Nov. 12, 1968 L. PETERS 3,410,699

METHOD OF AND MEANS FOR EMBOSSMENT AND PACKAGING OF COLD BUTTER

Filed Oct. 21, 1964 3 Sheets-Sheet 1

FIG. 3

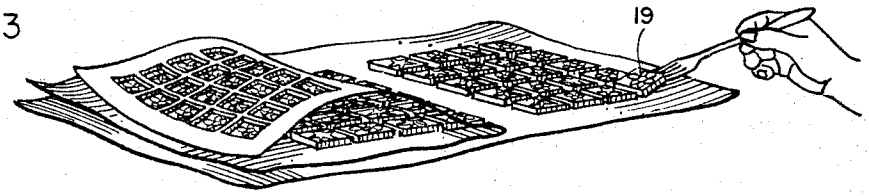


FIG. 1

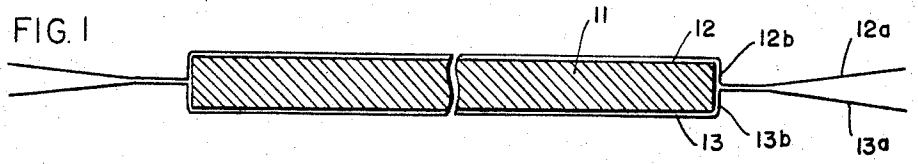
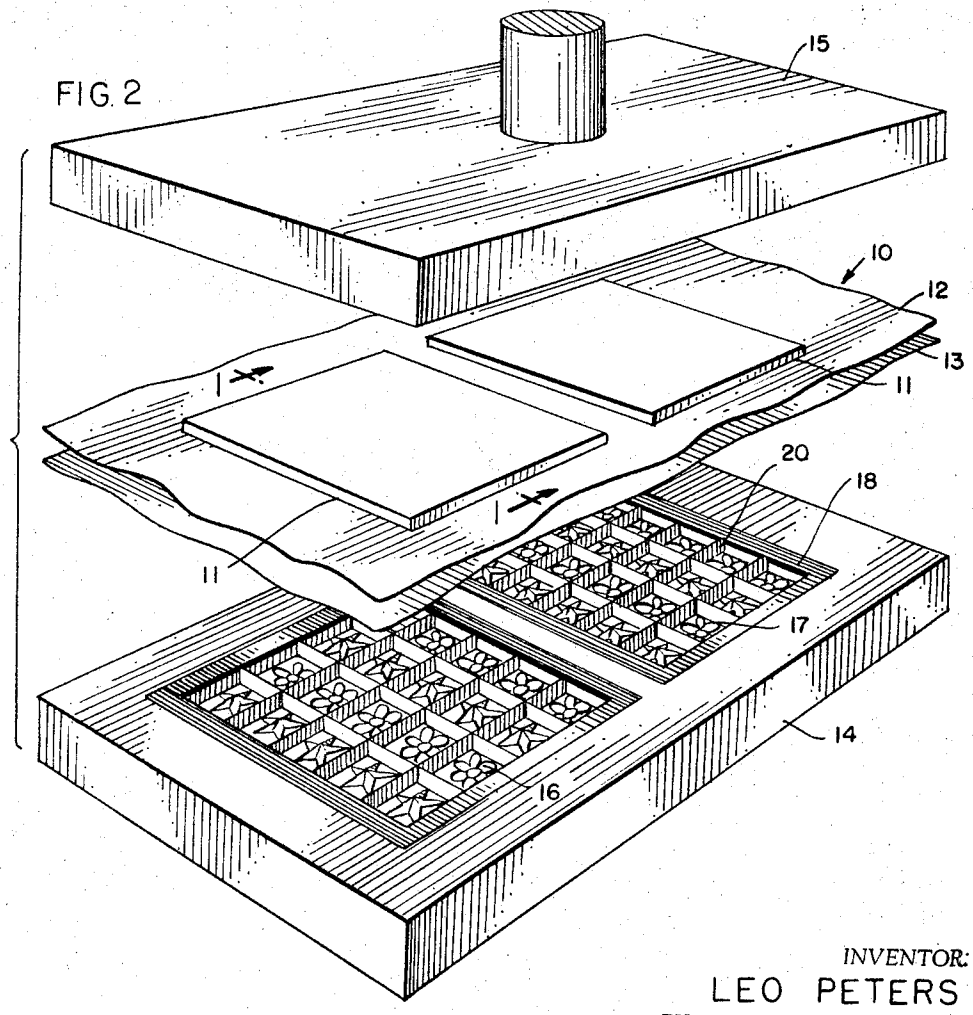


