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(54) METHOD OF MAKING AN EXPANDABLE PACKAGE

VERFAHREN ZUR HERSTELLUNG EINER AUSZIEHBAREN VERPACKUNG

METHODE DE FORMATION D'UN EMBALLAGE EXTENSIBLE

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(73) Proprietor: **The Hudson-Sharp Machine CO.
Green Bay, WI 54304 (US)**

(72) Inventors:
• **DESMEDT, Eric
Green Bay, WI 54304 (US)**

• **ALLAMPRESE, Michele
Green Bay, WI 54304 (US)**

(74) Representative: **Algemeen Octrooi- en
Merkenbureau B.V.
P.O. Box 645
5600 AP Eindhoven (NL)**

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Description

TECHNICAL FIELD

[0001] The present invention relates generally to flexible packaging for compressible articles, such as sanitary protection products, disposable diapers, and the like, and more particularly to an expandable package which facilitates storage and shipment by permitting articles therein to be maintained in a compressed state, with the package being expandable upon opening to facilitate removal of articles therefrom.

BACKGROUND OF THE INVENTION

[0002] Flexible packaging arrangements, typically formed from heat-sealable polymeric film materials, are in wide-spread use by virtue of the efficiency with which they can be manufactured and filled, and the convenience that they provide to consumers for handling and storage of articles therein. For some types of articles, such as sanitary protection products, disposable diapers, and the like, articles within the package are typically maintained in a compressed state to thereby desirably reduce costs associated with storage and shipment.

[0003] During packaging, products of this nature are typically packed vertically within an associated package, with the articles subjected to compression in the cross-direction, with respect to the filling machine. While these types of machines are capable of applying a relatively high degree of compression to articles being packaged in this fashion, the degree of compression is limited, in certain respects, by convenience for the end user. In particular, when such articles are subjected to relatively high compression, upon opening of the package, the package can tend "explode", and the articles therein can be inconveniently discharged from the package. In the event that the products do not "pop out" in this fashion, they may be retained within the package in a highly compressed state, detracting from convenient removal of the first few articles from within the package by consumers.

[0004] Thus, it is desirable to provide an improved form of package which facilitates higher compression of articles therein to facilitate efficient shipments and storage, while avoiding drawbacks associated with convenient removal of such articles by consumers.

[0005] This is already achieved by e.g. WO 92/12069.

[0006] The present invention is directed to such an improved package formed from flexible material, which notably is configured to expand upon initial opening, thereby greatly facilitating convenient removal of individual articles from within the package by consumers. The expandability of the package can be provided in an efficient fashion, without excessive expense, and can be filled on conventional filling machines without significant or expensive modifications.

[0007] In accordance with the illustrated embodiment, the present expandable package includes an outer bag

body including front and rear body panels, and a pair of opposite ends between which the body panels longitudinally extend. The bag body is preferably formed from flexible material, such heat-sealable polymeric film. However, it is within the preview of the present invention that other flexible packaging materials can be employed for manufacture of the present package.

[0008] The present expandable package includes at least one inner, folded expansion element positioned within and joined to the outer bag body of the package. The expansion element is joined to the bag body at two longitudinally spaced regions of the bag body, with the expansion element having an unfolded, longitudinal dimension greater than the longitudinal spacing of these regions. As used herein, the term folded is intended to encompass any configuration of the inner expansion element which effectively reduces its overall length, including folding, fan-folding, coiling, bunching or the like.

[0009] The bag body defines a preferentially weakened area positioned generally between the longitudinally spaced regions of the bag body to which the inner expansion element is secured. By this arrangement, upon opening of the bag body at the weakened area, the ends of the bag body can separate from each other as the inner expansion element unfolds. In this fashion, removal of articles from within the packages is facilitated.

[0010] In the illustrated embodiment, the bag body includes front and rear longitudinally extending body panels, and is provided with a pair of inner expansion elements positioned in respective association with the front and rear body panels. The expansion elements are spaced from each other, generally at the top of the package between the front and rear body panels. The weakened area of the package is preferably provided so that it extends substantially continuously about the periphery of the bag body.

