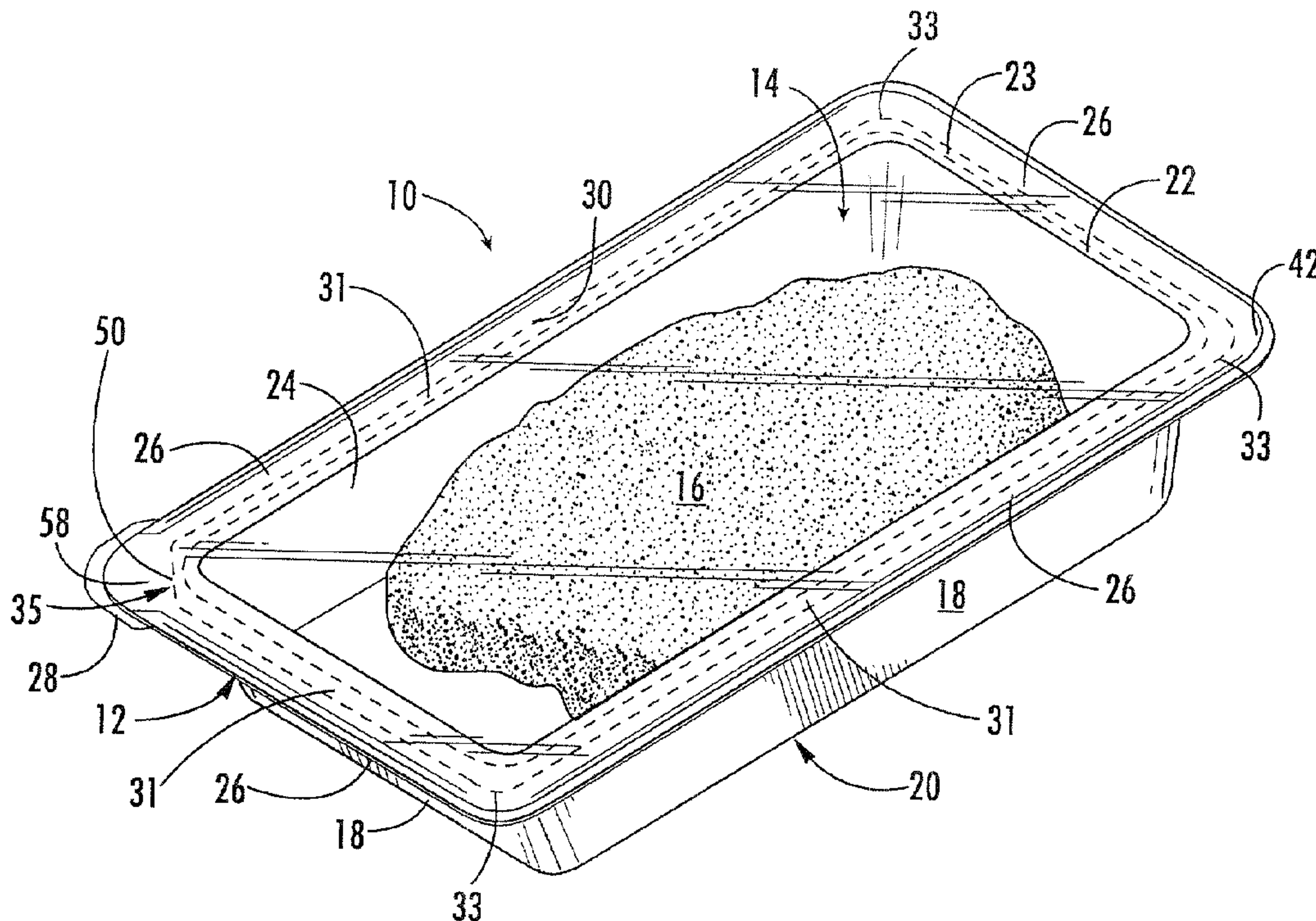




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(54) Titre : ELEMENT DE RUPTURE DE PELLICULE POUR COUVERCLE D'EMBALLAGE MULTICOUCHE PELABLE  
(54) Title: FILM FRACTURE FEATURE FOR PEELABLE MULTILAYER PACKAGE LID



(57) **Abrégé/Abstract:**

A package for storing and shipping food products incorporates a multilayer film lid that includes a gas-impermeable exterior layer and a gas-permeable interior layer. The multilayer film lid is heat sealed to a flange of a tray upon which the food product is supported. The gas-impermeable layer may be delaminated from the gas-permeable layer when it is desired to expose the food to atmospheric gases. Separation of the gas-impermeable layer from the gas-permeable layer is facilitated by a film fracture feature included in the heat seal pattern adjacent a pull tab of the lid. The film fracture feature concentrates the separation forces exerted on the tab in a small area so that the gas-permeable layer of the lid readily breaks at the film fracture feature.

## ABSTRACT OF THE DISCLOSURE

5 A package for storing and shipping food products incorporates a multilayer  
film lid that includes a gas-impermeable exterior layer and a gas-permeable interior  
layer. The multilayer film lid is heat sealed to a flange of a tray upon which the  
food product is supported. The gas-impermeable layer may be delaminated from  
the gas-permeable layer when it is desired to expose the food to atmospheric gases.  
Separation of the gas-impermeable layer from the gas-permeable layer is facilitated  
by a film fracture feature included in the heat seal pattern adjacent a pull tab of the  
10 lid. The film fracture feature concentrates the separation forces exerted on the tab  
in a small area so that the gas-permeable layer of the lid readily breaks at the film  
fracture feature.

