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(54) **Heat sealed sack of flexible film comprising a relief valve**

Heissgesiegelter Beutel aus flexibler Folie mit einem Entlastungsventil

Sac de film souple thermoscellé comprenant une valve de décharge

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Description

TECHNICAL FIELD

[0001] The present disclosure relates in general to packaging techniques of foodstuff and in particular in sacs of flexible film heat sealed by welding, adapted to permit to warm up the packaged food before eating it.

DISCUSSION OF KNOWN TECHNIQUES

[0002] It is common practice of packaging foodstuff in heat sealed sacs of mono or multilayer film impermeable to fluid exchanges with the exterior in order to prevent contaminations and favor conservation of the foodstuff. This type of packaging, commonly used in the commerce and/or dispensation of edible foodstuff must often be suitable to permit the heating of the food content in thermal or microwave oven before delivering or serving the warmed up food still contained inside a substantially unbroken sac.

[0003] This practice is common in snack bars, fast food restaurants, mess rooms automatic food dispensing machines, and foodstuff packaged in this manner are also on sale in self-service shops and supermarkets.

[0004] When heating those hermetically sealed packages an overpressure may develop inside the package due to the evolution of vapors (typically water vapor) and/or gases from the edible foodstuff. In absence of means of controlled release of overpressure, the hermetically sealed sac would swell to the point of rupturing.

[0005] Uncontrolled rupturing of the sac when it occurs with an abrupt uncontrolled detachment of an edge heat welded perimeter of the sac, determines an aspect of lack of integrity of the packaged foodstuff, beside complicating a neat opening of the sac by the customer/user which are undesirable.

[0006] With an aim of preventing these occurrences when heating the content of an airtight package in a sac of a flexible film sealed by heat welding, have been developed so called release valves of pressurized gaseous substances to be applied to the film with which the sac airtight package is formed upon exceeding a preset maximum limit overpressure shot of being able to cause uncontrolled rupturing of the film or detachment of a heat welded perimeter seam.

[0007] External valves are validly used in sacs of heat welded flexible film, applied onto the outer surface of the film in form of preconstituted stickers sealing holes or cuts made through the flexible film with which the heat sealed sac is made.

[0008] These external sticker valves must ensure on one side airtightness and anti-tamper features character of the package and on the other side an effective isolation of the edible content of the package from direct contact with the pressure activated adhesive of the sticker, typically of material unsuitable to come in contact with food. The anti-tampering is generally implemented by common breakable cuts in the sticker film that would make permanently evident any attempt to remove it by lifting it off an edge and tearing it off the outer surface of the sac, whilst isolation from contact with the adhesive material of the valve sticker is implemented by applying a disc or polygonal patch of film of a material compatible to contact the packaged aliment, disposed on central area of the adhesive face of the valve sticker, such that the patch bonded at the center of the face of application of the valve stickers, be comfortably masking the hole or cut purposely formed through the sac film through which eventually releasing pressurized fluids. Airtightness remains ensured by the circular crown or annular area of adhesion of the valve sticker onto the outer surface of the sac, around the masking central patch disc covering the release hole or cuts in the sac film.

[0009] The ability of releasing pressurized fluids upon reaching a certain overpressure inside the airtight package is given by dimensioning for a resisting force to detachment of the adhesive from the outer surface of the film of the sac to the point of eventually creating a release path of the internal pressurized fluid through at least a certain arc or region of the crown or ring of adhesion of the valve sticker. As may be easily recognized by a technician, precisely applying external valve sticker over release holes or cuts purposely formed through the flexible film with which the packaging sacs will be made by hot welding the film along predefined lines of the flexible film commonly produced in reels of continuous film ribbon, requires definition of their geometry using distinct cutters and/or die punches for defining the shape of the centrally adhered isolating patch and the outer perimeter of the valve sticker, respectively, on a multilayered ribbon. Cut out parts of a self-adhesive multilayered ribbon in which are defined the valve stickers that are surrounded and wasted, while the stickers will be individually lifted off from a supporting film of a peelable material to be finally applied over fluid release holes or cuts made through the continuous flexible film with which the hot welded sacs will be fabricated.

[0010] It is evident as this type of architecture of external valve is costly both in terms of the investment in definition tools and machines as well as in terms of cost of the multilayered ribbons in which the single valve stickers are geometrically defined, a considerable large part of it is wasted.

[0011] WO 03/048001-A1, discloses the features of the preamble of claim 1, with inclusion of a flexible diffusible film at a point along a weld seam of a food package destined to yield open and release over pressurized steam when heating the food in the sealed package.

[0012] US Patent No. 5,464,969 discloses the realization of a over pressure relief valve along a seal weld seam of the sac by introducing a multilayer insert between hot welded overlap edges of the sac, wherein the multilayer insert has layers weakly bonded to each other and adapted to preferentially yield open in case of overpressure.

[0013] WO 2008/057768-A3 discloses the insertion of

a water-insoluble insert of a thermoplastic elastomer and wax at a point along a hot seal weld seam of the sac.

SUMMARY

[0014] The present invention overcomes the complexities of the required tooling the wasteful use of relatively costly materials besides eliminating the need of making release holes or cuts through the flexible film with which the sacs are made.

[0015] Basically, the novel solution found by the applicant consists in realizing an effective and reliable release valve of pressurized fluids that may form within an airtight sac of hot welded flexible film at a point along a perimeter weld seam of the sac.

[0016] The vapor or other fluid release valve consists in a thin insert of relatively small dimensions, sandwiched between juxtaposed edges welded one to the other of the flexible film of heat weldable material constituting the sealed sac, according to claim 1.

[0017] The insert is adapted to create a tract or segment of a perimeter seam of the sac amenable to undergo detachment of adherent surfaces for creating a release flow path of any pressurized fluid upon reaching a certain maximum limit pressure inside the airtight sac.

[0018] The only action of predisposition of the flexible film with which will be formed the heat welded sacs consists in applying onto the surface of the inner side of the flexible film with which the sacs will be formed, in an area of the flexible film destined to be welded, a multilayered insert sticker or valve sticker, having a layer of pressure activated adhesive over a surface of a flexible plastic film of the sticker, a back surface layer of which (outermost surface of the applied sticker) is of a heat weldable material compatible to be welded to or identical to the heat weldable material of the inner side of the flexible film of fabrication of the heat sealed sacs.

[0019] In this manner, the welding together of juxtaposed edges or perimeter sides of the sac may be carried out without any regard of the weld seam side along which the valve sticker is applied, as if there wasn't any insert.

[0020] In practice, the weld seam will appear substantially free of discontinuities and retain a substantially uniform thickness along all the weld lines.