FIG. 2



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METHOD OF AND MEANS FOR EMBOSSMENT AND PACKAGING OF COLD BUTTER

Filed Oct. 21, 1964 3 Sheets-Sheet 2

FIG. 4

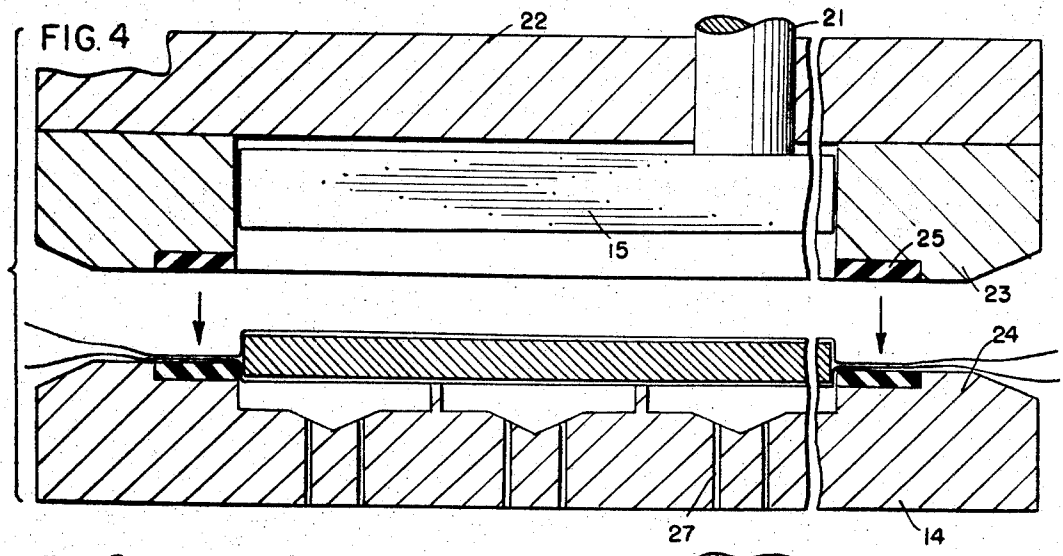


FIG. 5

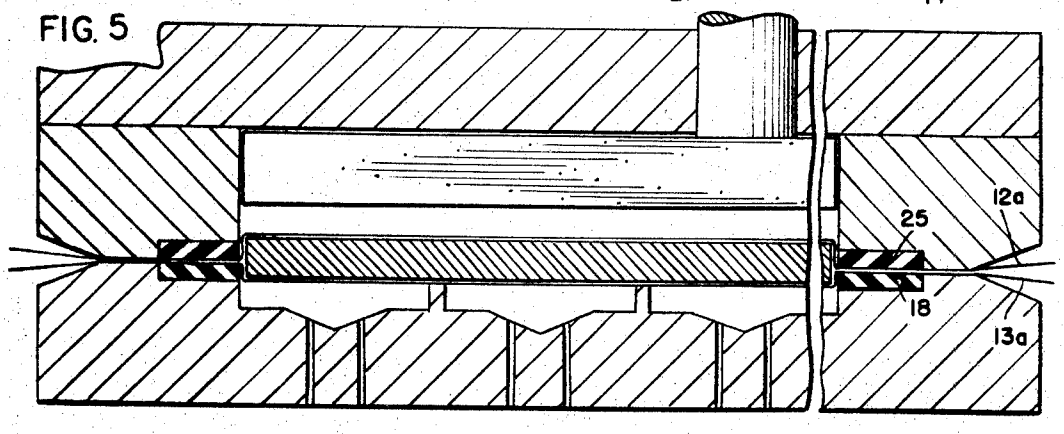
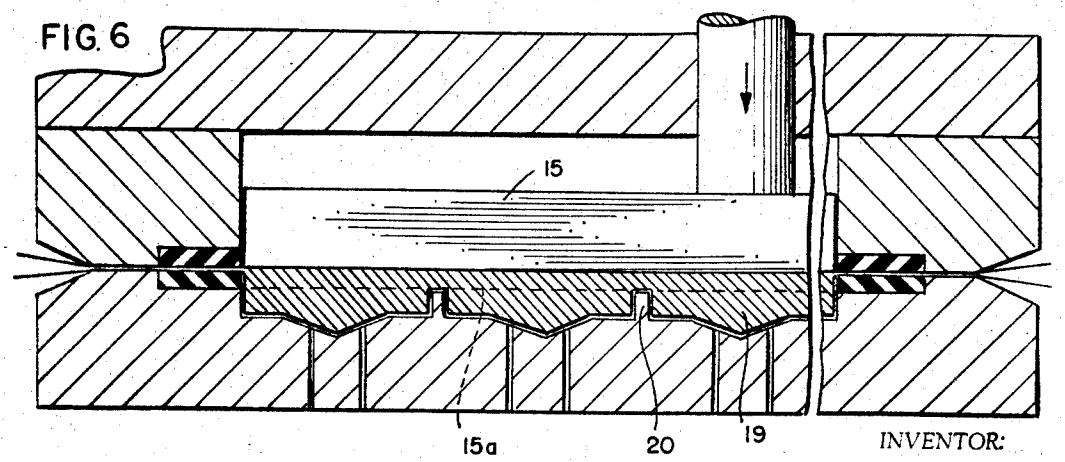