## FILM FRACTURE FEATURE FOR PEELABLE MULTILAYER PACKAGE LID

### FIELD OF THE INVENTION

The present invention relates generally to packaging for products, such as fresh red meat or other food products, that are enclosed between a tray or other support member and a flexible film lid sealed thereto, wherein a layer of the lid can be peelably removed from another layer of the lid that remains sealed to the tray.

### BACKGROUND OF THE INVENTION

Within the meat packaging industry, it is preferable to package red meats in a container without oxygen to extend the shelf life of the meat. Oxygen allows bacteria to grow which spoils the meat; therefore, depriving the packaged meat of oxygen retards the growth of bacteria. However, by denying the meat of oxygen, the myoglobin in the meat cannot generate a fresh, naturally appearing color.

A device for packaging meat is disclosed in U.S. Pat. No. 5,779,050 to Kocher et al. and assigned to the present assignee, wherein a multilayer film lid is provided for a meat packing container. The multilayer film lid consists of an exterior gas-impermeable layer and an interior gas-permeable layer. The lid is heat sealed to the oxygen-depleted package containing the meat product. This system allows the meat to be initially packaged and shipped in a low-oxygen environment. Before placing the package out for retail sale, the gas-impermeable layer of the lid is peeled off so that oxygen reaches the meat through the gas-permeable layer. This exposure to oxygen allows the meat to "bloom" so that fresh, naturally appearing colors are generated.

The multilayer film lid is generally affixed to the container by heat sealing. In packages of this type, difficulties have been encountered in delaminating the gas-impermeable layer from the gas-permeable layer of the lid. In particular, the gas-impermeable layer sometimes can not be completely removed in one piece  
5 from the gas-permeable layer. If the gas-impermeable layer fails to properly delaminate from the gas-permeable layer, it is possible for the heat seal between the lid and the tray to be damaged in the attempt to remove the gas-impermeable layer. Therefore, a need exists for a multilayer film lid with an exterior layer that can be reliably and consistently delaminated from an interior layer.

10

#### BRIEF SUMMARY OF THE INVENTION

The invention addresses the above needs and achieves other advantages by providing a package for storing a food product in a modified atmosphere wherein a heat seal between a lid and a tray defines a film fracture feature for focusing forces  
15 exerted on a pull tab portion of the lid so as to initiate fracture between the layers of the lid in a more-reliable and more-consistent manner. In one embodiment of the invention, the package comprises a tray for supporting the food product, and a multilayer film lid attached to an upper surface of the tray by a heat seal that extends about a perimeter surrounding a food product. An outside edge of the heat  
20 seal has two substantially straight portions that are approximately perpendicular to each other and are joined by a corner portion of the heat seal. The lid has upper and lower layers joined together in such a manner that the upper layer can be peeled from the lower layer, the lower layer being permeable to oxygen and the upper layer being substantially impermeable to oxygen. The lid includes a pull tab  
25 portion that extends out beyond the corner portion of the heat seal. In accordance with the invention, a film fracture feature is defined in the corner portion of the heat seal proximate the pull tab portion of the lid. The film fracture feature comprises a portion of the outside edge of the heat seal formed as a straight-line segment oriented at a non-perpendicular angle to each of the two substantially  
30 straight portions of the heat seal. Pulling upward on the pull tab portion focuses the forces on this straight-line segment to break the lower layer of the film along

the straight-line segment and thereby initiate fracture between the upper and lower layers of the lid.

In another embodiment of the invention, the package comprises a tray for supporting the food product and includes a bottom wall, a side wall extending  
5 upwards from the bottom wall, and a flange connected to a top surface of the side wall. The flange extends generally perpendicular to the side wall. The side walls of the tray form a quadrilateral having four side walls and four corners at the intersections of the side walls, and the flange includes four straight portions corresponding to the side walls and four corner portions corresponding to the  
10 corners of the tray.

The package also includes a lid bonded to the flange of the tray with a heat seal that extends along the entire upper surface of the flange; thus, the heat seal includes four straight portions and four corner portions. The lid includes a pull tab  
15 portion that is not affixed to the tray and extends out beyond the heat seal at one corner of the flange. The lid is a multilayer film having a first layer and a second layer that can be peeled apart. The first layer includes a film that is substantially gas-impermeable and the second layer is a gas-permeable film and is positioned between the first layer and the tray such that the first layer may be peeled from the  
20 second layer while leaving the second layer affixed to the tray. At the corner of the flange that is proximate the pull tab portion of the lid, the heat seal pattern defines a film fracture feature on an exterior edge of the heat seal pattern. The film fracture feature includes at least one straight-line segment that intersects with at least one of the straight portions of the heat seal proximate the fourth corner at an obtuse angle. The film fracture feature acts as a stress riser so that delamination  
25 between the first and second layers of the lid is initiated at the film fracture feature.

In another embodiment, the film fracture feature includes two line segments that intersect to form a vertex in the heat seal pattern for initiation of the delamination of the first layer from the second layer.

62451-901

## BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and  
5 wherein:

FIG. 1 is a perspective view of a package in accordance with one embodiment of the present invention;

FIG. 2 is a schematic, cross-sectional view of the package shown in FIG. 1;

10 FIG. 3 is a schematic, partial cross-sectional view of the package illustrating the removal of the gas-impermeable layer of the lid;

FIG. 4 is a schematic, partial cross-sectional of the package illustrating the removal of the gas-impermeable  
15 layer of the lid, formed as a coextruded, multilayer film;

FIG. 5 is a top, partial view of the package shown in FIG. 1 illustrating a film fracture feature formed as a single straight-line segment; and

20 FIG. 6 is a top, partial view of the package shown in FIG. 1 illustrating a film fracture feature consisting of multiple straight-line segments of the heat seal.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention now will be described more fully hereinafter with reference to the accompanying  
25 drawings, in which some, but not all embodiments of the invention are shown. Indeed, these inventions may be

62451-901

embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements. Like numbers refer  
5 to like elements throughout.