[0021] This is due to the fact that the back surface of the valve sticker applied onto the inner surface of the flexible film with which the hot sealed sac is fabricated, welds to the same inner surface of the flexible film of fabrication of the sac, of the edge portion that is brought against a juxtaposed edge portion onto which the valve sticker had been adhered.

[0022] Reliability and repeatability of the condition at which release of over pressurized fluids inside the sealed sac occurs are outstandingly high, being possible to vary case by case dimensions and shapes of the insert of prearranged "detachment" represented by the valve sticker, at a point along a weld seam of the airtight sac, depending from the mechanical characteristics of flexibility and plasticity of the flexible film with which the sacs are made and from the maximum limit internal over pressure at which a breakdown of the airtight adhesion occurs in correspondence of the insert along a weld seam constituted by the valve sticker "welded" between opposite edge portions of the flexible film of the sac.

[0023] The valve sticker to be applied at a precisely defined point onto the inner surface of the heat weldable flexible film with which the sacs are formed, may be defined in the desired geometrical shape by a simple die-cutting operation of a multilayered laminate.

[0024] According to a first exemplary embodiment, the multilayered laminate consists of a flexible film or a weldable plastic material one surface of which is treated such to be "peelable" and on which is thereafter applied a layer of a common pressure operated adhesive, the valve stickers die cut therein to be thence simply applied "on-register" at precisely defined points onto the inner surface of the flexible weldable film with which the sacs are going to be formed.

[0025] By the term "peelable" as commonly used by operators in the technical field of reference, it is intended a flexible film typically of polymeric nature, at least a surface of which is made compatible to adhere to a pressure activate adhesive though remaining detachable by tearing it off without dragging along residues of adhesive. A treatment often used to render peelable the surface of a weldable plastic film, consists in exposing the film to a plasma, generated for example by corona effect between a pair of electrodes, though other techniques may be followed as industrially used by manufacturers of plastic films.

[0026] According to an alternative embodiment, the valve sticker is composed by a flexible film of peelable plastic material with layer of pressure activated adhesive over the side of application and having a layer of hot weldable laquer on the opposite side or back of the self-adhesive sticker, which may be of a plastic material that is not per se weldable or not compatibly weldable to the inner surface of the flexible film with which the sacs are going to be made.

[0027] According to a third alternative embodiment, weldability of the back of the valve sticker, instead of being provided by a layer of heat weldable laquer is provided with a second flexible film of plastic material heat weldable to the material of the flexible film of the sac, bonded (laminated) by interposing an aqueous base or solvent free polyurethanic glue over the back surface of the first adhesive carrying plastic film of the sticker.

[0028] The different aspects and peculiarities of the gas-vapor release device from goods packed in airtight heat welded sacs of flexible weldable film of the present disclosure will be described in greater detail by referring to a number of attached drawings that illustrate several embodiments.

[0029] The invention is defined in the annexed claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030]

Figure 1 is a schematic three-dimensional view of an airtight sac of heat welded flexible film.

Figure 2 is an enlargement of the weld seam in which is present the detachment insert of the present disclosure.

Figures 3 and **4** show alternative ways of the creation of inner overpressure release vias by controlled detachment of surfaces originally bonded together.

Figure 5 shows a first embodiment of adhesive insert constituted by a peelable film with a layer of pressure activated adhesive, of a plastic material weldable to the flexible film of the sac.

Figure 6 shows an alternative embodiment of an adhesive insert of this disclosure composed of a peelable flexible film with a layer of pressure activated adhesive and back covered by a layer of heat weldable laquer.

Figure 7 shows a third embodiment of an insert of this disclosure constituted by a first peelable film, a layer of pressure activated adhesive and second film of a material heat weldable to the flexible film of the sac, laminated therewith.

Figures 8, 9 and **10** are respectively a sectional view, a side view and an exploded detail view of a sac of heat welded flexible film with release device of pressurised vapor and/or gas according to an exemplary embodiment.

Figure 11 schematically illustrates a possible fabrication process of an airtight sac of heat welded flexible film with pressure release device according to the present disclosure.

Figures 12-15 are schematic views of different types of sacs of heat welded flexible film with insert of localized detachment between welded edge portions of the flexible film of the sac along a tract of a weld seam of airtight sealing of the sac.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0031] **Fig. 1** shows a sac 1 of flexible film heat sealed by welding together juxtaposed perimeter edges 1a and 1b of the heat weldable film. Normally, there may be present also a longitudinal weld seam (not visible nor shown in the drawing) of juxtaposed edges brought one against the other of the flexible film ribbon of heat weldable material, such as for example polypropylene (PPcoex, PPcast). The film of the sac may also be a multilayered laminate comprising for example an outer layer of polyethylene, optionally including an intermediate layer containing oxygen barrier substances, such as for example SiOx or other material adapted to stop diffusion of molecular oxygen therethrough.

[0032] Along the bottom sealing weld seam of the sac 1, an insert sticker or valve sticker 2 is present placed at a point in which a localized detachment of bonded surfaces should reliably occur, such to ensure airtightness of the heat sealed sac and a controlled release of internal overpressure upon reaching an established maximum limit value by creating a fluid release path for vapors and/or pressurized gas.

[0033] **Fig. 2** is an enlarged detail view of the point of introduction of the insert sticker 2 between the heat welded edges 1a and 1b of the flexible film of the sac.

[0034] **Fig. 3** illustrates a first way of creating a release path of vapors and/or pressurized gases determined by a breakdown of adhesion between the inner surface of the edge portion 1b of the film of the sac and a layer of pressure activated adhesive present on the application surface of the insert sticker 2 . A suitable pressure activated adhesive may be for example the commercial product RC10 UV of RAFLATAC, though other commercial products with equivalent characteristics may be alternatively used.

[0035] **Fig. 4** shows a different way of detachment of the adhesion surface of the inner surface of the edge portion 1a of the sac film through failure of the weld seam occurring between the heat weldable inner layer of the edge portion 1a and a layer of heat weldable laquer applied on the surface of the back of the insert sticker 2, which, though ensuring airtightness of the heat sealed sac under conditions of absence of a substantial internal overpressure, has a limited mechanical resistance such that upon reaching an established maximum internal overpressure in said the airtight sac, the tract of the weld seam over the back of the insert sticker 2 fails thus allowing creation of a release path of pressurized fluids.

