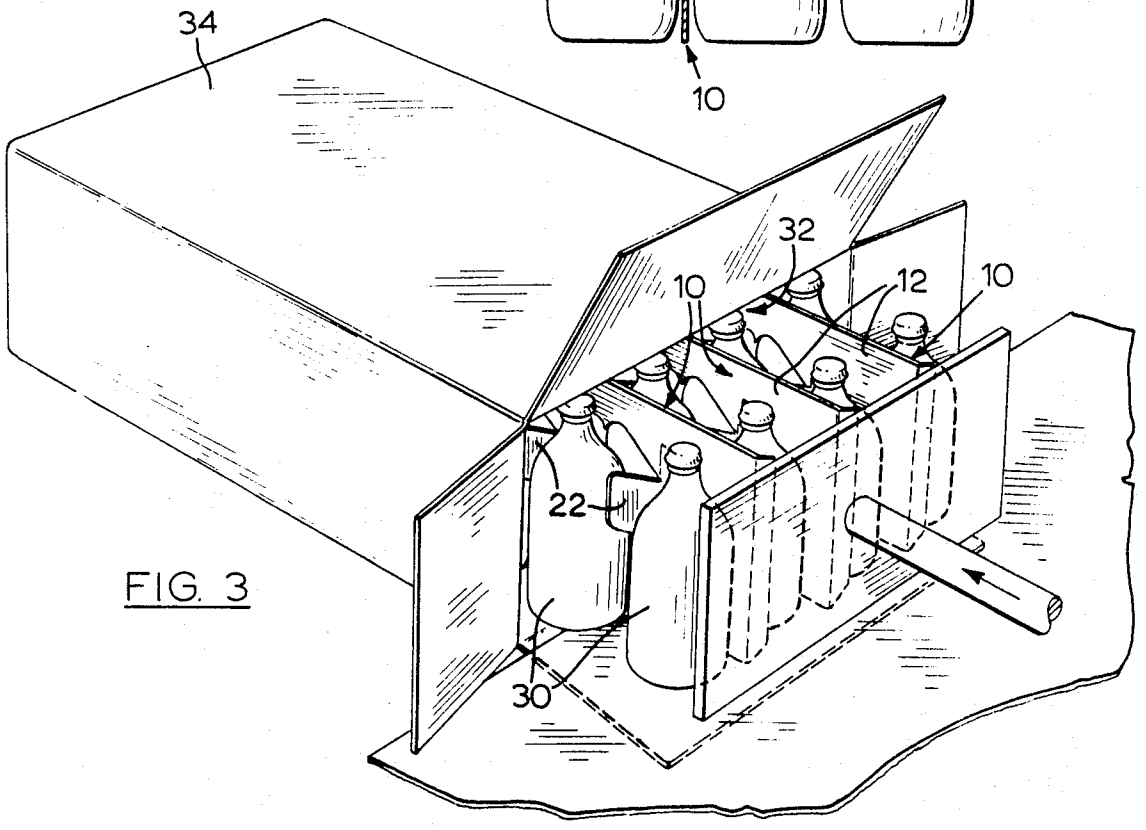


FIG. 3

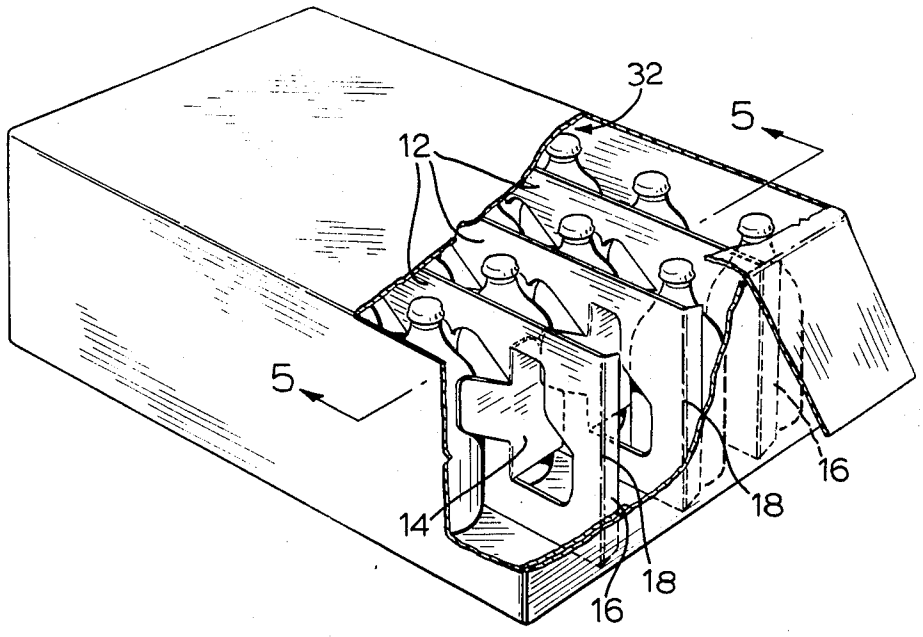


FIG. 4

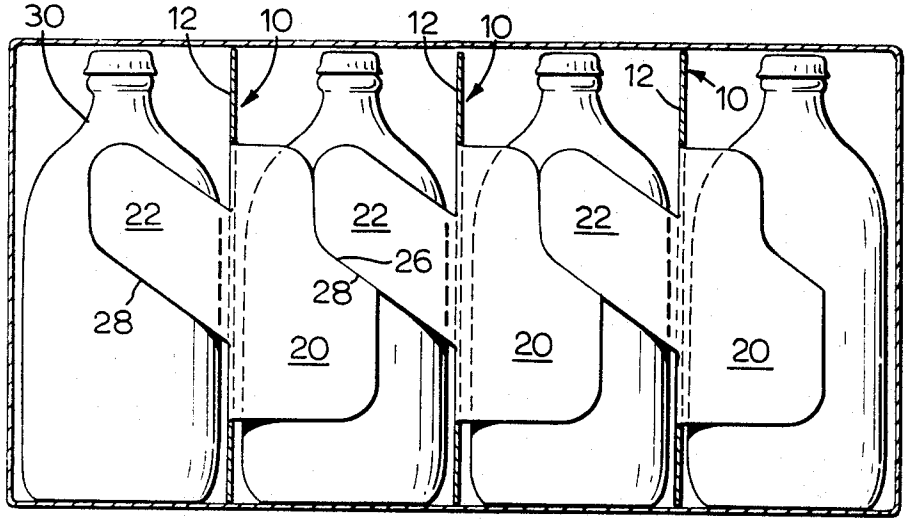


FIG. 5

CARTON DIVIDER

FIELD OF INVENTION

This invention relates to cartons wherein the container space is divided and sub-divided by divider panel means. In particular, this invention relates to an improved divider panel construction which is particularly suitable for use in the high speed loading of containers.

A very large number of different divider panels and divider panel assemblies have been designed for dividing the space within a carton into a plurality of compartments. These constructions have included both longitudinal and transverse divider panels which interlock with one another. Gernerally the practice is to locate the divider panels in the container space before the articles which are to be shipped in the container are loaded into the container space. It has been found that the machinery for loading cartons can be considerably simplified if the carton is loaded from one end, however, difficulty has been experienced in attempting to transversely sub-divide an end loading carton so as to effectively separate containers such as bottles or the like.

SUMMARY

It is an object of the present invention to overcome the difficulties of the prior art by providing a simple and inexpensive carton divider construction in which the transverse sub-divider panels of adjacent dividers may overlap one another.

According to an embodiment of the present invention, a carton divider comprises a main body panel and a sub-divider panel hingedly connected to the main body panel. The sub-divider panel has a first portion adapted to project outwardly from one side of the main body and a