May 5, 1970 H. FOCKE 3,510,053

POUCH MADE OF A SINGLE- OR MULTIPLE-PLY SYNTHETIC PLASTICS SHEET MATERIAL, PREFERABLY FOR TOBACCO

Filed July 17, 1968 3 Sheets-Sheet 1

Fig. 1

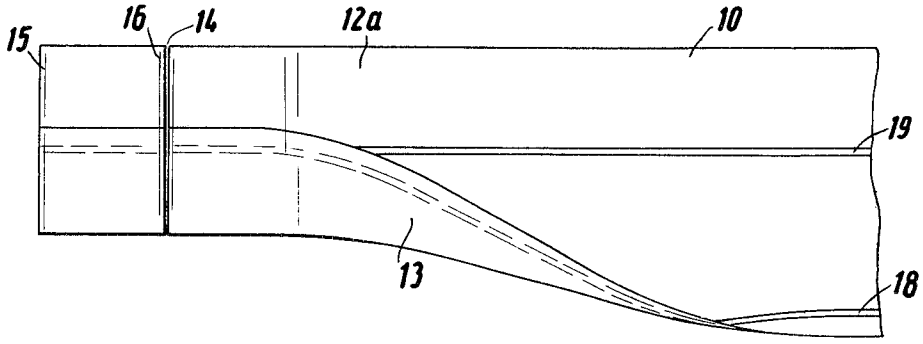


Fig. 2

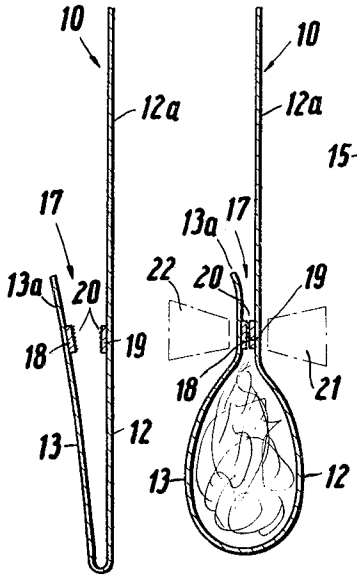


Fig. 3

Fig. 4

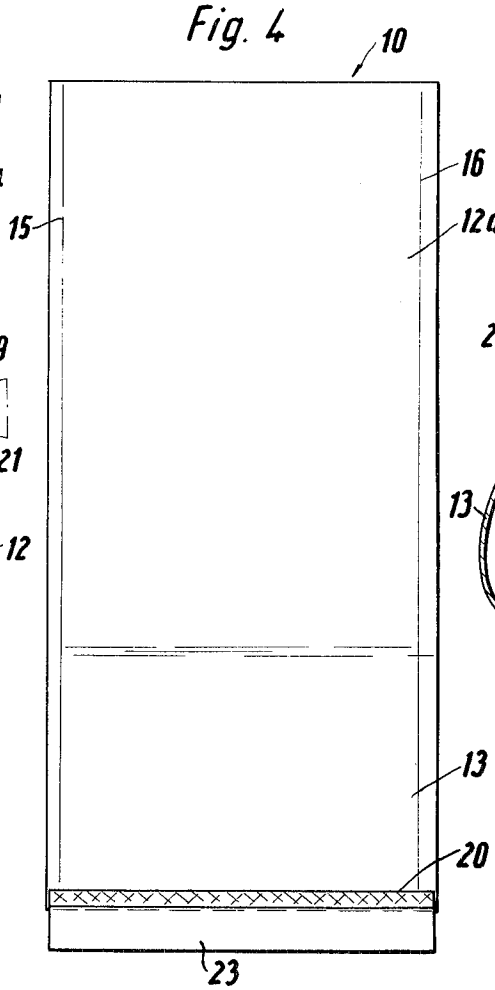
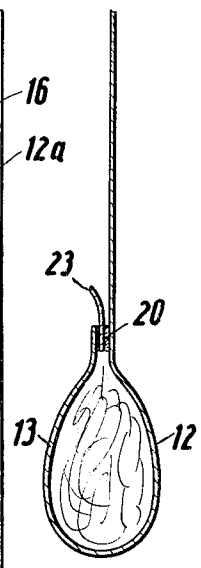


