Aug. 29, 1967 R. F. ANDERSON 3,338,406

CARTON CONSTRUCTION

Filed Dec. 20, 1965 2 Sheets-Sheet 1

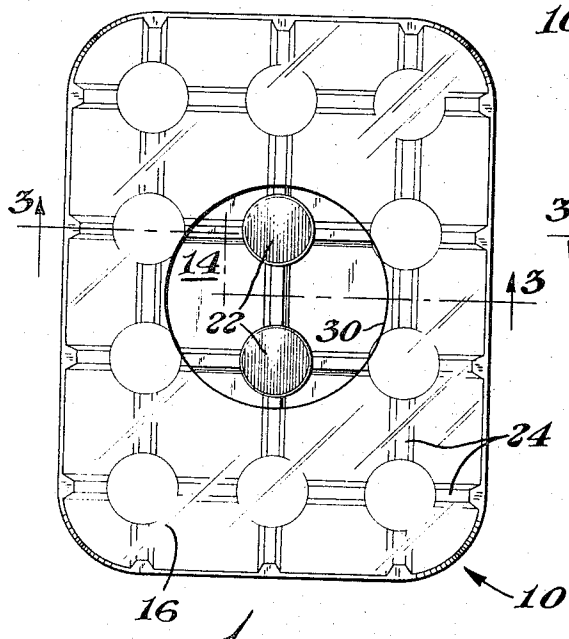

Fig. 1

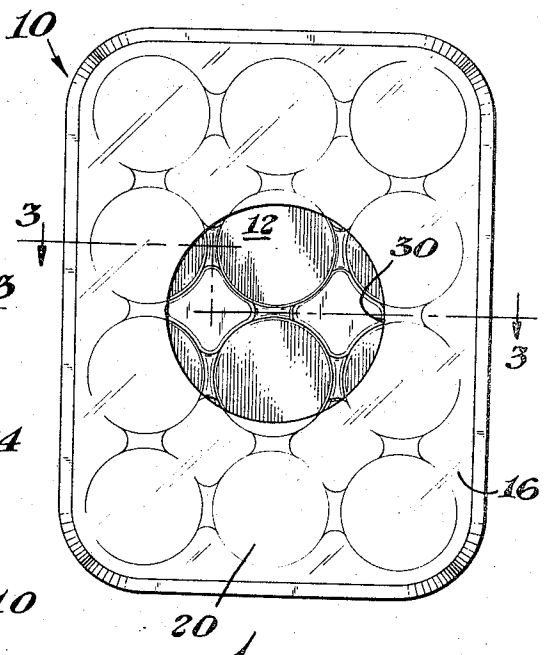

Fig. 4

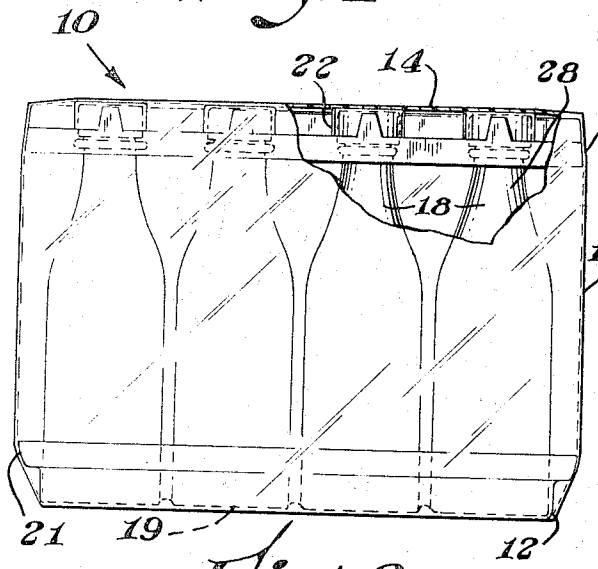

Fig. 2

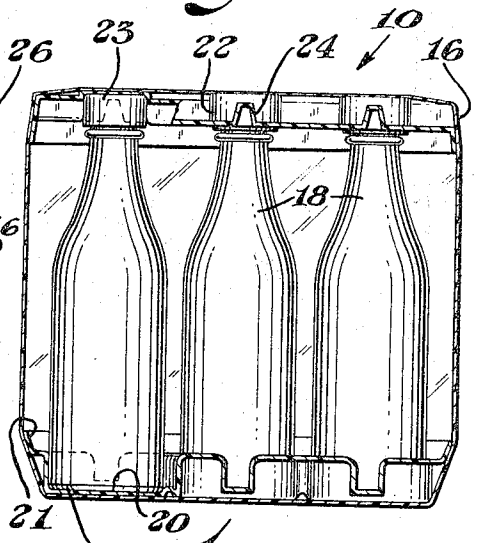

Fig. 3

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CARTON CONSTRUCTION

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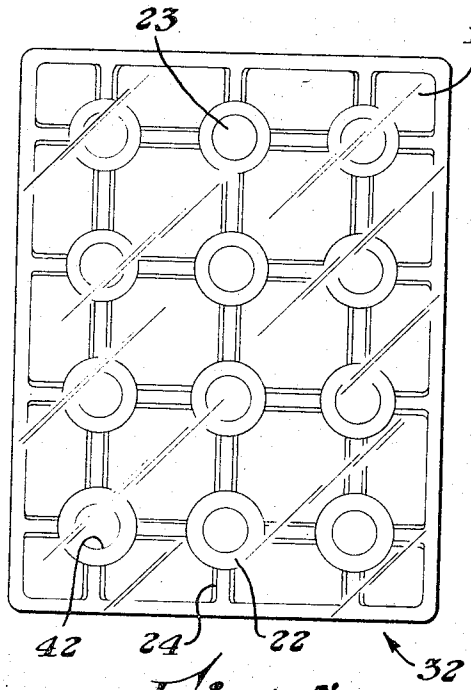

Fig. 5

