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(54) **NON-HERMETICALLY SEALED FOOD PACKAGE AND METHOD**

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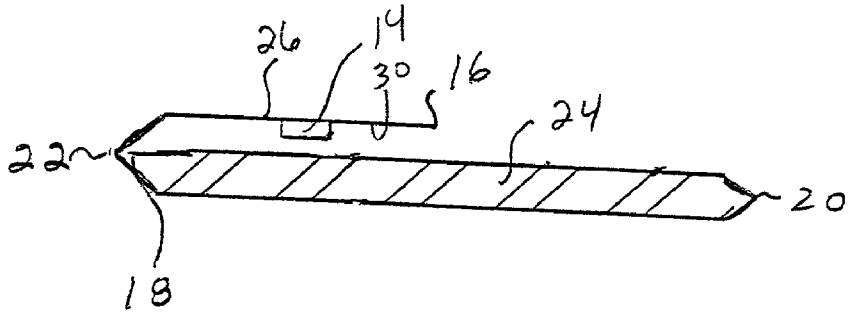
(57) **ABSTRACT**

The present invention includes a method for packaging a flowable food product, in particular cheese. The present invention forms a cheese package having a non-hermetic seal. A continuous moving web made of a heat sealable polymeric material has a non-heat sealable strip secured thereto and oriented in the machine direction. The web is moved in the machine direction while one longitudinal edge portion is placed over the other longitudinal edge portion in an overlapping relationship to form a food tube such that the non-heat sealable strip is disposed between the edge portions. The tube is heat sealed proximate the first longitudinal edge portion and filled with the flowable cheese product. The tube filled with cheese is then flattened. The flattened tube is heat sealed and cut at selected intervals in a transverse direction to form discrete individually packaged food slices. Each discrete individual food slice package has an opening along the non-heat sealable strip thereby providing a non-hermetic seal to the food package.