[0036] **Fig. 5** shows in an exploded fashion and as a composite assembly a valve or insert sticker 2 of localized detachment applicable onto the flexible film with which the sacs will be formed, according to a first embodiment. In this embodiment the insert sticker 2 consists of a film 2' of a heat weldable material, for example of PPcoex or PPcast adapted to weld to the material constituting the inner portion of the flexible film with which the sacs are going to be formed, the surface of application of which is treated such as to receive and adhere to a layer of pressure activated adhesive 2a to constitute the insert sticker 2, applicable at pre-ordered locations of the ribbon of flexible film of fabrication of the heat sealable sacs, and the back of which will weld the other edge portion of the flexible film of the sac, thus preordering an eventual localized release of pressurized vapors and/or gases, as represented in **Fig. 3.**

[0037] Alternatively, by making the surface of application of the film 2' of weldable material peelable, the eventual detachment may alternatively occur between the peelable surface of the film 2' and the layer of pressure activated adhesive 2a, which in this case would remain adherent to the surface of the edge portion 1b of the flexible film with which the sac is formed.

[0038] An exemplary alternative embodiment of the insert sticker of controlled detachment in which the film 2'

is of material not compatibly weldable to the material constituting the inner layer of the flexible film of formation of the hot sealed sacs is shown in Fig. 6. In this case, on the back of the film 2' is applied a layer of heat weldable laquer 21, for example a commercially available heat weldable laquer such as the product WP 7200 MI of the company FLINT or equivalent commercial products of producers such as for example HENKEL. The load of heat weldable laquer may generally be comprised between about 5 g/m^2 and 10 g/m^2 though may even be greater. The application of the heat weldable laquer may be carried out with a common printing technique, with a doctor blade, by contact or painting, to which may generally follow an oven treatment for evaporating off completely the solvent of the heat weldable plastic material thus distributed in a fluid state.

[0039] In this case, the controlled detachment mechanism with creation of a release path of vapors and/or gases may be pressurized inside the sac may occur indifferently either through the mechanism of **Fig. 3** or through the mechanism of **Fig. 4** in which the bonded surfaces more likely to detach from one another because of a raising inner overpressure are the hot welded surfaces of the inner layer of the edge portion 1a of the flexible film of the sac and of the layer of heat weldable laquer 21 that is applied on the back of the self-adhesive film 2' constituting the insert sticker of controlled detachment.

[0040] **Fig. 7** shows the structure of a controlled detachment insert sticker according to a further alternative embodiment.

[0041] In this case, instead of a layer of heat weldable laquer, the heat sealing of the edge portion 1a of the flexible film of the sac over the insert is ensured with a multilayered structure of the insert sticker that comprises a second film 2s of the same heat weldable material of the inner portion of the flexible film of the sac or compatibly weldable to it, laminated over the first film 2', using to this end a common aqueous base or polyurethanic glue free of solvent. The glue load (identified in the drawing by the layer 2c) before laminating the multilayer and curing it, may generally be comprised between 10 and 40 g/m^2.

[0042] The total thickness of the controlled detachment insert sticker 2 is preferably comprised between 10 and 30 μm. It may generally be thinner than the flexible film 1 of formation of the heat sealed sacs (as represented in Figures 1-4) or substantially equal to or even slightly greater than the thickness of the flexible film of formation of the sacs. In any case, the presence of the control detachment insert along a perimetral weld seam does not affect continuity and dimensional uniformity (overall thickness of the weld seam that is normally formed upon forming the sac which eventually will be completely sealed after introducing the content).

[0043] In the example shown in **Figures 8, 9** and **10**, that are respectively a sectional view, a side view, and an exploded detail view of a sac of heat sealed flexible film, the pressurized inner vapor and/or gases release device is constituted by the controlled detachment insert 2 between juxtaposed surfaces of edge portions of the flexible film 1 with which the sac is formed.

[0044] In this example, the controlled detachment insert has a shape of an isosceles trapezoid, the major base of which is toward the inner side of the sac and the minor base of which coincides or slightly protrude from the outer perimeter of the hot sealed edge portions of the flexible film of the sac. The shape of the insert sticker 2 may even be different, for example of different polygonal, round or elliptical form, though it extends for the whole height (width) of the weld seam and eventually may even protrude from the weld seam internally or externally of the airtight sac. Preferably, the height (width) of the weld seam should not be lesser than about 10 mm and may even be useful that the weld seam may have a height (width) of at least 15 mm in order to provide for a broader range of sizing of the controlled detachment insert and ensuring an enhanced repeatitivity of the limit value of release of inner overpressure.

[0045] The length of the insert sticker 2 (meaning the dimension along the longitudinal axis of the weld seam) may be of one or more cm. The length, together with the adhesion characteristics of the interface destined to fail upon reaching the established maximum limit of inner overpressure, and the flexibility characteristics of the film with which the sacs are made that must determine the creation of a passage way of release of inner pressurized vapors and/or gases, are main parameters for dimensioning the controlled detachment insert sticker of this disclosure. By increasing the length of the insert, the limit value of inner overpressure at which the release through the localized breakdown of the adhesion between hot sealed edge portions of the sac thus preordered to breakdown at a certain overpressure, restricts notwithstanding the other above-mentioned parameters remain the same. Normally a major base or length of the inner edge of the insert sticker 2 may be between 15 and 30 mm.

[0046] A trapezoidal or triangular shape with major base exposed to the inner pressurized fluid of the sac is preferred because it facilitates the correct sizing of the weld seam insert for achieving an enhanced repeatitivity of the maximum limit value of overpressure that causes the release.

[0047] A possible fabrication process of a heat sealed sac of flexible film will pressurize inner fluid release device according to the present disclosure, may preliminarily include that over one side of a continuous ribbon of flexible film 1 be applied, precisely at preestablished positions, insert stickers 2, the ribbon thus provided with the insert stickers adherent thereto may be rewound in reels to be stored and eventually transported, which will serve for feeding a common automatic sac forming machine.

[0048] The phase of forming the sacs is schematically illustrated in the diagram of **Fig. 11.**

[0049] The ribbon of flexible film 1, already carrying adherent insert stickers 2, is unwound from the feed reel

of the machine and common handling members provide to juxtapose one over the other the longitudinal edge portions of the ribbon and to weld them together along a longitudinal weld seam 3, thus forming a hot welded tubular article.

[0050] In correspondence of each insert sticker 2, is thereafter carried out a transversal heat weld 4 of the tubular article, which may have a width (height) about twice the width (height) of the insert sticker 2. By cutting along a median line the transversal weld seam 4, the sac extending from a heat welded end is separated from a successive sac.

[0051] Of course, many other forming schemes of heat sealable sacs may be followed according to needs and characteristics of the forming machine and of the devices of filling the individual sacs with products.