[0011] Upon opening the weakened area, each of the pair of the expansion elements is permitted to unfold as the package is opened. This permits articles within the package to be removed generally through the top thereof, generally from between the pair of expansion elements.

[0012] The present invention deals with a method of forming such an expandable package and includes providing a web of flexible material, and forming a series of spaced apart weakened regions which extend generally transversely of the web. The weakened regions may each be provided in the form of a perforation or scored area. The method further contemplates that the expansion elements, such as in the form of zig zag tape, are thereafter joined to the web of material, with each expansion element joined to the web at longitudinally spaced regions, generally so that each expansion element overlies and is connected across a respective one of the weakened areas. The web of plastic material can thereafter be formed into packages, in a conventional fashion, with compressed articles positioned therein. The filled packages can be handled in a conventional fashion for subsequent packaging, storage, and shipment.

[0013] After purchase, each individual package can be expanded by opening of the weakened area, whereby the ends of the package move away from each other, under the influence of the compressed articles therein, as the one or more expansion elements within the package unfold and longitudinally extend. Consumers can then conveniently remove articles from within the package.

[0014] Other features and advantages of the present invention will become readily apparent from the accompanying drawings, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Figure 1 is a diagrammatic, perspective view of an expandable package embodying the principles of the present invention;

Figure 2 is a diagrammatic, perspective view of the package of Figure 1, showing the package in an expanded condition;

Figure 3 is a diagrammatic view illustrating manufacture of the present package from a web of plastic fill material; and

Figure 4 is a cross-sectional, diagrammatic view illustrating securement of an expansion element to an associated flexible web of material.

DETAILED DESCRIPTION

[0016] While the present invention is susceptible of embodiment in various forms, there is shown in the drawings and will hereinafter be described a presently preferred embodiment, with the understanding that the present disclosure is to be considered as an exemplification of the invention, not intended to limit the invention to specific embodiment illustrated.

[0017] With reference now to Figures 1 and 2, therein is illustrated an expandable package 10 embodying the principles of the present invention. In the illustrated embodiment, the expandable package 10 has a generally rectangular configuration, including front and rear panels 12 and 14, top and bottom panels 16 and 18, and opposite end panels 20 and 22. As will be further described, package 10 is expandable such that the front, rear, top, and bottom panels can be expanded or lengthened, as the opposite end panels 20 and 22 are moved away from each other.

[0018] In order to configure the package 10 for expandability, the package includes an outer bag body, and at least one inner expansion element 24 joined to the bag body at two longitudinally spaced regions of the bag body. Prior to expansion of the package 10, the expansion element 24 is maintained in a folded condition, that is, any

configuration of the inner expansion element which effectively reduces its overall length, including folding, fan-folding, coiling, bunching and the like.

[0019] The bag body of the package 10 defines a preferentially weakened area 26 which extends about the outer periphery of the bag body, including front and rear panels 12 and 14, and top and bottom panels 16 and 18, preferably in closely spaced relationship to one of the end panels of the package, such as end panel 22 in the illustrated embodiment. The preferentially weakened area can be provided in the form of a perforation, score line, or the like, and acts to releasably maintain the package in its unexpanded condition, with the inner expansion element maintained in its folded configuration.

[0020] Figure 1 illustrates expandable package 10 in its unexpanded condition, in which condition articles within the package, such as disposable diapers, sanitary napkins, and like articles which can be compressed, are maintained in a compressed condition, thus facilitating efficient storage and shipment of the package 10.

