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Description

This invention relates generally to a packaging system and more particularly to a package comprising an outer bag having an article-carrying inner bag suspended therein.

U.S. Patent No. 4,597,244, issued on July 1, 1986 to Daniel A. Pharo for "Method for Forming an Inflated Wrapping", discloses a packaging system and method wherein an article is packaged within an inflated, sealed bag. The present invention provides certain improvements and variations over the packaging system and method taught in the above patent.

U.S. Patent No. 4 155 453 discloses a packaging structure comprising an envelope comprising a plurality of flexible interleaved wall panels, an outer pair of said wall panels being sealed together to form a first open-ended enclosure and an inner pair of said wall panels being sealed together to form a second open-ended enclosure defining an item-receiving zone therein, said inner pair of wall panels being sealed to and between said outer pair of wall panels so that said second open-ended enclosure is disposed within said first open-ended enclosure, wherein the only means of ingress to or egress from said item receiving zone is by the open end of said second open-ended enclosure, and the seal joining said inner pair of wall panels is so located and configured as to define a sealed inflatable chamber above said second open-ended enclosure, and a sealed inflatable chamber below said second open-ended enclosure, both of the inflatable chambers being inflated by intake valve means.

The chambers are independently sealed, and this makes it difficult to provide even protection for an item in the item zone.

According to one aspect of the invention there is provided a packaging structure as defined in claim 1.

According to another aspect of the invention there is provided a method for packaging an article as defined in claim 9, this packaging method being particularly adapted to the above-mentioned packaging structure.

Preferred embodiments of the invention are specified in the dependent claims.

Advantages of this invention will become apparent from the following description of an exemplary embodiment shown in the accompanying drawings, wherein :

Figure 1 is an isometric view illustrating a packaging system embodying this invention:

Figure 2 is a side elevational view of the packaging system with a sidewall portion of an outer bag thereof being removed to illustrate an article-retaining inner bag disposed in suspend-

ed and supported relationship within the outer bag;

Figure 3 is an exploded isometric view illustrating cut panels utilized to form a package from the inner and outer bags;

Figure 4 is an isometric view illustrating insertion of an article into an open end of the inner bag;

Figure 5 is an isometric view illustrating means for inflating the outer bag with a pressurized fluid, such as air;

Figure 6 is an enlarged sectional view, taken in the direction of arrows VI-VI in Figure 5, illustrating the ingress of the pressurized fluid into the outer bag;

Figure 7 is an enlarged top plan view of a filling stem after it has been sealed, subsequent to inflation of the outer bag;

Figure 8 is an isometric view, partially illustrating a modified packaging system;

Figure 9 is a cross-sectional view illustrating inflation of an outer bag of the modified packaging system of Figure 8; and

Figure 10 illustrates an alternative end closure for the packaging system.

Figures 1 and 2 illustrate a packaging system 20 comprising an outer bag 21 defining an inflatable, sealed chamber 22 therein. An inner bag, defining a pocket 24 for retaining an article A therein, is disposed within split chamber 22 and has peripheral edges thereof secured to the outer bag, in a manner hereinafter fully described, to support and suspend the inner bag within the chamber. As illustrated in Figure 3, outer bag 21 comprises a pair of superimposed and identical panels 25 and 26 whereas inner bag 23 comprises a pair of superimposed panels 27 and 28 connected together at a fold 29.

Each panel 25-28 is preferably composed of a gas-impervious composite laminate, such as the type described in U.S. Patent No. 4,597,244. For example, each flexible panel may comprise an intermediate layer of aluminum and outer and inner layers of a plastic heat-sealable coating, such as polyethylene, adapted to reactivate (melt) in the range of 150° C (300°F). These types of composite laminates (which may be constructed to be highly flexible and inextensible or extensible) are well known in the art and, therefore, further description thereof is unnecessary for a full understanding of this invention. In the embodiment illustrated, the panels of Figure 3 are heat-sealed together at selected overlying peripheral edges thereof to preform a package for the packaging system with a closeable end closure 30, illustrated in its open condition in Figure 4.

