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N. D. COMMISSO ET AL

3,288,347

SUPPORT TRAY FOR PRODUCE PACKAGING

Filed Jan. 15, 1965

3 Sheets-Sheet 1

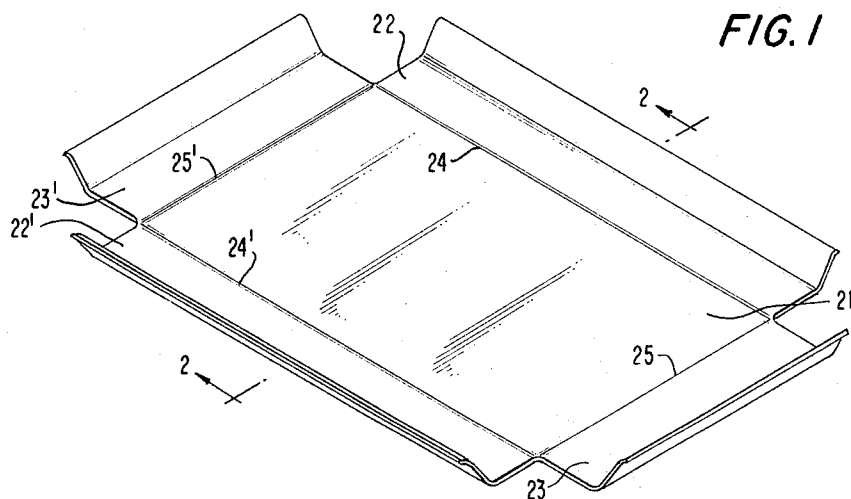


FIG. 2

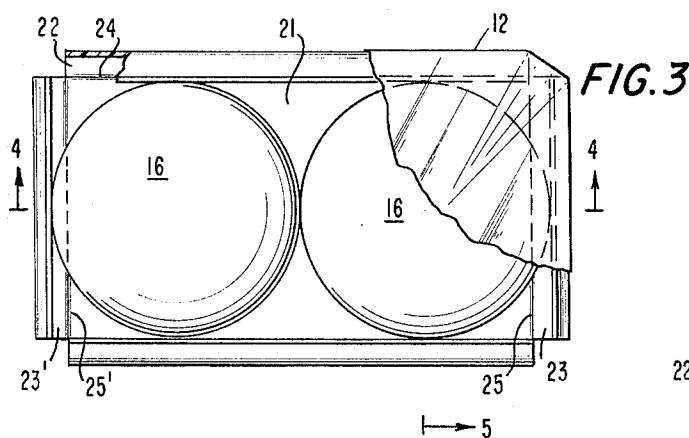
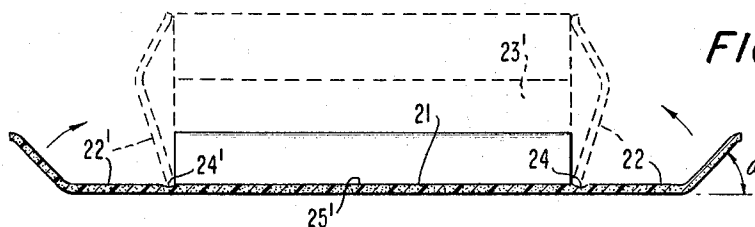