[0052] Fig. 12-15 are schematical views of several common types of heat welded flexible film sacs showing how sacs of different shape and structure may be equipped with the insert sticker 2 of the present disclosure, for ensuring a controlled and localized detachment in a hot sealed seam of edge portions of the flexible film of the sacs along any one of the perimeter weld seams of an airtight flexible sac package.

Claims

1. Heat sealed sac (1) of flexible film of weldable plastic for airtight packaging of foodstuff to be warmed before consuming it, having means for releasing pressurized vapors and/or gases, comprising a relief valve in the form of an insert between juxtaposed edge portions of the flexible film of weldable plastic at a point along a weld seam joining the juxtaposed edges of said flexible film of weldable plastic, **characterized in that**
said insert is in the form of an insert sticker (2) for a localized detachment of seal surfaces, pre-applied at a precisely determined location on the inner surface of said flexible film, in a first edge portion (1a) area of the film destined to be welded to a second edge portion (1b) of the film juxtaposed to the first edge portion (1a) for sealing the sac (1), said insert sticker (2) comprising
at least a flexible film (2') of plastic material having a first surface on which a layer (2a) of a pressure activated adhesive is present, adapted to adhere the insert sticker at said precisely determined location of pre-application over said first edge portion (1a) area of the the flexible film of weldable plastic of the sac, and a back surface of the insert sticker (2) weldingly connecting to the inner surface of said second edge portion (1b) upon welding the juxtaposed egde portions (1a, 1b), for sealing the sac;
at least the surface of adhesion to said layer (2a) of pressure activated adhesive of said first surface of the flexible film (2') of the insert sticker (2) is peelable for controlled localized detachment from said layer (2a) of pressure activated adhesive.

2. The sac (1) according to claim 1, wherein said flexible film (2') of the insert sticker (2) is of a plastic material weldable to the inner surface of said juxtaposed second edge portion (1b), said back surface welding to the surface of the juxtaposed second egde portion (1b) when heat sealing the sac.

3. The sac (1) according to claim 1, wherein said flexible film (2') of the insert sticker (2) is of a plastic material not compatibly weldable to the inner surface of said juxtaposed second edge portion (1b) and said back surface weldingly connects to said inner surface through a solvent free layer (21) of a weldable laquer material.

4. The sac (1) according to claim 1, wherein wherein said flexible film (2') of the insert sticker (2) is of a plastic material not compatibly weldable to the inner surface of said second edge portion (1b) and said back surface connects to said inner surface through a layer (2c) free of solvent of a water base glue or of a polyurethanic glue and a second flexible film (2bis) of a compatibly weldable plastic material, laminated over the layer (2c) of solvent free glue, adapted to weld to the inner surface of said second edge portion (1b).

5. The sac (1) according to anyone of the preceding claims, wherein said insert sticker (2) of localized detachment has a width equal or greater than the width of the sealing weld of a perimeter side of the sac and a length dimensioned in function of a preestablished internal overpressure of breaking open of the relief valve.

6. The sac (1) according to claim 5, wherein said insert sticker (2) has a trapezoidal profile with a major base exposed to the interior of the sac and a minor base coinciding with or extending out of the outer rim of the sealing weld of a perimeter side of the sac.

7. The sac (1) according to claim 1, wherein said insert sticker (2) of localized detachment, sandwiched between seal surfaces of juxtaposed edge portions (1a, 1b) of the flexible film of the sac welded one onto the other, has a thickness comprised between 30 and 100 μm.

8. The sac (1) according to claim 3, wherein said flexible film (2') of the insert sticker (2) is of a material belonging to the group composed of polypropylene, polyester and polyamide, and said weldable laquer (21) is a commercial product uniformly distributed in form of a fluid solution over the surface of the flexible film (2') at a load comprised between 5 and 10 g/m^2

and treated in oven for removing the solvent.

9. The sac (1) according to claim 4, wherein said flexible film (2') of the insert sticker (2) is of a material belonging to the group composed of polypropylene, polyester and polyamide, and said weldable film (2bis) is of the same plastic material constituting the inner surface (1a, 1b), weldable on itself of the flexible film of the sac, or compatibly weldable thereto.

10. The sac according to claim 1, wherein said pressure activated adhesive (2a) is an acrylic adhesive.

Patentansprüche

1. Heißgesiegelter Beutel (1) aus einem flexiblen Film aus schweißbarem Kunststoff zur luftdichten Verpackung von Nahrungsmitteln, die vor ihrem Verbrauch aufgewärmt werden sollen, mit Mitteln zur Freisetzung von unter Druck stehenden Dämpfen und/oder Gasen, die ein Entlastungsventil in der Form eines Einsatzes zwischen nebeneinander liegenden Kantenabschnitten des flexiblen Films aus schweißbarem Kunststoff an einer Stelle längs einer Schweißnaht aufweisen, die die nebeneinander liegenden Kanten des flexiblen Films aus schweißbarem Kunststoff verbindet, **dadurch gekennzeichnet, dass** der Einsatz für eine örtlich begrenzte Trennung von Dichtungsflächen in der Form eines Einsatzaufklebers (2) vorliegt, der an einem präzise festgelegten Ort auf der Innenfläche des flexiblen Films in einem ersten Kantenabschnittsbereich (1a) des Films im voraus aufgebracht wird, dazu bestimmt, an einen zweiten Kantenabschnitt (1b) des Films geschweißt zu werden, der neben dem ersten Kantenabschnitt (1a) liegt, um den Beutel zu versiegeln, wobei der Einsatzaufkleber (2) aufweist mindestens einen flexiblen Film (2') aus Kunststoffmaterial, der eine erste Oberfläche, auf der eine Schicht (2a) eines Haftklebers vorhanden ist, eingerichtet, den Einsatzaufkleber an den präzise festgelegten Ort der Vorauftragung über dem ersten Kantenabschnittsbereich (1a) des flexiblen Films aus schweißbarem Kunststoff des Beutels zu kleben, und eine Rückseite des Einsatzaufklebers (2) aufweist, die sich zum Versiegeln des Beutels beim Schweißen der nebeneinander liegenden Kantenabschnitte (1a, 1b) mit der Innenfläche des zweiten Kantenabschnitts (1b) schweißverbindet;
mindestens die Fläche der Klebung an die Haftkleberschicht (2a) der ersten Oberfläche des flexiblen Films (2') des Einsatzaufklebers (2) zur kontrollierten örtlich begrenzten Trennung von der Haftkleberschicht (2a) abziehbar ist.

2. Beutel (1) nach Anspruch 1, wobei der flexible Film (2') des Einsatzaufklebers (2) aus einem Kunststoffmaterial besteht, das an die Innenfläche des daneben liegenden zweiten Kantenabschnitts (1b) schweißbar ist, wobei die Rückseite an die Oberfläche des daneben liegenden zweiten Kantenabschnitts (1b) geschweißt wird, wenn der Beutel heißgesiegelt wird.

