



(12) **EUROPEAN PATENT APPLICATION**  
published in accordance with Art. 153(4) EPC

(43) Date of publication:  
**04.09.2013 Bulletin 2013/36**

(51) Int Cl.:  
**B65D 83/38 (2006.01) B65D 81/32 (2006.01)**

(21) Application number: **11836475.1**

(86) International application number:  
**PCT/JP2011/075005**

(22) Date of filing: **28.10.2011**

(87) International publication number:  
**WO 2012/057342 (03.05.2012 Gazette 2012/18)**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

(72) Inventor: **TERAMOTO Keiichiro**  
**Sashima-gun**  
**Ibaraki 306-0314 (JP)**

(30) Priority: **29.10.2010 JP 2010244841**

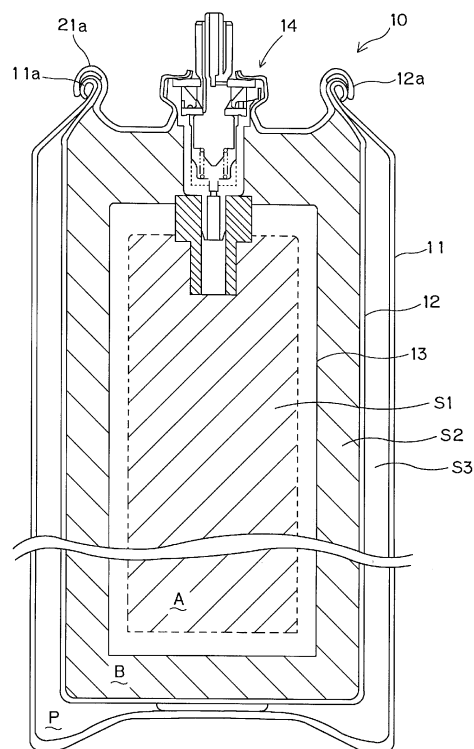
(74) Representative: **Hancox, Jonathan Christopher**  
**Brookes Batchellor LLP**  
**46 Chancery Lane**  
**London WC2A 1JE (GB)**

(71) Applicant: **Daizo Corporation**  
**Osaka-shi**  
**Osaka 552-0013 (JP)**

(54) **AEROSOL CONTAINER FOR MULTIPLE FLUID DISCHARGE, MULTIPLE FLUID DISCHARGE AEROSOL PRODUCT, AND INTERNAL CONTAINER USED THEREFOR**

(57) [Problem] To provide an internal container that is composed of a laminated sheet containing a metal foil layer that is resistant to degradation such as corrosion even if immersed in the content to be put in the container, an aerosol container for multiple fluid discharge provided therewith, and a multiple fluid discharge aerosol product. [Solution] A multiple fluid discharge type aerosol product (10) comprises: an outer container (11); an intermediate container (12) flexible enough to be inserted into the outer container; an internal container (13) flexible enough to be inserted into the intermediate container; and an aerosol valve (14) (hereinafter, valve) for closing the openings of these containers. The aerosol product independently stores and discharges two kinds of contents. The internal container is obtained by bonding one or more laminated sheets having the flexibility and provided with a metal foil layer and a synthetic resin layer, and is provided with a protection means on the end surface of the laminated sheet.

FIG. 1



**Description****[Field of the invention]**

**[0001]** The present invention relates to an aerosol container for multiple contents discharge, a multiple contents discharge aerosol product, and an inner container used therefor.

**[Description of Background Art]**

**[0002]** An aerosol container is a container for charging a content and a propellant in a pressure-resistant container and discharging the content by the pressure of the propellant. As such an aerosol container, a container which independently houses plural different contents and which independently and simultaneously discharges plural different contents is known. However, even if the plural different contents are housed in separate inner containers, if the inner containers are made of synthetic resin, the contents may penetrate the inner container and may be mixed depending on the contents. Particularly, when two different contents are reactive agents which react with each other such as a hair dye, there is a problem that the effectiveness of the product may be lost by mutually mixing the contents.

**[0003]** Hence, aerosol containers equipped with an inner bag using a laminated sheet having at least a metal foil layer are cited.

