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④ Self-pressurizing dispensing container.

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## Description

### Background of the Invention

For a long time there has been a need for a pressure generating system for use in product dispensing containers that is isolated from, and is not dispensed with, the product. This need has been partially due to environmental considerations but also for safety precautions, avoidance of product contamination or dilution as well as skin toxicity and/or irritation.

Furthermore, prior aerosol type dispensers generally were operable only in an upright condition, otherwise premature exhaustion of the dispensing medium would result with a substantial loss of usable product which would remain indispensible in the container due to loss of dispensing pressure.

Prior dispensers also had other deficiencies such as temperature sensitivity, non-uniform dispensing pressure, limited shelf-life, unreliability, difficulty of manufacture and relatively high cost of manufacture.

The present invention provides a dispensing mechanism which overcomes the above-mentioned deficiencies of the prior art devices and provides additional novel features and advantages, and a wider range of uses, than were possible with devices used heretofore.

In the U.S. patent No. 3,178,236 there is described a pressurized dispensing container containing an expandible bag capable of being inflated to force out the product disposed in the container externally of the bag. The bag is divided into a plurality of expandible chambers or compartments serially arranged and separated from each other by disruptable transverse partitions which are attached at each end on the bag wall and extend across the bag. These partitions separate the bag into a series of individual compartments which contain one component of a two-component gas generating mixture. One compartment begins to generate pressure gas after a predetermined period of time through addition of a delaying agent to the one gas generating component. Expansion of that compartment disrupts the associated partition releasing a further portion of the one gas generating component to generate more gas and maintain the pressure within the container. In this way, one partition after the other is disrupted until the bag is fully inflated and substantially all of the product is displaced out of the container.

However, this method of pressurization of a container has a serious drawback. It is very difficult to fabricate the expandible bag with its compartments and transverse partitions, even if the partitions are in the form of adhered portions of the sidewalls of the bag as suggested in a further embodiment. Thus, the problem raised to provide an improved dispensing container with a bag or pouch which can be produced easierly and more efficiently.

The present invention overcomes the above-mentioned deficiencies and provides a dis-

pensing container with novel features and advantages and a wider range of uses than the devices of the prior art.

### 5 Brief Summary of the Invention

Expulsion means for developing and maintaining relatively constant gaseous dispensing pressure in a container from which a product is to be dispensed, comprising an enclosed, fluid impermeable flexible plastic pouch disposed within the container, and having a pair of facing wall members. A plurality of pocket members are disposed within the pouch in spaced relation to one another and affixed to the interior of one of said wall members. A closure member is associated with the interior of the other wall member and releasably closes each of said pocket members. Each pocket member contains a first component, e.g., sodium bicarbonate, of a two-component carbon dioxide gas generation mixture. The second component, e.g., citric acid solution, of said two-component carbon dioxide gas generation mixture is disposed within the pouch and externally of said enclosed pocket members. Starting delay means, e.g., a rupturable or dissolvable capsule containing sodium bicarbonate and/or lithium carbonate is disposed within the pouch in contact with the second component for causing the initial generation of carbon dioxide gas after a prescribed period of time and each pocket member is sequentially severable from the closure member to thereby empty its contents into admixture with the second component to generate more gas as the pouch expands due to the dispensing of the product from the container.

### 35 Description of the Drawings

Fig. 1 is an elevation sectional view of an aerosol dispensing container including an expulsion means embodiment of the present invention shown in a fragmentary cutaway view;

Fig. 2 is a sectional plan view of the structure shown in Fig. 1 shown in the expulsion means in initial collapsed condition;

Fig. 3 is a sectional plan view of the device of Fig. 2 showing the expulsion means in intermediate expanded condition;

Fig. 4 is an enlarged isometric view of the two envelope sheets of an embodiment of the invention prior to assembly;

Fig. 5 is an enlarged isometric view of the two envelope sheets of Fig. 4 in assembled condition;

Fig. 6 is a sectional view taken along lines 6—6 of Fig. 5;

Fig. 7 is an enlarged schematic showing the method of insertion of the envelope into the pouch;

Fig. 8 is an enlarged schematic showing heat sealing of the envelope sides to the inner walls of the pouch;

Figs. 9 through 11 are reduced sectional elevations showing assembly of the envelope containing pouch into an aerosol type dispenser;

Figs. 12 and 13 are enlarged fragmentary schematic views showing separation of the en-

velope sides during expansion to open the pocket members; and

Figs. 14 through 17 are schematic representations of different arrangements of the pocket members and different patterns of attachment of the envelope sides to the pouch walls.

#### Detailed Description

Referring now to the drawings, in which each of the various components have the same reference numeral in the different views, and in particular Figs. 1—3, a fluid tight dispensing container is shown and designated generally by reference numeral 10. Container 10 has a cylindrical body or sidewall 11, inwardly dished bottom 12 and bell-shaped top 13 in which is mounted a conventional spring loaded aerosol spray valve assembly 14. Container 10 and its component parts just described can be fabricated from any suitable material such as thin gauge aluminum or other metal, or even plastic depending on the product to be dispensed and any governing safety specifications that might be involved. Valve assembly 14 is also of conventional design having plunger and spray head 15 carrying spray orifice 16, suitably constructed of plastic, and internal parts (not shown) such as a spring, ball valve and mounting ring 17 and bottom intake member 18 which may be of metal and/or plastic consistent with the previously mentioned requirements.