3. Beutel (1) nach Anspruch 1, wobei der flexible Film (2') des Einsatzaufklebers (2) aus einem Kunststoffmaterial besteht, das nicht kompatibel an die Innenfläche des daneben liegenden zweiten Kantenabschnitts (1b) schweißbar ist und sich die Rückseite mit der Innenfläche durch eine lösungsmittelfreie Schicht (21) eines schweißbaren Lackmaterials schweißverbindet.

4. Beutel (1) nach Anspruch 1, wobei der flexible Film (2') des Einsatzaufklebers (2) aus einem Kunststoffmaterial besteht, das nicht kompatibel an die Innenfläche des zweiten Kantenabschnitts (1b) schweißbar ist, und sich die Rückseite mit der Innenfläche verbindet durch eine lösungsmittelfreie Schicht (2c) eines Klebers auf Wasserbasis oder eines Polyurethanklebers, und einem zweiten flexiblen Film (2bis) eines kompatibel schweißbaren Kunststoffmaterials, der über die Schicht (2c) des lösungsmittelfreien Klebers geschichtet ist, der eingerichtet ist, mit der Innenfläche des zweiten Kantenabschnitts (1b) zu verschweißen.

5. Beutel (1) nach einem der vorhergehenden Ansprüche, wobei der Einsatzaufkleber (2) zur örtlich begrenzten Trennung eine Breite, die gleich oder größer als die Breite der Versiegelungsschweißung einer Umfangsseite des Beutels ist, und eine Länge aufweist, die als Funktion eines vorgegebenen inneren Überdrucks zum Aufbrechen des Entlastungsventils bemessen ist.

6. Beutel (1) nach Anspruch 5, wobei der Einsatzaufkleber (2) ein trapezförmiges Profil mit einer Hauptbasis, die zum Inneren des Beutels freiliegt, und eine Nebenbasis aufweist, die mit dem Außenrand der Versiegelungsschweißung einer Umfangsseite des Beutels übereinstimmt oder sich aus ihr erstreckt.

7. Beutel (1) nach Anspruch 1, wobei der Einsatzaufkleber (2) zur örtlich begrenzten Trennung, der zwischen Dichtungsflächen der nebeneinander liegenden Kantenabschnitte (1a, 1b) des flexiblen Films des Beutels eingelegt ist, die aneinander geschweißt sind, eine Dicke aufweist, die zwischen 30 und 100 μm liegt.

8. Beutel (1) nach Anspruch 3, wobei der flexible Film (2') des Einsatzaufklebers (2) aus einem Material besteht, das zu der Gruppe gehört, die aus Polypropylen, Polyester und Polyamid besteht, und der

schweißbare Lack (21) ein kommerzielles Produkt ist, das in Form einer flüssigen Lösung mit einer Massenbelegung, die zwischen 5 und 10 g/m^2 liegt, über die Oberfläche des flexiblen Films (2') einheitlich verteilt ist und zur Entfernung des Lösungsmittels in einem Ofen behandelt ist.

9. Beutel (1) nach Anspruch 4, wobei der flexible Film (2') des Einsatzaufklebers (2) aus einem Material besteht, das zu der Gruppe gehört, die aus Polypropylen, Polyester und Polyamid besteht, und der schweißbare Film (2bis) aus demselben Kunststoffmaterial, das die Innenfläche (1a, 1b) bildet, das an sich selbst schweißbar ist, des flexiblen Films des Beutels besteht, oder kompatibel daran schweißbar ist.

10. Beutel nach Anspruch 1, wobei der Haftkleber (2a) ein Acrylklebestoff ist.

Revendications

1. Sac scellé à chaud (1) en film souple de matière plastique soudable, pour un emballage étanche à l'air de produits alimentaires devant être réchauffés avant leur consommation, comportant des moyens pour libérer des vapeurs et/ou des gaz sous pression, comprenant un clapet de libération sous la forme d'un insert entre des portions de bord juxtaposées du film souple en matière plastique soudable en un point situé sur une couture de soudure joignant les bords juxtaposés du film souple en matière plastique soudable, **caractérisé en ce que**
l'insert a la forme d'un insert autocollant (2) pour permettre un détachement localisé de surfaces d'étanchéité, pré-appliqué en un emplacement déterminé avec précision sur la surface intérieure du film souple, dans une première région de portion de bord (1a) du film destinée à être soudée à une deuxième portion de bord (1b) du film juxtaposée à la première portion de bord (1a) pour sceller le sac (1), l'insert autocollant (2) comprenant
au moins un film souple (2') en matière plastique comportant une première surface sur laquelle se trouve une couche (2a) d'un adhésif activé par la pression, adaptée à faire adhérer l'insert autocollant à l'emplacement de pré-application déterminé avec précision sur la première région de portion de bord (1a) du film souple de matière plastique soudable du sac, et une surface arrière de l'insert autocollant (2) se connectant par soudure à la surface intérieure de la deuxième portion de bord (1b) au moment de la soudure des portions de bord juxtaposée (1a, 2b), pour sceller le sac ;
au moins la surface d'adhérence à ladite couche (2a) d'adhésif activé par la pression de la première surface du film souple (2') de l'autocollant de l'insert (2) est pelable pour permettre un détachement localisé contrôlé à partir de la couche (2a) d'adhésif activé par la pression.

2. Sac (1) selon la revendication 1, dans lequel le film souple (2') de l'insert autocollant (2) est en matière plastique soudable à la surface intérieure de la deuxième portion de bord juxtaposée (1b), la surface arrière se soudant à la surface de la deuxième portion de bord juxtaposée (1b) lors du scellage à chaud du sac.

3. Sac (1) selon la revendication 1, dans lequel le film souple (2') de l'insert autocollant (2) est en matière plastique non compatible pour une soudure avec la surface intérieure de la deuxième portion de bord juxtaposée (1b) et la surface arrière se connecte par soudure à la surface intérieure par l'intermédiaire d'une couche sans solvant (21) d'une laque soudable.

4. Sac (1) selon la revendication 1, dans lequel le film souple (2') de l'insert autocollant (2) est en matière plastique non compatible avec une soudure avec la surface intérieure de la deuxième portion de bord (1b) et la surface arrière se connecte à la surface intérieure par l'intermédiaire d'une couche (2c) sans solvant d'une colle à base d'eau ou d'une colle polyuréthane et d'un deuxième film souple (2bis) en matière plastique compatible avec la soudure, déposée en couche sur la couche (2c) de colle sans solvant, adaptée à se souder à la surface intérieure de la deuxième portion de bord (1b).

