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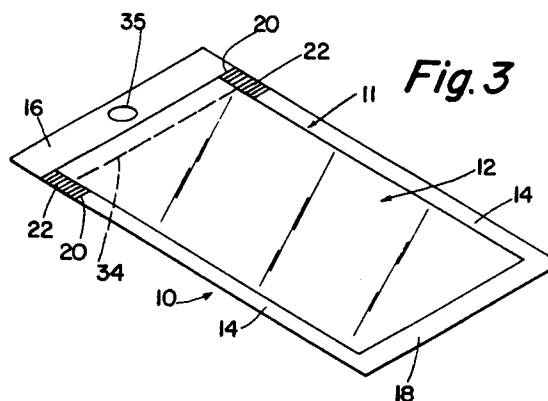
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London WC1V 6RY(GB)(54) **Pouch having means to facilitate tear initiation.**

(57) A hermetic pouch for food products having walls formed of laminated films which comprise one or more layers of polymeric material such as nylon, polyester, or polyethylene, and which may further include a layer of metal foil. The pouch includes a sealed edge portion which is weakened in a pre-determined area to facilitate tear initiation. The weakened area is confined to a minor portion of the seal area extending along one side edge of the pouch, so that the pouch may readily be opened by tearing inward from the edge through the weakened area. The remainder of the seal area is resistant to such tearing to avoid accidental tear initiation at undesired locations.

In the preferred embodiment, each of the walls includes at least one barrier layer. The weakened area is preferably made susceptible to tearing by provision of a plurality of discontinuities in at least one layer of at least one of the walls.

In one embodiment of the invention, two weakened areas are provided opposite one another on upper portions of the side edges of the pouch, in proximity to the upper edge of the pouch, whereby the top of the pouch may be torn off from either side. The pouch may have a reclosable closure extending across its width between its side edges beneath the weakened areas.



Background of the Invention

Field of the Invention

The invention relates to packaging, and more particularly to a pouch having means to facilitate unaided manual tear initiation.

Description of Related Art

Laminated films are commonly used in the packaging art for hermetic pouches for perishables. The films are generally maintained in rolls or webs and fed into apparatus in which the pouches are generated in a form, fill and seal operation. Strength and toughness are required of the pouches to withstand the stress and wear experienced during the form, fill and seal operation and subsequent handling. Barrier properties are also required. The materials chosen for the various layers of the laminated films include polymeric films of, e.g., nylon, polyester, or polyethylene, and/or metal foils composed of, e.g., aluminum. Labels may be printed on a surface which is at the interface of two layers after lamination to avoid exposure of the labels to environmental wear factors while also avoiding contact between the product and the label.

The need for strength and toughness creates a problem in that pouches which have the requisite strength and toughness are often difficult for the consumer to open without the use of scissors or other utensils, absent the provision of means integral with the pouch to facilitate tear initiation. In the past, one approach to the problem has been to provide one or more V-shaped notches along one or more edges of the pouch. Another approach has involved providing one or more slits along an edge, extending perpendicularly inward from the edge, as illustrated in U.S. Patent No. 4,898,280. A third approach has been to form a plurality of very small, shallow cuts, or scratches along the entire length of each of one or more edges of the laminated film, as described in U.S. Patent No. 4,543,279. A fourth approach has been to subject one layer to a surface roughening treatment prior to lamination, as described in U.S. Patent No. 4,778,058, such that one or more edges of the package are weakened along their entire lengths.

There remains a continuing need for improved means to facilitate unaided manual tear initiation in pouches for food products.

Summary of the Invention

In accordance with the invention, there is provided a pouch having a sealed edge portion which is weakened in a predetermined area to facilitate

tear initiation. The weakened area is confined to a minor portion of a seal area extending along one side edge of the pouch so that the pouch may readily be opened by tearing inward from the edge through the weakened area. The remainder of the seal area is resistant to such tearing to avoid accidental tear initiation at undesired locations. Each of the walls of the pouch is preferably of laminated construction, having at least one barrier layer. The weakened area is preferably made susceptible to tearing by provision of a plurality of discontinuities in at least one layer of at least one of the walls, with at least one barrier layer in each wall remaining intact. In one embodiment of the invention, two weakened areas are provided opposite one another on upper portions of the side edges of the pouch, in proximity to the upper edge of the pouch, whereby the top of the pouch may be torn off from either side. The pouch may have a reclosable closure extending across its width between its side edges beneath the weakened areas. The reclosable closure may comprise a pair of complementary, interengageable zipper strips, or may in the alternative comprise a bendable metal strip segment secured to one of the walls.