[0021] In order to facilitate access to the contents of the package 10 by consumers, it is desirable that the compressed articles within the package be uncompressed, thus facilitating separation and withdrawal of the articles from within the package. To this end, package 10 can be readily reconfigured to its expanded configuration, shown in Figure 2, by fracture, breaking, tearing, or other opening of the package at the preferentially weakened area 26. Upon opening in this fashion, end panel 22 can move generally outwardly of the remainder of the package, as the one or more inner expansion elements 24 unfold and extend. It is preferred that the inner expansion element not extend about the inner periphery of the package, to thereby define a product opening 27 at which the uncompressed products within the package can be easily removed. In a current embodiment, a pair of the expansion elements 24 are provided in respective association with the front and rear panels 12, 14, so that the expansion elements are spaced from each other at the top and bottom panels 16, 18, thus providing product opening 27 upon expansion of the package.

[0022] Figures 3 and 4 illustrate the claimed method by which the expandable package 10 of the present invention can be readily fabricated. Package 10 can be efficiently formed from a plastic film web 28, or like material, which is preferably heat-sealable. A series of the preferentially weakened areas 26 are formed transversely of the web of material 28, with the weakened regions spaced along the longitudinal axis of the web at intervals corresponding to the length of each package being formed.

[0023] Formation of the present package is next effected by the provision of a plurality of the expansion elements 24, with each of the expansion elements joined to the web at a pair of longitudinally spaced regions of the web so that each expansion element extends across one of the preferentially weakened areas 26 between the respective longitudinally spaced regions. As shown in Fig-

ure 4, such longitudinally spaced regions can be provided in the form of suitable seals 30, 32, which may be formed by heat-seals, adhesive seals, or like techniques as are known in the art.

[0024] As noted, each expansion element 24 has an unfolded longitudinal dimension greater than the longitudinal spacing between the respective ones of the longitudinally spaced regions i.e., seals 30, 32.

[0025] Package formation is further effected by providing a plurality of articles to be placed in each of the packages being formed, and thereafter folding the web of material to form a series of packages. Each package thus-formed includes an outer bag body having front and rear panels, and a pair of opposite ends between which the body panels extend. At least one of each of the expansion elements 24 is positioned interiorly of each of the packages being formed, with the formation method including positioning the plurality of articles, under compression, in the package being formed.

[0026] By this arrangement, upon opening of each package at the preferentially weakened area, the ends of the bag body can separate from each other as the one or more expansion elements unfold, thereby facilitating removal of articles from within the package.

[0027] In order to form an expandable package configured in accordance with the embodiment illustrated in Figure 1, it is preferred that a pair of the expansion elements 24 be joined to the web of material to respectively extend across each one of the preferentially weakened areas, so that each of the expansion elements is positioned in respective association with the front and rear panels of the respective outer bag body. Thus, a pair of expansion elements are spaced from each other, in a direction transversely of the web of material, generally at the top of the package being formed, so that upon opening of the package at the preferentially weakened area thereof, the articles can be removed from the package generally through the top thereof, such as through product opening 28, generally from between the pair of expansion elements 24.

Claims

1. A method of making an expandable package (10), comprising the steps of:

providing a web (28) of flexible material;
forming a series of preferentially weakened areas (26) transversely of the web of material, spaced along the longitudinal axis of said web at intervals corresponding to the length of each package being formed;
providing a plurality of folded expansion elements (24);
joining each one of said expansion elements to said web of material at a pair of longitudinally spaced regions of said web of material so that

the expansion element extends across one of said preferentially weakened areas between the respective longitudinally spaced regions, each said expansion element having an unfolded longitudinal dimension greater than the spacing between the respective ones of the pair of longitudinally spaced regions;

providing a plurality of articles to be placed in each of the packages being formed; and
folding said web of material to forming a series of said packages, each including an outer bag body having front and rear panels (12, 14), and a pair of opposite ends (20, 22) between which said body panels extend, with at least one of said expansion elements positioned interiorly of each of the packages being formed, including positioning the plurality of said articles, under compression, in the package being formed, so that upon opening of each package at the preferentially weakened area, the ends of the bag body can separate from each other as the expansion element unfolds, thereby facilitating removal of articles from within the package.