5. Sac (1) selon l'une quelconque des revendications précédentes, dans lequel l'insert autocollant (2) à détachement localisé a une largeur supérieure ou égale à la largeur de la soudure d'étanchéité d'un côté du périmètre du sac et une longueur dimensionnée en fonction d'une surpression interne préétablie de rupture d'ouverture du clapet de libération.

6. Sac (1) selon la revendication 5, dans lequel l'insert autocollant (2) a un profil trapézoïdale ayant sa grande base exposée vers l'intérieur du sac et sa petite base coïncidant avec ou s'étendant hors du rebord extérieur de la soudure d'étanchéité d'un côté du périmètre du sac.

7. Sac (1) selon la revendication 1, dans lequel l'insert autocollant (2) à détachement localisé, pris en sandwich entre des surfaces d'étanchéité de portions de bord juxtaposées (1a, 1b) du film souple du sac soudées l'une sur l'autre, a une épaisseur comprise entre 30 et 100 μm.

8. Sac (1) selon la revendication 3, dans lequel le film souple (2') de l'insert autocollant (2) est en un ma-

tériau appartenant au groupe composé du polypropylène, du polyester et de la polyamide, et la laque soudable (21) est un produit du commerce, réparti uniformément sous forme d'une solution fluide sur la surface du film souple (2') avec une charge comprise entre 5 et 10 g/m^2, et traité au four pour retirer le solvant.

9. Sac (1) selon la revendication 4, dans lequel le film souple (2') de l'insert autocollant (2) est en un matériau appartenant au groupe composé du polypropylène, du polyester et du polyamide, et le film soudable (2bis) est en la même matière plastique que celle qui constitue la surface intérieure (1a, 1b), soudable sur elle-même, du film souple du sac, ou est compatible avec une soudure à celui-ci.