Within container 10 is liquid product 19 and expulsion assembly 20 which is the subject of the present invention and as will be seen generates and maintains gas pressure within container 10 to enable product 19 to be dispensed on demand.

At the upper end 21 of the interior of cylindrical body 11 is a perforated or foraminous barrier member 22 having a plurality of holes 23 distributed throughout its surface. Also affixed to inner surface 24 of sidewall 11 and extending longitudinally there along is a perforate tube member 25 having a plurality of holes 26 at spaced positions around and along said tube member 25. The function of barrier member 22 and tube member 25 is to insure trouble-free operation of the dispenser and prevent expulsion assembly 20, as it expands in the manner to be described, from blocking off or plugging the interior of the container either laterally/circumferentially or plugging off the valve bottom intake member 18.

Expulsion assembly as shown is disposed within container 10 without being attached or anchored to container 10, although it may, if desired be so connected. Assembly 20 is comprised of generally rectangular envelope, bag or pouch 27 which is constructed of a flexible, fluid impermeable plastic such as, for example, polyethylene or polypropylene and may be fabricated from a sheet of plastic by folding it into overlaid halves which are then sealed or adhered by suitable means along their respective contacting side forming a first wall member 27a and a second wall member 27b of the pouch 27. Bottom and top edges 28, 29, 30 respectively form a sealed enclosure as shown in Figs. 1—3 inclusive.

Disposed within pouch 27 is fluid impermeable flexible plastic sandwich or enfoldment 31 having a pair of facing sheets 32, 33 releasably adhered to one another (see also Figs. 2 through 6) and permanently attached by suitable means such as heat sealed portions 35 to respective interior sides 27c, 27d of pouch halves 27a, 27b respectively. One sheet 32 is a substantially flat and the other sheet 33 has a plurality of cup-shaped depressions, cavities or pocket members 34 disposed inwardly from one surface thereof at spaced positions and aligned generally longitudinally of said enfoldment 31 which in turn is similarly aligned with respect to said envelope 20 in a substantially longitudinal relationship as shown in Fig. 1. Pocket members 34 are "lidded" or closed by sheet 32 to encapsulate within each pocket member 34 an aliquot of sodium bicarbonate 36 which may be either in the form of powder or a solution. In the interior of pouch 27 is citric acid solution 37. Also disposed in said citric acid solution is starting means 38 which as shown in the form of a dissolvable capsule and contains an initial charge of sodium bicarbonate which, after a predetermined period of time after assembly of the pouch 27 in container 10, filling the container with product 19 and capping it with the top 13 and associated parts, capsule 38 dissolves and causes the sodium carbonate contained therein to mix with the citric acid solution 37 and generate the initial quantity of carbon dioxide gas, thereby expanding envelope or pouch 27 and providing dispensing pressure within container 10.

The pouch member 27 in one preferred embodiment is constructed of a three layer laminated film having a middle layer of Saran, the external layer of Mylar and the inside layer (interior of the pouch) being low density polyethylene, each of said layers being approximately 2.5 mils in thickness except for the saran layer, which is only deposited from a spray. The characteristics required or desired in said pouch is that it be non-toxic, have sufficient mechanical strength and chemical stability, be heat sealable (to the sheets 32 and 33) and flexible but not appreciably elastic or stretchable.

Sheet 32 is fabricated from material which contacts the bag 27 and is of compatible plastic, e.g., polyethylene. In one preferred embodiment it has an overall thickness of about 4.5 mils and is a three layer sandwich of about 0.5 mil Mylar in the middle and about 2.0 mils low density polyethylene either side.

Sheet 33 carrying the pocket members 34 is adapted for deep drawing and is in one preferred embodiment a laminated plastic having an exterior layer (the layer in contact with pouch 27) of low density polyethylene of from about 0.5 to about 20 mils thick and an interior layer (the other side) of polypropylene of from about 0.1 to about 3.75 mils thick or higher. It is to be understood that pocket members 34 and capsule 38 may carry the citric acid and solution 37 may be sodium bicarbonate and water, or the two carbon dioxide

generating components can be switched the other way around.

A typical formulation is for each pocket members 34 and the capsule 38 to be charged with about 1 gram each of a 50% citric acid solution and the envelope content 37 to be about 5 to 10 grams of sodium bicarbonate mixed with about 5 grams of water.

The pressure generated within container 10 is of the order of about 120 psig  $\pm 20\%$  at an ambient temperature of about 70°F, but any desired pressure may be developed by adjusting the stoichiometry of the particular gas-generating ingredients.

While for most practical applications of the invention sodium bicarbonate and citric acid are normally preferred, it is possible that under particular circumstances other materials may be more suitable such as, for example, dilute hydrochloric acid (e.g., 10—30% even up to about 35%) in place of the citric acid, and lithium carbonate or calcium carbonate in place of the sodium bicarbonate.

Various starting delay means can be employed in addition to dissolvable capsule 38.