2. A method of making an expandable package in accordance with claim 1, including joining a pair of said expansion elements to said web of material to extend across each one of said preferentially weakened areas so that said expansion elements are positioned in respective association with the front and rear panels of the respective outer bag body, said pair of expansion elements being spaced from each other, in a direction transversely of said web of material, generally at the top of the package being formed, so that upon opening of the package at the preferentially weakened area thereof, the articles can be removed from the package generally through the top thereof, generally from between said pair of expansion elements.
3. A method in accordance with claim 1 or 2, wherein said weakened areas are formed by perforation.
4. A method in accordance with claim 1 or 2, wherein said weakened areas are formed by a scored area of said bag body.
5. A method in accordance with claim 1 or 2, wherein said weakened areas extend substantially continuously about the periphery of said bag body.
6. A method in accordance with claim 1 or 2, wherein said bag body is formed from a web of heat-sealable material, and said expansion element comprises zig-zag tape heat-sealed to the web of material at the interior of the bag body at said longitudinally spaced regions.

Patentansprüche

1. Verfahren zur Herstellung einer dehnbaren Verpackung (10), das die Schritte umfasst, bei denen:

eine Bahn (28) aus flexiblem Material bereitgestellt wird;

eine Reihe vorzugsweise geschwächter Bereiche (26) quer zur Materialbahn gebildet wird, die entlang der Längsachse der Bahn in Abständen, die der Länge jeder gebildeten Verpackung entsprechen, beabstandet sind;

mehrere gefaltete Ausdehnungselemente (24) bereitgestellt werden,

jedes der Ausdehnungselemente in zwei in Längsrichtung beabstandeten Zonen der Materialbahn mit der Materialbahn verbunden wird, so dass sich das Ausdehnungselement über einen der vorzugsweise geschwächten Bereiche zwischen den jeweiligen in Längsrichtung beab-

standeten Zonen erstreckt, wobei jedes Ausdehnungselement eine entfaltete Längsabmessung hat, die größer ist als der Abstand zwischen den entsprechenden Zonen der zwei in Längsrichtung beabstandeten Zonen;

mehrere Artikel bereitgestellt werden, die in jede der gebildeten Verpackungen anzuordnen sind; und

die Materialbahn gefaltet wird, so dass eine Reihe der Verpackungen gebildet wird, die jeweils einen äußeren Taschenkörper mit einer vorderen und einer hinteren Wand (12, 14) und mit zwei entgegengesetzten Enden (20, 22), zwischen denen sich die Taschenwände erstrecken, aufweisen, wobei mindestens eines der Ausdehnungselemente jeweils innerhalb der gebildeten Verpackungen angeordnet ist, was auch das Anordnen der mehreren Artikel unter Druck in der gebildeten Verpackung einschließt, so dass beim Öffnen jeder Verpackung an dem vorzugsweise geschwächten Bereich die Enden des Taschenkörpers voneinander getrennt werden können, wenn sich das Ausdehnungselement entfaltet, wodurch das Herausnehmen der Artikel aus der Verpackung vereinfacht wird.

2. Verfahren zur Herstellung einer dehnbaren Verpackung nach Anspruch 1, das Folgendes umfasst Verbinden von zwei der Ausdehnungselemente mit der Materialbahn, so dass sie sich über jeden der vorzugsweise geschwächten Bereiche erstrecken und die Ausdehnungselemente der entsprechenden vorderen und hinteren Wand des jeweiligen äußeren Taschenkörpers zugeordnet positioniert werden, wobei die beiden Ausdehnungselemente in Querrichtung zur Materialbahn im Allgemeinen im oberen Teil der gebildeten Verpackung voneinander beabstandet sind, so dass beim Öffnen der Verpackung

in deren vorzugsweise geschwächten Bereichen die Artikel im Allgemeinen über den oberen Teil der Verpackung, im Allgemeinen zwischen den beiden Ausdehnungselementen aus dieser herausgenommen werden können.

3. Verfahren nach Anspruch 1 oder 2, bei dem die geschwächten Bereiche durch Perforierung gebildet werden.

4. Verfahren nach Anspruch 1 oder 2, bei dem die geschwächten Bereiche durch einen mit Kerben versehenen Bereich des Taschenkörpers gebildet werden.