10. Sac selon la revendication 1, dans lequel l'adhésif activé par la pression (2a) est un adhésif acrylique.

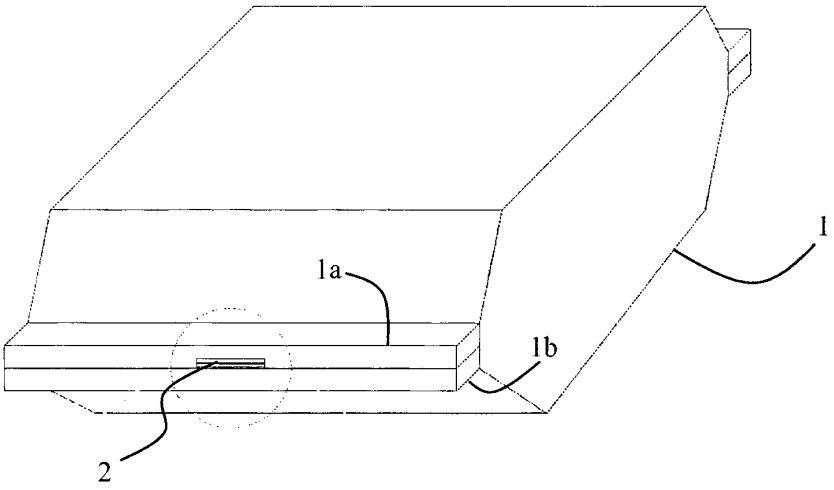

FIG. 1

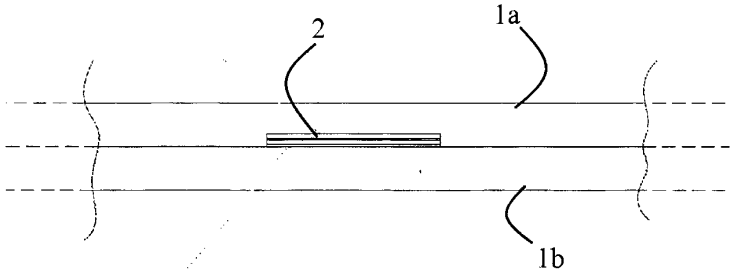

FIG. 2

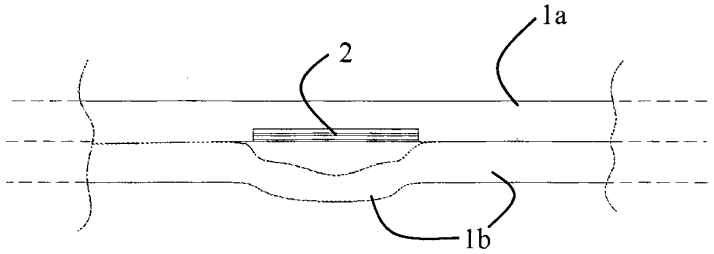

FIG. 3

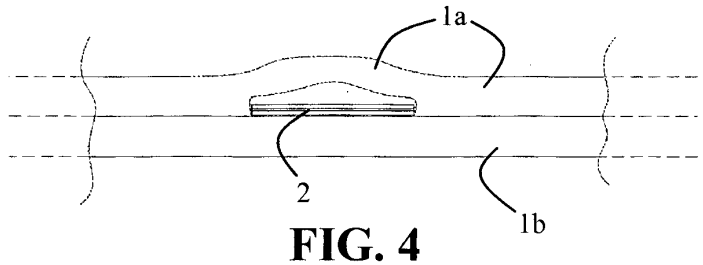

FIG. 4

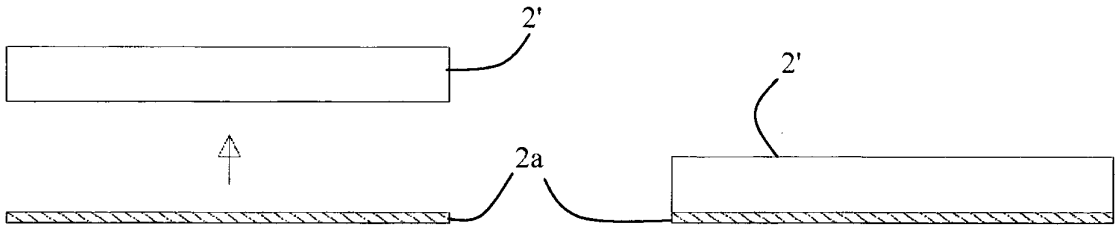

FIG. 5

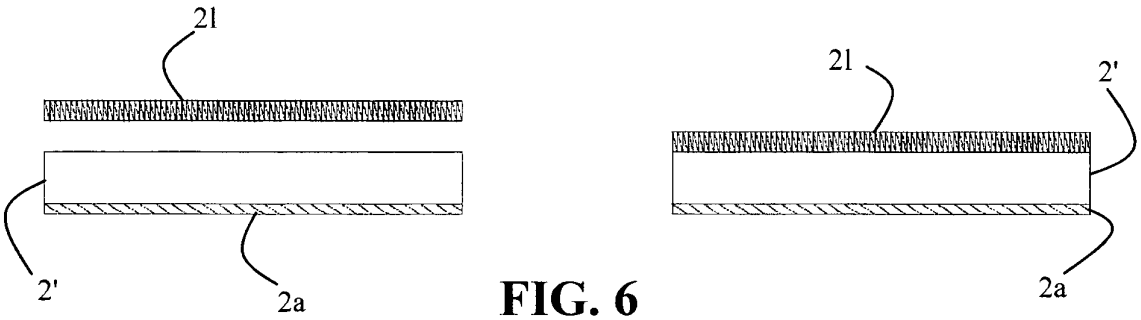

FIG. 6

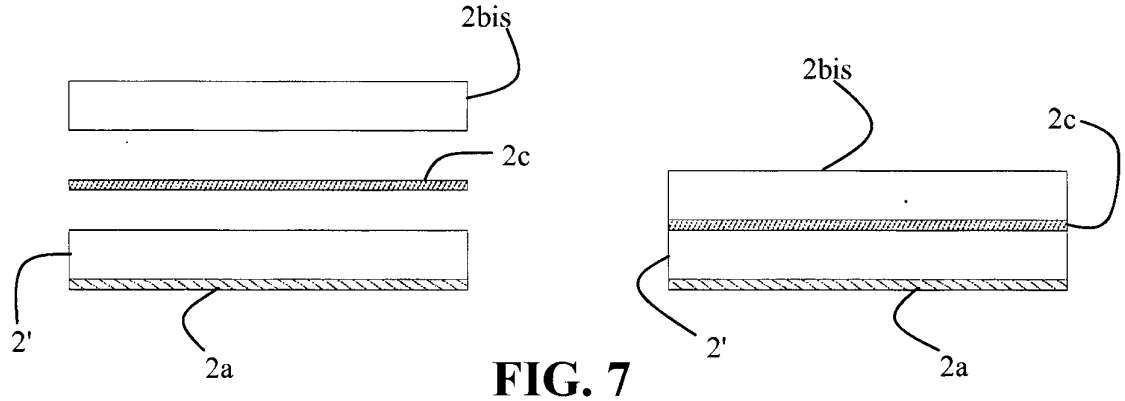

FIG. 7

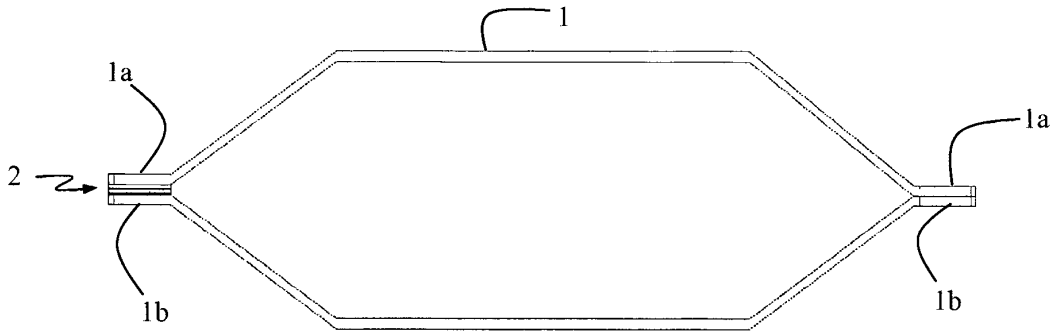