Figure 3 illustrates overlying common sealing areas peripheral edge portions of the panels by dot-dash lines 31 for explanation and clarification

purposes. The panels may be suitably cut and sealed together by conventional apparatus and methods, such as those described in U.S. Patent No. 4,545,844. It should be noted in Figures 1-4 that stem portions 32 and 33, formed integrally with and extending outwardly from edges of panels 25 and 26, respectively, are heat-sealed together about their edges. These stem portions are further heat-sealed to underlying parallel side edges of panel portions 34 and 35 of panels 27 and 28, respectively, which are joined together at fold 29.

Fold 29 and the remaining portions of panel portions 34 and 35, extending transversely between the superimposed and sealed edges of panel portions 31-34, remain unsealed relative to stem portions 32 and 33. As shown in Figure 6, fold 29 extends a limited distance into a filling stem 36, defined by overlying and sealed stem portions 31 and 32. As described more fully hereinafter, a pair of inlets are thus formed at fold 29 to communicate a pressurized fluid, such as air, to split chamber 22 on either side of inner bag 23.

A method for packaging article A to form packaging system 20 and to suspend the article at a fixed position within chamber 22 of outer bag 21, as shown in Figure 2, will now be described with particular reference to Figures 4-7. After the package has been prefabricated to assume its open-ended envelope-like configuration illustrated in Figure 4, article A is inserted through the open end of inner bag 23 and into pocket 24. It should be understood that the article could be placed at any desired position within the inner bag and will be firmly held in such position when the packaging system is inflated or otherwise charged or filled with the preselected filler medium, as described hereinafter.

After the article has been placed within pocket 24 of inner bag 23, overlying edge portions of formerly open end 30 are heat-sealed together at a seam 37, as illustrated in Figure 5, to form an end closure. The sealing apparatus used for this purpose may be of the type described in U.S. Patent No. 4,597,244, such as the impulse table top bag sealer Model 210-8 manufactured by A. I. N. Plastics, Inc. of Mount Vernon, New York. Sealing of the open end of the package will thus fully seal pocket 24 of inner bag 23 and will also substantially seal chamber 22.

Inflating means for charging and at least substantially filling chamber 22 with a pressurized fluid is shown in the form of an opening uncovered by a tab 38 defined by a cut line formed only through stem portion 32. An inlet passage 39 to the chamber is defined within filling stem 36 (Figure 6). Alternatively, the inflating means for charging chamber 22 could comprise an inflation valve, such as the one disclosed in U.S. Patent No. 4,586,910

and illustrated at 40 in Figure 8.

After the open end of the package has been sealed at seam 37, a standard inflation apparatus, including a fill tube 41 (Figure 5), can be utilized to charge and pressurize split chamber 22 to an inflation pressure exceeding ambient pressure, e.g., exceeding 14.7 psi at sea level. Alternatively, human lung power could be utilized to inflate chamber 22 with air. Other types of gases, such as helium, could be utilized as the filler medium, as well as a suitable liquid, such as water. Alternatively or in addition to the pressurized fluid, the chamber could be filled with a plastic (e.g., urethane, polystyrene, etc.) material in solid (injected in liquid form and solidified) or pieces (e.g., balls or pellets) form.

After the package has been inflated to suspend inner bag 23 and article A at its preselected fixed position within chamber 22, fill tube 24 is removed. Tab 38 is simultaneously compressed into stem 36 to prevent the pressurized fluid from escaping. As shown in Figure 7, stem 36 is then quickly heat-sealed at a seam 42 (sealing only stem portions 32 and 33 together) and/or at a seam 42' (sealing stem portions 32 and 33 and panel portions 34 and 35 together).

Referring to Figure 2, article A is thus substantially encapsulated by the filler medium and supported and held at a fixed position within chamber 22. Compressive forces occasioned by the pressurized fluid will be directed inwardly and uniformly against the exposed upper and lower surfaces of inner bag 23 to compress and conform the flexible wall panels of the inner bag to the contours of the article. Retention of the article in a fixed position within split chamber 22 is further aided by the horizontal components of forces acting on inner surface portions of transversely disposed side seams 43 and 43' of outer bag 21.

The latter holding force desiderata is more clearly illustrated and pronounced in modified packaging system 20' (Figures 8 and 9) wherein horizontal force components F will tend to place panels 27 and 28 of the inner bag in tension. In order to increase the horizontal force components F in this manner, outer bag panels 25 and 26 are prefabricated to have widths greater than the widths of panels 27 and 28 (Figure 8).