Fig. 5



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Fig. 6

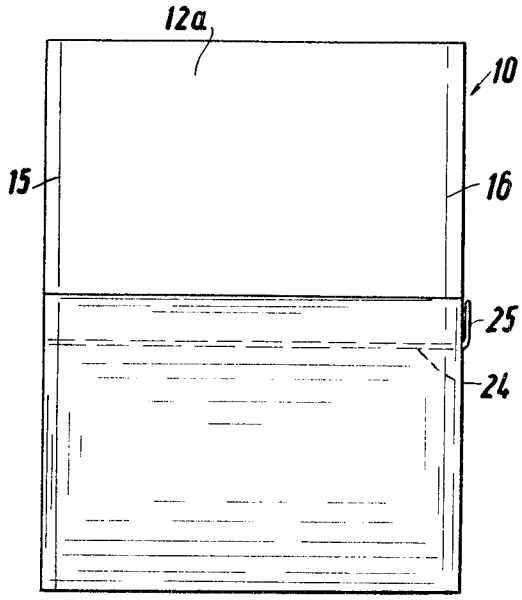


Fig. 8

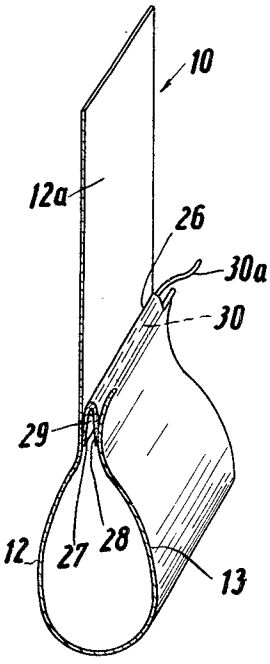


Fig. 7

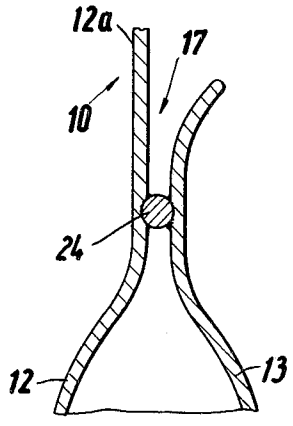
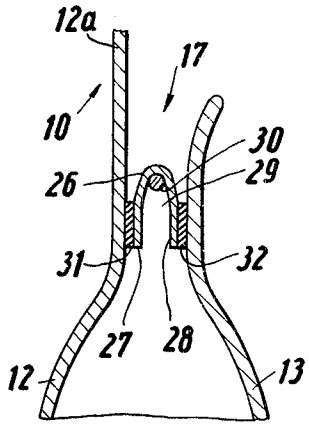


Fig. 9



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Fig. 10

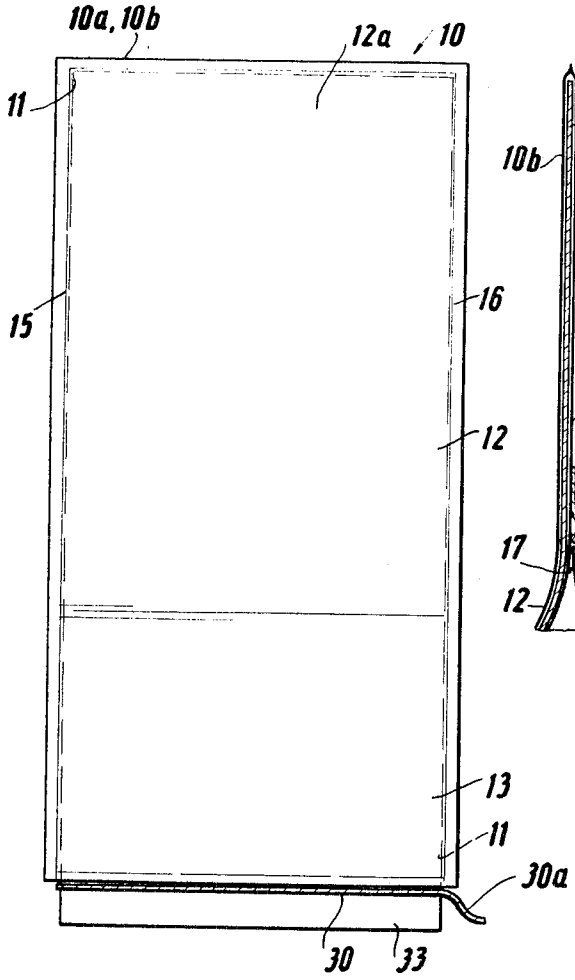


Fig. 11

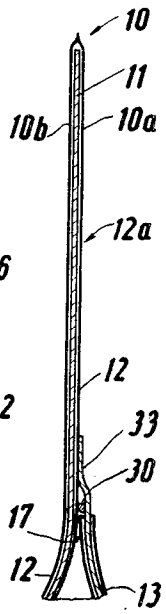
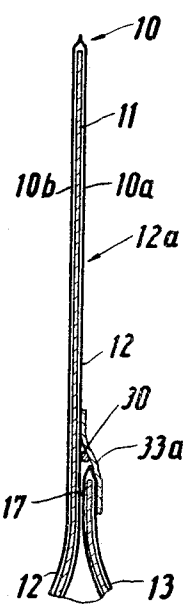