second portion adapted to project outwardly from the other side of the main body of the panel. The first portion has an upper edge and the second portion has a lower edge, the upper edge of at least the outer end of the first portion is disposed in a plane below the plane of at least the outer end of the lower edge of the second portion.

According to a further embodiment of the present invention, a carton comprises wall means defining a container space and at least two divider panels mounted witnin the container space dividing it into longitudinal compartments. Each of the divider panels is formed to provide sub-divider panels having a first portion projecting outwardly from one side of the main body panel and a second portion projecting outwardly from the other side of the main body panel of each divider panel, the first portions of the sub-divider panels on one divider panel underlying the second portions of the sub-divider panel on an adjacent divider panel and transversely dividing the longitudinal chambers into a plurality of compartments.

The invention will be more clearly understood after reference to the following detailed specification read in conjunction with the drawings, wherein

FIG. 1 is a plan view of a blank of a divider panel according to an embodiment of the present invention;

FIG. 2 is a pictorial side view illustrating the manner in which the divider panels are located between adjacent rows of bottles;

FIG. 3 is a pictorial view illustrating the manner in which the cartons are end loaded;

FIG. 4 is a partially sectioned pictorial view illustrating the manner in which the dividers are positioned when a carton is loaded; and

FIG. 5 is a sectional view taken in the direction of the arrows 5—5 of FIG. 4.