Figure 10 illustrates an alternative end closure for packaging system 22 that can be used in lieu of heat sealed seam 37 (Figure 1). In Figure 10, panels 25-28 are cut to different lengths to define relatively longitudinally staggered panel edges 25'-28'. A standard tape 44 is heat-sealed or mechanically secured over the ends of the panels to close and seal chamber 22 and pocket 24. Other types of end closures can be used such as a standard tape that is folded over the end of the package and then

heat-sealed or mechanically sealed in a conventional manner thereover. The opposite ends of the tape are then folded inwardly towards each other and secured in place. Also, a standard tape can be secured to the outer side of panel 25 and a protective strip removed from the tape after article A (Figure 4) has been inserted into inner bag 23. The panels of the bags can then be folded on a preformed crease or fold line to secure the panels together. If so desired, the end edges of the panels can be staggered longitudinally in the manner described above in reference to Figure 10. The end closure can also be formed by press-fitting and clamping an elongated cylindrical rod within a separate and generally C-shaped retainer. The rod should be sufficiently elastic to be compressed into the cavity of the semi-rigid retainer and permitted to expand to firmly compress the panels of the end closure therebetween to seal and isolate chamber 22 and pocket 24 (Figure 2). Alternatively, the rod could be composed of a semi-rigid plastic material with the retainer also being composed of a plastic material, but exhibiting sufficient flexure to spread and permit the rod to snap-fit or press-fit within the retainer in a well known manner.

Various opening devices and constructions can be utilized and formed into the end closure to open packaging system 20. For example, a cord or thread can be implanted in the heat-sealed end closure to adapt it for removal by a consumer. As an alternative or in addition to the cord, a second cord can be likewise implanted adjacent to heat-sealed side seam 43 or 43' (Figure 1) to permit its removal and opening of the packaging system. The cords may be suitably secured within the underside of one of the panels forming inner pouch 23 whereby article A (Figure 2) will be exposed when the cord is removed.

Various other modifications can be made to the preformed package and completed packaging system of this invention without departing from the spirit and scope thereof. The package could include additional bags, secured to bags 23 and 25 in the manner described above. Instead of using distal end 30 of packaging system 20 as the open side thereof, this end of the system could be heat-sealed during prefabrication of the package and one of the lateral sides left open and utilized for packaging purposes in the manner described above.

The heat-sealed seams of the system could be formed in the manner described above, or the panels folded onto each other and then heat-sealed together to form a seam having eight plies, for example. Gusseted seams could also be employed with the corners of end closure being folded inwardly towards each other and heat-sealed in place. In addition to the above-described end clo-

tures, the end portions of the panels comprising the end closure could have encapsulated beads of glue formed thereon which would function to adhere and seal the panels together when pressure and/or heat is applied to the panels to rupture the beads of glue. These portions of the panels could also be multi-folded over each other and then heat-sealed or reverse folded onto each other and then heat-sealed.

Claims

1. A packaging structure comprising an envelope comprising a plurality of flexible interleaved wall panels (25-28), an outer pair of said wall panels (25,26) being sealed together to form a first open-ended enclosure (22), and an inner pair of said wall panels (27,28) being sealed together to form a boundary, said inner pair of wall panels defining a second open-ended enclosure (24) having an item-receiving zone therein, said inner pair of wall panels (27,28) being sealed to and between said outer pair of wall panels (25,26) so that said second open-ended enclosure is disposed within said first open-ended enclosure, wherein the only means of ingress to or egress from said item receiving zone is by the open end of said second open-ended enclosure (24), and the seal (43) joining said pairs of wall panels is so located and configured as to define a sealable inflatable chamber above said second open-ended enclosure, and a sealable inflatable chamber below said second open-ended enclosure, both of the inflatable chambers being inflated through means (36) defining a closable passage (39); the structure being characterised in that said boundary of said inner pair of wall panels (27,28) defines an opening constituting the only fluid flow communication between said inflatable chambers, and in that said closable passage (39) projects from said first open-ended enclosure (22) and is constituted by a stem portion (32,33) extending outwardly from edges of said outer wall panels such that a filler medium can be introduced to said inflatable chambers whereby both of said inflatable chambers are charged with filler medium to assert pressure against and to cushion an item (A) contained within said item receiving zone.
2. The packaging structure of claim 1, wherein said outer pair of said wall panels (25,26) have outer peripheral edges (43,43') thereof sealed together and said inner pair of said wall panels (27,28) are sealed to said outer peripheral edges of said outer pair.

