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[21] Appl. No. **795,141**
[22] Filed **Jan. 27, 1969**
[45] Patented **May 25, 1971**
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[54] **CLEAR THERMOPLASTIC MULTI-PLY MEAT TRAY AND ABSORBENT STRIPS**
8 Claims, 6 Drawing Figs.

[52] U.S. Cl..... **220/83,**
99/174, 156/178, 161/57
[51] Int. Cl..... **B65d 7/42**
[50] Field of Search..... **220/83;**
229/2.5; 156/178; 161/57; 99/174; 206/46

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ABSTRACT: A clear, plastic tray, and a method for the production thereof, intended for the packaging of food products, such as meats, and the like, where the package contents will be clearly visible. The tray is completely transparent and is produced from sheet material which includes a preinserted strip or plurality of strips of absorbent cellulosic material for the reception and retention of any fluid or fluids which may drain from the package contents subsequent to the packaging.

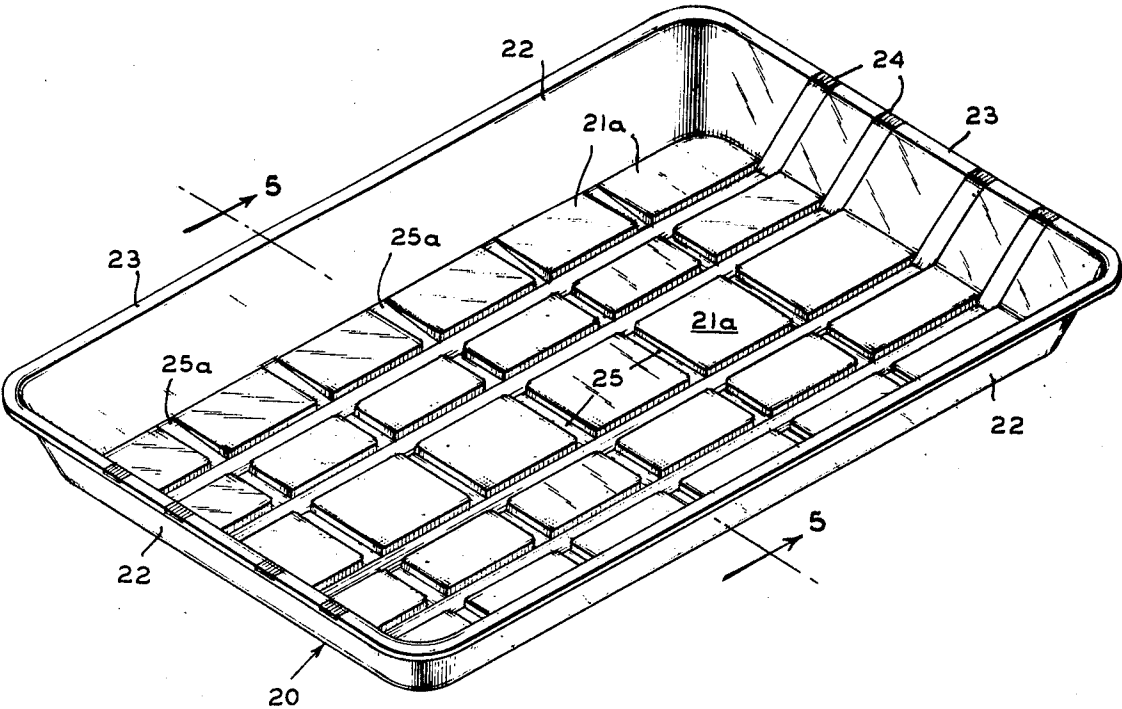


FIG. 1

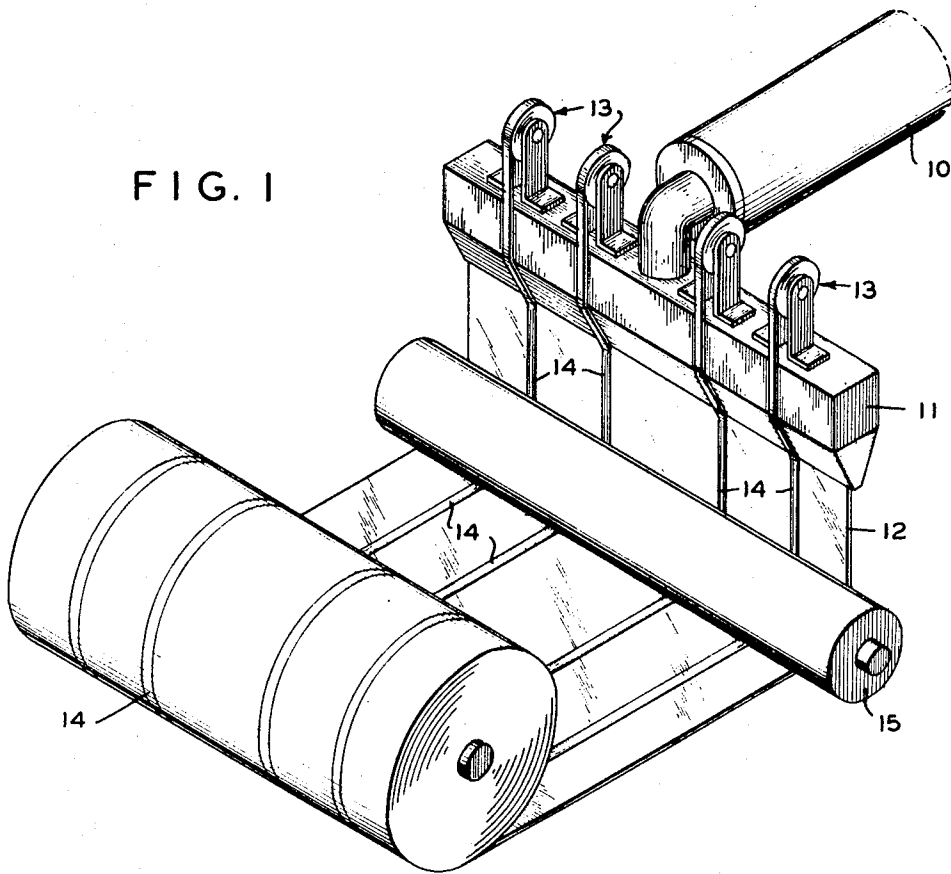


FIG. 2

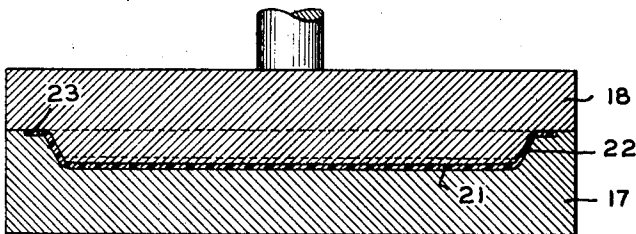
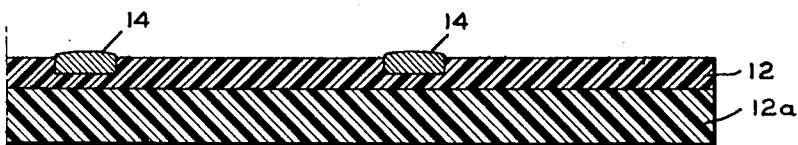