In Patent Document 1, a double aerosol container is disclosed, which comprises an outer container and two inner bags housed therein, and different contents are being housed in each inner bag. Moreover, the inner bag formed by mutually overlapping the laminate sheets and bonding right and left both edge portions and upper and lower end portions by a heat seal is disclosed.

In Figure 4 of Patent Document 2, a partial cross sectional shape is disclosed, which is equipped with a first pouch in which a first content is charged, a second pouch in which a second content is charged, being housed in the first pouch, a first flow path which communicates the first pouch and outside, a second flow path which communicates a second pouch and outside, and a valve which communicates with the first flow path and the second flow path.

**[Prior Art Documents]****[Patent Documents]****[0004]**

Patent Document 1: Japanese published Utility Model Appl. No. S63-28684

Patent Document 2: Japanese published Patent Appl. No. 2009-537403

**[Description of the invention]****[Problems to be solved]**

**[0005]** However, in the case that a plurality of inner bags is housed in an outer container, and a propellant is charged between the outer container and the inner bag as shown in Patent Document 1, two inner bags must be inserted from the circular opening of the outer container, the process thereof tends to become cumbersome.

Meanwhile, in Patent Document 2, since the second pouch (first space) is housed in the first pouch (second space), it only needs to insert the first pouch from the opening of the outer container substantially, the process thereof becomes easy. However, after charging contents in each pouch, the second pouch becomes in the state that the second pouch is immersed in the content of the first pouch, and it is found that the second pouch tends to be deteriorated by the content of the first pouch.

The present invention is directed to provide an inner container formed of a laminated sheet having a metal foil layer in which deterioration such as corrosion is prevented, even in the state it is immersed in the content, an aerosol container equipped therewith, and an aerosol product.

**[0006]** An aerosol container for multiple contents discharge of the present invention is characterized in that it comprises an outer container and an inner container inserted into the interior of the outer container, and have a first space being an inside of the inner container and a second space independent from the first space surrounding the first space, and different contents are being charged in the first space and the second space, in which the inner container is formed of one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer, and formed by overlapping or folding the laminated sheets so as to make the synthetic resin layer face outward, and mutually bonding a peripheral edge of the laminated sheets, and an edge face of the metal foil layer do not expose in the second space.

In such an aerosol container for multiple contents discharge, it may further comprises an intermediate container inserted into the outer container and inserting the inner container, in which the second space is an inside of the intermediate container, and a third space is formed between the intermediate container and the outer container independent from the first space and the second space.

**[0007]** In the aerosol container for multiple contents discharge of the present invention, a protecting means is preferable to be provided in the edge face of the laminated sheet. This protecting means may be provided after or before the laminated sheets are bonded.

In the inner container of the aerosol container for multiple contents discharge of the present invention, it is preferable that the laminated sheets in which the edge face of the laminated sheet may be folded inward is overlapped, or folded, and the peripheral edge thereof is mutually

bonded.

In the inner container of the aerosol container for multiple contents discharge of the present invention, it is preferable that the inner container is formed of the laminated sheets where the metal foil layer is smaller than the synthetic resin layer, and the edge portion of the metal foil layer is arranged in the interior of the bonded portion of the synthetic resin layer.

The edge face of the metal foil layer of the laminated sheet forming the inner container of the present invention is preferable to protrude outward from the intermediate container.

In any of the aerosol container for multiple contents discharge, the communication / shutoff between the first space and outside, and the communication / shutoff between the second space and outside can be operated simultaneously by opening and closing of one valve.

The valve performing the communication / shutoff between the first space and outside, and the valve performing the communication / shutoff between the second space and outside may be different.

**[0008]** The aerosol product for multiple contents discharge of the present invention is characterized in that it comprises the aerosol container for multiple contents discharge, a first content charged in the first space, a second content charged in the second space, and a propellant charged in the first space and /or in the second space.

The second aspect of the aerosol product for multiple contents discharge of the present invention is characterized in that it comprises an aerosol container for multiple contents discharge having intermediate container, a first content charged in the first space, a second content charged in the second space, and a propellant charged in the third space.

