

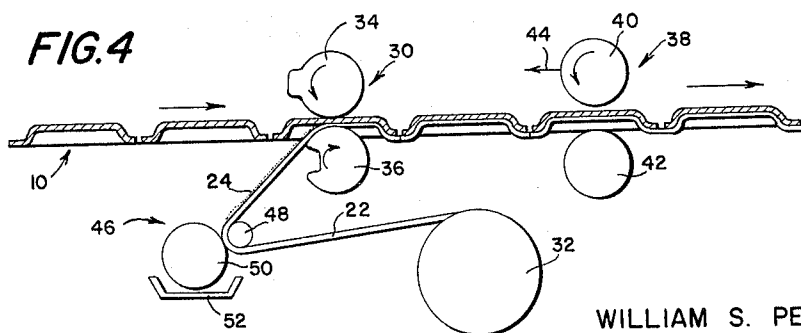
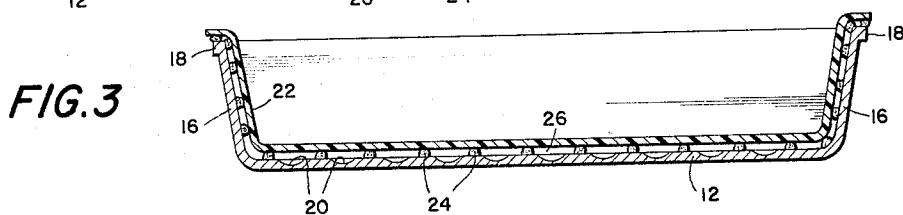
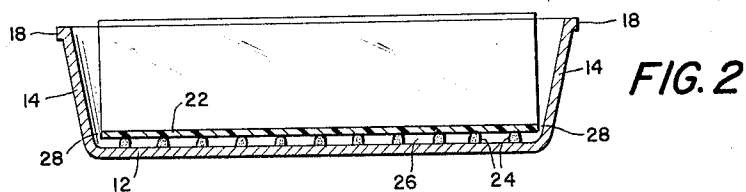
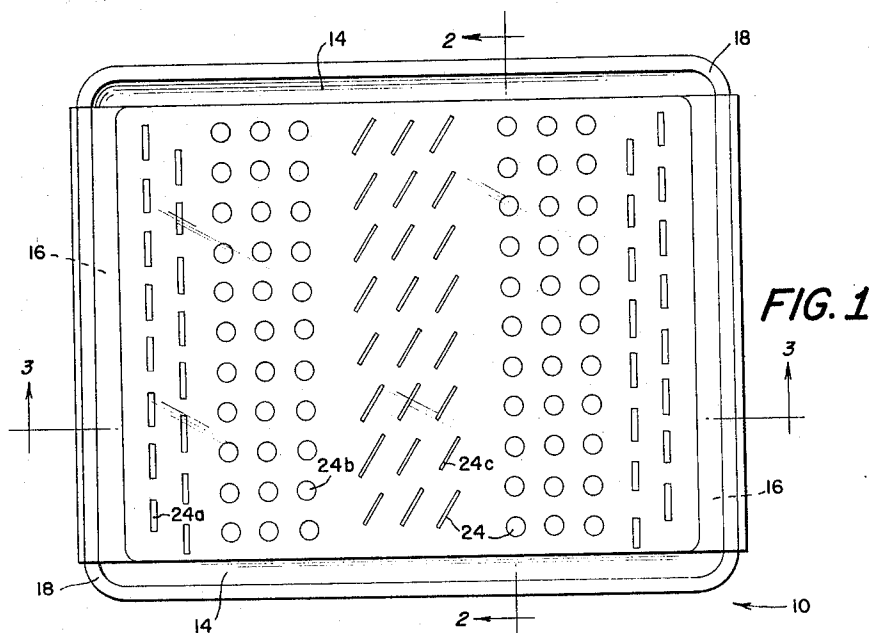
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FOOD CONTAINER

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FOOD CONTAINER

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The present invention relates to containers for the storage of food materials capable of exuding liquid, and methods of forming such containers. More particularly, the invention relates to paperboard or molded pulp containers especially suitable for the packaging of frozen meats, and to methods of making such containers.

Containers made of molded pulp or paperboard are customarily used in most retail food markets today for packaging fresh meats, poultry, fish or other commodities from which some natural juices are likely to exude. These containers are usually in the form of a shallow, generally rectangular tray, and also embody a transparent covering sheet of cellophane or polyethylene which may be wrapped around the tray and heat sealed to the bottom thereof. Such containers present an attractive display while providing adequate protection during the sale and temporary storage of the packaged foodstuffs, particularly for naturally juicy fresh poultry and the like, from which some blood or water may exude.