Brief Description of the Drawings

FIG. 1 is a plan view of a blank for forming a pouch in accordance with the invention.

FIG. 2 is a fragmentary sectional view of a weakened area of the blank of FIG. 1.

FIG. 3 is a perspective view of a pouch in accordance with a first embodiment of the invention.

FIG. 4 is a fragmentary plan view of a pouch in accordance with a second embodiment of the invention.

FIG. 5 is a sectional view of the pouch of FIG. 4, taken substantially along line 5-5 in FIG. 4.

FIG. 6 is a plan view of a pouch in accordance with FIG. 4, shown in a reclosed configuration.

FIG. 7 is a fragmentary plan view of a pouch in accordance with an embodiment of the invention.

FIG. 8 is a sectional view taken substantially along line 8-8 in FIG. 7.

FIG. 9 is a perspective view of a pouch in accordance with FIGS. 7 and 8, shown after opening.

FIG. 10 is a plan view of the pouch of FIGS. 7-9, shown in reclosed configuration.

Detailed Description of Preferred Embodiments

Referring to FIG. 3, the invention is preferably embodied in a pouch 10 comprising a pair of generally rectangular walls 12 heat sealed to one

another about their respective peripheries to define a generally rectangular peripheral seal area 11 and an enclosed interior 13 between said walls. The pouch 10 may be used for consumer packaging of a food product such as shredded cheese, or for various other packaging purposes. The seal area in the illustrated embodiment has side portions 14 extending along opposite sides of the pouch, and upper and lower end seal portions 16 and 18 respectively, extending along the respective top and bottom edges of the package.

In accordance with the invention, each of the side portions 14 of the peripheral seal area 11 has a weakened area 20 extending inward from the side edge 22 adjacent the upper end of the pouch. Each weakened area 20 is confined to a minor portion of its respective side seal portion 14 of the peripheral seal area so that the pouch may readily be opened by tearing inward from the side edge 22 through the weakened area 20, whereas the remainder of the side portion 14 of the peripheral seal area 11 is resistant to such tearing. The location of the areas of weakness 20 adjacent the upper end of the pouch enables the upper end seal portion 16 to be torn off while leaving the remainder of the pouch substantially intact to contain the food product without spillage when the pouch is maintained in an upright position. Means 34 may be provided to facilitate tearing along a straight line across the top of the pouch. The means 34 to facilitate tearing may take the form of a line of weakness, such as a perforation or score line, or in the alternative may simply comprise indicia such as a printed series of line segments to provide a visual guide. A punched circular hole 35 is provided in the upper seal area to enable the pouch to be conveniently supported on a display hanger. The hole is located so that a portion of the upper seal area remains intact beneath the hole to maintain hermeticity.

As shown in FIG. 2, each of the walls 12 of the package is preferably of laminated film construction, comprising at least two layers 24 and 26, of which at least one layer 26 is a barrier layer. The film may include polymeric layers of, e.g., nylon, polyester, or polyethylene, and/or metal foils composed of, e.g., aluminum. The weakened area 20 is defined by a plurality of discontinuities 28 in at least one layer of at least one of the walls. The discontinuities 28 may be random scratches of varying depth, or may be punctures which extend entirely through one of the layers. To maintain hermeticity for the pouch, each of the walls may have at least one barrier layer left intact, free of the discontinuities.

As an alternative to maintain hermeticity for the pouch, the areas of weakness 20 may be confined to outer portions of the side seal areas 14, with

non-weakened regions of the peripheral seal area 11 disposed between the weakened area 20 and the pouch interior 13. This arrangement enables employment of weakening techniques which penetrate all layers of the wall material, without loss of hermeticity.