5. Verfahren nach Anspruch 1 oder 2, bei dem sich die geschwächten Bereiche im Wesentlichen kontinuierlich um den Umfang des Taschenkörpers erstrecken.

6. Verfahren nach Anspruch 1 oder 2, bei dem der Taschenkörper aus einer Bahn aus Heißsiegelmaterial gebildet wird und das Ausdehnungselement ein Zickzackband aufweist, das durch Heißversiegelung am Innenbereich des Taschenkörpers, an den in Längsrichtung beabstandeten Zonen mit der Materialbahn verbunden wird.

Revendications

1. Procédé de fabrication d'un emballage extensible (10), comprenant les étapes de :

fourniture d'une toile (28) de matériau flexible ;
formation d'une série de zones préférentiellement affaiblies (26) transversalement à la toile de matériau, espacées le long de l'axe longitudinal de ladite toile à des intervalles correspondant à la longueur de chaque emballage en cours de formation ;

fourniture d'une pluralité d'éléments d'extension pliés (24),

jonction de chacun desdits éléments d'extension à ladite toile de matériau au niveau d'une paire de régions longitudinalement espacées de ladite toile de matériau de sorte que l'élément d'extension s'étende à travers l'une desdites zones préférentiellement affaiblies entre les régions longitudinalement espacées respectives, chaque dit élément d'extension ayant une dimension longitudinale non pliée plus grande que l'espacement entre celles respectives de la paire de régions longitudinalement espacées ;

fourniture d'une pluralité d'articles à placer dans chacun des emballages en cours de formation ;
et

pliage de ladite toile de matériau pour former

- une série desdits emballages, incluant chacun un corps de sac externe ayant des panneaux avant et arrière (12, 14), et une paire d'extrémités opposées (20, 22) entre lesquelles lesdits panneaux de corps s'étendent, au moins l'un desdits éléments d'extension étant positionné à l'intérieur de chacun desdits emballages en cours de formation, incluant le positionnement de la pluralité desdits articles, sous compression, dans l'emballage en cours de formation, de sorte que, lors de l'ouverture de chaque emballage au niveau de la zone préférentielle affaiblie, les extrémités du corps de sac puissent se séparer les unes des autres à mesure que l'élément d'extension se déplie, ce qui facilite le retrait d'articles depuis l'intérieur de l'emballage. 5 10 15
2. Procédé de fabrication d'un emballage extensible selon la revendication 1, incluant la jonction d'une paire desdits éléments d'extension à ladite toile de matériau pour s'étendre à travers chacune desdites zones préférentiellement affaiblies de sorte que lesdits éléments d'extension soient positionnés en association respective avec les panneaux avant et arrière du corps de sac externe respectif, lesdits éléments d'extension de la paire étant espacés l'un de l'autre, dans une direction transversale à ladite toile de matériau, généralement en haut de l'emballage en cours de formation, de sorte que, lors de l'ouverture de l'emballage au niveau de sa zone préférentiellement affaiblie, les articles puissent être retirés de l'emballage généralement par le haut de celui-ci, généralement depuis entre ladite paire d'éléments d'extension. 20 25 30 35
3. Procédé selon la revendication 1 ou 2, dans lequel lesdites zones affaiblies sont formées par perforation. 40
4. Procédé selon la revendication 1 ou 2, dans lequel lesdites zones affaiblies sont formées par une zone marquée dudit corps de sac.
5. Procédé selon la revendication 1 ou 2, dans lequel lesdites zones affaiblies s'étendent sensiblement continuellement autour de la périphérie dudit corps de sac. 45
6. Procédé selon la revendication 1 ou 2, dans lequel ledit corps de sac est formé d'une toile de matériau thermoscellable, et ledit élément d'extension comprend une bande en zigzag thermoscellée sur la toile de matériau à l'intérieur du corps de sac au niveau desdites régions longitudinalement espacées. 50 55