3. The packaging structure of claims 1 or 2, wherein said outer pair of wall panels (25,26) and said inner pair of wall panels (27,28) are generally rectangular and are at least substantially co-extensive relative to each other.
4. The packaging structure of any preceding claim, wherein at least said outer pair of wall panels (25,26) are composed of a gas impervious, flexible material.
5. The packaging structure of any preceding claim further comprising end closure means (44) for securing adjacent edge portions of said inner and outer wall panels together and to seal said item receiving zone after an item has been placed therein.
6. The packaging structure of any preceding claim, wherein said filler medium comprises a pressurized gas, or a plastic foam material in solid or pieces form, or a combination thereof.
7. The packaging structure of any preceding claim, wherein said packaging structure has opposite frontal and rearward edges and opposite lateral edges, said inner panels (27,28) being sealed to said outer panels (25,26) at said frontal, rearward and lateral edges and said inner panels being sealed together at said rearward and lateral edges.
8. A packaging structure according to any preceding claim, further comprising a pressurized source of said filler medium; and means for injecting said filler medium through said valve to charge said inflatable chambers.
9. A method for packaging an article (A) comprising the steps of:
 - (1) securing edges of an open ended inner bag (23) and an open ended outer bag (21) together so that their open ends correspond, wherein said inner bag is suspended within chamber portions (22) defined within said outer bag; and
 - (2) placing an article through the open end of said inner bag into a pocket (24) defined within said inner bag; characterised by the further steps of:
 - (3) forming closable filling means to define an inlet passage (39) through said outer bag, the inlet passage communicating with said chamber portions;
 - (4) sealing the open ends of said inner and outer bags, and (5) at least substantially filling said chamber portions simultaneously with a filler medium through said closable

filling means to substantially encapsulate and support said inner bag and said article, and sealing said chamber portions.

- 5 10. A method according to claim 9, wherein said inner bag (23) and said article (A) are substantially encapsulated and supported at a preselected fixed position within said chamber portions (22).
- 10 11. A method according to claim 9 or 10, wherein said outer bag (21) comprises a pair of overlying and generally rectangular first panels (25,26), said inner bag comprises a pair of overlying and generally rectangular second panels (27,28), and the step of securing edges of the inner and outer bags together so that their open ends correspond comprises securing overlying edges of said inner and outer bags together, except at the open ends thereof and without sealing said inlet passage.
- 15 12. A method according to any of claims 9 to 11, wherein said chamber portions (22) are filled with a pressurised fluid through the inlet passage (39) which is defined by said filling means.
- 20 13. A method according to claim 11 or 12, further comprising forming said first panels (25,26) to have widths between the opposite edges thereof greater than the corresponding widths of said second panels (27,28).
- 25 30 35

Patentansprüche

1. Verpackungsaufbau mit einer Hülle, die eine Mehrzahl von flexiblen, zusammenhängenden Wandteilen (25-28) aufweist, wobei ein äußeres Paar der Wandteile (25,26) miteinander versiegelt ist, um eine erste Umhüllung mit offenem Ende (22) zu bilden, und ein inneres Paar der Wandteile (27,28) miteinander versiegelt ist, um eine Begrenzung zu bilden, wobei das innere Paar von Wandteilen eine zweite Umhüllung mit offenem Ende (24) definiert, die darin eine Gegenstandsaufnahmezone hat, wobei das innere Paar der Wandteile (27,28) so mit und zwischen dem äußeren Paar von Wandteilen (25,26) versiegelt ist, daß die zweite Umhüllung mit offenem Ende innerhalb der ersten Umhüllung mit offenem Ende angeordnet ist, wobei das einzige Mittel des Hinein- oder Herauskommens in die/aus der Gegenstandsaufnahme durch das offene Ende der zweiten Umhüllung mit offenem Ende (24) ist und die die Paare von Wandteilen verbindende Versiegelung (43) so gelegen und konfiguriert ist, daß
- 40 45 50 55