In packaging fresh meats or poultry in paperboard or pulp trays, it is desirable to have the tray pick up or absorb any exuded blood, free moisture or juice to keep the appearance of the package neat and to prevent such fluids from being free to run around the inside of the sealed package during normal handling by the customers or perspective purchasers. However, when the package and contents become solidly frozen, the tray is often difficult to remove from the product without pre-thawing the product slightly unless a special lining is provided.

Previous attempts to provide impervious lining materials for food containers which exude liquids have not been entirely satisfactory, particularly from an economic standpoint. Thus, the addition of an impervious liner has proven procedurally expensive. In addition, the use of an impervious liner generally obviates a significant advantage of the paper product container itself, i.e., its ability to absorb exuded liquid unless even further procedural operations are provided to make it somehow pervious to the liquid.

An object of the present invention is to bond an impervious lining to a paper-product tray bottom in such a manner so that exuded liquid can pass freely underneath when the contents are unfrozen, but which will permit the product to be readily stripped from the lining when the contents are frozen.

It is another object of the present invention to provide a method and paper-product food container which obviates the difficulties of the prior art, such as indicated above.

It is another object of the present invention to provide an inexpensive method and container but wherein the container is extremely effective to provide frozen release of the contents and absorb free liquid.

It is another object of the present invention to provide a pulp or paperboard tray having an impervious lining from which frozen food can be readily stripped, yet which tray effectively absorbs the exuded liquids around the sides of the impervious layer.

Another object of the present invention is to provide new and improved paperboard or molded pulp containers and method of forming such containers.

Another object of the present invention is to provide new and improved food containers for packaging na-

turally wet or juicy food which containers are provided with means for trapping any excess freely flowable liquids drained from the packaged food.

Another object of the present invention is to provide new and improved food containers having integral means for absorbing excess fluids without dehydrating the food packaged therein.

Other objects and the nature and advantages of the instant invention will be apparent from the following detailed description taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a top plan view of a paper-product container embodying the present invention;

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

FIG. 3 is a vertical sectional view taken along line 3-3 of FIG. 1; and

FIG. 4 is a schematic illustration showing the formation of a container of the present invention.

In order to illustrate the principles of the invention as applied to a typically widely used article of commerce, the paper-product trays embodying the invention shown in the drawings appear relatively shallow and generally rectangular in overall configuration, and it should be understood that this configuration may be varied as desired. The illustrated trays are particularly suitable for the packaging of fresh meat, poultry or fish for sale in retail food markets.

The container shown in FIGS. 1-3 comprises a paper-product tray 10 having a generally flat horizontal bottom wall 12 from the edges of which project four integral upstanding inclined side walls 14 and 16 terminating in a peripheral lip 18. If desired, the upper surface of the bottom wall 12 may be provided with a multiplicity of cup-shaped depressions 20 uniformly distributed over the entire area of this surface, such as is shown in FIG. 3 and is described in greater detail in Patent No. 2,974,843.

As previously indicated, the tray 10 is formed of a paper-product material and it is preferably either molded from pulp or fabricated from paperboard, such as are well known in the art.

A strip of impervious material 22, which may be plastic film, metal foil or other suitable material, is fastened to the bottom of the tray 10 by means of a discontinuous pattern of adhesive 24 which securely bonds the impervious barrier layer 22 to the tray 10 without impeding the flow of free moisture onto the upper surface of the tray bottom 12. The impervious barrier layer 22 preferably extends up to the lip 18 of the tray on two opposing side walls 16 to facilitate the lining operation.

As shown in FIG. 1, the discontinuous adhesive pattern may take any desired configuration, such as transverse dashes 24a, dots 24b, inclined dashes 24c, or any other suitable configuration. FIGS. 2 and 3 show an exaggerated thickness of the adhesive 24; in actuality the layer 22 is separated from the bottom 12 and the side walls 16 by a very narrow thickness 26 which is, however, sufficiently great so as to permit exuded liquid to travel between the adhesive spots 24 so as to be absorbed by the bottom 12 between the adhesive spots 24 and/or be retained within the depressions 20, as well as being retained within the space 26 itself.

An important feature of the present invention is the width of the impervious barrier layer 22 with respect to the width of the bottom 12 of the tray 10. Thus, it is important that the impervious layer 22 be no wider than the width of the bottom wall 12 and preferably be slightly narrower than the width of the bottom layer 12 so as to provide openings 28 between the walls 14 and the edge of the barrier layer 22 to permit the flow of exuded liquid around the edges of the barrier layer 22 and from there

into the space 26 to be retained in the bottom wall 12 as previously described.