The third aspect of the aerosol product for multiple contents discharge of the present invention is characterized in that it comprises the aerosol container for multiple contents discharge having the intermediate container, a first content charged in the first space, a second content and a propellant charged in the second space, and a gas existing in the third space.

**[0009]** The inner container of the present invention is characterized in that it is used in an aerosol container housing independently a plurality of contents, and it directly separates at least two contents. It is formed by overlapping or folding one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer so as to make the synthetic resin layer become an outer surface, and mutually bonding the peripheral edge thereof, and in which a protecting means is provided in the edge face of the laminated sheet.

**[0010]** The second aspect of the inner container of the present invention is characterized in that it is used in an aerosol container housing independently a plurality of contents, separating directly at least two contents. It is formed by folding one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer so as to make the edge face of the laminated sheet face

inward, overlapping or folding the folded laminated sheet so as to make the synthetic resin layer become an outer surface, and mutually bonding the peripheral edge of the laminated sheets.

#### **[Effect of the Invention]**

**[0011]** In the aerosol container for multiple contents discharge of the present invention, the inner container in the second space is formed of one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer, and formed by overlapping or folding the laminated sheets so as to make the synthetic resin layer face outward, and mutually bonding a peripheral edge of the laminated sheets, hence the metal foil layer is hard to become corroded by the second content housed in the second space, and its durability is high. Moreover, since the inner container is composed by the laminated sheet having the metal foil layer, even if two sorts of content is charged in the aerosol container, the permeation of the contents to the both of the first space and the second space can be prevented, the contents can be stably stored.

**[0012]** In the aerosol container for multiple contents discharge of the present invention, in the case that an intermediate container inserted into the interior of the outer container and which the inner container is inserted is further equipped, the second space being formed by the intermediate container, and a third space independent from the first space and the second space being formed between the intermediate container and the outer container, the three independents spaces in the pressure resistant container can be arbitrarily filled with any contents or propellant, according to the sort of the content and the propellant.

**[0013]** In the case that the protecting means is provided in the edge face of the laminated sheet, the metal foil layer of the laminated sheets can be covered securely. In the case that the inner container is formed of the laminated sheets whose edge face is folded inward, and formed by overlapping or folding the laminated sheets, and mutually bonding the peripheral edge of the laminated sheets, the edge face of the metal foil layer of the laminated sheet do not exposes to the outer face of the inner container.

In the case that the inner container is formed of the laminated sheet or laminated sheets, in which the metal foil layer is smaller than the synthetic resin layer and the edge portion of the metal foil layer is arranged in a bonded portion of the synthetic resin layer, the edge face of the metal foil layer of the laminated sheet do not exposes to the second space.

In the case that the edge face of the laminated sheet protrudes outward than the intermediate container, since the edge face protrudes to the outside of the intermediate container, corrosion of the edge face of the metal foil layer by the content housed in the intermediate container (second space) can be prevented.

In any of the aerosol container for multiple contents discharge, in the case that the communication / shutoff between the first space and outside, and the communication / shutoff between the second space and outside are operated simultaneously by opening and closing of one valve, it is possible to switch the discharge / stop of two contents by one time operation. Moreover, the insertion of the inner container into the outer container and the attachment of the valve are easy. Furthermore, the path in a discharge member can be shortened, making it possible to reduce a residue in the path after discharge.

On the other hand, in the case that the valve performing the communication / shutoff between the first space and outside, and the valve performing the communication / shutoff between the second space and outside are different, each valve is sufficient to be of a simple configuration used for one contents discharge. The contents can be charged from each valve, making the manufacture easy. Moreover, if a discharge member which performs the opening and closing operation of the two valves simultaneously is equipped, it is possible to switch the discharge / stop of the two liquids by one time of operation, and if a discharge member which operates independently is equipped in the two valves, it is possible to discharge individually.

**[0014]** The aerosol product for multiple contents discharge of the present invention comprises a first content charged in the first space, a second content charged in the second space, and a propellant charged in the first space and / or the second space, hence a plurality of liquids, at least two liquids can be stably stored. Moreover, since the first content and / or the second content and the propellant can be discharged simultaneously, the discharge condition of the content can be changed such as, foam and cream, foam and gel.