Fig. 12



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3,510,053

POUCH MADE OF A SINGLE- OR MULTIPLE-PLY SYNTHETIC PLASTICS SHEET MATERIAL, PREFERABLY FOR TOBACCO

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Int. Cl. B65d 27/14
U.S. Cl. 229—62 11 Claims

ABSTRACT OF THE DISCLOSURE

The invention provides a pouch made of a single- or multiple-ply synthetic plastics sheet material, particularly polyethylene, for the reception of a material such as tobacco. The pouch is preferably formed by longitudinally folding over a continuous sheet of plastics material so that it has a short wall and a longer wall which latter serves as a wrap-around flap. The pouch is sealed at three edges and has an opening sealed by a substantially air-tight closure so constructed that it can be easily torn open.

BACKGROUND OF THE INVENTION

This invention relates to a pouch made of one or more plies of a synthetic thermoplastic sheet material, particularly polyethylene, preferably for holding tobacco, and having an opening for the introduction and extraction therethrough of the contents of the pouch.

For the purpose of packing tobacco various types of pouches made of synthetic thermoplastic sheet material have already been proposed. Pouches consisting of a plastics sheet material have the advantage of being relatively inexpensive to make and also of protecting and preserving the aroma of the tobacco because the plastics sheet material is air-tight. Usually such tobacco pouches consist of two plies of a plastics sheet material with an interleaved sheet of paper which may be printed upon its side facing the outsidet of the pouch. The edges of the two plies of plastics sheet material are weld seamed together and the interleaved paper sheet is thus completely enclosed by the plastics sheet material. The pouch itself is then produced by folding over the two-ply sheet and weld seaming the superimposed edges together, thereby forming a closed pouch with one open side. Usually the plastics sheet material is so folded that the two wall portions of the pouch are of unequal length. The longer wall will then form a flap which can be wrapped around the pouch for closing the opening. For keeping the flap in this position a seal in the form of an adhesive strip is stuck over the edge of the flap.

It is still a major drawback of pouches of this kind for holding tobacco that the closure thus formed is not air-tight and therefore insufficient to preserve the aroma. A tight closure cannot be produced by thus wrapping the flap around the body of the pouch. In practice such a closure is not satisfactory because the contents of the pouch deteriorate by contact with ambient air when the climatic conditions are unfavorable.

Moreover, the subsequently affixed seal offers no guarantee that the pouch may not have been intentionally or accidentally opened and resealed (a warranted factory-closed seat cannot be provided).

SUMMARY OF THE INVENTION

It is the object of the present invention to provide a pouch made of synthetic plastics sheet material in such a way that it is simple and cheap to make, and that its closure is aroma-tight but can nevertheless be easily opened without the need of special tools.

A pouch according to the present invention is therefore characterized in that it possesses a substantially aroma-tight closure for sealing its opening, and that the closure can be easily torn open.

In the case of a pouch having walls preferably formed by longitudinally folding over a continuous sheet and connecting together the edges of the walls on three sides, the edges of the remaining open side are indirectly connected together with the interposition of bonding and tearing elements that can be torn open.

In pouches according to the present invention, particularly for tobacco, the walls which preferably consist of several plies of a synthetic thermoplastic sheet material are directly connected together in the conventional manner by weld seaming three of their edges. At the edges forming the opening for the introduction and withdrawal of the contents of the pouch the walls are indirectly connected together with the interposition of special bonding and tearing elements that can be torn open. These bonding and tearing elements are so contrived that the closure can be conveniently made and later easily reopened by tearing it open. Another important feature of the special bonding and tearing elements is that when they have been torn open no adhesive surfaces are exposed to which the contents of the pouch, such as tobacco, could stick.

In order to satisfy this latter requirement at least one of the bonds of the bonding and tearing elements according to the invention is made with the aid of a known type of adhesive, generally known as a hot-sealing adhesive, which melts above a predetermined temperature level. This temperature is such that at any normal environmental temperature the adhesive is inactive, so that exposed surfaces of adhesive do not stick and cannot retain particles of the contents of the pouch.