FIG. 3

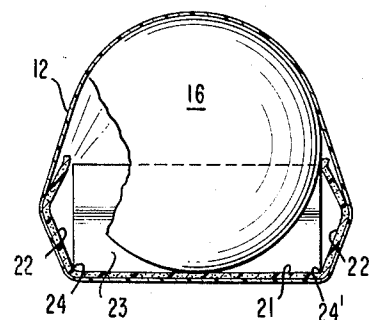


FIG. 5

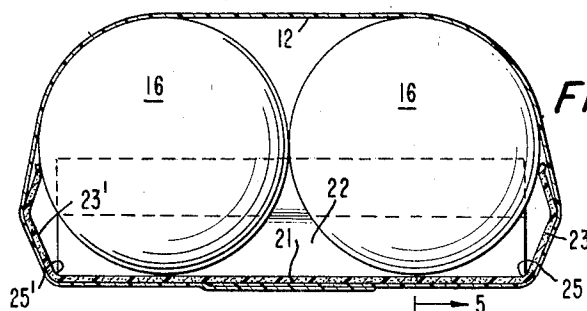


FIG. 4

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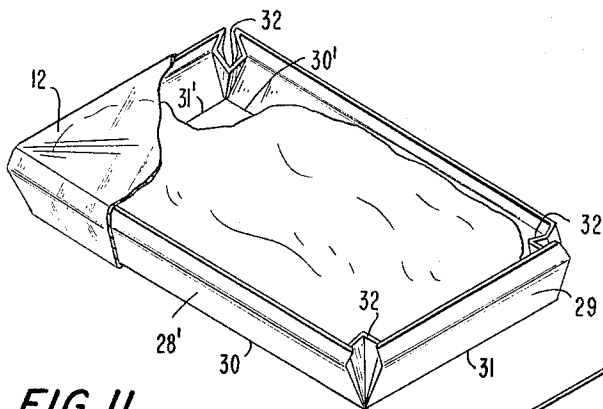
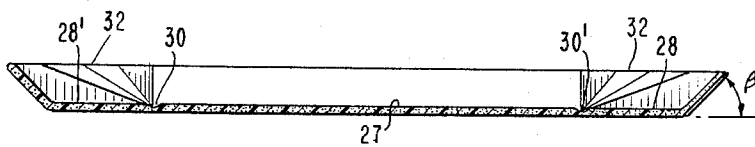
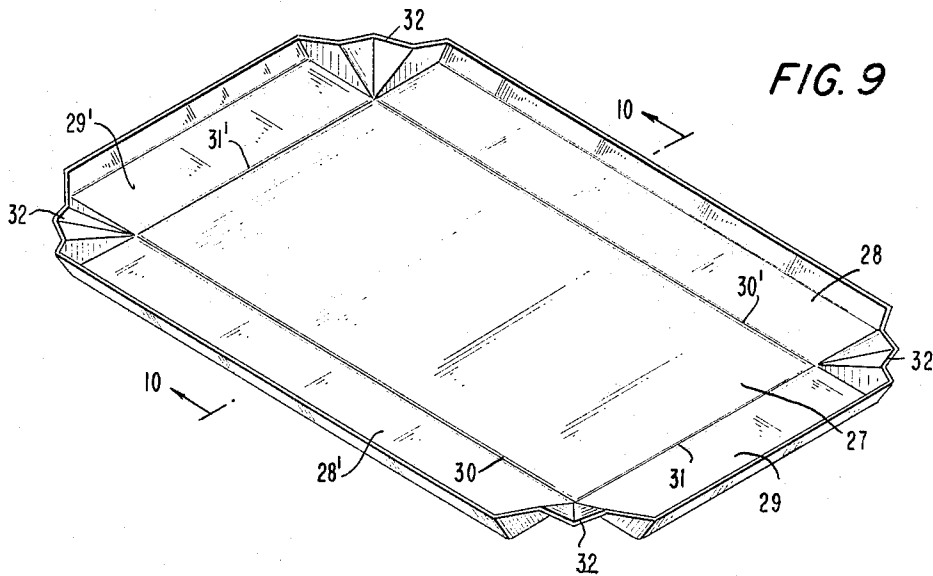
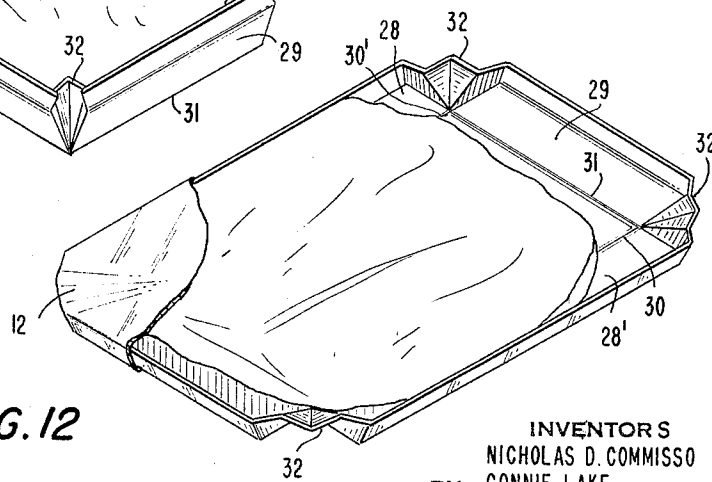


FIG. 12



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SUPPORT TRAY FOR PRODUCE PACKAGING
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4 Claims. (Cl. 229-30)

The present invention relates to containers formed of plastic material and more particularly to containers employed for the containment and support of overwrapped objects, such as fresh produce or meat for example.

In the past, containers for products such as: fresh produce, e.g. fruits and vegetables, have been fabricated from materials such as paperboard, molded fiber pulp and the like and have been generally characterized in that they have a substantially fixed volume and form. The nature of the material from which such containers are formed and the construction details of the container itself usually result in a rigid or semi-rigid container which can receive only items of a particular size and shape. For example a common type of produce support tray fabricated or molded from fiber pulp is generally a shallow tray comprising a substantially flat base with four integrally connected container side walls, erected vertically around the perimeter of the tray base at substantially a 90° angle, the vertical side walls or edges thereof being substantially resistant to deformation or flexure by virtue of the fact that they are continuously connected to one another and molded into such a shape.