The embodiment of FIG. 3 is particularly suitable for pouches in which reclosability is not needed. In the embodiments of FIGS. 4-6 and 7-10, the pouch includes a reclosable closure extending between the side edges immediately beneath the weakened areas, but is otherwise substantially similar to the pouch of FIG. 3, and accordingly the same reference numerals used in FIG. 3 are used to denote like elements in FIGS. 4-6 and 7-10.

In the embodiment of FIGS. 4-6, the reclosable closure comprises a bendable metal strip segment 30 secured to one of the walls. The bendable metal strip segment 30 may be of the type described and illustrated in U.S. Patent No. 4,898,280, the disclosure of which is incorporated herewith by reference, and may be secured by a length of sealing tape 31 to the pouch wall in the manner described in Patent No. 4,898,280.

In the pouch of FIGS. 4-6, as in the pouch of FIG. 3, access to the pouch is obtained initially by tearing inward from a side edge 22 through one of the weakened areas 20 and across the pouch to enable the upper end seal area 16 of the pouch to be removed, leaving the product contained in the remaining portion of the pouch. After a portion of the product has been removed, the pouch may then be reclosed by rolling the top of the remaining lower portion of the pouch down around the bendable metal strip segment 30, and subsequently bending end portions 32 of the metal strip segment inward to achieve the configuration shown in FIG. 6. The metal strip segment 30 then retains the package in the closed position.

In the embodiment illustrated in FIGS. 7-10, there is provided a reclosable closure 36 which comprises a pair of complementary interengageable zipper strips 38 and 40. The pouch of FIGS. 7-10 is initially opened by tearing inward from a side edge 22 through one of the weakened areas 20 and across the pouch to enable the upper end seal area 16 of the pouch to be removed, leaving intact a lower portion including free edge areas 42 disposed above the zipper profiles. The edge areas 42 are then manually grasped and pulled apart to disengage the complementary zipper profiles 38 and 40 from one another, and a product such as shredded cheese 44 may then be dispensed as illustrated in FIG. 9. After dispensing of the product, the pouch may be resealed simply by application of pressure to the opposite complementary zipper profiles 38 and 40 along their entire lengths. As illustrated in FIG. 10, this may be accomplished

manually simply by squeezing the profiles between the thumb 52 and forefinger 54 and sliding the thumb and forefinger along the length of the zipper.

The pouch is preferably formed, filled and sealed on vertical form, fill, seal apparatus, using a web of polymeric film material having the areas of weakness preformed thereon. FIG. 1 illustrates a blank 45 for a pouch in accordance with the invention, shown as part of a continuous web 58 having a series of like blanks thereon. The blank comprises wall portions 46 having areas of weakness 48 and 50 preformed thereon at the edges and at the center, and has a prepunched hole 56 in each of its wall portions 46. The blank may be formed into a pouch in accordance with the invention by folding along its longitudinal axis and sealing it about its periphery in a vertical form, fill, seal operation. When the blank is folded, the areas of weakness 48 at the edges of the blank and the holes 56 meet, and the central area of weakness 50 is folded in half.

In accordance with a first method of providing the discontinuities which facilitate tear initiation at the areas of weakness, a studded wheel is applied to the web of material to be used as one of the layers in the walls of the finished pouch, prior to lamination of the layers. The discontinuities of predetermined size. In accordance with a second method, the areas of weakness may be formed after forming, filling and sealing the pouch by a studded wheel similar to that described above, or by an abrasive implement which abrades one or both surfaces of the peripheral seal area in the desired region 22. In the latter case, the areas of weakness are limited to outer portions of the peripheral seal area so that the inner portion of the seal area remains intact to ensure that hermeticity is maintained.

From the foregoing it will be appreciated that the invention provides a novel and improved pouch. The invention is not limited to the embodiments described hereinabove, nor to any particular embodiments, but is particularly pointed out in the following claims.

Claims

1. A pouch comprising:

a pair of generally rectangular walls joined to one another about their respective peripheries so as to define a pair of side edges, a pair of end edges, and an enclosed interior, each of said walls comprising at least one layer of material;

a seal area having at least one side portion extending along at least one of said side edges and at least one end portion extending along at least one of said end edges;

said side portion having a weakened area extending inward from said side edge adjacent one of said end portions;

said weakened area being confined to a minor portion of said side portion so that said pouch may readily be opened by tearing inward from said side edge through the weakened area, while the remainder of said portion is resistant to such tearing;

said weakened area being defined by a plurality of discontinuities in at least one layer of at least one of said walls.