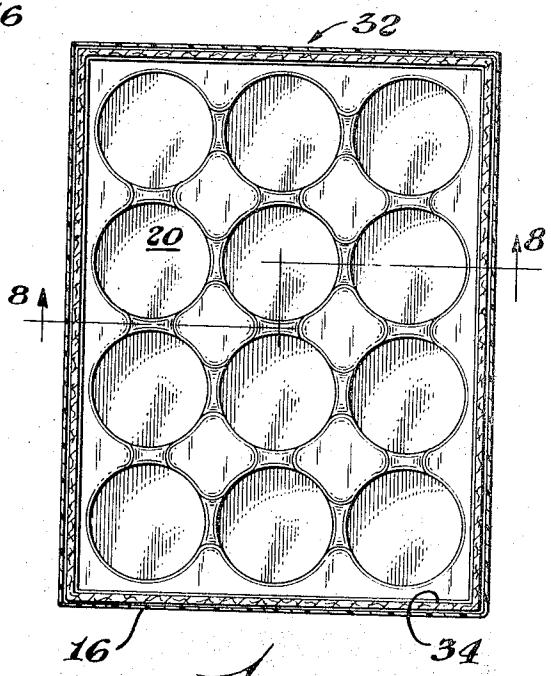

Fig. 7

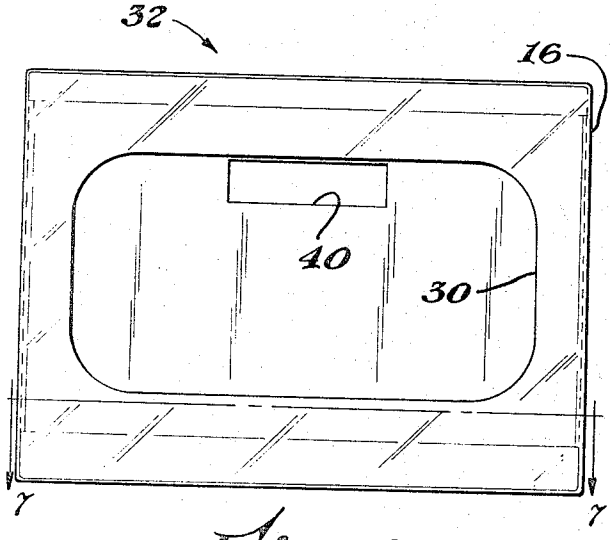

Fig. 6

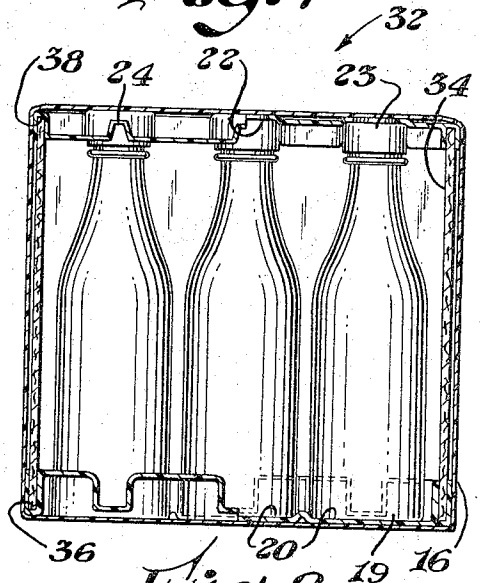

Fig. 8

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3,338,406

Patented Aug. 29, 1967

3,338,406

CARTON CONSTRUCTION

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Filed Dec. 20, 1965, Ser. No. 514,858
3 Claims. (Cl. 206—65)

This invention relates to a carton for packaging a related series of products, such as containers, in a spaced relation.