FIG. 6



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METHOD OF AND MEANS FOR EMBOSSMENT AND PACKAGING OF COLD BUTTER

Filed Oct. 21, 1964 3 Sheets-Sheet 3

FIG. 7

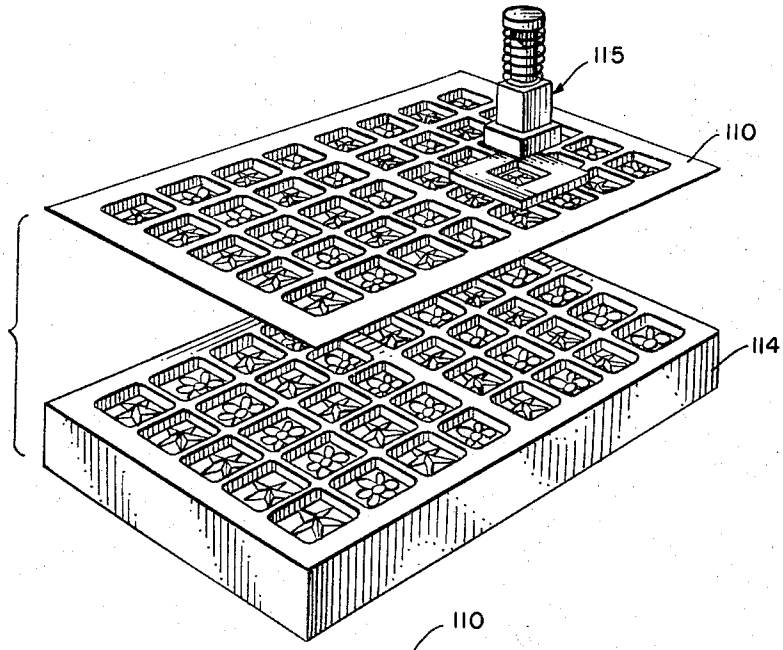


FIG. 8

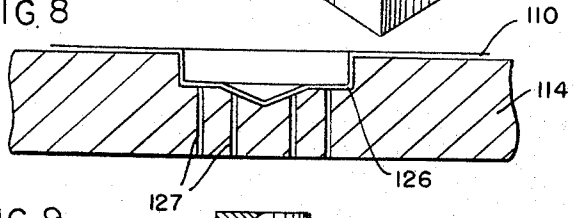


FIG. 9

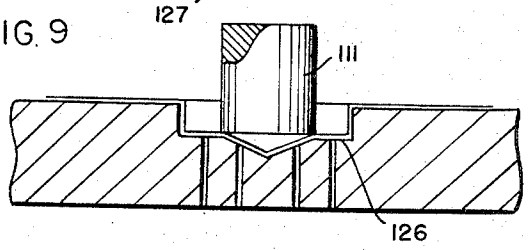


FIG. 10

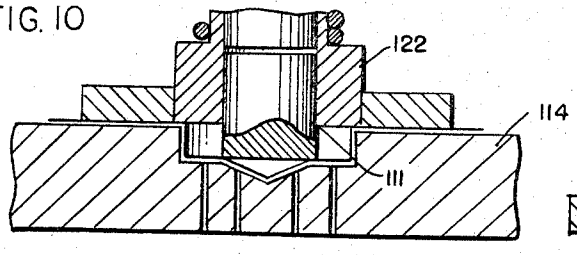


FIG. 11

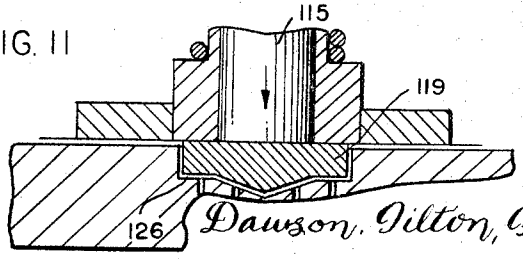
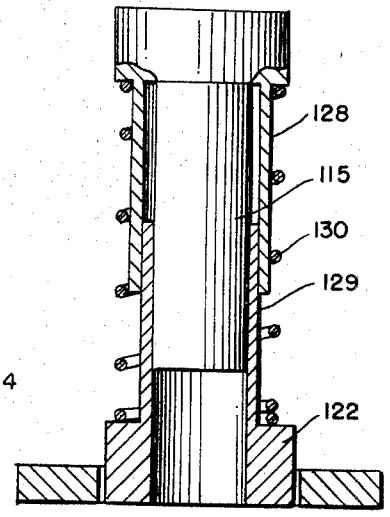


FIG. 12



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3,410,699

METHOD OF AND MEANS FOR EMBOSSMENT AND PACKAGING OF COLD BUTTER

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Filed Oct. 21, 1964, Ser. No. 405,514
11 Claims. (Cl. 99—179)

ABSTRACT OF THE DISCLOSURE

Use of a flexible film such as polypropylene between a blank of cold butter and a female die to form an upstanding embossment on the blank.

"Cold butter" as used herein refers to butter at any temperature that renders it nonflowable under the influence of gravity, i.e., all temperatures below 70° F. and down to 0° F. Within this temperature range, butter can be moved and molded only with relatively high pressures, ranging from a few pounds per square inch at the 70° F. temperature to hundreds of pounds per square inch in the freezing range temperatures. In commercial practice, and more particularly for this invention, it refers to (but is not limited to) the historically-used packaging temperatures in the general range of 35–55° F. Within this range again, butter can be moved and molded only with relatively high pressures, pressures ranging from about 50 p.s.i. to about 150 p.s.i. or more, depending upon the temperature of the butter and the type of forming machine used.

"Embossed" surfaces — multi - cubic - dimensioned. By this is meant:

(1) Surfaces that are "upraised" above the plane on which the designs are set. This is in distinction to surfaces that are engraved, i.e., having designs "cut in" below the plane on which the designs are set.

(2) Finely delineated (as fine as 1/64" wide), multi-cubic-dimensioned surfaces, having depth, breadth, and height (in distinction to cut-in depth only), with lines of definition able to branch off in any number of directions.

"Commercial production." By this is meant production that provides methods enabling products to be successfully sold in the competitive mass market in the United States. To be such, production must be fast, make accurately-finished multiple duplicates, and with both production methods and packaging means low in cost. This is in distinction to manual, or hand production, which is slow, inaccurate in duplication, and high in both production and packaging costs.

The problem of producing decorative-surfaced embossments on cold butter is both old and pressing. For centuries there has existed a pressing demand and a continuing search for a commercially-practical solution to the problem. During these centuries, the market demand for such butter has been met and curbed by a trickle of high-cost, crudely-formed products, manually produced at the point of use because no commercially-practical methods of production and shipment have been in existence.

For those experienced in food packaging, butter is considered an unusually sticky product that will adhere to practically any surface against which it is pressed for molding. This adhesive quality varies somewhat with the temperature of the butter: the lower the temperature, the less its adhesive, and the greater its cohesive quality; and vice versa, the higher the temperature, the greater its adhesive, and the less its cohesive, quality.