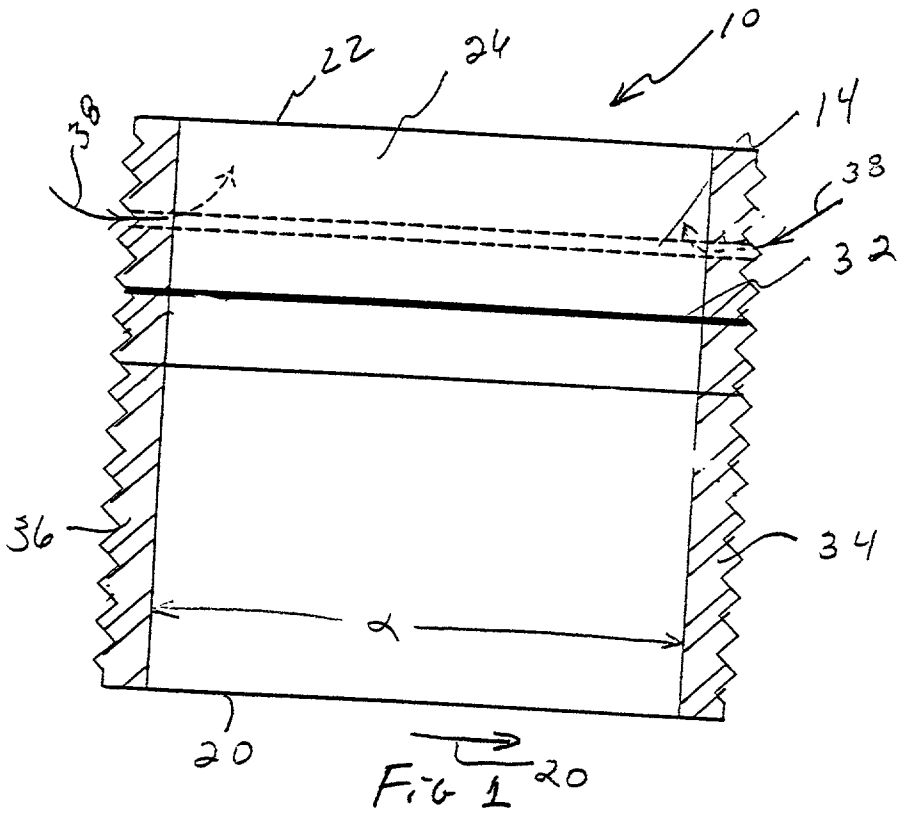


Fig 1

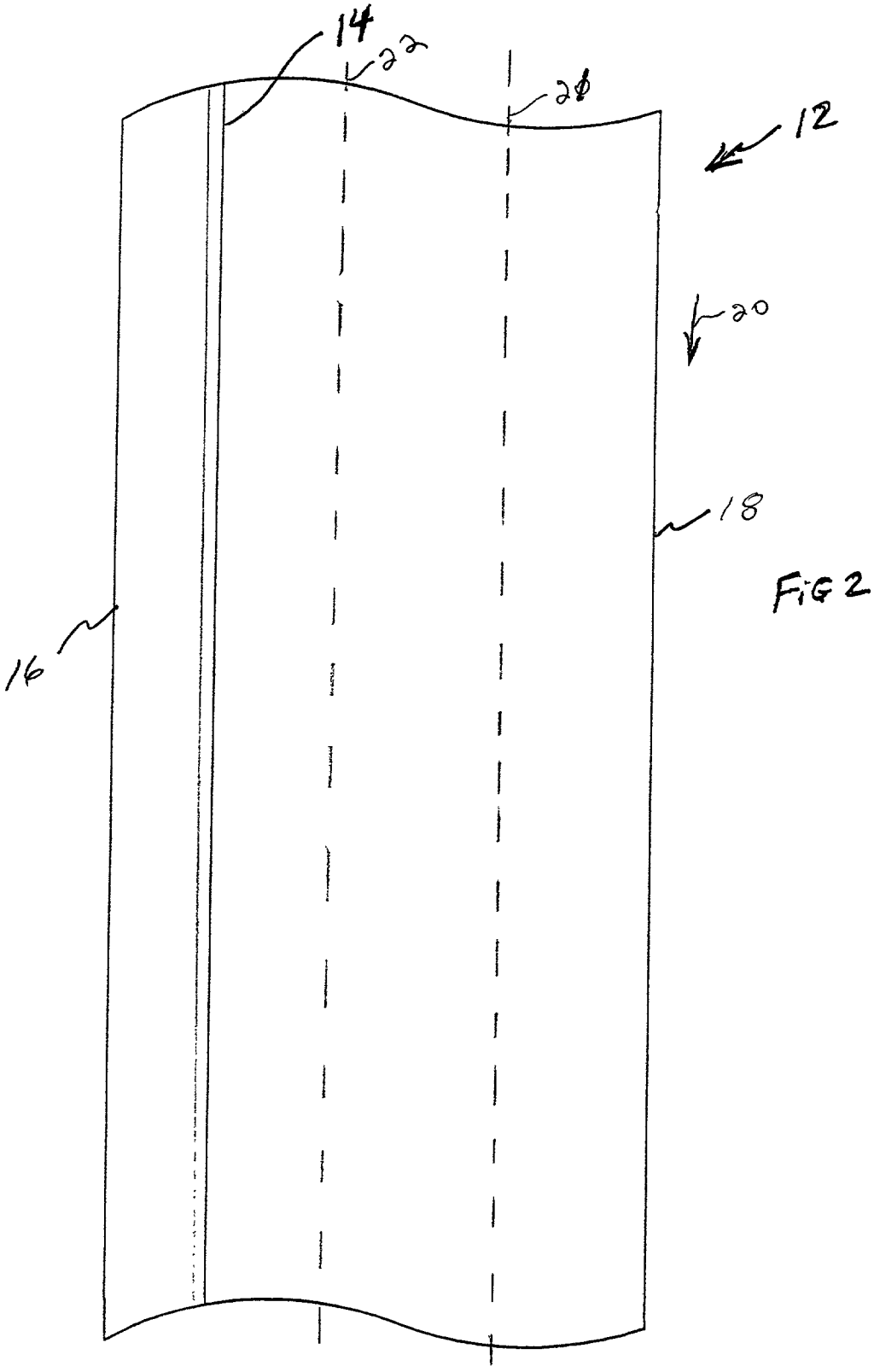


FIG 2

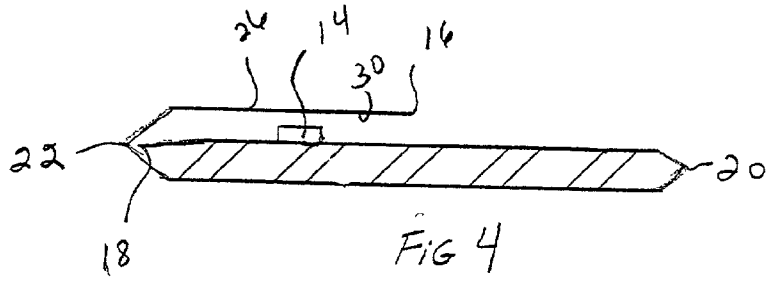


FIG 4

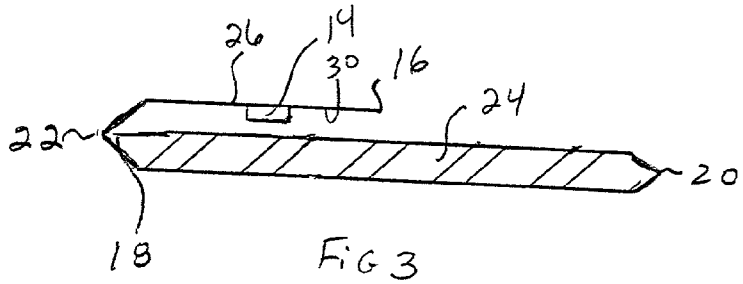


FIG 3

NON-HERMETICALLY SEALED FOOD PACKAGE AND METHOD

BACKGROUND OF THE INVENTION

[0001] The present invention relates to packaging of flowable food products in plastic film, and in particular, it relates to the continuous packaging of such food products by heat sealing such film in a non-hermetic fashion.

[0002] The packaging of flowable food products such as processed cheese, processed cheese food, and cheese spread is well known in the art. The following patents describe methods and machines for forming such a packaged food product.

Meli et al.	5,800,851
Meli et al.	5,701,724
Meli et al.	5,619,844
Meli et al.	5,440,860
Meli et al.	5,347,792
Meli et al.	5,112,632
Bush	3,542,570

BRIEF SUMMARY OF THE INVENTION

[0003] The present invention includes a method for packaging a flowable food product, in particular cheese. The present invention forms a cheese package having a non-hermetic seal. A continuous moving web made of a heat sealable polymeric material has a non-heat sealable strip secured thereto and oriented in the machine direction. The web is moved in the machine direction while one longitudinal edge portion is placed over the other longitudinal edge portion in an overlapping relationship to form a food tube such that the non-heat sealable strip is disposed between the edge portions. The tube is heat sealed proximate the first longitudinal edge portion and filled with the flowable cheese product. The tube filled with cheese is then flattened. The flattened tube is heat sealed and cut at selected intervals in a transverse direction to form discrete individually packaged food slices. Each discrete individual food slice package has an opening along the non-heat sealable strip thereby providing a non-hermetic seal to the food package.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] **FIG. 1** is an elevational view of the package of the present invention.

[0005] **FIG. 2** is a plan view of the polymeric web used to form the packaging of the present invention.

[0006] **FIG. 3** is a sectional view of a cheese package of the present invention.

[0007] **FIG. 4** is a sectional view of an alternative package of the present invention.

DETAILED DESCRIPTION

[0008] A cheese package of the present invention is generally indicated at **10** in **FIG. 1**. The cheese package is made from a longitudinal moving web generally indicated at **12** in **FIG. 2**. Although cheese is specifically referred to, it is understood that the present invention may be used to package other flowable food products.