FIG. 1 illustrates a peelable, modified-atmosphere package **10** in accordance with the present invention. (Known peelable, modified-atmosphere packages are disclosed in U.S. Pat. Nos. 5,779,050 and 6,032,800). Package **10** includes  
10 tray **12** having a cavity **14** formed therein and a food product **16** disposed within the cavity. Tray **12** is preferably in the form of a tray having a bottom wall **20** and side wall **18** that extends upwardly from the bottom wall **20**. Tray **12** thus defines the cavity **14**, and further includes a peripheral  
15 flange **22** extending outwardly from the top edge of side wall **18**. A lid

24 is heat sealed to flange 22 to enclose the food product 16 within cavity 14. The lid 24 comprises a flexible film structure as further described below.

Tray 12 can have any desired configuration or shape, e.g., rectangular, round, oval, etc. A preferred configuration, as illustrated in FIG. 1, is generally rectangular and includes four side walls 18. Similarly, flange 22 may have any desired shape or design, including a simple, substantially flat design that presents a single sealing surface as shown, or a more elaborate design which presents two or more sealing surfaces. In a preferred embodiment, flange 22 includes four straight portions corresponding with the side walls 18 and four corner portions corresponding to the corners of the tray. In a preferred embodiment illustrated in FIG. 2, the flange includes an upper surface 23 that extends outward from the tray side walls 18 and a recessed or stepped surface 42 connected to and surrounding an outer perimeter of the upper surface 23.

Suitable materials from which tray 12 can be formed include, without limitation, polyvinyl chloride, polyethylene terephthalate, polystyrene, polyolefins such as high density polyethylene or polypropylene, paper pulp, nylon, polyurethane, etc. The tray may be foamed or non-foamed as desired, and preferably provides a barrier to the passage of oxygen therethrough, particularly when food product 16 is an oxygen-sensitive food product. Tray 12 may also comprise a material which itself provides a barrier to the passage of oxygen and may have a substantially gas-impermeable sealant film (not shown) laminated or otherwise bonded to the inner or outer surface thereof.

In the embodiment of FIGS. 1-3, the lid 24 includes an upper gas-impermeable portion or layer 34 and a lower gas-permeable portion or layer 32. The two layers 32, 34 are joined together in such a fashion that the upper layer 34 can be peeled from the lower layer 32. The upper layer 34 includes a gas-impermeable film, which can comprise the entirety of the upper layer 34; alternatively, a gas-impermeable film can be joined to one or more other layers selected to impart other desired properties to the upper layer; for instance, in a non-illustrated embodiment the gas-impermeable film can be sandwiched between two or more other film layers to form the upper layer 34. The gas-impermeable film of the upper layer preferably includes a material that provides a substantial barrier to

the passage of gas, particularly oxygen, therethrough. Suitable materials may include, but are not limited to, vinylidene chloride copolymer (saran), nylon, polyethylene terephthalate, ethylene/vinyl alcohol copolymer, and silicon oxides (SiOx). Gas-permeable layer 32 preferably allows a certain amount of gases to pass through while generally maintaining a barrier to other substances such as dirt, dust, or moisture. Gas-permeable layer 32 may also include perforations 36, as illustrated (not to scale) in FIG. 3, which may be formed by any suitable means, such as mechanically, chemically, and/or electrically. Examples of such devices include, but are not limited to, devices that perforate with laser energy, electrostatic discharge, ultrasonic waves, flame discharge, needles or other sharp objects, and combinations thereof. Perforations 36 may range in size from 5 to 2000 microns in diameter, most preferably 75 to 100 microns in diameter. Gas-impermeable layer 34 is joined to the top surface of gas-permeable layer 32 to form the lid 24 prior to the bonding of lid 24 to flange 22 of tray 12 by a heat seal 30. Lid 24 is frangible in that the gas-impermeable layer 34 may be delaminated from gas-permeable layer 32.

Although food product 16 is illustrated as having a maximum height which is below the maximum height of tray 12, i.e., the level at which flange 22 is located, the invention is not limited to such "low profile" products. Rather, "high profile" products may also be packaged in accordance with the present invention, i.e., those having a maximum height which is above the level at which flange 22 is located so that the portion of the product which extends above the level of flange 22 will be in contact with lid 24.

Referring again to FIG. 2, the lid 24 is affixed to the upper surface 23 of flange 22 via the heat seal 30. Heat seal 30 preferably extends continuously around the upper surface 23 of flange 22 to thereby hermetically seal the food product 16 within package 10. In this manner, lid 24 and tray 12 preferably form a substantially gas-impermeable enclosure for food product 16 which substantially completely protects the product from contact with the surrounding environment including, in particular, atmospheric oxygen, but also including dirt, dust, moisture, and microbial contaminants. When food product 16 is oxygen-sensitive, i.e., perishable, degradable, or otherwise changeable in the presence of oxygen,

such as fresh red meat products (e.g., beef, veal, lamb, pork, etc.), poultry, fish, cheese, etc., it is preferred that food product 16 be packaged in a low-oxygen environment within package 10 to maximize the shelf-life of the product.