If the edges of the impervious liner 22 contact the walls 14, exuded liquid may still find its way to the space 26 between the liner 22 and the bottom 12, but in this case it can reach the space 26 only by capillary action; therefore providing a space 28 at each edge of the layer 22 is desired.

It is also desirable to extend the liner 22 up the side walls 16 to the top thereof primarily for fabricating purposes since the equipment necessary to form the laminated tray is simpler and less expensive in this case. However, the product itself is somewhat superior when the liner extends all the way up the opposing walls 16 because this will inhibit sticking of the frozen food to the side walls 16 of the paper-product tray 10.

The liner 22 is, as indicated above, preferably formed of metal foil or plastic film and either of these materials has been found to have suitable non-sticking and frozen release properties. While the liner 22 may be perforated to permit liquid to flow therethrough into the spaces 26 to be absorbed by the bottom wall 12 (rather than, or in addition to, flowing around the edges of the layer 22 through the openings 28), this has been found to be less advantageous due to the fact that it requires an additional processing step, forming the holes, thereby increasing the cost and also because the food will still have a slight tendency to freeze to the bottom wall 12 through the holes thus provided.

While it is preferred that the discontinuous pattern of adhesive 24 be provided between the impervious layer 22 and the tray 10 along the entire length of the layer 22, it may be desirable in some instances to provide the adhesive pattern 24 between only sections of the facing layers; thus, the liner 22 may be adhered only to the side walls 16 or only to the bottom 12 of the tray 10.

FIG. 4 is a schematic illustration showing the formation of the container of FIGS. 1-3. In general, a series of the pulp or paperboard trays 10 are passed in essentially edge-to-edge contact past a pressing station 30. Simultaneously, a continuous impervious layer 22 is passed from a roller supply 32 thereof past the same pressing station 30. At the pressing station 30, the trays 10 and layer 22 are laminated together via the discontinuous adhesive 24 by means of suitable presses, such as complementary shaped pressing nip rolls 34 and 36. The continuous laminated strip is then passed on to a cutting station 38, where the laminate is cut into separate lined trays. The cutter at the cutting station preferably takes the form of a pair of rolls 40 and 42, one of which has a cutter blade 44.

With regard to the application of the discontinuous adhesive pattern 24, this is preferably applied to the continuous impervious layer 22 prior to lamination, such as at adhesive applying station 46. The adhesive 24 may be applied by passing the impervious layer 22 between nip rollers 48 and 50, where the nip roller 50 has a patterned surface and dips within an adhesive trough 52 to pick up the adhesive and print it in a discrete pattern upon the impervious barrier layer 22. Alternatively, the adhesive may be applied in a similar manner to the inner surface of the trays 10. In such a case, however, adhesive 24 is preferably applied only to the bottom 12 of the tray 10, leaving the ends of the liner 22 adjacent the side walls 16 unadhered.

While the unlined trays 10 are generally formed as separate and distinct bodies and are passed to the laminating station 30 in such a form, but merely in end-to-end contact, the trays may, however, be formed as a continuous strip in which case the cutting means 38 will serve to sever not only the continuous barrier layer 22 but also the paper-product trays themselves.

While the laminating means 30 is shown to be a pair of complementary nip rolls, it is understood that the barrier layer 22 may be laminated to the trays 10 by pressing between matched platens or chain carried forms. It is also understood that the cutter 44 may be included in the squeeze roll 34, if desired.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the invention, and therefore the invention is not limited to what is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. A container for the storage of food materials, capable of exuding liquid, comprising:
 - a paper-product tray having an inner surface comprising a bottom wall and four upstanding side walls, said bottom wall being capable of retaining liquid;
 - a liquid impervious, continuous, non-perforated liner overlying said bottom wall and two first opposing upstanding side walls, said liner terminating at its two side edges adjacent two second opposing upstanding side walls so that said liner is no wider than the width of said bottom wall;
 means both to define a space between said bottom wall and liner to trap exuded liquid therebetween and to adhere said liner to said inner surface of said tray, said means comprising a discontinuous pattern of adhesive between said liner and said inner surface, said space being adjacent said adhesive between said bottom wall and said liner; and
 means to permit entry of liquid to said space between said liner and said bottom wall comprising an opening between each of said side edges of said liner and each of said two second opposing upstanding side walls.
2. A paper-product container in accordance with claim 1, wherein said tray is formed of paperboard.
3. A paper-product container in accordance with claim 1, wherein said tray is formed of pulp.
4. A container in accordance with claim 1, wherein said liner is formed of metal foil.
5. A container in accordance with claim 1, wherein said liner is formed of plastic film.
6. A container in accordance with claim 1, wherein said bottom wall contains depressions extending downwardly from the upper surface thereof.

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