When an object or group of objects is to be packaged in an overwrap operation utilizing such a support tray, the base of the objects, i.e. the portion in contact with the supporting tray, must generally conform in size and shape to the bottom of the tray. The object is placed upon the tray and subsequently overwrapped with flexible packaging material, transparent plastic film for example. The film is wrapped tightly around the article and the supporting tray and the film edges are overlapped around the underside of the tray base where they are sealed together, thereby completing the overwrap packaging operation. In such a package structure, the support tray facilitates stacking, handling and examination of the overwrapped product through the transparent film. The film itself serves a two-fold purpose in that in addition to allowing for visual inspection of the package contents, it also acts as a form of retaining cover, securing the product in the support tray.

It is apparent that if the product being packaged in such a tray is too large, the upstanding walls of the support container would prevent it from nesting or seating itself properly upon the tray base. Conversely, if the objects are relatively small in comparison with the overall area of the base of the tray, when the overwrap packing has been completed, the aesthetic appearance of the finished package leaves much to be desired, in that the package appears to be, and is in fact, only partially full. Consequently, users of this type of tray are forced to inventory a large selection of tray sizes to fit the exact size of the particular object or group of objects being packaged.

It is one of the purposes of the unique container construction of the present invention to eliminate the necessity of having to provide particular size trays for particular size objects or groups thereof. That is to say, when the support tray construction of the present invention is employed in an overwrapping operation, it no longer becomes critical that the tray base conform to the exact or nearly exact size of the products being packaged therein. The tray structures of the instant invention may be of a single uniform size, yet they are so designed and constructed that they will accommodate products of varying size and shape in a convenient and most expeditious manner.

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A better understanding of the invention may be had from the following description read in conjunction with the accompanying drawings, wherein:

FIG. 1 illustrates a perspective view of the support tray of the present invention.

FIG. 2 is a sectional view taken along line 2-2 of FIG. 1.

FIG. 3 is a perspective overhead view of the improved package of the present invention and showing the product disposed therein.

FIG. 4 is a sectional view taken along line 4-4 of FIG. 3.

FIG. 5 is a sectional view taken along line 5-5 of FIG. 4.

FIG. 6 is a perspective overhead view of the same container shown in FIGURES 1 through 5 illustrating the container's capacity for accommodating increased product volume.

FIG. 7 is a sectional view taken along line 7-7 of FIG. 6.

FIG. 8 is a sectional view taken along line 8-8 of FIG. 6.

FIG. 9 is a perspective view of another form of the support tray of the present invention.

FIG. 10 is a sectional view taken along line 10-10 of FIG. 9.

FIGURES 11 and 12 are perspective views of the same container as shown in FIG. 9 with product of varying size disposed therein.

As illustrated in FIG. 1 of the drawings, one embodiment of the tray structure of the present invention consists of a substantially flat tray bottom 21 with upwardly and outwardly flaring side walls 22-22' and end walls 23-23' integrally connected around the perimeter of bottom member 21 along hinge lines 24-24' and 25-25' respectively. The upper, longitudinal edge portions of side walls 22-22' and end walls 23-23' are formed so that they are inclined upwardly at an angle with respect to the horizontal plane of bottom member 21. The inclination angle shown in FIG. 2 for purposes of illustration is approximately 45° above the horizontal plane, however this angle may vary within a wide range for example from about 20° up to about 90°.

As shown in FIG. 1, wall members 22-22' and 23-23' have unrestricted side edges between adjacent wall edge portions, between end wall 23 and side wall 22' for example. The angle subtended between the wall edges permits the unrestricted upward flexure of side walls 22-22' and end walls 23-23' along hinge lines 24-24' and 25-25' respectively.

As illustrated in FIG. 3, the support tray of the present invention is employed to contain product 16 which has a cross-sectional area approximately equal to that of tray bottom 21. The tray and product 16 contained therein have been completely and securely overwrapped with transparent packaging film, a fragmentary section 12 of which is shown in FIG. 3. The tight film holds the side walls 22-22' and end walls 23-23' in a position substantially perpendicular with respect to the plane of tray bottom 21, the wall members having been rotated upwardly around hinge lines 24-24' and 25-25'.

As illustrated in FIG. 6, a tray identical in overall dimensions to the tray shown in FIGS. 1 and 3 is employed to contain products 16' the combined volume of which is considerably greater than that of encased products 16 illustrated in FIG. 3. In FIG. 6 the total cross-sectional area of products 16' is considerably greater than that of the surface area of tray bottom 21. As more clearly shown in FIG. 8, the side wall members 22-22' are substantially in the same plane as tray bottom 21, with only their upwardly contoured longitudinal edges being employed to properly position the overwrapped products

16' and restrict their movement upon the tray surface. As shown in FIG. 7 end wall members 23-23' are flexed upwardly along their respective hinge lines 25-25' to assist in positioning and securing the products 16' in the support tray. In instances where the support tray is employed to package product which would extend over hinge lines 25-25', the end walls would lie in a plane substantially the same as tray bottom 11 with only their upwardly contoured longitudinal edges being employed to properly position and retain the product disposed in the tray.