The method of assembly is depicted schematically in Figs. 4—8 and 9—11. Sheet 33 is formed in a mold by heating and drawing to form pocket members 34. The pocket members are then filled with one component, e.g., citric acid. Sheet 32 is overlayed on sheet 33 to close pocket members 34 and the sheets are heat sealed together (Fig. 5) and enfoldment 31 is inserted into the open end 39 of pouch or bag 27 (Fig. 7) and the two members 31 and 27 are heat sealed together at 35. Sodium carbonate solution 37 and starting capsule 38 are added to pouch 27 and then upper edge 30 of pouch 27 is heat sealed to completely enclose the contents in pouch 27 (Fig. 8). The expulsion means assembly 20 is then inserted into container 10 and product 19 added, barrier member 22 put into place, and top 13 affixed to container 10 (Fig. 10). After elapse of the prescribed period of time, starting capsule 38 has dissolved, generating carbon dioxide gas, expanding pouch 27 and the dispenser is now ready for use (Fig. 11). Figs. 3, 12 and 13 show schematically how expansion of pouch 27, to separate inner sides of which sheets 32, 33 are permanently attached, successively pulls apart portions of releasably adhered sheets 32, 33 to successively expose the contents of each pocket member 34 and deliver it into contact and admixture with other gas generating component 37 in the bottom of the pouch.

Figs. 14—17 depict variations in the arrangement of pocket members 34 and heat seals 35 as well as in configurations and relative dimensions of pouch 27 and enfoldment 31.

A dispensing apparatus containing the expulsion means of the present invention has the following advantages and features:

1. no flammable propellants are used, thereby eliminating the dangers of prior art assemblies;
2. the assembled containers can be steam

sterilized without affecting operating performance;

3. a constant balanced internal dispensing pressure is maintained at the user's demand and insures a continual even flow of product at room temperature, regardless of the amount of product remaining in the container;

4. the product never comes into contact with the propellant, eliminating any danger of contamination of the product, such as taste or smell;

5. the dispenser will discharge its contents in any position, upright, horizontal or inverted and without escape of propellant;

6. the spray does not chill the sprayed surface as is caused by hydrocarbon propellants;

7. there is no pollution or contamination of the atmosphere with the propellant because it remains in the container; and

8. ease and low cost of manufacture, extended shelf life and reliability of service make this dispenser highly advantageous over prior art dispensers.

While certain embodiments of the invention have been shown and described herein, it is to be understood that changes and additions may be made by those skilled in the art without departing from the scope and spirit of the invention.

### Claims

1. Self-pressurizing dispensing container with a manually actuatable atomizing and dispensing valve (14), a dispensable medium (19) and internal expulsion means for developing and maintaining a relatively constant gaseous dispensing pressure for the product being dispensed, comprising an enclosed fluid impermeable flexible pouch (27) disposed within the container (10), a first and a second component (36 and 37) of a gas generation mixture disposed separately within the pouch (27) and being brought sequentially into contact for causing increasing gas generation in the pouch, characterized in that the pouch (27) sealingly encompasses first closure means including at least one first closure member (32) affixed to the interior (27c) of a first wall member (27a) of the pouch (27) and second closure means including at least one second closure member (33) affixed to the interior (27d) of a second wall member (27b) of the pouch (27) facing the first wall member (27a), the second closure means defining a plurality of pocket members (34) in spaced relation to one another, the first closure means releasably closing each of the pocket members (34), which contain one component (36) of the two-component gas generation mixture, the pocket members (34) being sequentially severable from said first closure means to empty their contents into admixture with the other component, whereby the second wall member (27b) is increasingly spaced from the first wall member (27a) to gradually expand the flexible pouch (27).
2. Dispensing container according to claim 1, characterized in that the pouch (27) forms an envelope and that said first closure member (32)

and said second closure member (33) comprise a pair of sheets disposed within said envelope and permanently attached on their outer surfaces to the inner facing surfaces (27c, 27d) of the envelope along at least portions of their respective margins and releasably adhered to one another over substantially their entire contacting surfaces, and that at least one of the sheets (33) has a plurality of depressions in its surface forming the pocket members (34) and the other sheet (32) closes the depressions.

3. Dispensing container according to claim 2, characterized in that said envelope (27) is comprised of a three-layer laminated plastic, the external layer being thermoplastic linear polyester 0,0127 to 0,0772 mm in thickness, the inner layer being low-density polyethylene 0,0127 to 0,508 mm in thickness, and the middle layer being polyvinylidene chloride deposited by spraying onto at least one of the inner surfaces of said polyester and polyethylene layers.

4. Dispensing container according to claim 2, characterized in that the sheet (33) of the pair carrying the depressions (34) is comprised of a two-layer plastic lamination having an outer layer of low-density polyethylene about 0,0127 to 0,508 mm thick attached to the envelope and an inner layer of polypropylene 0,00254 to 0,254 mm in thickness.

5. Dispensing container according to claim 2, characterized in that the other sheet (32) is comprised of a three-layer plastic sandwich lamination having an inner layer of thermoplastic linear polyester 0,0077 to 0,0772 mm thick, the other layers of the sandwich being low-density polyethylene each 0,00254 to 0,508 mm thick.

6. Dispensing container according to claims 2 to 4, characterized in that the pouch (27) and the sheet (33) carrying the depressions and forming the pocket members (34) have polyethylene layers permanently heat sealed together.

7. Dispensing container according to claims 2, 3 and 5, characterized in that the said other sheet (32) is permanently adhered to the interior (27c) of its associated wall member (27a) at surfaces comprised of low-density polyethylene.