The bonding and tearing elements as proposed by the invention may have varying forms. However, preferably they are at least partly already attached to the sheet material that is to be used for forming the pouches, and they are then merely closed when the pouch has been filled.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features of the invention will be hereinafter more particularly described with reference to embodiments shown in the accompanying drawings in which:

FIG. 1 schematically illustrates the production of pouches from a continuous band of sheet material;

FIG. 2 is a schematic cross section of a pouch according to the invention before it is filled;

FIG. 3 is the pouch according to FIG. 2 during the process of forming the closure;

FIG. 4 is a schematic plan view of a sheet material blank for forming a different embodiment of a pouch according to the invention;

FIG. 5 is a schematic cross section of the pouch according to FIG. 4 after it has been closed;

FIG. 6 is a schematic plan view of another pouch according to the invention, in open condition;

FIG. 7 is an enlarged representation of a detail of the closure of a pouch according to FIG. 6;

FIG. 8 is a schematic perspective view of yet another embodiment of a pouch according to the invention after it has been closed;

FIG. 9 is an enlarged representation in cross section of a detail of the closure of the pouch according to FIG. 8;

FIG. 10 is an open blank for forming a further embodiment of a pouch according to the invention;

FIG. 11 is an enlarged cross section of the closure of the pouch shown in FIG. 10, and

FIG. 12 is a modification of the closure according to FIG. 11.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The invention concerns pouches of simple construction made of a synthetic thermoplastic sheet material, particularly polyethylene. More specifically the pouches exemplified by the embodiments that will be hereinafter described with reference to the drawings are understood to be for holding and packing tobacco. According to the invention the pouches are so designed that having been filled they can be readily sealed and that the resultant receptacle is then entirely airtight, preventing loss of aroma and a consequent deterioration of the quality of the tobacco even under adverse climatic conditions. On the other hand, it is proposed that such a pouch should nevertheless be easily openable without a tool for extracting the tobacco therefrom.

The illustrated embodiments of a pouch as proposed by the invention are made from a single ply or preferably from two plies **10***a* and **10***b* of a synthetic sheet material with a paper or like material **11** interleaved between the two plies as is clearly shown in FIGS. 11 and 12.

Such a pouch is produced in the manner indicated in FIG. 1. First a continuous sheet **10** comprising two plies **10***a* and **10***b* of synthetic sheet material with an interleaved strip **11** is prepared. One longitudinal edge of this two-ply continuous sheet **10** containing the interleaved strip is then continuously folded over part of the remainder of the sheet to form two superimposed walls **12** and **13** of the proposed pouch. According to the desired width of the pouch the continuous sheet **10** is then cross-cut at **14** and the ends of the two superimposed walls **12** and **13** are connected together by lateral weld seams **15** and **16**, thereby to form a pouch with three closed edges, an opening **17** and a wrap-around flap **12***a* at the open edge. This wrap-around flap **12***a* is folded over the pouch when the latter has been filled, thereby closing its opening **17**. For the sake of simplicity the walls of the pouch in FIGS. 1 to 9 are drawn as if they consisted of only a single ply material. A sealing mark (not shown) is then stuck down on the wrap-around flap **12***a*.

According to the invention the opening **17** of the filled pouch is so closed that the contents of the pouch are substantially protected from the ingress of air. The drawings show various embodiments of a seal for closing the opening **17**.

In FIGS. 1 to 3 the sides of the superimposed walls **12** and **13** are each provided with a bonding strip **18** and **19**, respectively, on the inside of the opening **17**. These bonding strips likewise consist of a plastics material and preferably of a material that has a pronounced dipole moment. Such a material can then be heated in a capacitive high frequency field. The facing surfaces of the bonding strips **18** and **19** are provided with a special adhesive **20**. This adhesive **20**, which is of a kind known in the art, does not become active until the temperature is raised beyond a given temperature level. Below this temperature the adhesive does not adhere (hot-sealing adhesive). The adhesive **20** may therefore already be present on the facing surfaces of the bonding strips **18** and **19** when the pouch is being filled without any risk of particles of the contents of the pouch, more particularly of the tobacco, sticking to the adhesive. Not until the opening **17** is to be sealed are the two bonding strips **18** and **19** pressed tightly together and the adhesive **20** exposed to a suitable temperature for activation.