It is now apparent that, as illustrated particularly in FIGS. 3 and 6, a single size support tray of the present invention may be employed to contain and support a wide variety of various sized products. For example, products whose size or volume ranges are intermediate that of the products illustrated in FIGS. 3 and 6 may be conveniently contained in this tray, the degree of upward flexure of the side 22-22' and end wall 23-23' members being adjusted to suit the particular size of the product being packaged. It has been found in actual practice that the area and volume occupied by various products, when utilizing the tray structure of the present invention, may vary as much as 150% and still be accommodated by the same size tray.

FIG. 9 illustrates another embodiment of the tray structure of the present invention. The structure illustrated in FIG. 9 comprises a substantially flat bottom member 27, side wall 28-28' and end wall 29-29' members continuously and integrally connected to bottom member 27 along hinge lines 30-30' and 31-31' respectively, the hinge lines circumscribing the perimeter of bottom member 27. In this embodiment of the present invention the side edges of side and end wall members, 28-28' and 29-29', are interconnected with integrally formed webbed connecting members 32, the upper edges of webbed connecting members 32 being in substantially the same plane as the upper edges of side and wall members 28-28' and 29-29'. Web members 32 are designed in an accordion type or pleated configuration so that they may flex inwardly toward the center of the tray as side and end wall members 28-28' and 29-29' flex upwardly around hinge lines 30-30' and 31-31' respectively. Web members 32 function to join together the edges of the tray walls and yet are so designed as to permit flexure of the walls to accommodate to the size of the product contained in the tray. This type of support tray is especially useful in the packaging of fresh meats, poultry or other moisture emitting products, in that the natural juices and moisture exuding from such products will be retained interiorly within the confines of the continuous tray structure. The upper longitudinal edge portions of the tray side and end walls, 28-28' and 29-29' are contoured upwardly at an angle from the horizontal plane of tray bottom member 27. As in FIG. 1, FIG. 10 illustrates this angle as being approximately 45°, however, this is purely for purposes of illustration since this angle may vary in actual practice from about 20° up to about 90°.

FIGS. 11 and 12 illustrate the versatility inherent in this tray structure in that it also will accommodate a variety of sizes of products utilizing a single size of the support tray.

As illustrated in the drawings, it is preferred to employ a molded, one-piece construction for the trays of the present invention. The raw material being sufficiently flexible and soft to allow for the impression of score lines,

i.e. the hinge lines referred to herebefore as 24-24'; 25-25' and 30-30'; 31-31' in the drawings. It has been found that foamed polystyrene lends itself very well to this type of molded, one-piece construction. However, other materials of a more rigid composition may also be employed, for example, high impact polystyrene, crystalline polyethylene, nylon, polybutene, high density polyolefins and others, the only criterion being that when support trays are formed from more rigid materials, they must be capable of flexing upwardly at the junctures of the tray base and the side and end wall members. When more rigid materials are employed, this may be accomplished by fabricating the trays from individual base and wall component parts and joining them with a flexible hinge material such as tape, elastic adhesives or the like.

Although a variety of molding techniques may be employed to form the support trays of the present invention the preferred formation technique when employing foamed polystyrene as the construction material is a thermoforming method wherein known thermoforming techniques are employed to mold the support trays of the present invention. Other forming methods include steam-chest molding utilizing a charge stock of expansible beads of polystyrene or other foam forming polymers, blow molding, injecting molding, rotational molding or other techniques may also be employed.

Although the present invention has been described with preferred embodiments, it is to be understood that modifications and variations may be resorted to, without departing from the spirit and scope of this invention, as those skilled in the art will readily understand. Such variations and modifications are considered to be within the purview and scope of the appended claims.

What is claimed is:

1. A packaging tray which comprises a substantially flat bottom portion, a pair of side walls having their bottom edges integrally joined to the side edges of said bottom portion, a pair of end walls having their bottom edges integrally joined to the end edges of said bottom portion, said side walls and said end walls being substantially in the same horizontal plane as said flat bottom portion and having their outer edges contoured upwardly, a hinge line at the juncture of the edges of said bottom portion with said side and end wall edges, whereby said end and side walls can be flexed upwardly about said hinge line joining said side and end walls to said flat bottom portion.

2. A packaging tray as defined in claim 1 wherein said side and end walls have exposed side edges.

3. A packaging tray as defined in claim 1 wherein said side and end walls have interconnected side edges.

4. A packaging tray as defined in claim 1 wherein said bottom portion and said side and end walls are composed of foamed polystyrene.

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