FIG. 1

FIG. 2

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THERMOFORMED REUSABLE PACKAGE HAVING A RECLOSEABLE LID
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ABSTRACT OF THE DISCLOSURE
This invention comprises a thermoformed reusable package having a reclosable lid. The package is formed to accept a set of shaped food items. The lid is also shaped to the shape of the food items except for an opaque area of the lid which carries descriptive information.

BACKGROUND OF THE INVENTION
This invention relates to a shaped reclosable and reusable package. A tray and lid are shaped so as to contact the contained item and prevent the formation of condensation on the interior container surfaces which would then shield the contained item from view.

It is desirable in packaging many foods to have a container which can be reclosed so as to preserve that portion which is not being used. This type of a container provides for a faster opening and resealing, and overcomes the disadvantage of repacking an unused portion for further storage. The advantages are numerous. The cost of providing extra wrap material is obviated; and in the use of the same container, any information on the container is preserved. This information may be instructions for use of the contents, critical dates for disposal, or just what brand and product it is. However, although the containers of the present invention are of a reclosable type, a further and distinct advantage of these containers is that articles which must undergo refrigeration may be packaged in clear see-through packages without the formation of a vision shielding layer of condensation on the interior surfaces of the tray or lid. By forming the container tray and lid to the same shape as the contained items, the items are always in intimate contact with the container internal surfaces inhibiting the formation of any vision shielding condensation. The advantage in commerce is a clear pleasing appearance of the contained food item.

The prior art is well illustrated by U.S. Pats. 3,082,903 and 3,111,220. U.S. Pat. 3,082,903 shows a hinged, one-piece reclosable container. The shape is not of a nature to accept any particular article. U.S. Pat. 3,111,220 discloses a similar one-piece hinged container, but having shaped recesses in the base. The present invention is directed to a two-piece reclosable container wherein the body and lid are of substantially the same shape as the items which it is to contain. And in a particular embodiment, it is directed to a container for sausage, frankfurters, luncheon meat or other food stuffs wherein, if the contained item is not in an intimate contact with the interior package surface, an unappealing condensation forms, shielding the packaged item from view. It is therefore necessary for these items which must be refrigerated that the item be in intimate contact with the interior package wall wherever the package is transparent. It is further a preferred embodiment of the present invention also to coat the interior surfaces with a wetting agent. The containers of the invention, although being of the reclosable type, are not useful for packaging items which must undergo refrigeration, and yet be appealing. In the prior art packages, a fog type of condensation will form on the inner package surface shielding the contents from consumer examination.

It is an object of this invention to provide a refrigerable, reclosable and reusable container.

It is further an object of this invention to provide a transparent container which, when filled with moist items, will, on refrigeration, remain clear for efficient visual inspection.

It is also an object of this invention to provide a reclosable container wherein the contained item is in intimate contact with the interior surfaces of the container.

SUMMARY OF THE INVENTION
This invention comprises a refrigerable reclosable container having a tray portion and a lid portion these tray and lid portions being shaped to accept and remain in contact with the items which are being packaged. The invention further comprises the coating of the interior of this container with a wetting agent to further prevent the formation of a vision inhibiting condensation layer on the internal surfaces.

BRIEF DESCRIPTION OF THE DRAWINGS
FIG. 1 is a perspective view of the container with the lid in place on the container.
FIG. 2 is a plan view of the container and lid of FIG. 1.
FIG. 3 is a cross-sectional view of the package of FIG. 1, with a reclosable wedge sealing means.
FIG. 4 is a cross-sectional view of the package of FIG. 1, with a rib and socket sealing means.
FIG. 5 is a perspective view of the container with the lid in place, the lid having a flat opaque space for decoration or descriptive information.