sie eine versiegelbare, aufblasbare Kammer über der zweiten Umhüllung mit offenem Ende und eine versiegelbare, aufblasbare Kammer unter der zweiten Umhüllung mit offenem Ende definiert, wobei beide aufblasbaren Kammern über eine Vorrichtung (36) aufgeblasen werden, die einen verschließbaren Durchgang (39) bestimmt; wobei der Aufbau dadurch gekennzeichnet ist, daß die Begrenzung des inneren Paares von Wandteilen (27,28) eine Öffnung bestimmt, die die einzige Fluidfluß-Verbindung zwischen den aufblasbaren Kammern bildet, und dadurch, daß der verschließbare Durchgang (39) sich von der ersten Umhüllung mit offenem Ende (22) erstreckt und durch einen sich von den Kanten der äußeren Wandteile erstreckenden Stielabschnitt gebildet ist, derart, daß ein Füllmedium in die aufblasbaren Kammern eingeführt werden kann, wobei beide aufblasbaren Kammern mit Füllmedium beladen werden, um einen Druck gegenüber einem Gegenstand (A), der in der Gegenstandsaufnahmezone enthalten ist, aufzubauen und diesen zu polstern.

2. Verpackungsaufbau nach Anspruch 1, wobei das äußere Paar von Wandteilen (25,26) miteinander versiegelte äußere Randkanten (43,43') hat und das innere Paar von Wandteilen (27,28) mit den äußeren Randkanten des äußeren Paares versiegelt ist.

3. Verpackungsaufbau nach den Ansprüchen 1 oder 2, wobei das äußere Paar von Wandteilen (25,26) und das innere Paar von Wandteilen (27,28) allgemein rechteckig sind und sich mindestens im wesentlichen zueinander gemeinsam erstrecken.

4. Verpackungsaufbau nach einem der vorhergehenden Ansprüche, wobei mindestens das äußere Paar von Wandteilen (25,26) aus einem gasundurchlässigen, flexiblen Material gebildet ist.

5. Verpackungsaufbau nach einem der vorangehenden Ansprüche, weiter eine Endverschlußvorrichtung (44) zum Befestigen benachbarter Kantenabschnitte der inneren und der äußeren Wandteile miteinander und zum Versiegeln der Gegenstandsaufnahmezone, nachdem darin ein Gegenstand untergebracht wurde, aufweisend.

6. Verpackungsaufbau nach einem der vorangehenden Ansprüche, wobei das Füllmedium ein komprimiertes Gas oder ein Kunststoffschäummaterial in fester oder Stückform oder eine

Kombination aus diesen aufweist.

7. Verpackungsaufbau nach einem der vorangehenden Ansprüche, wobei der Verpackungsaufbau gegenüberliegende vordere und hintere Kanten und gegenüberliegende Seitenkanten hat, wobei die inneren Wandungen (27,28) mit den äußeren Wandungen (25,26) an den vorderen, hinteren und seitlichen Kanten versiegelt sind und die inneren Wandungen miteinander an der hinteren und den seitlichen Kanten versiegelt sind.

8. Verpackungsaufbau nach einem der vorangehenden Ansprüche, weiter eine unter Druck stehende Quelle des Füllmediums und eine Vorrichtung zum Einführen des Füllmediums durch das Ventil zum Beladen der aufblasbaren Kammern aufweisend.

9. Verfahren zum Verpacken eines Artikels (A) mit den Schritten:

(1) Befestigen von Kanten einer inneren Tasche (23) mit offenem Ende und einer äußeren Tasche (21) mit offenem Ende miteinander derart, daß ihre offenen Enden einander entsprechen, wodurch die innere Tasche innerhalb von Kammerabschnitten (22), die innerhalb der äußeren Tasche bestimmt sind, aufgehängt wird, und

(2) Anordnen eines Artikels durch das offene Ende der inneren Tasche in einer Aufnahme (24), die innerhalb der inneren Tasche bestimmt ist; gekennzeichnet durch die weiteren Schritte:

(3) Ausbilden einer verschließbaren Füllvorrichtung zur Bestimmung eines Einlaßdurchgangs (39) durch die äußere Tasche, wobei der Einlaßdurchgang mit dem inneren Kammerabschnitt in Verbindung steht,

(4) Versiegeln der offenen Enden der inneren und äußeren Tasche und

(5) gleichzeitiges Ausfüllen der Kammerabschnitte mindestens im wesentlichen mit einem Füllmedium durch die verschließbare Füllvorrichtung, um die innere Tasche und den Artikel im wesentlichen einzukapseln und zu halten, und Versiegeln der Kammerabschnitte.