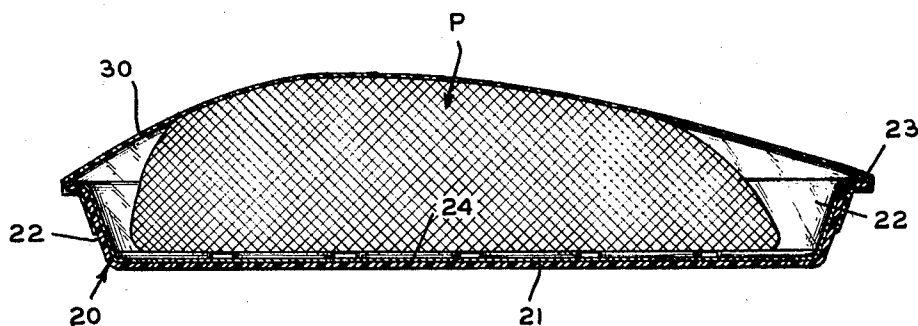
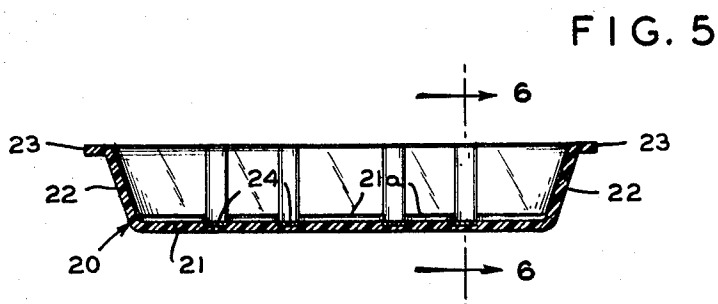
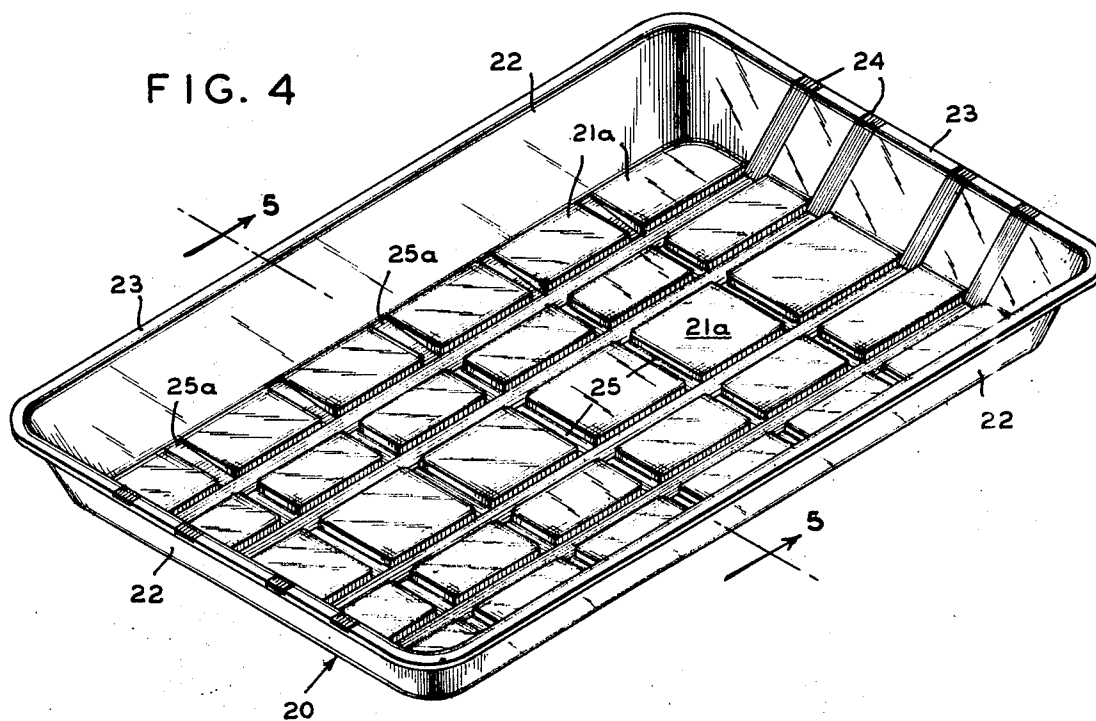
FIG. 3

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CLEAR THERMOPLASTIC MULTI-PLY MEAT TRAY AND ABSORBENT STRIPS

This invention relates to plastic trays for the packaging of food products, and the like, and more particularly to such a tray produced from transparent material and having see-through characteristics whereby the top and bottom surfaces of the contents, as well as the side or edge surfaces, will be subject to inspection by the prospective purchaser.

It is known in the art to produce trays of the character with which we here are concerned from such materials as polyethylene, polypropylene, polystyrene, polyvinyl chloride, and the like. Such trays are widely used and, for many purposes, are highly satisfactory. However, where the package contents are of such a nature that drainage occurs within the package, trays of this character become highly unsatisfactory since certain products, and meats in particular, discolor rapidly when in contact with the tray surface and often deteriorate to the point of spoilage.

This situation is further aggravated by drainage or exudate from the product, whether blood or bloody colored water, which flows to the edges of the tray and is not only unsightly but also is repelling to the prospective purchasers.

It is known to place a sheet of absorbent material in the tray located immediately beneath the contents. Such sheet material will, of course, absorb drainage. However, at the same time, the rate and degree of drainage is accelerated to the detriment of the packaged product by reason of capillary attraction. Further, such sheet material prevents inspection by the prospective purchaser of the bottom surface of the package contents and, with a view to consumer protection, laws are being formulated and have been adopted in certain states requiring that no more than 10 percent of the surface area on the top or bottom surfaces of the contents may be obscured as by packaging materials and label.