It is an important objective, therefore, of this invention to provide a method and means which will enable embossed butter to be removed from its embossment die

quickly and cleanly no matter how great its adhesion to the die-forming walls becomes under the combined influence of stickiness and high pressure.

My invention includes an integral web of material with the ability to cover the inside surfaces of an embossing die smoothly and tightly without adhering thereto; to function as an interleaf and a divider between a die and butter pressured against it, while at the same time sticking to butter pressured against it so that it will adhere to the butter and not to the die upon its removal from the die.

The web has an ability to conform smoothly and adhere tightly and completely to butter pressed against it, so that it will function as a tight-fitting, air-excluding, completely packaged, contact between itself and butter.

Upon release from this packaged contact, either at point of production or at point of consumption, the web has an ability to reverse its adhesion to butter.

A commercially acceptable mechanical means for impressing embossed surfaces on cold butter.—In the practice of my invention, I employ a simple but non-obvious modification of the male into female method used in certain metal-working industries for die-sinking embossed surfaces on such objects as coins, medals, jewelry, etc., by inserting a surface-conforming interleaf or divider (as described heretofore) between the male and female members.

The male member in my preferred use of this invention becomes the member to be formed; it is a release agent-encased blank or slab of butter of a predetermined amount needed to fill the female embossing die. The female member here is the accurately preformed embossing die. Thus, a relatively soft release agent-encased male member (butter) is formed by being punched into a hard female member (the embossing die). The release agent may optionally line the female member instead of encasing the male member before the punching operation takes place. In either event, the release agent functions so that the hard female embossing die and the soft male butter blank may be pressed (a) into skin-tight, form-fitting, but (b) out-of-direct-contact relationship in order that (c) the butter will be properly embossed and pressure-packaged without sticking to the die, and (d) will be easily and cleanly releasable from both the die and the package after embossment.

The invention is described in conjunction with the accompanying drawings, in which—

FIG. 1 is an enlarged fragmentary sectional view of the construction seen in the central portion of FIG. 2 and such as would be seen along the sight line **1—1** applied to the central portion thereof;

FIG. 2 is an exploded perspective view of apparatus arranged to practice the invention in embossing cold butter blanks, with the central portion thereof generally designated **10** being a perspective view of cold butter blanks packaged in film according to the preferred version of the invention and prior to the development of embossed surfaces;

FIG. 3 is a perspective view of cold butter blanks packaged in film according to the preferred version of the invention after embossment has taken place and with the embossed side of the packaging film partially peeled back to show completed, individually embossed molds of butter ready to dispense for consumer use;

FIG. 4 is an enlarged fragmentary view, partially in section, of the apparatus of FIG. 2 and showing the same in condition for the hobbing operation to commence;

FIG. 5 is a view similar to FIG. 4 but at an intermediate stage of production wherein the upper member or die is brought into contact with the lower member;

FIG. 6 is a view similar to FIGS. 4 and 5, but showing the apparatus in a yet further stage of operation wherein

the butter blank has now been displaced into the female die portion of the lower member;

FIG. 7 is an exploded perspective view of an alternative apparatus for practicing the invention wherein only a single film sheet is employed;

FIG. 8 is an enlarged fragmentary sectional view of one of the female die portions of the apparatus of FIG. 7;

FIG. 9 is a view similar to FIG. 8 but augmented by the positioning within the female die of a cylindrical blank of cold butter;

FIG. 10 is a view similar to FIGS. 8 and 9 and showing the apparatus of FIG. 7 in a yet further condition of operation characterized by the fact that the blank of butter is now confined by an upper sleeve or frame;

FIG. 11 is a fragmentary sectional view of the apparatus of FIG. 7 showing the blank now displaced into the female die member for the purpose of developing an embossed surface; and

FIG. 12 is an enlarged elevational view, partially in section, of the plunger mechanism seen in perspective view at the extreme upper portion of FIG. 7.