10. Verfahren nach Anspruch 9, wobei die innere Tasche (23) und der Artikel (A) in einer vorgewählten festen Position nahe der Kammerabschnitte (22) im wesentlichen eingekapselt und gehalten werden.

11. Verfahren nach Anspruch 9 oder 10, wobei die äußere Tasche (21) ein Paar von übereinander-

liegenden und allgemein rechtwinkligen ersten Wandteilen (25,26) aufweist und die innere Tasche ein Paar von übereinanderliegenden und allgemein rechtwinkligen zweiten Wandteilen (27,28) aufweist und der Schritt des Miteinander-Befestigens der Kanten der inneren und äußeren Taschen, derart, daß ihre offenen Enden einander entsprechen, das Befestigen übereinanderliegender Kanten der inneren und äußeren Taschen miteinander mit Ausnahme von deren offenen Enden und ohne Versiegeln des Einlaßdurchgangs aufweist.

12. Verfahren nach einem der Ansprüche 9 bis 11, wobei die Kammerabschnitte (22) durch den Einlaßdurchgang (39), der durch die Füllvorrichtung definiert ist, mit einem unter Druck stehenden Fluid gefüllt werden.

13. Verfahren nach Anspruch 11 oder 12, weiter aufweisend das Ausbilden der ersten Wandteile (25,26) so, daß sie zwischen ihren gegenüberliegenden Kanten Breiten haben, die größer als die entsprechenden Breiten der zweiten Wandteile (27,28) sind.

Revendications

1. Structure d'emballage comportant une enveloppe comprenant une pluralité de panneaux de paroi flexibles imbriqués (25-28), un couple extérieur desdits panneaux de paroi (25,26) étant scellés l'un à l'autre de manière à former une première enceinte (22) à extrémité ouverte, et un couple intérieur desdits panneaux de paroi (27,28) étant scellés l'un à l'autre pour former une limite, ledit couple intérieur de panneaux de paroi définissant une seconde enceinte (24) à extrémité ouverte, formant intérieurement une zone de réception d'un article, ledit couple intérieur de panneaux de paroi (27,28) étant scellés à et entre ledit couple de panneaux de paroi (25,26) de sorte que ladite seconde enceinte à extrémité ouverte est disposée à l'intérieur de ladite première enceinte à extrémité ouverte, et dans laquelle le seul moyen de pénétration ou de sortie dans ou hors de ladite zone de réception d'un article est l'extrémité ouverte de ladite seconde enceinte à extrémité ouverte (24), et le joint de scellement (43) réunissant lesdits couples de panneaux de paroi est situé et conformé de manière à définir une chambre gonflable, pouvant être scellée au-dessus de ladite seconde enceinte à extrémité ouverte, et une chambre gonflable, pouvant être scellée, au-dessous de ladite seconde enceinte à extrémité ouverte, les deux chambres gonflables étant gonflées

par des moyens (36) définissant un passage (39) pouvant être fermé; la structure étant caractérisée en ce que ladite limite dudit couple intérieur de panneaux de paroi (27,28) définit une ouverture constituant la seule communication d'écoulement d'un fluide entre lesdites chambres gonflables, et en ce que ledit passage (39) pouvant être fermé fait saillie à partir de ladite première enceinte à extrémité ouverte (22) et est constitué par un élément en forme de tige (32,33) qui s'étend extérieurement à partir des bords desdits panneaux de paroi extérieurs de sorte qu'un milieu de remplissage peut être introduit dans lesdites chambres gonflables, ce qui a pour effet que lesdites deux chambres gonflables sont chargées par le milieu de remplissage de manière à appliquer une pression à matelasser un article (A) contenu dans ladite zone de réception de l'article.

2. Structure d'emballage selon la revendication 1, dans laquelle ledit couple extérieur desdits panneaux de paroi (25,26) ont des bords extérieurs périphériques (43,43') réunis par scellement et que ledit couple intérieur desdits panneaux de paroi (27,28) sont scellés auxdits bords périphériques extérieurs dudit couple extérieur.