It is a major purpose of the present invention to produce a transparent plastic tray of the class set forth having novel means for the absorption of drainage from the product contained therein, while at the same time providing substantially complete visibility of the package contents.

It is a further object of the invention to provide an improved plastic tray for the packaging of food products, particular consideration being given to such products as meat, poultry, and the like, which exude moisture, the novel package maintaining a clean, fresh, and wholesome appearance even when a substantial amount of exudate is present therein.

It is a still further object of the present invention to provide a novel clear plastic tray of the class set forth which will have means incorporated therein for the absorption and retention of exudate occurring within the package thereby preventing the dispersion thereof to the serious detriment to the appearance and quality of the packaged products.

It is a still further object of the invention to provide a novel method for the production of clear plastic sheet wrapping materials, for the packaging of food products or from which plastic fully transparent trays may be produced, said sheet wrapping material having incorporated therewith relatively narrow strips of cellulosic and absorbent material for the reception and retention of any exudate from the package contents.

Further objects and advantages of the invention will be readily apparent from the following description, taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view illustrating, somewhat diagrammatically, extrusion apparatus for the production of transparent plastic sheet material having imbedded therein, simultaneously with the extrusion operation, spaced strips of absorbent cellulosic material, such wrapping material being highly suitable for the packaging of food products or for use in the direct molding of clear plastic trays of the class with which we here are concerned;

FIG. 2 is a fragmentary sectional view, on a substantially enlarged scale, through laminated plastic sheet wrapping material produced in accordance with the present invention;

FIG. 3 is a detail sectional view illustrating, somewhat diagrammatically, molding apparatus for the production of a clear plastic tray from sheet material produced in accordance with the present invention;

FIG. 4 is a perspective of a molded clear plastic tray produced by the apparatus of FIG. 3;

FIG. 5 is a transverse sectional view taken on the line 5-5 of FIG. 4; and

FIG. 6 is a longitudinal sectional view through the plastic tray of FIG. 5, taken on the line 6-6, and illustrating (conventionally) a food product contained within the tray and an over-wrap of suitable thermoplastic material to provide a finished and sealed package.

As shown in the drawings, particular reference being had to FIG. 1 thereof, the extruder 10 delivers molten plastic material such as polyethylene, polypropylene, polystyrene, polyvinyl chloride, or other suitable olefin, directly to the die 11 which has an elongated and narrow discharge orifice through which the molten plastic material exits in sheet form as indicated at 12.

The thickness of the sheet 12 may vary through an extremely large range, in accordance with the width of the orifice and the required end use. Where the production of plastic trays is contemplated, the sheet may range in gauge from 20 mils to 125 mils. Further, laminar extrusion techniques may be employed, as is known in the art, whereby the extruded sheet may be constituted by more than a single layer and such layers may be of similar or dissimilar plastic materials. Thus, it would be a simple matter to laminate a sheet having, for example, one layer of polyethylene and another layer of polypropylene, or a sheet having a layer of one plastic material sandwiched between two layers of a dissimilar material. Such combinations are known and are utilized to meet desired requirements as to strength, transparency, gloss, and the like.

A plurality of spaced rolls 13 of relatively thin strips of cellulosic material 14 are located adjacent the die 11 and are mounted in any desired manner whereby the extremities of the strips 14 will be presented to the extruded sheet 12 as it leaves the die orifice in substantially molten condition. A casting roll 15 is mounted adjacent the die orifice and substantially in the path of the extruded sheet 12, the distance between the casting roll 15 and the die orifice being sufficiently great that the extruded sheet 12, carrying therewith the extremities of the strips 14, will have cooled at ambient temperature to self-sustaining condition.

The sheet 12 is then drawn beneath the casting roll 15 which, desirably, is furnished with a highly polished chrome surface to provide an appropriate finish, having requisite characteristics as to gloss, etc., on the material being produced. Simultaneously with the sheet 12 contacting the casting roll, the cellulosic strips 14 are embedded within the upper surface of the sheet, which has not yet fully solidified, as is indicated more clearly in FIGS. 2 and 5 of the drawings, and the finished wrapping material thus produced is carried to a wind-up roll 16 or other suitable storage facility.