Prior to this invention the common way for relatively safely packaging a plurality of containers such as glass bottles for ketchup, for example, was to place them in a corrugated cardboard shipping carton with corrugated cardboard partitions crossing one another to provide individual cells for each container. While such a carton construction has not been entirely unsatisfactory, it has had several shortcomings. Such corrugated cardboard cartons and partitions have been relatively expensive and require considerable storage space. Labels on the containers can often be defaced by rubbing against the corrugated partitions while in transit. If glass containers are broken their contents can seep through the cardboard walls. Furthermore, a corrugated carton, when cut in such a way as to provide a tray for display and racking of the packaged products, is not particularly appealing to the ultimate consumer.

It has been discovered that a carton construction formed basically of plastic sheet or foam plastic and of a configuration as hereinafter described can maintain all of the advantages and eliminate most of the above disadvantages of prior art packaging techniques. Accordingly, there is provided by this invention a new carton construction having a lower cost, lesser weight, which requires less storage space, is more convenient to open, is waterproof, and provides an attractive display case when opened. It also gives better protection against defacing of labels and provides a carton easier to dispose of after being opened.

Briefly, the carton construction of this invention provides for packaging of a related series of containers in a spaced relation by providing top and bottom elements having suitable depressions to hold the bottles in spaced positions. A shrink film is preferably formed about the top and bottom elements to secure the carton construction together. Additionally, or instead of the film, strengthening side wall elements can be contained in between the trays and about the periphery of the carton. The shrink film can include a tear-strip for ease of removal. The elements can have holes for marking of the containers while in the carton.

Yet additional objects and advantages of the present invention are even more apparent when taken in conjunction with the accompanying drawing in which:

FIGURE 1 is a plan view of a carton constructed according to the principles of the present invention;

FIGURE 2 is a side elevational view thereof, with portions broken away;

FIGURE 3 is a cross sectional view there of taken along the line 3—3 of FIGURES 1 and 4;

FIGURE 4 is a bottom view thereof;

FIGURE 5 is a plan view of a modified form of carton constructed according to the principles of the present invention;

FIGURE 6 is a side elevational view of the modified carton;

FIGURE 7 is a cross-sectional view thereof taken along line 7—7 of FIGURE 6, only with the bottles removed; and

FIGURE 8 is a cross-sectional view thereof taken along line 8—8 of FIGURE 7 only with bottles present.

Referring more particularly to the drawing, there is illustrated in FIGURES 1 to 4 a carton construction 10 which primarily comprises a tray 12, an upper receptacle 14 and a film closure 16 enclosing containers 18 (shown as bottles) between the tray 12 and receptacle 14. The particular container 18 can be, for example, bottles for ketchup or other food products, aerosol containers, canned good, and the like which are usually sold on the shelf in such business establishments as supermarkets, drug stores, department stores, etc.

Tray 12 and receptacle 14 in the embodiment illustrated are vacuum or matched die formed from sheets of thermoplastic material, such as polystyrene. However, it is understood that both the tray 12 and the receptacle 14 can be made of other plastic materials and forms of plastic materials such as polyethylene foam or polystyrene foam and can be directly molded to the desired configurations instead of being formed from sheets.

Carton construction 10, as illustrated, is designed to contain a plurality of bottle-like containers 18. Tray 12 includes a plurality of compartments 20 of a size and shape to receive compactly the bottoms 19 of containers 18. The spacing between adjacent compartments 20 is such that adjacent containers are prevented from contacting one another when their bottoms 19 are located in such compartments 20. Preferably, the outer peripheral edge of the tray 12 is in the form of an upwardly turned lip 21 which serves to guide the film enclosure 16 therearound in a manner to be later described.

Receptacle 14 serves a function complementary to that of tray 12. Thus, there are found in a receptacle 14 a plurality of cells 22 each of the size, shape and spacing from one another to receive the tops 23 of the containers 18. In most instances, but depending on whether or not the containers are symmetrical, the cells 22 will be located directly in line with and above each compartment 20 and is so shown in the carton construction 10. However, it is conceivable that for other than ordinary shaped bottles such alignment or corresponding relationship between the number of cells and compartments could vary and still be within the concepts of the present invention. For aid in reinforcing receptacle 14, a plurality of channel shaped ribs 24 are located between each of the cells 22 and the outer peripheral extent of the receptacle 14 is provided with a down-turned edge 26. The peripheral edge 26 serves in much the same manner as the lip 21 of the tray 12.