5 When packaged as shown in FIG. 2, food product 16 can be maintained under any desired environmental conditions by virtue of the substantial gas-impermeability of lid 24 (and tray 12) as long as the gas-impermeable layer 34 remains bonded to the remainder of lid 24. For example, when food product 16 is a fresh red meat product, a low-oxygen environment (e.g., less than 0.5% oxygen by volume) is preferably maintained within cavity 14 to preserve the meat product during shipping and storage. However, under such conditions, a fresh red meat product will have a purple color that is unappealing to consumers. For this reason, when the packaged product is to be displayed for consumers to purchase, the gas-impermeable layer 34 of the lid 24 is peeled off such that atmospheric oxygen can enter the package, thereby causing the fresh red meat product to re-bloom to a  
10  
15 more-appealing red color.

In the embodiment of FIGS. 1-3, the lid 24 delaminates at the interface between gas-impermeable layer 34 and gas-permeable layer 32 when the pull tab of the lid 24 is pulled in the direction indicated by the arrow in FIG. 3. In this manner, gas-permeable layer 32 remains bonded by the heat seal 30 to the upper  
20 surface 23 of flange 22. However, in another embodiment shown in FIG. 4, a lid 24' is employed that includes a gas-permeable layer comprising a delaminateable film 38 that splits within itself. Delaminateable film 38 is preferably a coextruded, multilayer film. When the pull tab of the lid 24' is pulled, the delaminateable film 38 essentially splits into two portions 38' and 38'' along a separation plane 40.  
25 The portion 38' remains attached to the upper layer 34. The portion 38'' remains affixed to the flange 22 and serves as a gas-permeable film. Delaminateable film 38 can comprise a gas-permeable film in which the permeability increases as the thickness decreases. In some cases, the increased oxygen permeability of the bottom portion 38'' may be sufficient to cause the fresh red meat to re-bloom  
30 without any perforation of the film 38''; if not, the entire film 38 or, alternatively, the bottom portion 38'' only, may be perforated as necessary.

In accordance with the present invention, delamination can be performed simply and easily just prior to placing the package in a display case for customer purchase as follows. The pull tab portion **28** of multilayer film lid **24** is grasped and pulled generally upwards and backwards (i.e., towards an opposite edge or corner of the package). In the embodiment of FIG. 3, delamination occurs between the substantially gas-impermeable layer **34** and the substantially gas-permeable layer **32**. In the embodiment of FIG. 4, delamination occurs along separation plane **40** and separates delaminatable film **38** into a top portion **38'** and bottom portion **38''**. Once the substantially gas-impermeable layer **34** has been removed, oxygen may pass through the substantially gas-permeable layer **32** or the bottom portion **38''** to cause product **16** to re-bloom.

Delamination of lid **24** is shown in FIG. 3 in greater detail, wherein the gas-impermeable layer **34** is shown as it begins to delaminate from gas-permeable layer **32**. Gas-permeable layer **32** is preferably bonded to the upper surface **23** of flange **22** with a heat seal **30** that has a greater cohesive strength than the intra-film cohesive bond strength between gas-impermeable layer **34** and gas-permeable layer **32**. In this manner, when gas-impermeable film **34** is subjected to a delaminating force as indicated by the arrow in FIG. 3, the lid **24** delaminates such that the gas-permeable portion **32** remains bonded to tray **12** while the gas-impermeable portion **34** is removed from the package and discarded. Thus, gas-permeable layer **32** remains bonded to tray **12** via heat seal **30**.

In the embodiment of FIG. 4, gas-impermeable layer **34** is preferably bonded to delaminatable film **38** with a bond-strength that exceeds the intra-film cohesive strength within delaminatable film **38**. Similarly, heat seal **30** preferably results in a bond between delaminatable film **38** and tray **12** that is also greater than the intra-film cohesive strength within delaminatable film **38**. In this manner, when lid **24'** is subjected to a delaminating force as indicated by the arrow in FIG. 4, the lid delaminates within delaminatable film **38** along separation plane **40** such that the bottom gas-permeable portion **38''** remains bonded to tray **12**, while the gas-impermeable portion **34**, along with the top portion **38'** of the delaminatable film, is removed from the package and discarded.

62451-901

As noted, to facilitate peeling, the lid 24 preferably includes a pull tab portion 28. This pull tab portion 28 can be manually grasped to initiate peeling, and is preferably formed as disclosed in above-mentioned U.S. Pat. No. 5,779,050. Peeling is initiated by grasping and pulling pull tab portion 28 in the direction of the arrow shown in FIG. 3 and FIG. 4, thus subjecting the heat seal 30 to an upward force. This force is in a direction tending to pull apart gas-impermeable layer 34 and gas-permeable layer 32, or the delaminateable film 38, as illustrated in FIG. 3 and FIG. 4, respectively. The heat seal 30 holds the gas-permeable layer 32 or the portion 38" intact and secured to tray 12. If a force of sufficient magnitude is applied, the layer(s) of the lid 24 or 24' below the gas-impermeable layer 34 is (are) supposed to break at the heat seal and thereby initiate delamination of the gas-impermeable film from the rest of the lid as described above.

However, in packages 10 with a heat seal pattern similar to that disclosed in U.S. Pat. No. 5,779,050, the delamination of the lid can be problematic. The force exerted on the pull tab of the lid can cause the flange 22 to bend upward and prevent removal of gas-impermeable layer 34. The gas-impermeable layer 34 may tear, resulting in an incomplete removal of the gas-impermeable layer. In addition, if the lower layer of the lid does not break when the tab is pulled, the force can rupture the heat seal 30 between the flange 22 and the lid. Such failures are thought to result primarily from a non-optimum distribution of the peel force along the exterior edge of the heat seal 30. The present invention utilizes a film fracture feature on an exterior edge of the heat seal 30 to concentrate the

62451-901

force so that the gas-permeable layer 32 reliably breaks at the film fracture feature and thus allows the gas-impermeable layer 34 to be peeled off without adversely affecting the gas-permeable layer 32, the flange, or the  
5 heat seal.