The special choice of the material of the bonding strips **18** and **19** permits the seal to be formed, i.e. the adhesive **20** to be activated, by exposure to a capacitive high frequency field which may be generated between two electrodes **21** and **22** presented to the outsides of the edges of the opening **17**. This method of heating has the advantage that the sheet material of the pouch, which is preferably polyethylene, is not involved and will not therefore be deformed, with a consequent creation of undulations, nor shrink or expand. The temperature is raised exclusively

in the bonding strips **18** and **19** and in the sealing adhesive **20**.

The bonding strips **18** and **19** may be affixed to the walls **12** and **13** of the pouch in any suitable way. Preferably the two bonding strips **18** and **19** are fixed, particularly welded, in position when the continuous sheet **10** is being prepared, for instance by the application of heat with the aid of hot rollers or like means.

The adhesive **20** is so chosen that the opening **17** can be opened by pulling the superimposed walls **12** and **13** apart along the line of the adhesive between the strips **18** and **19** by pulling a tearing lip **13***a* formed on the end of the wall **13**.

This method of opening the pouch does not damage the easily stretchable and deformable plies of sheet material of the wall **12** and **13** which therefore retain their shape and permit the pouch to be used, as is conventional, for a longer period of time until its contents have been used up.

FIGS. 4 and 5 illustrate a modification of the described construction of a closure as proposed by the invention. In this instance a special tearing lip **23** is provided which is welded to the free edge of the wall **13**. This tearing lip **23** is likewise preferably attached during the production of the continuous two-ply sheet material by welding the lip **23** to the wall **13**. An adhesive **20** is then applied to the outside of the lip. The type of adhesive used for this purpose is again a special temperature-activated adhesive (hot-sealing adhesive) of the kind already described with reference to FIGS. 1 to 3. The pouch is then formed by folding over the wall **13**, cutting the continuous doubled material along lines **14**, and weld seaming the edges **15** and **16** to form the pouch which can then be filled. Finally the seal is made by bonding the adhesive **20** to the wall **12** of the pouch by exposing it to the required temperature.

For opening the closure the seal is torn open by pulling the tearing lip **23**, and causing the seal to separate along the line of the adhesive bond between the tearing lip **23** and the wall **12**.

In this embodiment a bonding strip may also be attached to the wall **12** in the manner described with reference to the bonding strip **19** in FIGS. 2 and 3, the adhesive **20** being provided between the bonding strip **19** and the facing side of the tearing lip **23**. If this is done the seal will be opened by the tearing lip **23** separating from the bonding strip **19** without mechanically stressing the sheet material of the wall **12**.

The construction of the embodiment according to FIGS. 6 and 7 is particularly simple. In this instance an electrically conducting ripping wire **24** is provided along the line of the opening **17** when the pouch is being made, the wire **24** being bonded to both walls **12** and **13** by passing a high current pulse of low voltage through the wire and thereby forming the closure. The ripping wire **24** has at least one projecting end **25** which can be gripped and the ripping wire **24** pulled out of the opening **17** which is thereby cut open.

In the embodiment according to FIGS. 8 and 9 a special tearing strip **26** consisting of a material that will readily tear, particularly paper, is provided. This tearing strip **26** is longitudinally folded and then inserted into the opening **17** where the two flanks **27** and **28** of the tearing strip **26** are bonded to the facing inner sides of the two walls **12** and **13**. A ripping thread **30** is inserted and preferably glued into the inside of the crease **29** of the folded strip **26**. This closure can be readily opened by gripping the ripping thread **30** at one end **30***a* and tearing the strip **26** along the crease.

Preferably the tearing strip **26** is separately made and prepared, likewise in the form of a continuous band or strip. The ripping thread **30** is applied to one side of the tearing strip **26**, whereas weldable or adhesive sealing strips **31** and **32** are applied to the other side of the tearing strip **26** in positions laterally offset from the position of the ripping thread **30**. These sealing strips **31** and **32** may then be secured to the walls **12** and **13** of the pouch

in some suitable way, preferably by welding or by adhesive bonding with the application of heat. The ripping thread **30** may conveniently be of the self-adhering kind.

Also in the embodiment illustrated in FIGS. 10 and 11 a special sealing strip **33** of tearable material is provided. This sealing strip **33** forms part of the interleaved paper or like material **11** and projects from between the two plies **10***a* and **10***b* at the free end of the wall **13**. A ripping thread **30**, preferably of the self-adhering kind, is applied to that side of this sealing strip **33** which is on the inside in the completed pouch. The two plies **10***a* and **10***b* of the wall **13** are connected on both sides along the free edge to the sealing strip **33** (FIG. 11) to preserve the evenness of the wall **13**.