2. A pouch in accordance with Claim 1 wherein each of said walls is of laminated construction comprising a first layer and a second layer, said first layer being a barrier layer and being free of discontinuities, said discontinuities being formed in said second layer.

3. A pouch in accordance with Claim 1 further comprising a reclosable closure extending between said side edges in proximity to said weakened area, said weakened area being between said reclosable closure and the adjacent end edge of said pouch.

4. A pouch in accordance with Claim 3 wherein said reclosable closure comprises a pair of complementary interengageable zipper strips.

5. A pouch in accordance with claim 3 wherein said reclosable closure comprises a bendable metal strip segment secured to one of said walls.

6. A hermetic pouch and food product contained therewithin, comprising:

a pair of generally rectangular walls sealed to one another about their respective peripheries to define a generally rectangular peripheral seal area and an enclosed interior between said walls containing said food product;

each of said walls being of laminated construction, comprising first and second layers of material, said first layer of each wall being a barrier layer;

said pouch having an upper edge, a lower edge, and a pair of side edges,

said generally rectangular peripheral seal area having a top portion extending along said upper edge of said pouch, a bottom portion extending along said lower edge of said pouch, and a pair of side portions extending along said side edges of said pouch;

each of said side portions of said generally rectangular peripheral seal area having an area of weakness adjacent the top portion to facili-

tate unaided manual tear initiation whereby a tear may be initiated at either side edge within the area of weakness, and propagated across the pouch to provide an opening for dispensing of said food product;

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each area of weakness being defined by a plurality of discontinuities in said second layer, said first layer being free of discontinuities;

each area of weakness being confined to a minor portion of its respective side portion so as to avoid accidental tear initiation at undesired locations.

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7. A hermetic pouch and food product in accordance with Claim 6 wherein said food product comprises shredded cheese. 15
8. A hermetic pouch and food product in accordance with Claim 7 wherein said pouch further comprises a reclosable closure extending between said side edges in proximity to said weakened areas, said weakened areas being between said reclosable closure and the top edge of said pouch. 20
9. A hermetic pouch and food product in accordance with Claim 8 wherein said reclosable closure comprises a pair of complementary interengageable zipper strips. 25
10. A hermetic pouch and food product in accordance with Claim 8 wherein said reclosable closure comprises a bendable metal strip segment secured to one of said walls. 30