8. Dispensing container according to one of the claims 1 to 7, characterized in that a plurality of relatively short heat sealed portions (35), each adjacent and laterally spaced from a respective one of the pocket members (34), permanently join the first wall member (27a) and the first closure member (32) as well as the second wall member (27b) and the second closure member (33) and releasably join the second closure member (33) relative to the first closure member (32), and that the heat sealed portions (35) are staggered diagonally longitudinally relative to the pocket members (34) to accommodate sequential expansion of the pouch (27) during use.

9. Dispensing container according to one of the claims 1 to 8, characterized in that the one component (36) of the two-component gas generation mixture is comprised of a compound selected from the group consisting of barium carbonate,

calcium carbonate and sodium bicarbonate and the other component (37) is a water soluble acid.

10. Dispensing container according to claim 9, characterized in that the one component of the gas generation mixture is sodium bicarbonate and the water soluble acid is citric acid.

11. Dispensing container according to one of the foregoing claims, characterized in that the generated gas is carbon dioxide.

12. Dispensing container according to claim 1, characterized in that starting delay means is disposed in the second component of the gas generating mixture and comprises a capsule (38) carrying a portion of the component (36) being enclosed in the pocket members (34).

#### Patentansprüche

1. Selbstbedrückender Abgabebehälter mit einem manuell betätigten Sprüh- und Abgabeventil (14), einem Abgebemedium (19) und einer internen Ausstossvorrichtung, um einen relativ konstanten gasförmigen Abgabedruck für das abzugebende Produkt herzustellen und aufrechtzuerhalten, sowie einem in dem Behälter (10) eingeschlossenen, undurchlässigen elastischen Beutel (27), und eine erste und zweite Komponente (36 und 37) einer gaserzeugenden Mischung, die getrennt in dem Beutel (27) angeordnet sind und allmählich in Berührung gebracht werden, um eine anwachsende Gaserzeugung in dem Beutel zu bewirken, dadurch gekennzeichnet, dass der Beutel (27) eine erste Abdichtende Schliessvorrichtung mit mindestens einem ersten Verschlusssteil (32) aufweist, das an der Innenseite (27c) eines ersten Wandteils (27a) des Beutels (27) befestigt ist, sowie eine zweite Schliessvorrichtung, die mindestens einen zweiten Verschlusssteil (33) aufweist, das an der Innenseite (27d) eines zweiten Wandteils (27b) des Beutels (27) gegenüber dem ersten Wandteil (27a) befestigt ist, wobei die zweite Schliessvorrichtung eine Vielzahl von im Abstand angeordneten Taschen (34) bildet und die erste Schliessvorrichtung löslich jede dieser Taschen (34) verschließt, die eine Komponente (36) der gaserzeugenden Zweikomponentenmischung enthalten, wobei diese Taschen (34) nacheinander von der ersten Schliessvorrichtung abschaltbar sind, um ihren Inhalt als Zumischung zu der anderen Komponente abzugeben, wodurch der zweite Wandteil (27b) immer mehr von dem ersten Wandteil (27a) entfernt wird, um den elastischen Beutel (27) schrittweise zu dehnen.

2. Abgabebehälter nach Anspruch 1, dadurch gekennzeichnet, dass der Beutel (27) eine Hülle bildet und dass der erste Verschlusssteil (32) und der zweite Verschlusssteil (33) ein Paar Lamellen aufweist, die in der Hülle angeordnet sind und mit ihren Außenflächen fest an den Innenflächen (27c, 27d) der Hülle wenigstens an Teilen ihrer jeweiligen Ränder verbunden sind und weitgehend über ihre gesamte Fläche aneinander hängen, und dass mindestens eine der Lamellen (33) in ihrer Oberfläche eine Vielzahl von Vertiefungen

aufweist, die die Taschen (34) bilden, während die andere Lamelle (32) die Vertiefungen verschließt.

3. Abgabebehälter nach Anspruch 2, dadurch gekennzeichnet, dass die Hülle (27) aus einer dreischichtigen Plastikfolie besteht, deren äußere Schicht aus thermoplastischem Polyester mit einer Dicke von 0,0127 bis 0,772 besteht, während die innere Schicht aus Polyäthylen niedriger Dichte mit einer Dicke von 0,0127 bis 0,508 mm besteht, und die mittlere Schicht aus Polyvinylidenchlorid besteht, das auf mindestens einer der Innenflächen der Schichten aus Polyester und Polyäthylen aufgesprüht ist.

4. Abgabebehälter nach Anspruch 2, dadurch gekennzeichnet, dass die Lamelle (33) des Lamellenpaars, die die Vertiefungen (34) aufweist, aus einer zweischichtigen Plastikfolie besteht, deren äußere Schicht aus Polyäthylen niedriger Dichte mit einer Dicke von 0,0127 bis 0,508 mm besteht und an der Hülle befestigt ist, während die innere Schicht aus Polypropylen mit einer Dicke von 0,00254 bis 0,254 mm besteht.

5. Abgabebehälter nach Anspruch 2, dadurch gekennzeichnet, dass die andere Lamelle (32) aus einer dreischichtigen Sandwichfolie besteht, deren innere Schicht aus thermoplastischem linearen Polyester mit einer Dicke von 0,0077 bis 0,0772 mm besteht, während die anderen Schichten der Sandwichfolie aus Polyäthylen niedriger Dichte mit jeweils 0,00254 bis 0,508 mm Dicke bestehen.