In a preferred embodiment, heat seal 30 includes four straight portions 31 (FIGS. 1 and 5) respectively extending along the four straight portions of flange 22, three smoothly curved corner portions 33 at three of the  
10 four corners of flange 22, and a fourth corner portion 35 (FIG. 5) that includes a film fracture feature located at the fourth corner of flange 22. The pull tab 28 of the lid extends out beyond the fourth corner portion 35 of the heat seal. In a preferred embodiment,

heat seal **30** is approximately 0.25 inches wide, but the width may vary depending on the application or material properties.

FIGS. 1 and 5 depict one embodiment of a film fracture feature defined by the corner portion **35** of the heat seal **30** for concentrating peel forces exerted on the tab portion of the lid so as to break the gas-permeable layer **32** of the lid at the film fracture feature. In this embodiment, the film fracture feature comprises a straight-line segment **50** of the outer edge of the heat seal **30**; by "outer edge" is meant the edge of the heat seal **30** farther from the cavity **14** of the package. The straight-line segment **50** is proximate the pull tab portion **28** of the lid. Straight-line segment **50** intersects at an obtuse angle with each of the straight portions **31** of heat seal **30** on either side of the corner portion **35** of the heat seal and thereby creates vertices **51** (FIG. 5) at these intersections. When the pull tab portion **28** is pulled up and back, the forces are focused on the straight-line segment **50** so as to initiate fracture of the lower layer **32** of the lid **24**. Additionally, the vertices **51** between the straight-line segment **50** and the straight portions **31** of the heat seal are discontinuities in the curvature of the outer edge of the heat seal **30** and serve as stress risers to concentrate the peel force during removal of the gas-impermeable layer **34** from the gas-permeable layer **32**. The concentration of the peel force on the film fracture feature **50** allows the lower layer **32** of the lid to break at the film fracture feature and thus permits gas-impermeable layer **34** to be removed in one piece without disturbing the heat seal **30** between the lower layer **32** and the upper surface **23** of flange **22**.

Another embodiment of the film fracture feature is illustrated in FIG. 6, wherein the film fracture feature can be formed by multiple line segments, such as segments **52** and **54**. The line segments **52** and **54** intersect to form a vertex **56**. Line segments **52** and **54** are preferably straight, but alternatively they may have a convex or concave shape that nevertheless creates a vertex at their intersection. Furthermore, the preferred embodiment of the vertex **56** is defined as a sharp corner, but alternatively the vertex may comprise a very small radius and still serve as a stress riser in the outer edge of the heat seal.

A further problem during the delamination of a package **10** in the prior art can occur when the heat seal **30** extends outwardly beyond upper surface **23** of

flange 22. As noted, the flange 22 includes upper surface 23 and recessed or stepped surface 42. The stepped surface 42 extends outward from the outer perimeter of the upper surface 23 and defines an upward facing surface that is lower than upper surface 23. This stepped surface 23 is advantageously utilized during manufacture of package 10 when the material of lid 24 beyond the edges of heat seal 30 is cut. Improper delamination of the lid may occur if the heat seal 30 onto the interface between the upper surface 23 and the stepped surface 42. In that case, exerting a peel force on pull tab portion 28 can cause the flange 22 to bend upward in the direction of the force because of the orientation of the heat seal 30 on the interface between upper surface 23 and stepped surface 42.

To address this issue, packages in accordance with some embodiments of the present invention include a modified flange structure at the corner where the pull tab is located. In particular, as illustrated in FIG. 5, the flange upper surface at that corner includes a surface 58 that forms an extension of the upper surface 23 to the outer perimeter of the flange 22. This surface 58 exists where the stepped surface 42 would otherwise be located in a non-modified flange. In effect, the top of stepped surface 42 is raised to the level of the upper surface 23 in the corner with pull tab portion 28 to create surface 58. Because the film fracture feature could have various configurations as exemplified by the different embodiments described herein, the surface 58 provides additional surface area to ensure the film fracture feature is confined to the flat upper surface; additionally, the extended surface 58 allows for some degree of tolerance in the location of the heat seal relative to the flange.

Advantageously, the provision of the film fracture feature in accordance with the invention does not require any additional manufacturing steps or materials. The film fracture feature is a unique shape in the pattern of heat seal 30 and is created when film 24 and tray 12 are joined together.

Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the inventions are not to be limited to the specific embodiments disclosed and that modifications and other

embodiments are intended to be included within the scope of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