The second embodiment of the aerosol product for multiple contents discharge comprises a first content charged in the first space, a second content charged in the second space, and a propellant charged in the third space, hence a plurality of contents can be stored stably. The aerosol container for multiple contents discharge equipped with the intermediate container comprises a first content charged in the first space, a second content and a propellant charged in the second space, and a gas existing in the third space, since the gas exists between the intermediate container and the outer container, when the outer container is a metal can, the outer container can be further protected.

**[0015]** The inner container of the present invention for inserting into the aerosol container in which a plurality of contents is independently charged and, which directly separates at least two contents, and it is composed of the laminated sheets equipped with a metal foil layer and a synthetic resin layer which are bonded, and a protecting means is provided in the edge face of the laminated sheet, the edge face of the metal foil layer is not exposed. Therefore, it is hard to corrode and the durability is high. The second embodiment of the inner container of the

present invention is for inserting into an aerosol container which independently houses a plurality of contents, and which directly separates at least two contents, and that the inner container is formed by folding one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer so as to make the edge face of the laminated sheet face inward, by overlapping or folding the folded laminated sheet so as to make the synthetic resin layer become an outer surface, and mutually bonding the peripheral edge of the laminated sheets, the edge face of the metal foil layer is not exposed. Hence, it is hard to corrode and the durability is high.

## **[Brief Description of the Drawings]**

### **[0016]**

[Figure 1] Figure 1 is a side cross sectional view showing an embodiment of the aerosol product for multiple contents discharge of the present invention.

[Figure 2] Figures 2a, b, c are a front view, a side view, and a side cross sectional view showing the inner container of Figure 1.

[Figure 3] Figures 3 is a side cross sectional view showing the valve of Figure 1.

[Figure 4] Figure 4a-Figure 4d are process drawings showing the production process of the aerosol product of Figure 1.

[Figure 5] Figure 5 is a partial side cross sectional view showing the other embodiment of the aerosol product for multiple contents discharge of the present invention.

[Figure 6] Figure 6 is a side cross sectional view showing the valve of Figure 5.

[Figure 7] Figure 7a-Figure 7d are side cross sectional views showing the other configurations of the bonded portion of Figure 2, Figure 7e is a partially cut out front view of the bonded portion of Figure 7d.

[Figure 8] Figure 8a, Figure 8b are a perspective view, a cross sectional view showing further the other embodiment of the inner container of the present invention, Figure 8c is a perspective view showing the bag body thereof.

[Figure 9] Figure 9 is a side cross sectional view of the valve connected to the inner container of Figure 8a.

[Figure 10] Figure 10 is a front view showing further the other embodiment of the inner container of the present invention.

[Figure 11] Figure 11 is a perspective view showing an embodiment of the protecting sheet related to the present invention.

[Figure 12] Figure 12a is a front view showing the opened state of the protecting sheet of Figure 11, Figure 12b is a front view showing the state that the protecting sheet is attached to the inner container, Figure 12c is a substantial cross sectional view of the inner container to which the protecting sheet of

Figure 12b is attached.

[Figure 13] Figure 13 is a side cross sectional view showing further the other embodiment of the aerosol product for multiple contents discharge of the present invention.

[Figure 14] Figure 14 is a front cross sectional view showing further the other embodiment of the aerosol product for multiple contents discharge of the present invention.

[Figure 15] Figure 15 is a top view in which the spout member of the aerosol product of Figure 14 is removed.

[Figure 16] Figure 16 is a side cross sectional view showing further the other embodiment of the aerosol product for multiple contents discharge of the present invention.

[Figure 17] Figure 17 is a top view of the aerosol product of Figure 16.

[Figure 18] Figure 18 is a side cross sectional view showing further the other embodiment of the aerosol product for multiple contents discharge of the present invention.