6. Abgabebehälter nach einem der Ansprüche 2 bis 4, dadurch gekennzeichnet, dass der Beutel (27) und die Folie (33), die die Vertiefungen aufweist, die die Taschen (34) bilden, aus Polyäthylenschichten bestehen, die fest miteinander verschweisst sind.

7. Abgabebehälter nach einem der Ansprüche 2, 3 und 5, dadurch gekennzeichnet, dass die andere Folie (32) fest an der Innenseite (27c) des entsprechenden Wandteils (27a) an Flächen befestigt ist, die aus Polyäthylen niedriger Dichte bestehen.

8. Abgabebehälter nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, dass eine Vielzahl relativ kurzer verschweisster Teile (35), die jeweils benachbart und im Abstand von einem jeweiligen Taschenteil (34) fest mit dem ersten Wandteil (27a) und dem ersten Verschlussteil (32) und dem zweiten Wandteil (27b) und dem zweiten Verschlussteil (33) verbunden sind und sich löslich mit dem zweiten Verschlussteil (33) im Vergleich zu dem ersten Verschlussteil (32) verbinden, und dass die verschweissten Teile (35) diagonal in Längsrichtung zu den Taschenteilen (34) abgestuft sind, um eine allmähliche Ausdehnung des Beutels (27) im Einsatz zu ermöglichen.

9. Abgabebehälter nach einem der Ansprüche 1 bis 8, dadurch gekennzeichnet, dass die eine Komponente (36) der aus zwei Komponenten bestehenden gaserzeugenden Mischung aus einer Verbindung besteht, die aus der Gruppe ausgewählt wurde, die aus Kalziumkarbonat und Natriumbikarbonat besteht, während die andere Komponente (37) aus einer wasserlöslichen Säu-

re besteht.

10. Abgabebehälter nach Anspruch 9, dadurch gekennzeichnet, dass die eine Komponente der gaserzeugenden Mischung Natriumbikarbonat ist, während die wasserlösliche Säure Zitronensäure ist.

11. Abgabebehälter nach einem der vorausgehenden Ansprüche, dadurch gekennzeichnet, dass das erzeugte Gas Kohlenstoffdioxid ist.

12. Abgabebehälter nach Anspruch 1, dadurch gekennzeichnet, dass in der zweiten Komponente der gaserzeugenden Mischung eine Startverzögerung vorgesehen ist, die eine Kapsel (38) enthält, die einen Teil der Komponente (36) enthält, die in den Taschenteilen (34) enthalten ist.

#### Revendications

1. Récipient distributeur comprenant des moyens générateurs de pression avec une valve (14) d'atomisation et de distribution actionnable manuellement, un milieu distributeur (19) et des moyens internes d'expulsion pour développer et maintenir une pression de gaz distributrice relativement constante pour le produit qui est distribué, comprenant une poche (27) flexible incluse imperméable aux fluides disposée à l'intérieur du récipient (10), un premier et un second composants (36 et 37) d'un mélange générateur de gaz disposés séparément à l'intérieur de la poche (27) et qui sont amenés séquentiellement en contact pour produire une génération augmentée de gaz dans la poche, caractérisé en ce que la poche (27) enveloppe de manière étanche des premiers moyens de fermeture comprenant au moins un premier organe de fermeture (32) fixé à l'intérieur (27c) d'une première paroi (27a) de la poche et des seconds moyens de fermeture comprenant au moins un second organe de fermeture (33) fixé à l'intérieur (27d) d'une seconde paroi (27b) de la poche, les seconds moyens de fermeture définissant une pluralité de pochettes (34) écartées les unes des autres, les premiers moyens de fermeture fermant de manière libérable chacune des pochettes (34) qui contient un composant (36) du mélange à deux composants générateur de gaz, les pochettes (34) pouvant être séquentiellement séparées d'avec lesdits premiers moyens de fermeture pour vider leur contenu en mélange avec l'autre composant, ce qui écarte de plus en plus la seconde paroi (27b) de la première paroi (27a) pour dilater graduellement la poche flexible (27).

2. Récipient distributeur selon la revendication 1, caractérisé en ce que la poche (27) forme une enveloppe et que ledit premier organe de fermeture (32) et ledit second organe de fermeture (33) comprennent une paire de feuilles disposées à l'intérieur de ladite enveloppe et fixées en permanence sur leurs surfaces extérieures aux surfaces (27c, 27d) opposées intérieures de l'enveloppe le long d'au moins des portions de leurs marges respectives et collées de manière libérale l'une à l'autre sur sensiblement la totalité de leurs surfaces de contact, et qu'au moins une des feuilles

(33) a une pluralité de dépressions dans sa surface formant les pochettes (34) et l'autre feuille (32) ferme les dépressions.

3. Récipient distributeur selon la revendication 2, caractérisé en ce que ladite enveloppe (27) est formée d'une matière plastique lamifiée à trois couches, la couche externe étant du polyester thermoplastique linéaire de 0,0127 à 0,0772 mm d'épaisseur, la couche interne étant du polyéthylène basse densité de 0,0127 à 0,508 mm d'épaisseur, et la couche moyenne étant du polychlorure de vinylidène déposé par pulvérisation sur au moins une des surfaces intérieures des dites couches de polyester et de polyéthylène.