## WHAT IS CLAIMED IS:

1. A package for a food product, comprising:
  - a tray for supporting a food product, the tray defining an upper surface;
  - 5 a multilayer film lid attached to the upper surface of the tray by a heat seal that extends about a perimeter surrounding the food product, an outer edge of the heat seal having two substantially straight portions that are joined by a corner portion of the heat seal, the lid having upper and lower layers joined together such that the upper layer can be peeled from the lower layer, the lower layer being
  - 10 permeable to oxygen and the upper layer being substantially impermeable to oxygen, the lid having a pull tab portion that extends out beyond the corner portion of the heat seal; and
  - a film fracture feature defined in the corner portion of the heat seal proximate the pull tab portion, the film fracture feature comprising a portion of the
  - 15 outer edge of the heat seal formed as a straight-line segment oriented at a non-perpendicular angle to each of the two substantially straight portions of the heat seal, whereby pulling upward on the pull tab portion focuses forces on said straight-line segment to break the lower layer along the film fracture feature and thereby initiate fracture between the upper and lower layers of the lid.
- 20 2. The package of claim 1, wherein the film fracture feature includes a second straight-line segment, the two straight-line segments intersecting at a vertex.
3. The package of claim 1, wherein the tray includes a bottom wall for supporting said food product, a side wall extending upwards from said bottom wall
- 25 and terminating at a top edge, and a flange extending outwardly from said top edge of said side wall and including said upper surface to which said lid is attached by said heat seal.
4. A package for storing a food product in a modified atmosphere, comprising:
- 30 a tray for supporting the food product; and

a multilayer film lid attached to the tray with a heat seal between the tray and the lid, said heat seal extending substantially continuously about the product to enclose the food product between said tray and said lid, said lid comprising a multilayer film having a first layer and a second layer removably joined together  
5 such that the first layer can be delaminated from the second layer;

wherein the lid includes a pull tab portion and said second layer is positioned between said first layer and said tray such that the first layer may be delaminated from the second layer while leaving said second layer attached to said tray;

10 wherein the heat seal includes a film fracture feature on an outer edge of the heat seal proximate to said pull tab portion of said lid, said film fracture feature comprising a straight-line segment of the outer edge of the heat seal that intersects another portion of the outer edge of the heat seal and thereby forms a vertex that acts as a stress riser for initiation of the delamination of said first layer from said  
15 second layer.

5. The package of claim 4, wherein the tray includes a bottom wall for supporting said food product, a side wall extending upwards from said bottom wall and terminating at a top edge, and a flange connected to said top edge of said side wall, wherein said lid is connected to the flange by the heat seal.

20 6. The package of claim 5, wherein said flange provides a continuous surface that completely surrounds the top edge of said side wall.

7. The package of claim 6, wherein said tray is generally a quadrilateral including four of said side walls and four corners at the intersections between said side walls, and said flange includes four straight portions respectively joined to the  
25 side walls and four corner portions formed at junctures between said straight portions of the flange.

8. The package of claim 7, wherein said heat seal includes four straight portions respectively extending along the four straight portions of said flange and four corner portions respectively located at the four corner portions of said flange,

and wherein said film fracture feature is located at one of the corner portions of the heat seal.

5 9. The package of claim 8, wherein said flange includes a generally planar upper surface extending outwardly from said top edge of said side walls and a stepped surface connected to an outer edge of said upper surface.

10 10. The package of claim 9, wherein said film fracture feature of the heat-seal pattern does not extend outwardly beyond the upper surface of the flange.

10 11. The package of claim 9, wherein said generally planar upper surface of the corner portion of the flange having the film fracture feature extends to an outer edge of said corner portion.

12. The package of claim 4, wherein the film fracture feature includes a second straight-line segment, the two straight-line segments intersecting at a vertex.

15 13. The package of claim 4, wherein the film fracture feature includes at least three straight-line segments that form a vertex at each intersection of said straight-line segments.

14. The package of claim 4, wherein said first layer includes a gas-impermeable film.

20 15. The package of claim 14, wherein said second layer is a gas-permeable film.

16. A package for storing a food product in a modified atmosphere, comprising:

25 a tray for supporting said food product thereon including a bottom wall for supporting said food product, a side wall extending upwards from said bottom wall and terminating in a top edge, and a flange connected to the top edge of said side wall, wherein said tray is generally a quadrilateral including four of said side walls

and four corners at intersections between said side walls, such that said flange includes four straight portions and four corner portions; and

5 a lid bonded to said tray with a heat seal between said tray and said lid, said heat seal extending substantially continuously about the product to enclose the food product between said tray and said lid, said lid being a multilayer film having a first layer and a second layer removably joined together, said lid having a pull tab portion;

10 wherein said first layer is gas-impermeable and wherein said second layer is gas-permeable and is positioned between said first layer and said tray such that said first layer may be delaminated from said second layer;

wherein said heat seal includes four straight portions respectively extending along the four straight portions of said flange and four corner portions respectively located at the four corner portions of said flange, the pull tab portion of said lid extending out beyond one of the corner portions of the heat seal;

15 wherein the corner portion of the heat seal proximate the pull tab portion includes a film fracture feature comprising a straight-line segment of an outer edge of the heat seal that intersects another portion of the outer edge of the heat seal and thereby forms a vertex that acts as a stress riser for initiation of the delamination of said first layer from said second layer.

20 17. The package of claim 16, wherein said flange includes a generally planar upper surface extending outwardly from said top edge of said side wall and a stepped surface connected to an outer edge of said upper surface, and wherein said stepped surface is absent in the corner portion of the flange at which the film fracture feature is located such that the upper surface of said flange at said corner  
25 portion extends to an outer edge of the flange.

18. The package of claim 16, wherein the film fracture feature includes a second straight-line segment, the two straight-line segments intersecting at a vertex.

30 19. A package for storing a food product in a modified atmosphere, comprising:

a tray for supporting the food product; and

a multilayer film lid attached to the tray with a heat seal between the tray and the lid, said heat seal extending substantially continuously about the product and creating a heat seal pattern which encloses the food product between said tray and said lid, said lid being a multilayer film having a first layer and a second layer removably joined together such that the first layer can be delaminated from the second layer;

5  
10 wherein the lid includes a pull tab portion and said second layer is positioned between said first layer and said tray such that the first layer may be delaminated from the second layer while leaving said second layer attached to said tray;

15 wherein an outside edge of the heat seal pattern defines a film fracture feature proximate the pull tab portion, said film fracture feature comprising two line segments of said outside edge that intersect and thereby form a vertex that acts as a stress riser for initiation of the delamination of said first layer from said second layer.