#### **[Best mode for carrying out the invention]**

**[0017]** An aerosol product 10 for multiple contents discharge shown in Figure 1 is equipped with an outer container 11, an intermediate container 12 having flexibility inserted into the outer container, an inner container 13 having flexibility inserted into the intermediate container, and an aerosol valve (hereinafter, referred to as valve) 14 closing those openings. The aerosol product 10 is of the two-contents discharge type (multiple contents discharge type) which independently houses two sort of content, even from a propellant and mutually discharges two sorts of content. In this embodiment, a first content A is housed in the inner container (a first space S1), a second content B is housed in the intermediate container (a second space S2), and a propellant P is charged in the outer container (a third space S3). Stated differently, it means that the inner container 13 exists in the second content B.

**[0018]** The outer container 11 is pressure resistant bottomed cylindrical shaped container having a bottom portion, a barrel portion, and a shoulder portion, and a bead portion 11a formed on the upper end of the shoulder portion. A tube like neck portion may be provided between the shoulder portion and the bead portion. This outer container 11 is an integrally formed product which is formed by impact processing, drawing compound etc. from a metal plate such as aluminum, tin plate. However it may be formed by connecting plurality of members by double seaming. Moreover, it may be formed of other materials such as synthetic resin, pressure-proof glass, but it is preferable to be a hard body having pressure resistance.

**[0019]** The intermediate container 12 is a flexible bottomed cylindrical shaped container having a bottom portion, a barrel portion, and a shoulder portion, and a flange portion 12a formed in the upper end of the shoulder por-

tion. In this container also, a tube like neck portion may be provided between the shoulder portion and the flange portion. Moreover, a bellows portion may be provided in the neck portion, the shoulder portion, or the barrel portion so as to bend vertically. Such intermediate container is formed from synthetic resin such as polyethylene (PE), polyolefin such as polypropylene, ethylene-vinyl alcohol copolymer (EvOH), Nylon, having flexibility, into a single layer or a laminated layer of such as PE/EvOH/PE, PE/NY/PE so as to be capable of discharging the second content B by being crushed by the depressing force of the propellant agent P. The intermediate container 12 can be formed, for example, by expanding a parison against a forming die, in the case of not having a metal foil layer.

**[0020]** As shown in Figure 2a, b, c, the inner container 13 comprises, a bag body 16 formed by bonding two laminated sheets, and a connection portion 17 held between the two laminated sheets. The laminated sheet has three-layer structure in which a synthetic resin layer is provided in the both faces of a metal foil layer. However, it is well if it has flexibility, is equipped with a metal foil layer and a synthetic resin layer, and its outermost layer is a synthetic resin layer. For example, it may be two layers composed of a metal foil layer and a synthetic layer, three layers in which different synthetic resin layers are continuously provided in the one side of the metal foil layer, three-layer structure in which the same or different synthetic resin layers are provided in the both side of the metal foil layer, further, four layers or more in which one outermost layer is a synthetic resin layer can be cited. As the metal foil layer, such as aluminum foil (Al) can be cited. As the synthetic resin layer, such as polyethylene terephthalate (PET), poly ethylene, polypropylene (PP), ethylene-vinyl alcohol copolymer (EvOH), nylon (NY) can be cited, for example, PE/Al/PET, PE/Al/PE, PET/Al/PE, PET/Al/NY, PE/EvOH/Al/PE, PE/EvOH/Al/PET, PE/EvOH/Al/NY etc. can be cited. Moreover, in the surface of the synthetic resin layer, silica (Si), alumina (Al<sub>2</sub>O<sub>3</sub>), Carbon (C) may be vapor-deposited. Particularly, when the content is a two-liquid type hair dye, it is preferable to use PET/Al/PE, PE/Al/PE, PET/Al/NY so that the surface contacting the acid second agent containing oxidizer such as hydrogen peroxide becomes PET and PE, and that the surface contacting the alkaline first agent containing alkaline chemicals such as acid dye and ammonia becomes PE and NY.