4. Récipient distributeur selon la revendication 2, caractérisé en ce que la feuille (33) de la paire portant les dépressions (34) est formée par un lamifié à deux couches ayant une couche extérieure en polyéthylène basse densité d'environ 0,0127 à 0,508 mm d'épaisseur fixée à l'enveloppe et une couche intérieure en polypropylène de 0,00254 à 0,254 mm d'épaisseur.

5. Récipient distributeur selon la revendication 2, caractérisé en ce que l'autre couche (32) est formée par un lamifié sandwich en matière plastique à trois couches ayant une chouche intérieure en polyester thermoplastique linéaire de 0,0077 à 0,0772 mm d'épaisseur, les autres couches du sandwich étant en polyéthylène basse densité de 0,00254 à 0,508 mm d'épaisseur chacune.

6. Récipient distributeur selon les revendications 2 à 4, caractérisé en ce que la poche (27) et la feuille (33) portant les dépressions et formant les pochettes (34) a des couches en polyéthylène soudées ensemble à chaud de manière permanente.

7. Récipient distributeur selon les revendications 2, 3 et 5, caractérisé en ce que l'autre feuille (32) est collée de manière permanente à l'intérieur (27c) de sa paroi associée (27a) sur des

surfaces constituées de polyéthylène basse densité.

8. Récipient distributeur selon l'une des revendications 1 à 7, caractérisé en ce qu'une pluralité de portions (35) relativement courtes soudées à chaud, chacune adjacente et éloignée latéralement d'une des pochettes (34) respectives, relie en permanence la première paroi (27a) et le premier organe de fermeture (32) ainsi que la seconde paroi (27b) et le second organe de fermeture (33) et relie de manière libérable le second organe de fermeture (33) par rapport au premier organe de fermeture (32), et que les portions (35) soudées à chaud sont disposées en quinconce diagonalement longitudinalement par rapport aux pochettes (34) pour admettre une dilatation séquentielle de la poche (27) pendant l'utilisation.

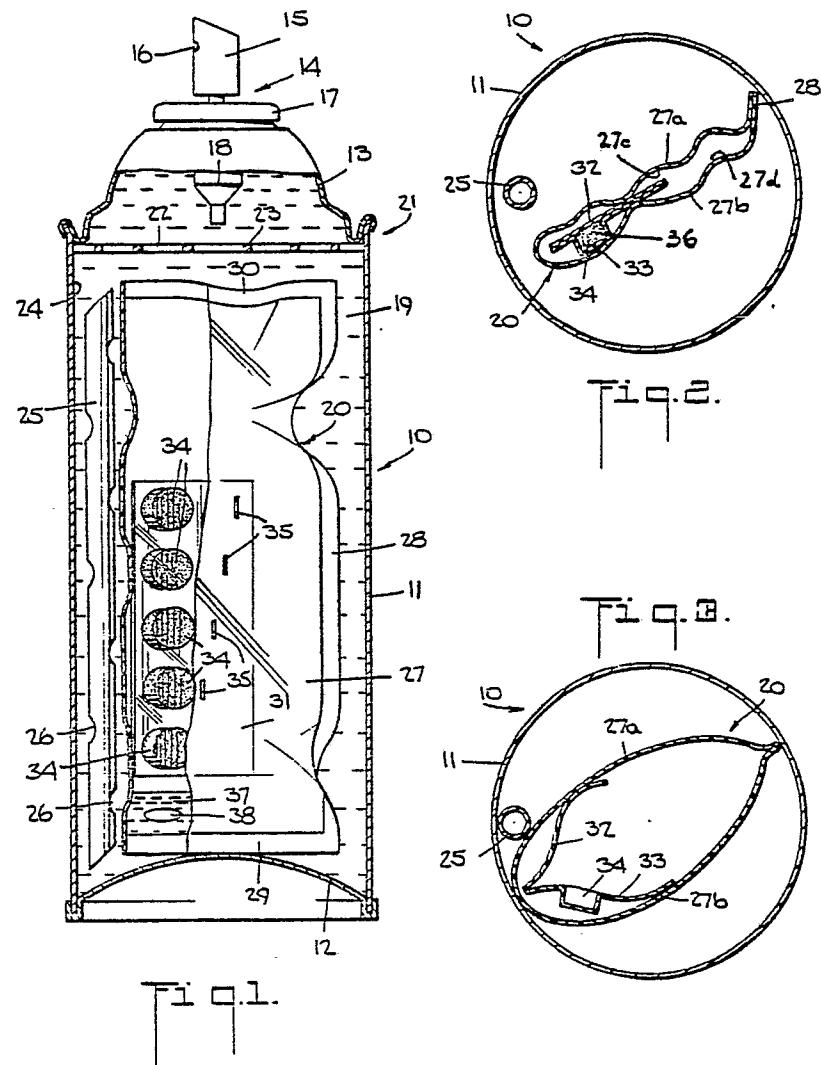
9. Récipient distributeur selon l'une des revendications 1 à 8, caractérisé en ce que le premier composant (36) du mélange à deux composants générateur de gaz comprend un composé choisi dans le groupe constitué par le carbonate de baryum, le carbonate de calcium et le bicarbonate de sodium, et l'autre composant (37) est un acide soluble dans l'eau.