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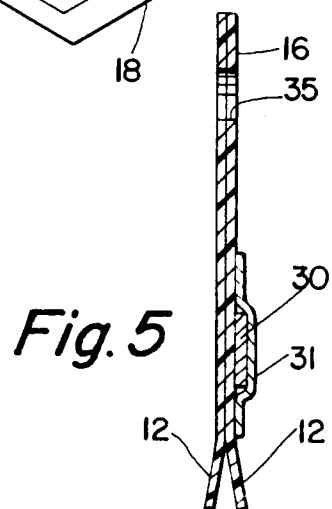
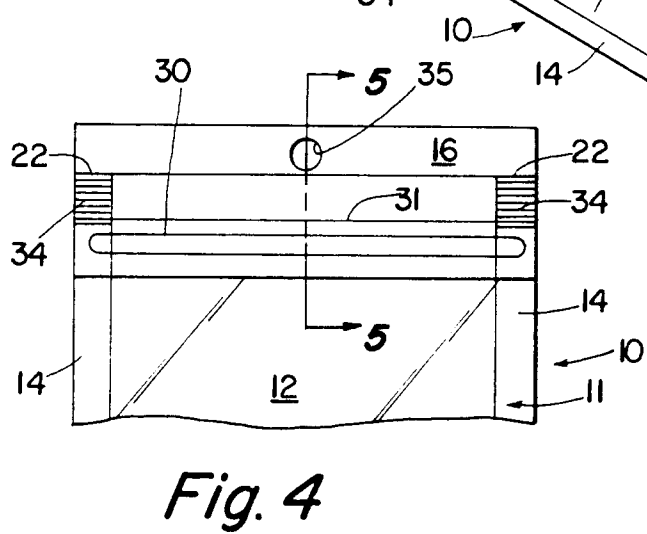
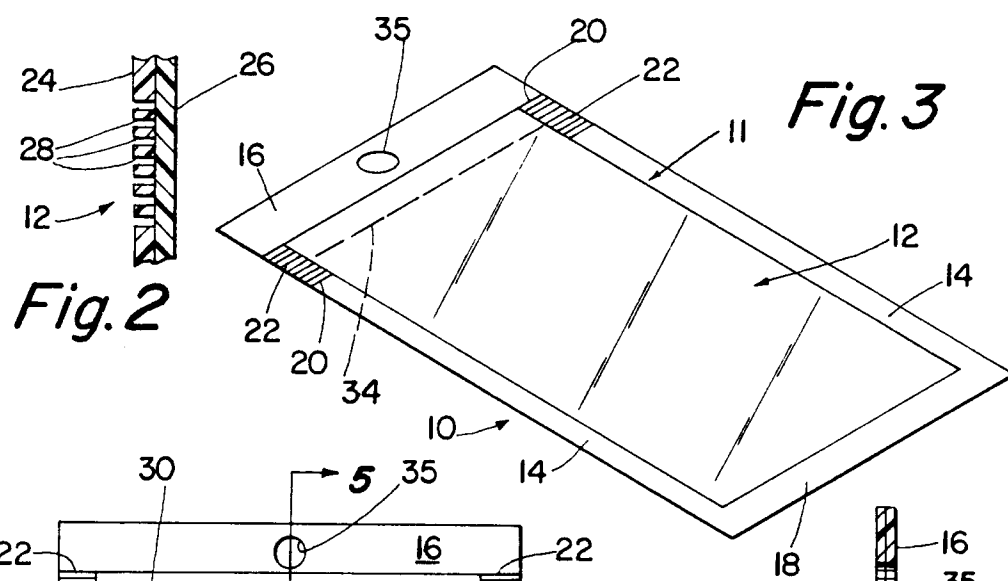
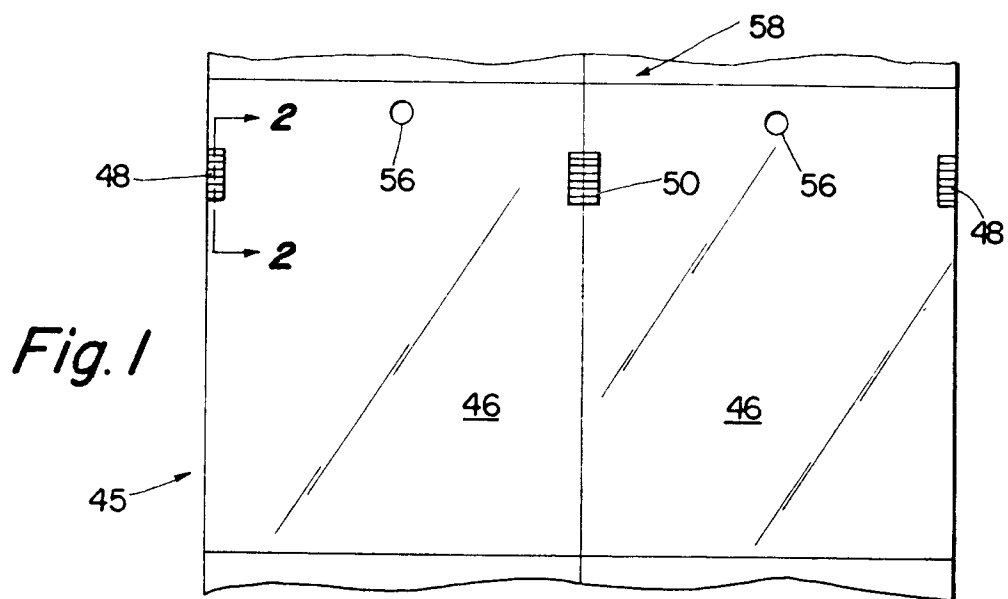