[0009] The process of the present invention is used to package a cheese product from molten cheese. The cheese product is made using conventionally known materials and processes. Cheese product derived from molten cheese includes processed cheese, processed cheese food and processed cheese spread and other processed cheese products. As used herein, the term "processed cheese" refers to cheese that is made by grinding one or more varieties of natural cheese. The ground cheese is heated and mixed with an emulsifying agent. The ground cheese mixture is then processed until it is homogeneous and exhibits a plastic consistency. As used herein, the term "processed cheese food" refers to a cheese product that is generally formed using the same components and procedures as processed cheese. However, cheese food may include additional diary ingredients such as cream, milk, or whey. As used herein, the term "processed cheese spread" refers to a cheese product that is generally similar to processed cheese food. However, processed cheese spread has a fat level that is less than processed cheese food or processed cheese. Other processed cheese products that fall outside these three traditional cheese standards are also considered cheese products as used herein. Such cheese products are typically made in "slice" form and packaged in a clear or translucent plastic film.

[0010] Such packaged cheese slices are produced in continuous manufacturing processes using machines that package the cheese in a polymeric web **12** that is provided in a continuous web form. A current example of a machine used to process such webs is the Kusmer KD, manufactured by Kustner Industries, S. A. of Switzerland. The web **12** is made of a food grade polymer or polymers. Usually such polymers are thermoplastics. Typically, such food grade films are of multilayer construction having a base polymer layer and sealant surface layers. Preferably, the base polymer is polypropylene and the sealant layers are ethyl vinyl acetate (EVA). However, the polymer layer construction of the web is not particularly important to the present invention just as long as the film can be used to package foods and may be heat sealed.

[0011] The web **12** of the present invention includes a strip **14** adhered to the web **12** in a longitudinal orientation. The strip may be any width or thickness that provides a sufficient opening to prevent a hermetic seal when the web is subsequently sealed to form the package **10**. In some instances, the strip may also serve as a brand identifier by exhibiting a selected color or having indicia such as words or graphics imprinted thereon.