In the illustration given and with particular reference to FIG. 2, the numeral **10** designates generally a product arranged for the development of a plurality of embossed butter pats and which includes a pair of blanks **11** each of which may measure about 8" x 5" and which are confined between upper and lower films **12** and **13**. Advantageously, for very delicate embossments, the films may be 0.0005" polypropylene, which films are characterized, among other things, by the unique ability to produce a high degree of cold stretch with substantially no recovery after stretching, thereby affording excellent packaging material for the practice of the preferred form of the invention. The wrapper-liner films **12** and **13** are applied to the cold butter blanks **11** to form the construction seen in FIG. 1 where the edge portions **12***a* and **13***a* extend outwardly from the central portions of the films **12** and **13** in order to function both as gaskets during the embossing operation and as readily available, easy to grasp, handles during the wrapper-removal operation. Advantageously, films **12** and **13** may be applied to the cold butter through an "ironing" operation relative to the large top and bottom surfaces, and a rolling or peening operation along the sides so as to develop a superior form fit, particularly as at **12***b* and **13***b* along the sides. Advantageously, these operations are performed sequentially so as to substantially remove air from within the film-enveloped blanks. It will be appreciated that the elimination of air is advantageous in implementing the embossing. The presence of air bubbles could result in unsightly blemishes.

The blank package **10** thus achieved is seen to be positioned (now referring to FIG. 2) between a lower member **14** and an upper member **15** suitably provided on a frame (not shown). The lower member **14** has a pair of female die configurations as at **16** and **17**, each of which is surrounded by a perimetric resilient material gasket as at **18**. Defining the shapes of the patties ultimately developed as at **19** (see the central portion of FIG. 3), is a network of upstanding walls as at **20**, each of which is relatively thin—of the order of 1/16"—and which cooperate to define the outer limits or dimensions of each patty **19**.

Ultimately the upper member **15** which is advantageously provided in the form of a plunger (compare FIGS. 5 and 6) is depressed to the level designated **15***a* in FIG. 6, wherein the lower edge of the plunger member **15** is designated in dotted line and corresponds to the upper surface of the upper film **12**. Through the coaction of the walls **20** and the plunger **15**, the films **12** and **13** are brought together in contacting relation immediately above the walls **20** so as to facilitate separation of the now-embossed patties (also designated **19** in FIGS. 1 and 6). For the purpose of bringing about this result, the plunger member **15** is reciprocably mounted—as by a shaft **21**—within an upper frame **22**. The upper frame **22** carries a depending perimetric flange as at **23** adapted to contact the upstanding perimetric flange **24** provided on the lower member **14**. The depending flange **23** is equipped with a gasket **25** corresponding in character and extent with the gasket **18**, and it is seen that in proceeding from the configuration of elements in FIG. 4 to that of FIG. 5, the initial stage is for the gaskets **18** and **25** to be brought into contact so as to tightly clamp the edges **12***a* and **13***a* of the upper and lower films. After the above-mentioned clamping has been achieved, the plunger **15** is lowered through the solid line position of FIG. 6 to the dotted line position also seen therein for the purpose of developing the patty configuration illustrated schematically in the central portion of FIG. 3. Air entrapped temporarily below the plunger member **15** and above the film **12** escapes upwardly around the plunger member **15** and out of the apparatus.

Now referring to the third drawing sheet, the alternative method of practicing the invention is seen. There, a single liner sheet is provided as at **110** and individual plungers as at **115** are utilized in combination with a multi-female die-equipped lower member **114**. As was the case with the preferred form of the invention, each female of the die-set is suitably engraved, i.e., depressed, so as to result in the formation of an embossment on the butter blank. The sequence of operations can be appreciated best from a consideration of FIGS. 8–11, where the base **114** is first seen equipped with the film **110**—the film **110** having been vacuum-drawn into the die cavity **126** by vacuum having been exerted through the plurality of ports **127**. Thereupon, a cylindrical blank **111** (see FIG. 9) is placed within the die cavity **126** and thereafter a confining frame as at **112** is lowered over the blank **111** and into contact with the upper surface of the lower member **114**. Lastly, a spring-loaded plunger **115** is lowered to bring the butter blank into conforming relation with the female embossing member **126** so as to develop an embossed butter party **119**.

In this connection, reference is made to FIG. 12, where the plunger **115** is seen to be equipped with a concentric sleeve as at **128**, the sleeve **128** being telescopically related to an upstanding sleeve **129** provided on the upper frame **122**. A coil spring **130** encircles the telescope sleeve so as to return the plunger **115** to the position shown in FIG. 12 after it has developed the embossed patty **119** by virtue of being lowered to the position seen in FIG. 11.