FIG. 8

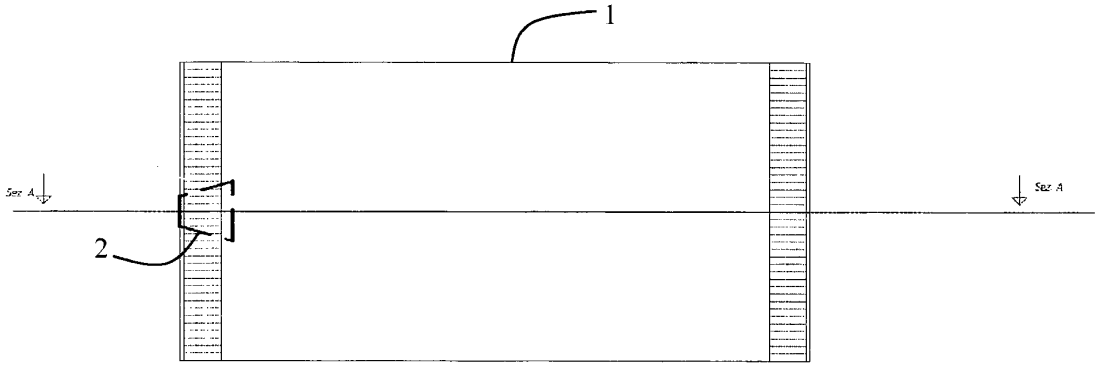

FIG. 9

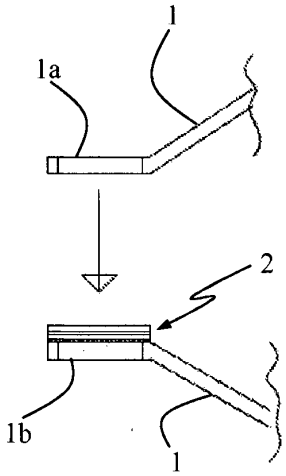

FIG. 10

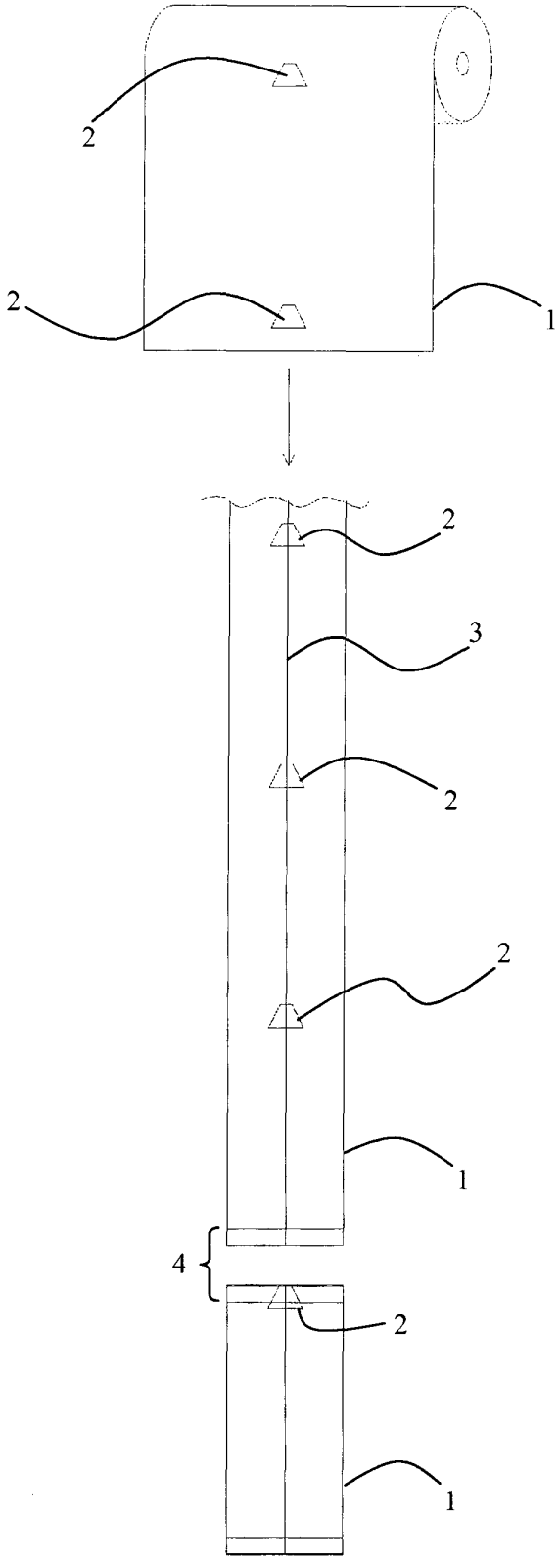

FIG. 11

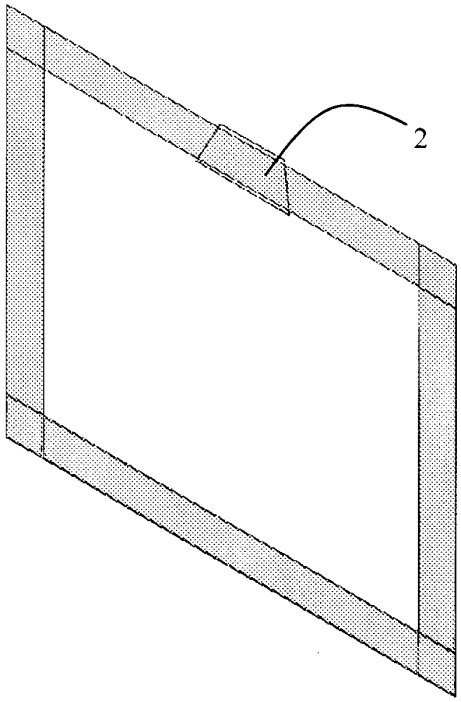

FIG. 12

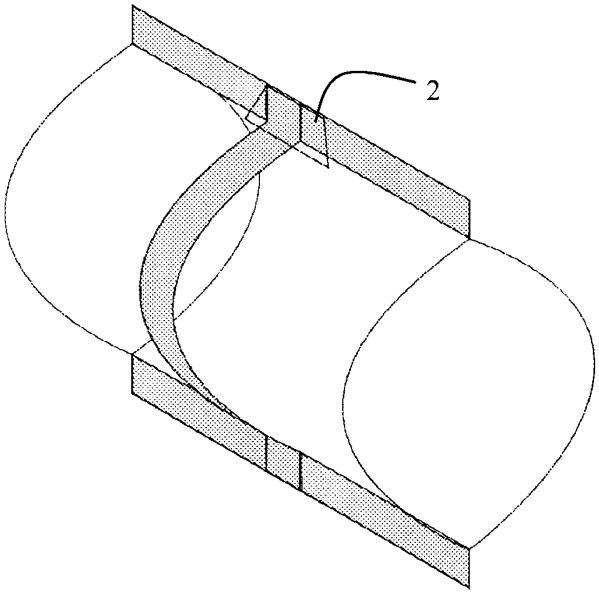

FIG. 13

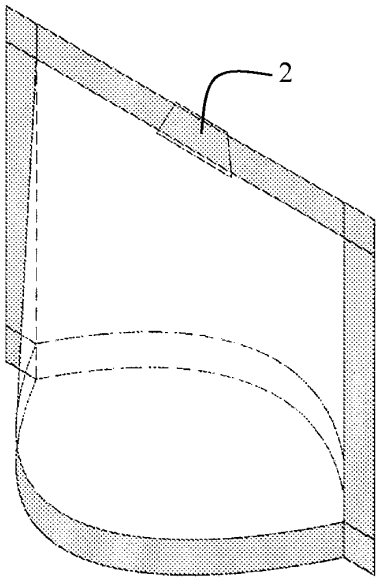

FIG. 14

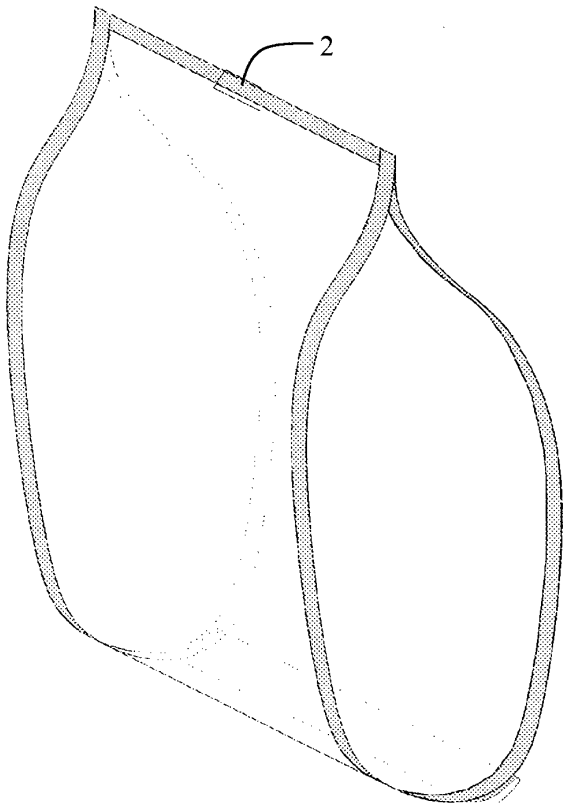

FIG. 15

REFERENCES CITED IN THE DESCRIPTION

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- US 5464969 A **[0012]**
- WO 2008057768 A3 **[0013]**