10. Récipient distributeur selon la revendication 9, caractérisé en ce que le premier composant du mélange générateur de gaz est du bicarbonate de sodium et l'acide soluble dans l'eau est de l'acide citrique.

11. Récipient distributeur selon l'une des revendications précédentes, caractérisé en ce que le gaz généré est du gaz carbonique.

12. Récipient distributeur selon la revendication 1, caractérisé en ce que des moyens retardateurs de démarrage sont disposés dans le second composant du mélange générateur de gaz et comprennent une capsule (38) portant une portion du composant (36) qui est enfermé dans les pochettes (34).

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Fig. 4.

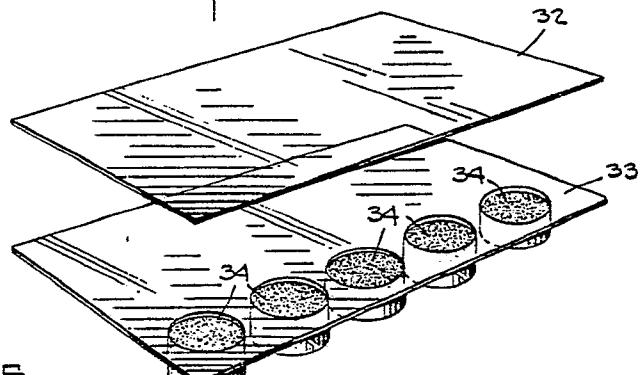


Fig. 6.

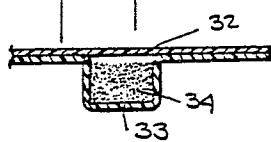


Fig. 5.

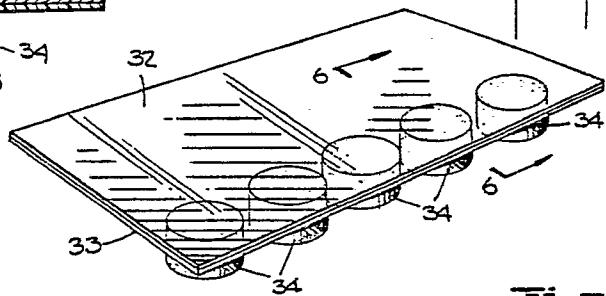
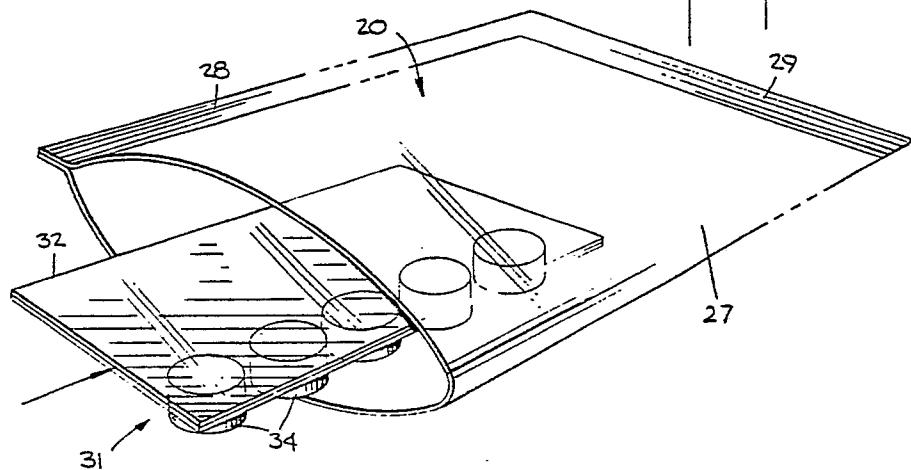
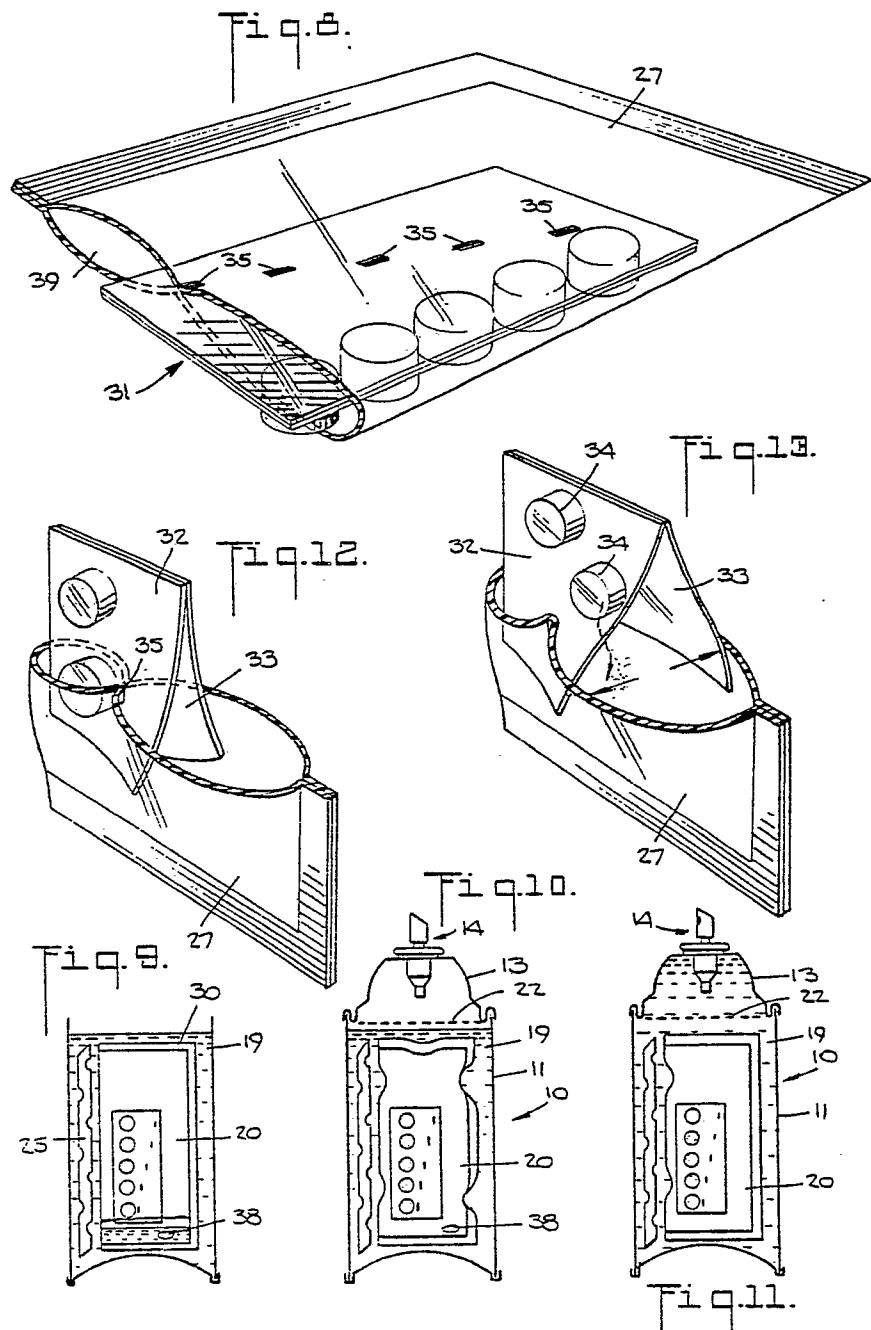