In the practice of the alternative form of the invention such as that seen in FIGS. 7–12, slightly higher gauges of film material may be employed such as up to 1.5–2.0 mil polyvinyl chloride. It will be appreciated that the film is formed initially in this alternative form by virtue of the application of vacuum, so materials satisfactory for vacuum forming may be employed.

In both instances, removal of the film-equipped patty is achieved through an initial movement essentially parallel to the movement of the plunger **15** or **115**, as the case may be, used to develop the embossed patty. In both instances, air which might interfere with the fine delineation of the embossment is removed from the female die, utilizing either the atmospheric pressure ports **27** (see FIG. 4) in the preferred form, or the vacuum ports **127** in the alternative form (see FIG. 8). In the preferred form of FIGS. 4–6, air is removed contemporaneously with the lowering of the platen or plunger, while in the FIG. 8 showing the air is removed initially, i.e., before any deforming force is applied to the blank **111**.

In both methods, the cold butter in its respective encasing films **12** and **13** or **110**, as the case may be, and after embossment has been completed as shown in FIG. 3 and partially in FIG. 7, is in completed packaged condition for ready shipment and/or removal from its package.

While in the foregoing specification a detailed description of the invention and its application to cold butter has been set down for the purpose of illustration, many variations in the details herein given and their application for foods similar to butter, as, for example, mar-

garine, may be made by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. In a method of forming embossed surfaces on cold butter, the steps of interposing a flexible film liner between a butter blank and a recessed die engraved complementarily for the finished butter embossment, and applying pressure to said blank to form the same into said die recess.

2. The method of claim 1 in which said butter blank is confined between a pair of liners.

3. The method of claim 1 in which air is removed from said recess simultaneously with the application of pressure to said blank.

4. The method of claim 1 in which the formed blank is removed from said die recess by an initial movement generally similar to the angle of pressure application.

5. In a process for embossing the surface of cold butter, the steps of: interposing a thin, manipulable, flexible film, having stretch but no recovery, between a female embossing die and a blank of cold butter, exerting pressure on said blank sufficient to press said blank against said film and, in turn, both film and blank into said die so that both will be formed into an embossed surface complementary to said die, and so that after embossment both will adhere to each other in a complementary, skin-tight, air-excluding, immobile relationship.

6. The process of claim 5 in which air is removed from between said film and said blank of butter by draping and pressing said film smoothly over said blank.

7. The process of claim 5 in which said blank of butter is completely enclosed by said die and the means for exerting said pressure while said pressure is being exerted.

8. The process of claim 5 in which air is removed from between said film and said blank simultaneously with the exertion of pressure on said blank of butter.

9. In a packaging process wherein a blank of plain-surfaced cold butter is formed into an embossed-surfaced body, the steps of wrapping said blank in a thin, flexible, butter-adhering, metal-non-adhering, stretchable but nonrecovering, plastic film, strong enough to withstand without breaking the pressures required to emboss cold butter, in an air-excluding relationship, embossing said butter within a die-set in which an engraved embossing die is the female member, by applying sufficient pressure to impress butter of a specific temperature and hardness with the configuration of said female die member and to seal said wrapper into complete contact with a coverage of said embossed surface in an air-excluded, skin-tight, immobile, yet seal-breakable, cleanly releasable, packaged relationship.

10. A package comprising a blank of cold, unwhipped butter having its top equipped with a multi-cubic-dimensioned embossment and a flat bottom, said blank except for its bottom being completely covered by a thin, flexible, stretchable, embossment-conforming film-wrapper pressure-bonded in skin-tight, immobile yet reversible and cleanly peelable, relationship to said top by the pressure required to emboss cold butter.

11. A package comprising a cube of cold, unwhipped butter having at least one side with a multi-cubic-dimensioned embossment on its surface, said embossed surface and at least four of the remaining five sides of said cube completely covered by a thin, flexible, stretchable, embossment-conforming film-wrapper pressure-bonded in skin-tight, immobile yet reversbile and cleanly peelable, relationship to said surfaces by the pressure required to emboss cold butter.

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