The projecting end of the interleaved paper or like material **11**, i.e. the sealing strip **33**, is bonded to the wall **12** for forming the seal, for instance adhesively or by hot sealing, the ripping thread **30** which has at least one projecting end **30***a* being located on the inside. The seal can be opened by pulling the ripping thread **30** and tearing the sealing strip **33**.

The embodiment shown in FIG. 12 is in principle of similar construction. However, in this instance the interleaved paper or like material **11** is completely enclosed on all sides by the plies **10***a* and **10***b* of the sheet material. A sealing strip **33***a* consisting of a tearable material is adhesively secured or weld-seamed across the opening **17**, a ripping thread **30** being inserted on the inside. Again the seal can be easily opened by pulling away the ripping thread **30**.

Pouches as proposed by the invention are characterized by their cheap and inexpensively producible design, their satisfactory tightly sealed closure and the ease with which they can be opened when required. Furthermore, the pouches continue to be servicable for further use after they have been opened, since adhesive surfaces are not thereby exposed.

What is claimed is:

1. A pouch constructed of at least one ply of synthetic thermoplastic material comprising a body having an opening for the introduction and extraction of contents therethrough, said opening being defined by adjacent portions of front and back walls of said body, bonding and tearing means for closing said opening, said bonding and tearing means including a coating of hot-sealing adhesive having a bond strength at ambient temperature less than the rupture strength of said thermoplastic material whereby opening forces applied to said pouch at said adjacent wall portions will rupture the adhesive bond without stretching, rupturing or otherwise deforming said thermoplastic material.

2. The pouch as defined in claim **1** wherein said bonding and tearing means include a bonding element bonded to each of said front and back walls, said bonding elements being normally secured to each other by said hot-sealing adhesive, and the bond strength between each bonding element and its associated wall being greater than the bond strength of said hot-sealing adhesive whereby opening forces applied to said pouch at said opening will rupture the hot-sealing adhesive bond upon the transfer of opening forces thereto through said bonding elements.

3. The pouch as defined in claim **2** wherein said bonding elements are constructed from plastic material having dipole moment, said hot-sealing adhesive is a coating applied to opposing faces of said bonding elements, and said hot-sealing adhesive coatings are activated to form the bond therebetween by a capacitive high frequency field.

4. The pouch as defined in claim **1** wherein one of said walls includes a wrap-around flap adapted to be folded upon the pouch for reclosing said opening after the latter has been once opened, and the other of said walls includes a tear strip portion projecting beyond said bonding and tearing means.

5. The pouch as defined in claim **1** wherein said bonding and tearing means include a separate tear strip spanning and secured between said front and back walls, and a tearing element secured to an inner surface of said tear strip whereby forces applied to said tear element are transferred to said tear strip for rupturing the same to provide access to the interior of said pouch through said opening.

6. The pouch as defined in claim **5** wherein said tear strip is of a generally inverted U-shaped cross-sectional configuration defined by a bight portion and a pair of legs, said legs being bonded to said front and back walls, and said tear element being bonded to the interior of said bight portion.

7. The pouch as defined in claim **4** wherein said front and back walls are of a laminated construction including at least two plies, and said tear strip includes another portion laminated between the plies of said other wall.

8. The pouch as defined in claim **4** wherein said front and back walls are of a laminated construction defined by a pair of outer plies and a medial ply therebetween, and said tear strip portion is an integral extension of said medial ply projecting beyond said bonding and tearing means.

9. The pouch as defined in claim **4** wherein said tear strip is a separate member bonded between said wrap-around flap and an exterior surface of said front wall, and a tear element is bonded to an inner surface of said tear strip.

10. The pouch as defined in claim **8** including a tear element secured to an inside surface of said tear strip portion.

11. The pouch as defined in claim **1** wherein a tear strip is provided having a portion within said opening and a portion projecting therefrom, the tear strip portion within said opening having a surface secured to an interior surface of one of said walls by a bond of a strength greater than the bond strength of said hot-sealing adhesive, and an opposite surface of said tear strip portion within said opening being adhesively secured to said hot-sealing adhesive whereby upon the application of an opening force to said tear strip an opening will be formed by the rupture of said hot-sealing adhesive bond.

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DAVID M. BOCKENEK, Primary Examiner

U.S. Cl. X.R.

206—41; 229—80