Fig. 7.



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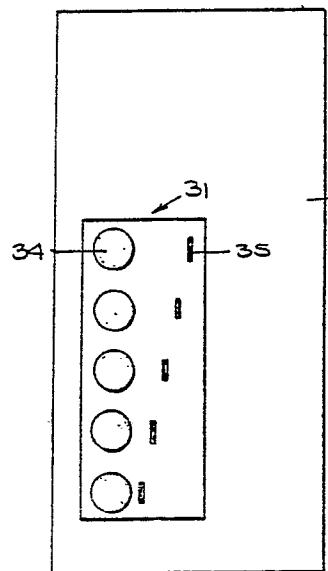


Fig.14.

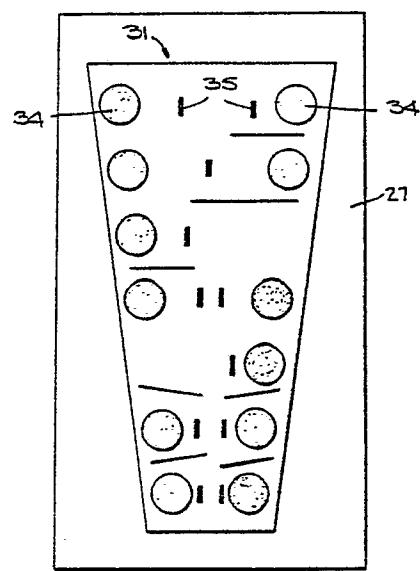


Fig.15.

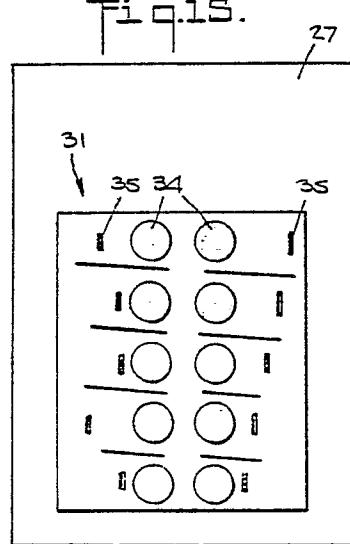


Fig.16.

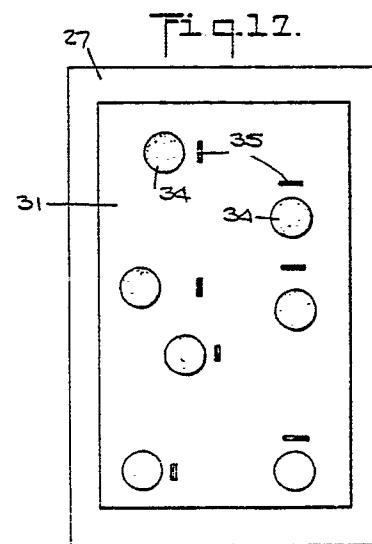


Fig.17.