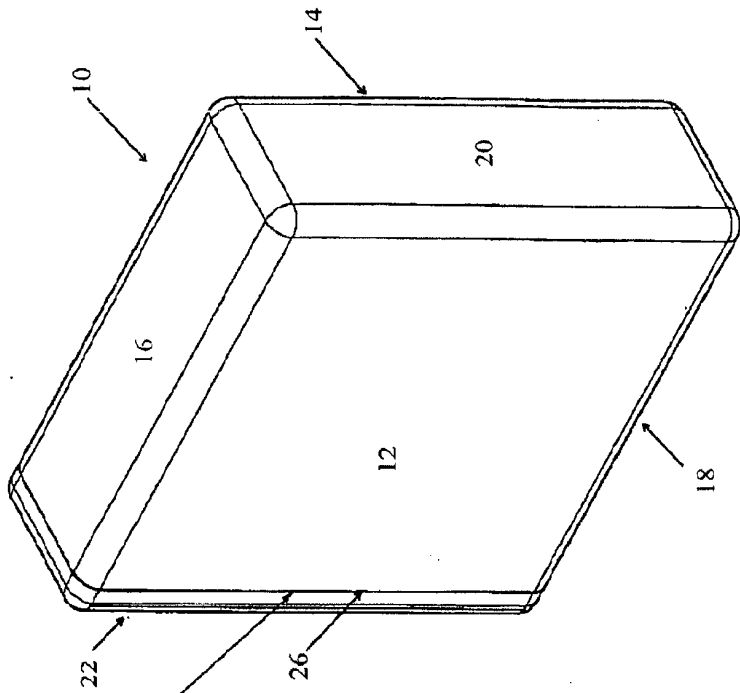


FIG-1

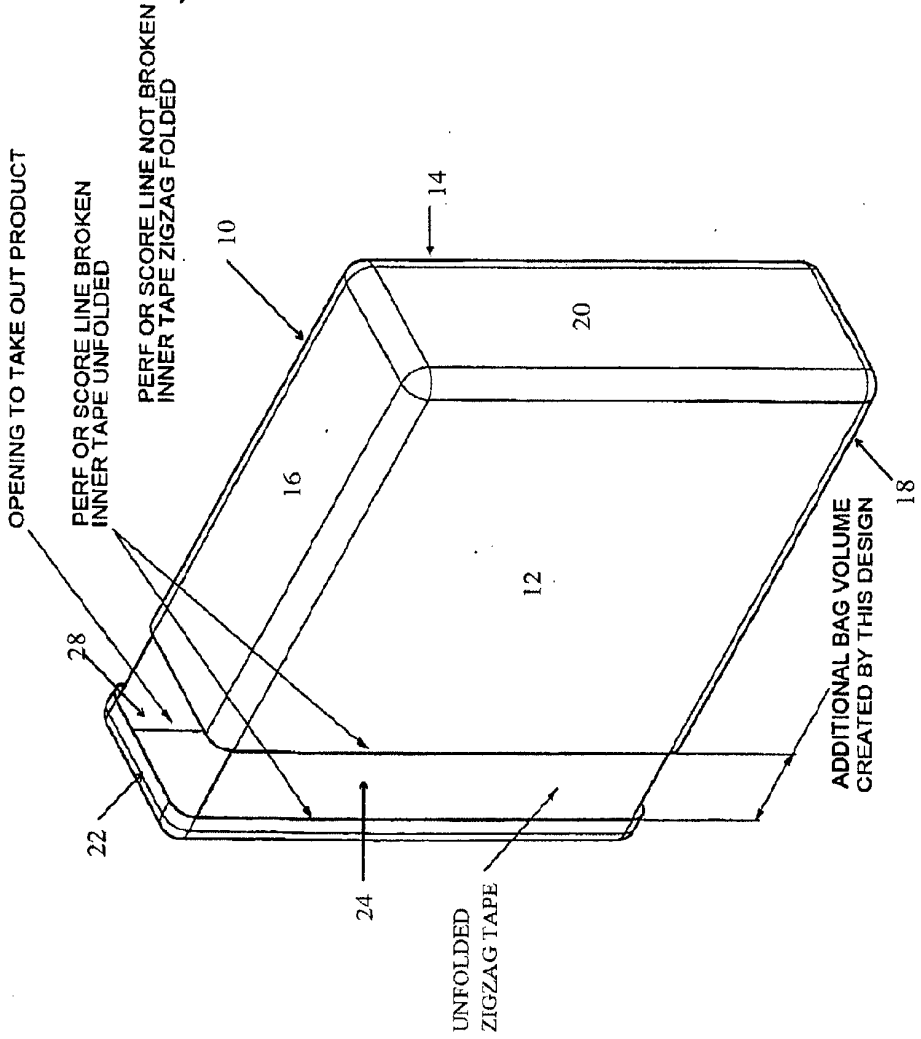


FIG-2

FIG. 3

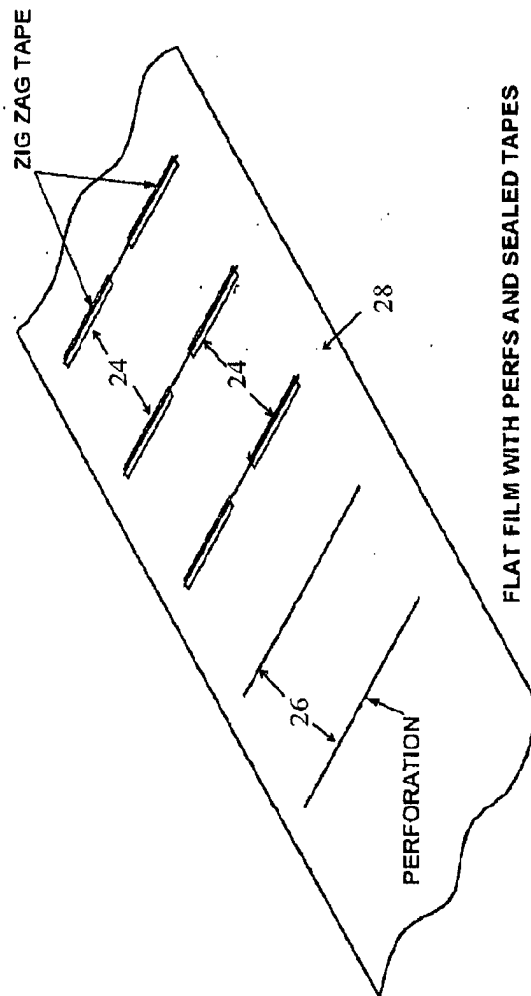
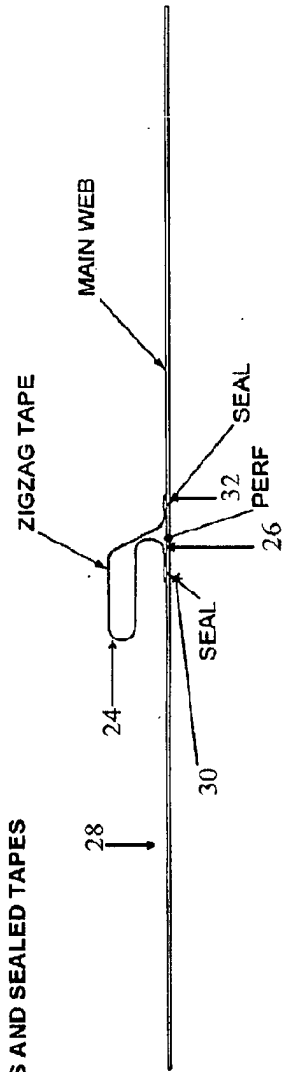


FIG. 4

FLAT FILM WITH PERFS AND SEALED TAPES



REFERENCES CITED IN THE DESCRIPTION

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