20. The package of claim 19, wherein each of said line segments is substantially straight.

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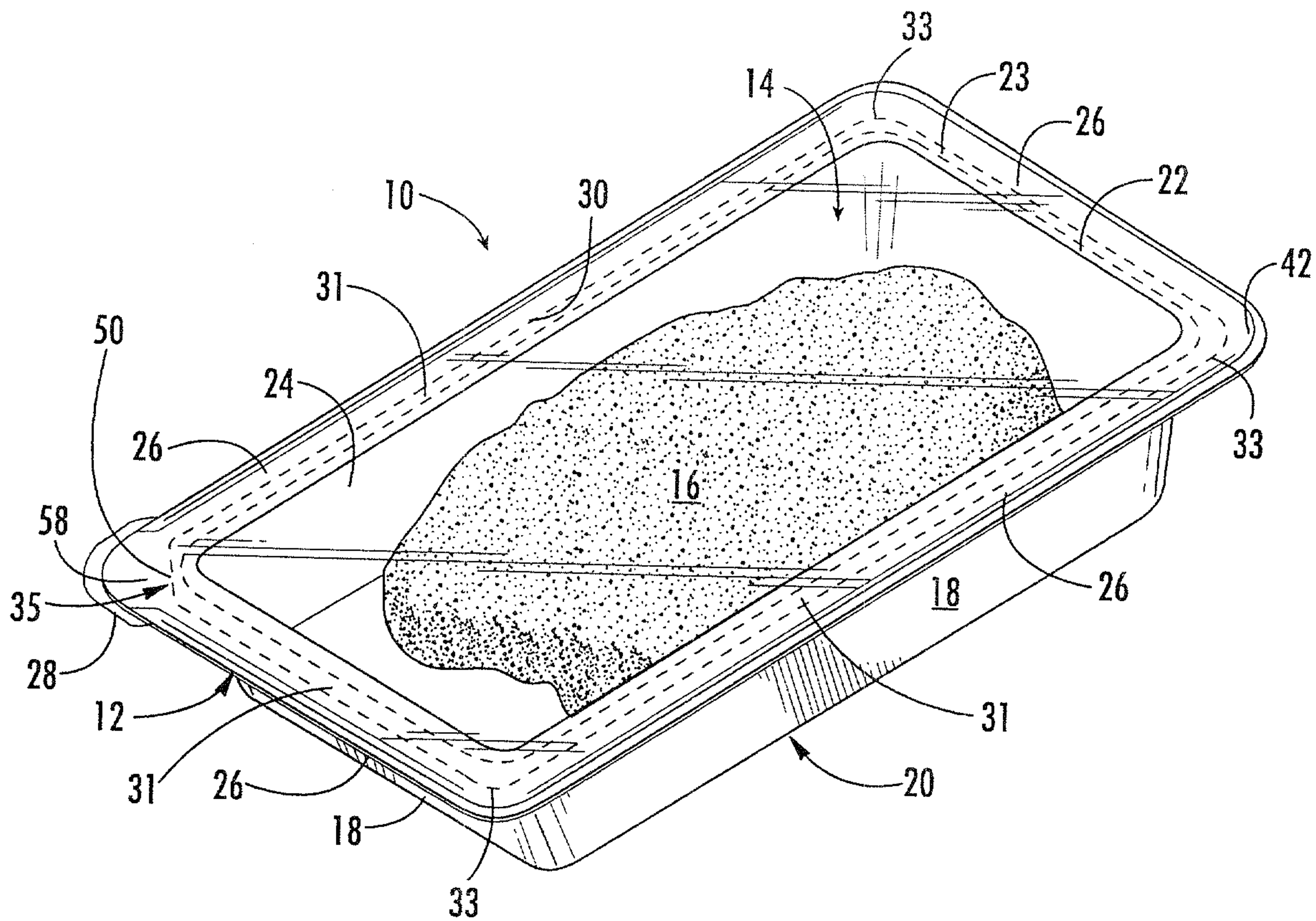


FIG. 1.