DETAILED DESCRIPTION OF THE INVENTION
More specifically, and in a preferred embodiment, this invention is directed to a package for a plurality of what are commonly designated as frankfurters or sausages.
FIG. 1 is a perspective view of the food package having a shaped tray portion 10 and a shaped lid portion 20. The tray portion 10 comprises in this view substantially vertical sides 18 and 13, with side 18 being upwardly and outwardly extending from the base and terminating in a flange area 17. Side 13 comprises an upwardly and outwardly extending section having a series of indentations 15 which serve to form compartments on the inside of the package. These indentations 15 connect with the base upwardly protruding indentation ridges 12 of FIG. 2. The tray wall of side 13 also terminates in flange area 17. The lid 20 comprises a horizontal flange 21 carrying tab 22 for convenient opening. Extending from the lid flange 21 is a substantially vertical sidewall 23 connecting recessed lid surface 22. Lid surface 22 comprises shoulders 24,
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3 raised portions 25 and separating sections 26. The separating sections 26 of the lid are in alignment with the tray sidewall indentations 15 and serve to also form compartments within the package. In this preferred embodiment, the compartments formed within the package readily receive from 5 to 10 frankfurters or sausages, hold them in a set orientation, and maintain them in contact with the internal surfaces of the container package.

FIG. 2 is a plan view of the internal surfaces of the tray and lid. The tray 10 consists of base portion 11, sidewalls 13, 14, 18 and 19 and flange area 17. The base surface 11 carries upwardly protruding indentation ridges 12 while extend from the base to the flange. The base surface 11, 12 and 14 meet the inwardly protruding indentations 15. These indentations further serve to form the compartments for holding the frankfurters or sausages. The sidewalls 13 and 14 at a point immediately below the flange area 17 have ledges 16 which serve to give added support to the lid when it is being pressed into place and when in place. When in a closed condition, ledges 16 of the tray contact ledges 24 of the lid. The lid 20 in this view comprises the flange 21 carrying tab 27, and the base surface 22 with portions 25 and separating sections 26. In this view, since the internal surface of the lid is exposed, the portions 25 extend downwardly and the separating sections 26 extend upwardly. These sections 26 terminate in ledges 24.

FIGS. 3 and 4 are cross-sectional elevational views of the packaging of FIG. 1 with the lid 20 in place on the tray 10. The tray in each embodiment comprises base 11 with upwardly extending indentations 12, and sidewalls 18 and 19 terminating in the flange area 17. The lid in each figure comprises the flange 21, sidewall 23 and the lid surface 22 which consists of the raised portions 25 and separating sections 26. Principally demonstrated in these figures are reclosable sealing means. In FIG. 3, the flange area 17 of the tray comprises the horizontal peripheral tray flange lying below and coinciding with lid flange 21, a downwardly and outwardly extending wall 28 terminating in a ledge 27. The lid is of a dimension such that sidewall 23 contacts wall 28 and ledge 27 in a nesting, caming fit. FIG. 4 sets out a further reclosable sealing means. In this embodiment, the flange 21 carries rib 30. This rib friction fits into socket groove 29 in the flange area 17 of the tray. Further, in the use of either reclosable sealing means, the tray and lid flanges can be coated with a tacky non-curing adhesive which will provide an additional force for maintaining the lid 20 on tray 10.

FIG. 5 is a perspective view of a container with the lid 20 in place, flipped upward, forming the completed package. In this embodiment, the lid 20 has a flattened area 31 which is opaque for carrying a logo, instructions for product use or for pricing data. However, it is necessary that any package surface which is not in a substantial contact with the packaged item, in this instance frankfurter or sausage pieces, be opaque. This is required because, if a transparent area is not in a substantial contact with the packaged item, a vision inhibiting and unappealing condensation layer will form on the internal package surface. Where the package is opaque, as in area 31, any condensation formation can not be visually detected. Further, in a preferred embodiment, the internal surfaces are also coated with a wetting agent. Suitable wetting agents are ethoxylated aliphatic alcohols of from 10 to 18 carbon atoms. A preferred wetting agent is lauroyl alcohol which has been ethoxylated with from 2 to 6 moles of ethylene oxide.