With reference to the drawings, reference numeral **10** refers generally to a divider panel according to an embodiment of the present invention. The divider panel consists of a main body portion **12** which is cut to provide a plurality of subdivider panels generally identified by the reference numeral **14.** End flaps **16** are hingedly connected along hinge lines **18** at opposite ends of the panel **12.** Each of the sub-divider panels **14** consists of a first portion **20** and a second portion **22.** The first portion **20** is hingedly connected along hinge lines **24** to the main body portion **12.** The first portion **20** have an upper edge **26** which underlies and is nestable with the lower edge **28** of the second portions **22.**

When the divider panel is to be used, the sub-divider panels are folded on fold lines **24** so that all of the first portions **20** project outwardly from one side face thereof and all of the second portions **22** extend outwardly from the other side face. When the sub-divider panels are located in this position, a first divider panel is positioned between two adjacent rows of containers in the manner shown in FIG. 2 of the drawings by lowering the divider into position in the direction of the arrow A so that the first portion **20** of the first positioned panel projects in a direction towards the position in which the second divider panel is to be located. As shown in FIG. 2 of the drawing the structure of the first positioned divider panel permits a second divider panel to be located between the subsequent row of bottles by lowering this divider panel therebetween in a direction of the arrow B. Each subsequent divider panel is lowered until the nested overlapping relationship illustrated in FIG. 5 of the drawings is achieved. It will be apparent that because of the fact that the upper edge of the outer end of the first portion of the divider panel is located at a lower level than the lower edge of the outer end of the second portion, it is possible to achieve the sequential location of the divider panel between adjacent rows without the sub-divider panels interfering with one another.

The bottles **30,** with the divider panels located therebetween as described above, are loaded into the container space **32** of an end loading carton **34** as diagrammatically illustrated in FIG. **3** of the drawing.

when the dividers are located within the carton, the end flaps **16** may be adhesively bonded to the ends of the carton.

FIGS. **4** and **5** of the drawings illustrate the manner in which the divider panel **12** and sub-divider panels **14** serve to define the container compartment **32** into four longitudinally extending chambers, each of which is sub-divided into six compartments. This construction may be used in the packaging of bottles such as beer bottles and the like.

As clearly shown in FIG. **5** of the drawings, the upper surface of the portion **20** of one of the sub-divider panels is adapted to nest with the lower surface of the portion **22** of an adjacent divider. This provides an effective sub-divider for dividing bottles and the like which extends across the full width of the chamber. Each of the arms **20** and **22** are proportioned so as to project outwardly from the panel **12** a distance which is greater than half of the distance between adjacent panels so

that when only one portion of the sub-divider panel projects into the space which is to be sub-divided, as in the outer chamber of FIG. 5, the sub-divider panel is of a sufficient length to effectively sub-divide the compartment. The carton and divider may be made from paperboard, corrugated paperboard or the like.

Various modifications of the present invention will be apparent to those skilled in the art without departing from the scope of the invention. For example, the sub-divider fingers may have a different contour and they may be spaced apart from one another vertically of the space which is to be sub-divided.

The divider of the present invention is simple to construct and install and it provides an efficient divider panel.

The divider of the present invention may be installed by means of the apparatus described in the applicant's copending application Ser. No. 343,724 filed Mar. 22, 1973 and entitled Carton Loader, now U.S. Pat. No. 3,845,852.

What we claim as our invention is:

1. A lay flat cardboard divider blank, comprising:

a main body panel,

a series of similar single ply sub-divider panels cut from said panel,

each of said sub-divider panels being connected to said main body panel about a hinge axis and having a first portion on one side of its hinge axis and a second portion on the other side of its hinge axis and being swingable about its hinge axis to locate said first portion thereof on one side of said main body panel and said second portion thereof on the other side of said main body panel,

adjacent sub-divider panels in said series of sub-divider panels in the lay flat condition being disposed with a first portion of one sub-divider panel in close relation to a second portion of the other sub-divider panel and with the upper edge of at least the outer end of said first portion below the lower edge of said second portion whereby said first portion of each of said sub-divider panels is above the second portion thereof when said sub-divider panels are swung about their hinge axis to locate the first portion thereof on one side of said main panel and a second portion thereof on the other side of said main panel.

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