3. Structure d'emballage selon la revendication 1 ou 2, dans laquelle ledit couple de panneaux de paroi (25,26) et ledit couple intérieur de panneaux de paroi (27,28) possèdent une forme générale rectangulaire et s'étendent conjointement au moins sensiblement sur la même étendue.

4. Structure d'emballage selon l'une quelconque des revendications précédentes, dans laquelle au moins ledit couple extérieur de panneaux de paroi (25,26) est constitué par un matériau flexible imperméable aux gaz.

5. Structure d'emballage selon l'une quelconque des revendications précédentes, comprenant en outre des moyens de fermeture d'extrémité (44) pour fixer des éléments de bord adjacents desdits panneaux de paroi intérieur et extérieur entre eux et sceller de façon étanche ladite zone de réception d'un article une fois qu'un article y a été placé.

6. Structure d'emballage selon l'une quelconque des revendications précédentes, dans laquelle ledit milieu de remplissage comprend un gaz comprimé ou une matière plastique à l'état de mousse à l'état massif ou sous forme de mor-

ceaux ou une combinaison des deux.

7. Structure d'emballage selon l'une quelconque des revendications précédentes, ladite structure d'emballage possédant des bords avant et arrière opposés et des bords latéraux opposés, lesdits panneaux intérieurs (27,28) étant scellés auxdits panneaux extérieurs (25,26) au niveau desdits bords avant, arrière et latéraux et lesdits panneaux intérieurs étant réunis par scellement au niveau desdits bords arrière latéraux. 5 10
8. Structure d'emballage selon l'une quelconque des revendications précédentes, comprenant en outre une source dudit milieu de remplissage sous pression; et des moyens pour injecter ledit milieu de remplissage par l'intermédiaire de ladite valve pour charger lesdites chambres gonflables. 15 20
9. Procédé d'emballage d'un article (A) comprenant les étapes consistant à :
 - (1) fixer des bords d'un sachet intérieur (23) à extrémité ouverte et d'un sachet extérieur (21) à extrémité ouverte entre eux de manière que leurs extrémités ouvertes se correspondent, ledit sachet intérieur étant suspendu dans des parties formant chambre (22) définies dans ledit sachet extérieur; et 25 30
 - (2) placer un article, en passant par l'extrémité ouverte dudit sachet intérieur, dans une poche (24) définie dans ledit sachet intérieur; caractérisé par les étapes supplémentaires consistant à : 35
 - (3) former des moyens de remplissage, pouvant être fermés, pour définir un passage d'entrée (39) à travers ledit sachet extérieur, le passage d'entrée communiquant avec lesdites parties formant chambre; 40
 - (4) sceller les extrémités ouvertes dudit sachet intérieur et extérieur, et
 - (5) remplir simultanément au moins pour l'essentiel lesdites parties formant chambre avec un milieu de remplissage par l'intermédiaire desdits moyens de remplissage, pouvant être fermés, pour essentiellement encapsuler et supporter ledit sachet intérieur et ledit article, et sceller lesdites parties formant chambre. 45 50
10. Procédé selon la revendication 9, selon lequel ledit sachet intérieur (23) et ledit article (A) sont essentiellement encapsulés et supportés dans une position fixe présélectionnée à l'intérieur desdites parties formant chambre (22). 55

11. Procédé selon la revendication 9 ou 10, selon lequel ledit sachet extérieur (21) comprend un couple de premiers panneaux sensiblement rectangulaires et en chevauchement (25,26), ledit sachet intérieur comprend un couple de seconds panneaux sensiblement rectangulaires et en chevauchement (27,28), et l'étape de fixation des bords des sachets intérieur et extérieur l'un à l'autre de manière que leurs extrémités ouvertes se correspondent comprend la fixation de bords en chevauchement desdits sachets intérieurs et extérieurs entre eux, hormis au niveau de leurs extrémités ouvertes et sans scellement dudit passage d'entrée.
12. Procédé selon l'une quelconque des revendications 9 à 11, selon lequel lesdites parties formant chambre (22) sont remplies par un fluide sous pression par l'intermédiaire dudit passage d'entrée (39), qui est défini par lesdits moyens de remplissage.
13. Procédé selon la revendication 11 ou 12, comprenant en outre la formation desdits premiers panneaux (25,26) de manière que leurs largeurs entre leurs bords opposés soient supérieures aux largeurs correspondantes desdits seconds panneaux (27,28).