The package of the present invention is most readily produced by a thermoforming molding technique. The tray portion and the lid portion are each separately made. The specific technique is preferably that of vacuum forming a heated plastic sheet material. Although any transparent thermoplastic material can be used, it is preferred to construct the packages of oriented polystyrene. This material is highly transparent, self-sustaining, relatively rigid, but yet resilient. If distorted, it can be easily pressed back into its original form. The thicknesses of the original material and of the end package are dependent on the packaging requirements. It is preferred that the final package be of a thickness from about 4 mils to about 15 mils. Further, for some packaging requirements, the lid flange and tray flange area may be of a greater thickness than the other parts of the package. In general, such variants are within the skill of those in the art and are encompassed by the present package.

What is claimed is:

1. A transparent reclosable package comprising:
   (a) a tray comprising:
      (1) a bottom surface divided into a series of sections by upward indentations therein, said upward indentations being parallel one to the other and extending across said bottom surface;
      (2) a first pair of side surfaces uprising from opposed ends of said bottom surface, said opposed ends being those ends of the bottom surface in which said indentations terminate, and said side surfaces having a series of inward indentations corresponding to and connecting with said indentations in said bottom surface;
      (3) a second pair of side surfaces rising from opposed ends of said said bottom surface and connecting with the side surfaces of said first pair to form four corners in said tray; and
      (4) a horizontal flange extending around and outwardly from the upper perimeter defined by the upper edges of said first and second pair of side surfaces;
   (b) a lid comprising:
      (1) a peripheral horizontal flange which is coextensive with the horizontal flange of said tray;
      (2) a central area recessed from said peripheral lid flange and having a series of raised sections in alignment with the series of corresponding sections in the bottom surface of said tray;
      (3) a sidewall connecting said central area and said lid flange; and
      (4) a planar opaque portion tangent to the raised sections in said central area; and
   (c) means for reclosing said lid to the tray.

2. The transparent container of claim 1 wherein the reclosing means comprises:
   (i) a lid support ledge, the upper edges of said first pair of side surfaces terminating in said ledge;
   (ii) a substantially vertical peripheral sidewall extending downwardly and outwardly from said horizontal tray flange and terminating in said lid support ledge; and
   (iii) said lid sidewall extending downwardly and outwardly from said horizontal lid flange whereby said lid sidewall will have a nesting, camming fit against said tray peripheral sidewall when said lid is closed on said tray.

3. The transparent packaging of claim 1 wherein the reclosing means comprises:
   (i) a continuous socket groove in said horizontal tray flange; and
   (ii) a continuous protruding rib on said horizontal lid flange whereby on placing said lid on said tray and exerting pressure, said rib enters said socket groove and is maintained in said groove.

4. The transparent packaging of claim 1 wherein both the tray and lid are constructed of oriented polystyrene.

5. The transparent package of claim 1 wherein said indentations are formed to maintain a series of frankfurter shaped items in a pre-set orientation.

6. The transparent packaging of claim 1 wherein the internal surfaces of said lid and said tray are coated with an ethoxylated lauryl alcohol wetting agent further preventing the formation of vision shielding condensation.

(References on following page)
5 References Cited

UNITED STATES PATENTS

3,460,711 8/1969 Al-Roy ----------------- 220—60
3,131,069 4/1964 Goller et al. -- 99—171 (LP) X
3,326,408 6/1967 Ringlen ------------------ 220—60
3,048,266 8/1962 Hackhel et al. -- 99—171 CA UX
3,087,823 4/1963 Hein et al. ----------------- 99—174
3,388,827 6/1968 Thanhauser et al. ------ 220—60
3,446,591 5/1969 Yates, Jr. ----------------- 220—60
3,257,062 6/1966 Whiteford ------- 99—177 UX

6 FOREIGN PATENTS

105,069 6/1963 Netherlands -------------- 220—60

5 OTHER REFERENCES

Food Engineering, September 1956, p. 148.

U.S. Cl. X.R.

99—171 S, 171 CT, 171 MP, 171 CA; 220—60; 206—
45.34; 229—43