[0012] Although the strip **14** is secured to the web on one side thereof, the strip **14** on an opposing side does not adhere to the web during subsequent sealing operation. Several methods may be used to obtain this result. Preferably, the strip is made of a material having a higher melt temperature than the sealing temperature of the web. For example, the web may preferably be made of a co-extruded film having a polypropylene base with an EVA blend as a sealant layer, with the strip being made of polyethyleneterephthalate (PET) which has a higher melt temperature than the EVA blend sealant layer, the PET strip will not seal to the EVA blend layer and provides an opening to the environment for the package **10**. The strip **14** has no affinity for the surface layer of the web **12**, and therefore, when the web **12** is heat sealed, no adherence occurs of the web to the strip **14**. In

addition, the strip **14** has a release coating such as silicone which will prevent adherence of the strip **14** to the web **12**.

[**0013**] The strip **14** is positioned nearer one longitudinal edge **16** of the web **12** than the other edge **18**. The position of the strip **14** nearer one longitudinal edge than the other edge **18** disposes the strip **14** in an outer flap **26** of the package **10**, as illustrated in **FIG. 1**.

[**0014**] In producing the package **10** of the present invention, the web **12** travels in a machine direction as indicated by arrow **20**. In one example, the web is folded along a food chamber fold line **20** and a flap fold line **22** to form a cheese containing chamber **24** and the outer flap **26**, as best illustrated in **FIG. 3**. In this example, the strip **14** is located on an underside surface **30** of the flap **26**.

[**0015**] The formation of the chamber fold line **20** and the flap fold line **22** produces a tube into which molten cheese is transferred. The tube is heat sealed longitudinally along seal **32**, as illustrated in **FIG. 1**.

[**0016**] Once the tube is formed and the cheese transferred into the tube, the tube is flattened to a selected thickness which is approximately the eventual thickness of the cheese slice.

[**0017**] After the tube is flattened, the tube moves to a crimping and heat sealing station for producing heat seals in a direction transverse to the machine direction. In crimping the tube, cheese product in the heat seal area is removed by tools that crimp the tube and squeeze the cheese product out between opposing surfaces of the web. The crimping and the heat sealing of the tube may be accomplished in the same step or as two separate steps, that is the crimping occurs in the first step, and the heat sealing occurs in a second step. The transverse heat seals are positioned a selected distance equal to the dimension of the cheese slice in the machine direction as illustrated by a in **FIG. 1**. As illustrated in **FIG. 1, a** first transverse heat seal **34** defines a leading edge of the cheese slice within the package **10**. A second heat seal **36** defines the trailing edge of the cheese slice. An air passage **38** results due to the non-adherence of the strip **14** in the transverse heat seals **34** and **36** thereby providing a non-hermetic seal.

[**0018**] Alternatively, the strip **14** may be positioned near the edge **18** of the longitudinal web than the edge **16**. With the chamber fold line **20** and the flap fold line **22** being formed in a similar manner, all that is changed is that the strip **14** does not adhere to the underside **30** of the flap **26**. Heat seal **32** is formed in a similar manner and the resulting package looks much the same as package **10** illustrated in **FIG. 1**.

[**0019**] Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention.

1. A method of producing a non-hermetic packaged food product, the method comprising:

providing a continuous moving web of a heat sealable polymeric material having a strip secured thereto in a machine direction and spaced a selected distance from one edge of the web, the strip being made of a material that will not heat seal on one side thereof to the web;

placing a first longitudinal edge portion of the web over a second longitudinal edge portion in an overlapping relationship to form a food tube and an overlapping region, the non-heat sealable strip being disposed in the overlapping region between the first edge portion and the second edge portion;

heat sealing proximate the first longitudinal edge portion;

filling the tube with a flowable food product;

flattening the tube filled with the food product; and

heat sealing and cutting the tube in a transverse direction to form discrete individual food slices that have an air opening along the non-heat sealable strip.

2. The method of claim 1 wherein the non-heat sealable strip is secured to the web along the first edge portion.

3. The method of claim 1 wherein the non-heat sealable strip is secured to the web along the second edge portion.

4. A non-hermetically sealed cheese package comprising:

a plastic film having a cheese containing chamber defined by opposing film walls integrally joined at one edge and having an overlapping area defined by a flap formed by one wall overlapping another wall and heat sealed along the flap and heat sealed along transversely disposed edges; and

a non-heat sealable strip extending between and through the transversely disposed end portions such that the non-heat sealable strip forms an air passage through the heat seal of the transversely disposed edge portions.

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