The sheet 12 may be laminar and include an outer layer 12a of a similar or dissimilar polyolefin. Thus, the inner layer with the cellulosic inserts might be produced from polypropylene having increased rupture resistant characteristics while the outer layer might be polyethylene thereby providing greater flexibility and heat sealing characteristics. The material thus described is highly suitable for wrapping and packaging and, if desired, may be fabricated into bags with particular facility. Thickness may vary through a wide range. It has been found in practice that the thickness of the cellulosic strips may be approximately 50 percent of the sheet material. Thus, for example, the cellulosic strips may have a thickness of approximately 5 mils in sheet material which is 10 mils thick. For highly satisfactory molded trays, an outer layer approximately 20 mils in thickness may be employed.

Such material may be molded into trays having maximum rigidity and nesting characteristics and appropriate molding apparatus has been illustrated conventionally in FIG. 3 of the

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drawing. As shown, the mold includes a female base portion 17 and a male upper portion 18 which mate to produce a rigid tray 20 having a bottom wall 21, outwardly inclined sidewalls 22, and a marginal edge or bead 23. Spaced cellulosic strips 24 are imbedded in the upper surface of the bottom wall 21 and, desirably, a plurality of grooves or channels 25 are provided to uniformly lead any exudate from the package contents directly to the absorbent strips 24.

As shown more clearly in FIG. 4 of the drawings, the grooves or channels 25 may provide an ornamental effect, with spaced, slightly raised surfaces 21a therebetween, each extremity of the centrally located grooves or channels 25 leading directly to an absorbent strip 24 while the outermost of said grooves or channels may be angularly inclined as illustrated at 25a to prevent any accumulation of exudate at the marginal edges of the tray.

Simple molding techniques, under appropriate conditions of elevated temperature and pressure, are all that are required to produce rigid trays, as illustrated and described, with particular economy. If desired, the surfaces 21a may be elevated slightly above the upper surfaces of the cellulosic absorbent strips 24 thereby avoiding direct capillary drainage thereto of exudate.

As illustrated in FIG. 6 of the drawing an overwrap 30 may be provided, produced from transparent readily heat-sealable and moisture-impervious sheet material such as polyethylene, or the like, to produce a completely sealed and highly attractive finished product having substantially complete visibility of packaged contents illustrated conventionally as at P.

There has thus been described a novel, transparent packaging material which is particularly suitable for the packaging of food products, such as meat, or the like, where control or prevention of moisture build up is of particular importance. The interior surface of this packaging material, which may be fabricated or molded into rigid receptacles of any desired configuration such as trays and the like having see-through characteristics, includes a plurality of spaced, pressed-in strips of absorbent cellulosic material, the number, thickness, and width of such strips having direct relationship to the size and nature of the packaged product, for the absorption of a substantially large percentage of natural juices, or liquids, which may exude from the package contents.

It will be obvious to those skilled in the art that various

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changes may be made in the invention without departing from the spirit and scope thereof and reference is had to the claims for summaries of the essentials of the invention and novel features of construction, for all of which protection is desired.

I claim:

1. A plastic receptacle for holding a moisture-containing food product such as meat or the like, said receptacle including a bottom wall and sidewalls extending upwardly therefrom, the upper surface of said bottom wall including a plurality of spaced, absorbent cellulosic strips imbedded therein and extending continuously across said upper surface and upwardly across the inner surface of the two adjacent sidewalls of said receptacle, and a plurality of spaced channels in said upper surface, providing communication between adjacent spaced cellulosic strips.

2. The receptacle of claim 1, wherein the plastic material from which the receptacle is fabricated is transparent.

3. The receptacle of claim 2, wherein the total area of the cellulosic strips is no more than 10 percent of the area of the side and bottom walls of the receptacle.

4. The plastic receptacle of claim 1, wherein the material from which the receptacle is fabricated is a laminate of an upper layer of polypropylene and a lower layer of polyethylene.

5. The receptacle of claim 1, wherein the upper surface of the bottom wall is raised above the upper surface of the absorbent cellulosic strips.

6. A transparent plastic tray comprising a bottom wall and four sidewalls extending upwardly therefrom, the upper surface of said bottom wall including a plurality of substantially parallel, spaced, absorbent cellulosic strips imbedded therein and extending continuously across said upper surface and upwardly across the inner surface of the two sidewalls which are transverse the direction of said strips and a plurality of spaced channels in said upper surface providing communication between adjacent cellulosic strips.

7. The tray of claim 6 wherein the cellulosic strips are narrow so as to provide substantially complete visibility of a food product held thereon.

8. The tray of claim 6 wherein the plastic portion comprises a laminate of an upper layer of polypropylene and a lower layer of polyethylene.