The carton construction 10 is assembled by locating the bottoms 19 of each of the containers 18 in a respective compartment 20 of tray 12, placing receptacle 14 over the tops 23 of the containers 18 such that each cell 22 contains such a container top, inserting this combination of elements into a plastic film sleeve or tube (not shown in this form), the film being of the shrinkable variety as for example illustrated in U.S. Patent No. 3,087,610. The entire arrangement is then placed in a shrink tunnel or oven (not shown), whereby the tube shrinks about the entire tray, receptacle and containers so as to secure them readily together in the form illustrated in the drawing, most usually leaving openings 30 in opposite ends thereof. Lips 21 and edges 26 are outwardly canted to serve as guides for the film to slip over the tray and receptacle and shrink thereabout, as well as provide reinforcement therefor. A package is thus formed which gives the advantages heretofore enumerated and which can be readily opened by tearing or ripping or cutting of the closure 16 and which, when the film closure 16 and receptacle 14 are removed, provides an attractive display shelf, via tray 12.

If desired, the film sleeves which form closure 16 can be of such a size and dimension that no opening 30 is left, thereby providing a carton construction which is

dust-proof and substantially moisture impermeable. On the other hand, dust also can be substantially eliminated when openings **30** are located on the outside of tray **12** and receptacle **14**, as illustrated in FIGURES 1 and 4, rather than around the peripheral sides of the construction.

Another modification of this invention is that illustrated by FIGURES 5 to 8. Carton construction **32** is similar in most respects to that of carton construction **10** and like reference characters have been applied to corresponding components. Where the carton construction **32** varies, however, is that sides or side walls **34** are included between the tray **12** and receptacle **14** to give added strength where necessary or desirable.

Sides **34** can be of cardboard or of any other material having the requisite strength, weight, durability, etc., such as plastic or metal sheet. To receive sides **34**, each of the tray **12** and receptacle **14** is provided about its periphery with channels **36** and **38**, respectively, which channels are in alignment and oppose one another. These channels serve not only as a guide and holder for sides **34**, but as a means for securing the tray **12** to the receptacle **14**. Thus, in assembling the carton construction **32**, a similar process as heretofore described can be employed with the exception that between the steps of locating the bottom **19** of containers **18** in the cells **22** of tray **12**, and the placing of the receptacle **14** on the containers, the cardboard side walls **34** are inserted into channel **36**. The cells **22** and channel **38** of receptacle **14** are then fitted over container tops **23** and side walls **34**. If the channels **36** and **38** contain an adhesive, such as a hot melt asphalt or wax adhesive, mastic or rubber emulsion, or any of the animal glues, for example, the carton construction **32** could be considered complete. Otherwise, or in addition to the adhesive, a plastic film tube as earlier described can be shrunk entirely about the components theretofore assembled.

In this embodiment, a hand well **40** is provided in at least opposite end walls **34**. To make available for use such hand wells **40**, the openings **30** in closure **16** are located on the corresponding sides of the carton construction **32** rather than on the tops and bottoms thereof as illustrated in the first embodiment.

Where closure **16** is omitted from the carton construction **32** such that it is held together solely by adhesive or if the closure **16** is otherwise cut-back from the receptacle **14**, holes **42** in cells **22** will permit marking of the container tops **23** so that pre-pricing of the containers is possible.

Also included optionally is a tear strip which can aid in opening a package. The tear strip can be of any conventional design, as for example, a pair of perforated lines in the closure **16** itself with a pull tab to initiate tearing.

While certain representative embodiments and details have been shown for the purpose of illustrating the invention, it will be apparent to those skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope of the invention.

Accordingly, what is claimed as new is:

1. A carton construction comprising a thermoplastic tray, a thermoplastic receptacle, containers located between said tray and receptacle, said tray including a plurality of compartments each receiving a container bottom, said receptacle including a plurality of cells each receiving a container top, and a film tubing shrunk around both the tray and receptacle holding them together about said containers.

2. The construction of claim **1** wherein said tray and receptacle include oppositely facing channels about their peripheral extents, and side walls located between and in said channels for added strength.

3. The construction of claim **2** wherein adhesive means additionally secures said channels to said side walls, holes are located in said cells to permit marking of the container tops, each of said compartments and cells are spaced laterally a distance from other compartments and cells sufficient to prevent contact between adjacent containers, a tear strip is integral with said tubing to permit ready opening of said carton construction, and said side walls include hand wells located within openings at opposite ends of said film tubing.

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