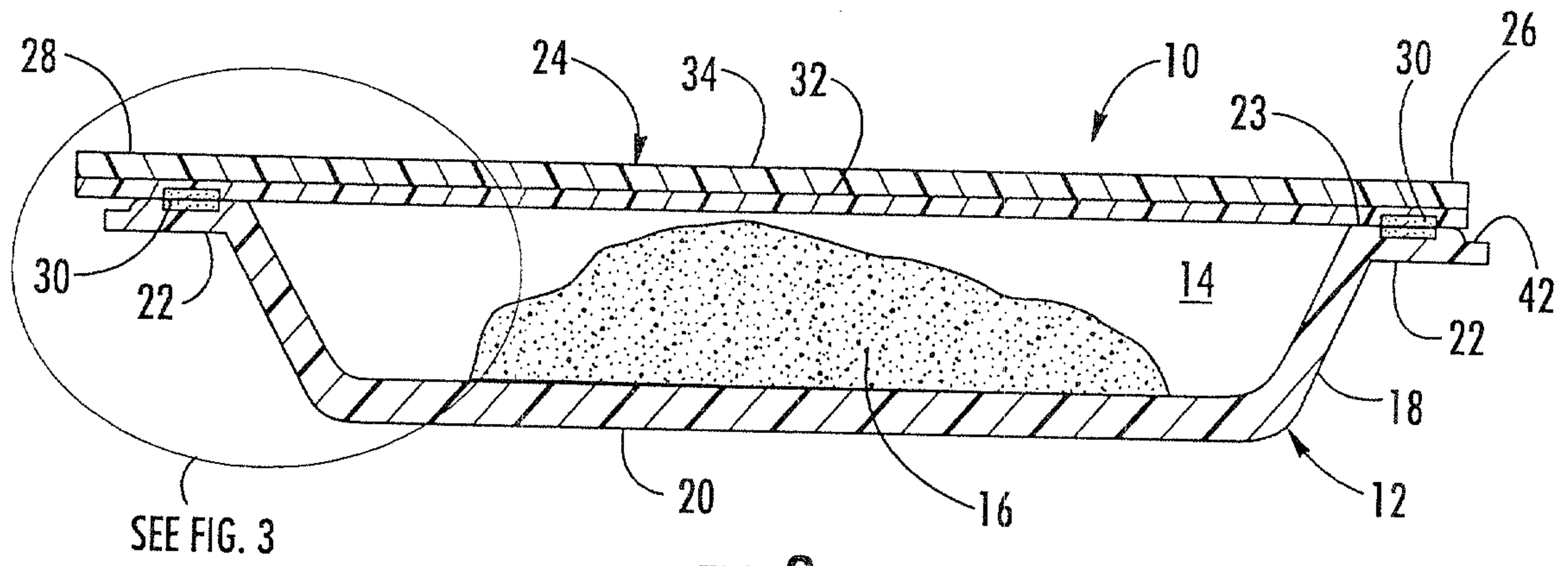


FIG. 2.

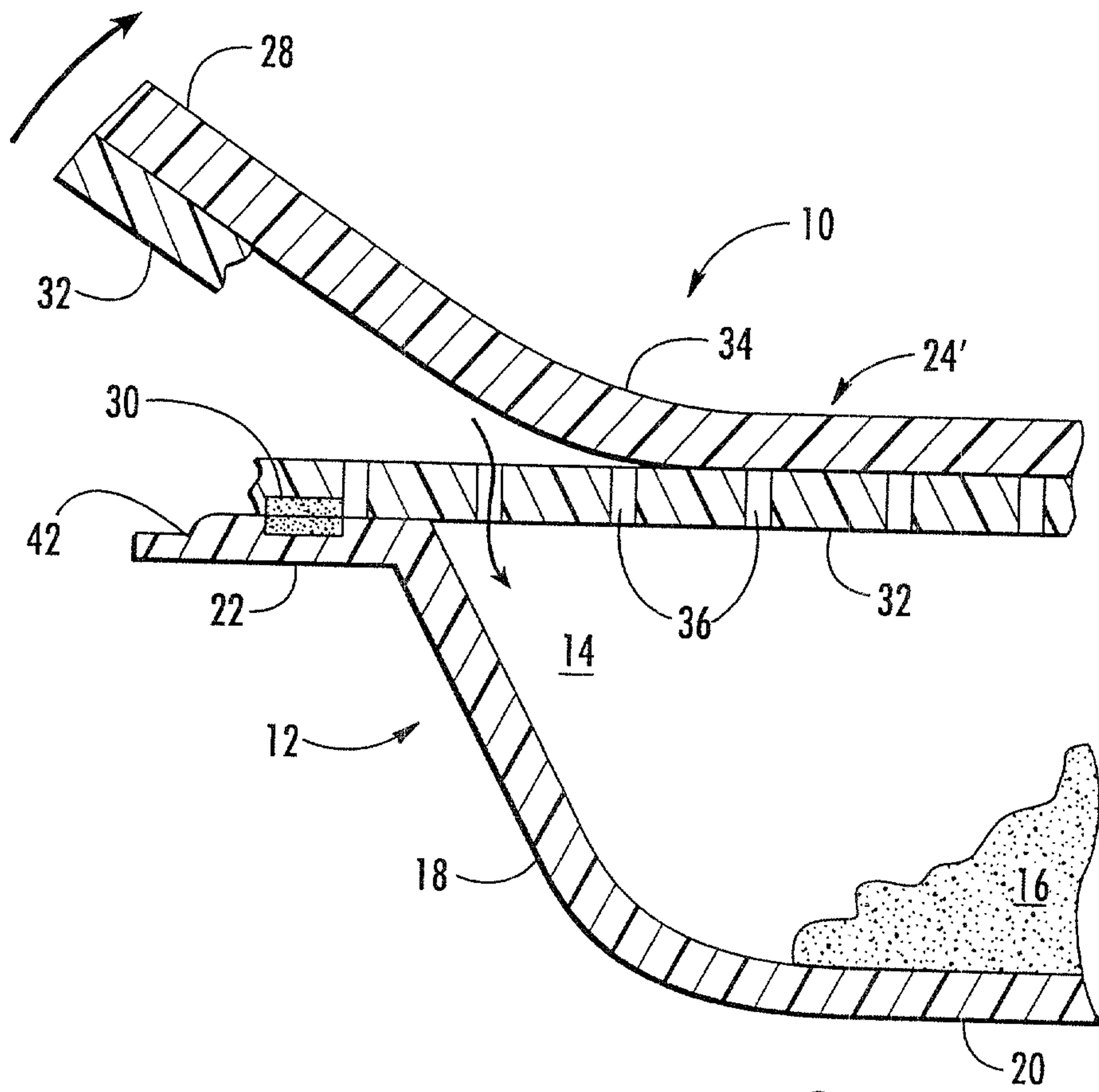


FIG. 3.