Fig. 6

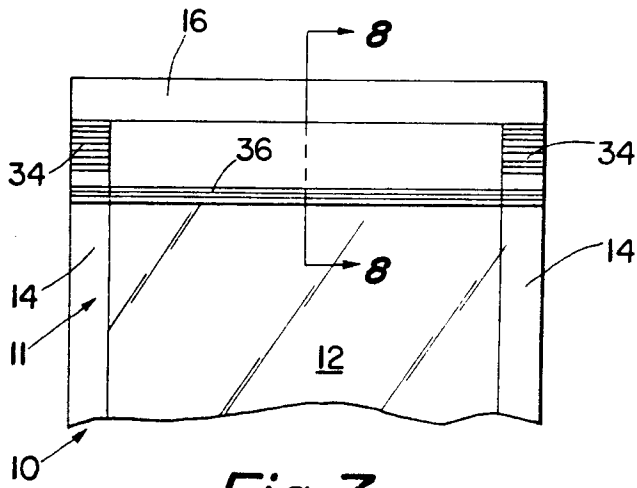
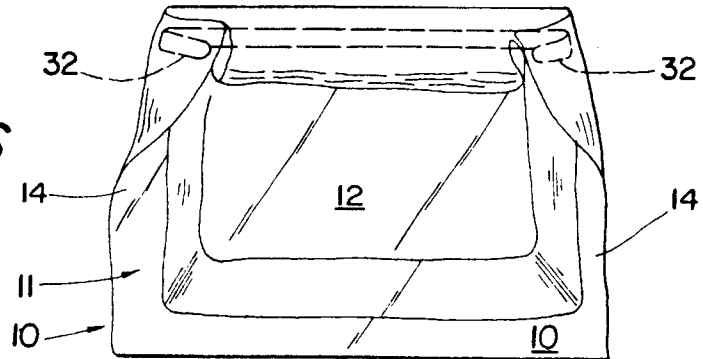


Fig. 7

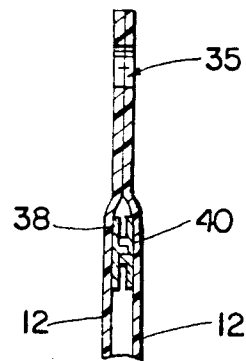


Fig. 8

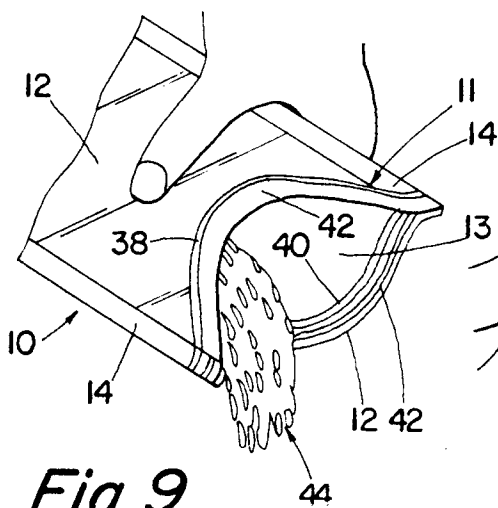


Fig. 9

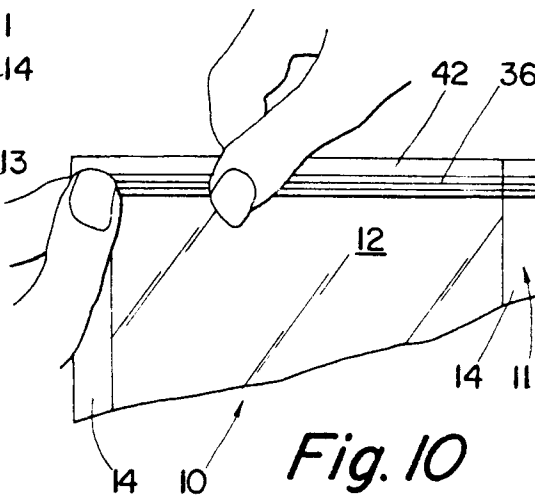


Fig. 10