**[0021]** The bag body 16 is formed by cutting a laminated sheet into a predetermined shape, overlapping two laminated sheets so that the outer peripheral surface becomes a synthetic resin layer, and mutually bonding the outer peripheral edge thereof by thermal deposition or ultrasonic wave deposition. In Figure 2a, the bonded portion 18 is shown by an imaginary line. In the edge of the bonded portion 18, a protecting coat 18a which is a protecting means is provided all over the circumference. In other words, the bonded portion 18 is a portion where the two laminated sheets are overlapped, but in the edge,

the layer structure including the metal foil layer of the two laminated sheets is exposed. Hence, by providing the protecting means such as the protecting coat 18a, the edge of the metal foil layer which is exposed in the end portion of the laminated sheet can be covered. Thereby, problem that reaction of the end portion of the metal foil and the content, particularly a two liquid type hair dye of the acid second agent and the alkaline first agent generating gas, and deteriorating the content can be solved. Further the infiltration of the agents from the bonded portion and the exfoliation of the bonded portion can be prevented. As such protecting coat 18a, a resin film formed by spraying a liquid synthetic resin such as epoxy phenol, epoxy urea, polyamide imide, a fluorine resin such as polytetrafluoroethylene, on the bonded portion or on the whole inner surface of the inner container, formed by immersing the inner container in the liquid synthetic resin such as epoxy phenol, epoxy urea, polyamide imide, or formed by electrostatic-coating a solid resin of polyethylene, polyethylene terephthalate, nylon formed on the bonded portion and on the whole of the inner container, or a rubber film formed by immersing the inner container in the silicon rubber, synthetic rubber may be cited. Moreover, a vapor deposition film may be provided by vapor depositing, silica (Si), alumina ( $Al_2O_3$ ), carbon (C) etc. in the outer surface of the inner container and the bonded portion.

**[0022]** The connecting member 17 is a tube like body equipped with a center hole 17a penetrating vertically, comprising an upper portion 19a whose cross sectional shape is approximately elliptical, and a lower portion 19b whose cross sectional shape is approximately circular, composing an opening of an inner container 12. The upper end of upper portion 19a is connected with a later described valve 14. Since the upper portion 19a has a flat cross sectional shape extending transversely, the contact area with the laminated sheet is large. The protecting coat 18a is also provided on the edge face of the laminated sheet fixed to the connecting member 17. This connecting member 17 is composed by stainless steel coated with adhesive resin such as polyether, polyurethane, polyolefin, or is composed by synthetic resin such as polyacetal, nylon.

**[0023]** Since being configured thus, nevertheless the inner container 13 is shaped by bonding the laminated sheets having the metal foil layer, the metal foil layer (the edge face of the laminated sheet) is not exposed to outside. Hence, even after the content of two-liquid reaction type is charged in the aerosol container, it is possible to prevent the metal foil layer from corroding due to the second content B housed in the second space S2, air, moisture etc. Particularly, it is effective when the second content B is highly reactive. As stated above, the inner container 13 is preferably used for an aerosol container for discharging a reactive content. Moreover, the protecting coat 18a may be provided in the edge portion of the laminated sheet before the laminated sheet is overlapped.

**[0024]** As shown in Figure 3, the valve 14 comprises

a mounting cup 21 (refer to Figure 1) crimped to a bead portion 11a of the outer container, a housing 22 which passes two contents independently, being held in the center of the mounting cup, a stem 23 housed in the housing so as to be movable vertically, equipped with a first stem hole 23a of lower side and a second stem hole 23b of upper side, first stem rubbers 24a of lower side and two second stem rubbers 24b of upper side having a cylindrical shape, which open and close each stem hole, a fixing member 25 of a cylindrical shape which fixes the vicinity of the outer peripheral edge of each stem rubber, being provided between those stem rubbers, and a spring 26 which energizes the stem upward always.

**[0025]** A mounting cup 21 have a curved flange 21a (refer to Figure 1) crimped to the bead portion 11a, and a housing holding portion 21b of a bottomed cylinder shape which holds a housing 22, which is conventional mounting cup. The mounting cup is made from, for example, a metal plate such as aluminum and tin plate.

**[0026]** The housing 22 is equipped with a bottom portion 31, is equipped with a connecting portion 32 of a cylindrical shape extending downward from the bottom face, and is equipped with a flange portion 33 protruding outside in the upper portion. The connecting portion 32 is a portion inserted into the center hole 17a of the connecting member 17. In the center of the bottom portion 31, a communicating hole 31a which communicates the center hole 22a and the connecting portion 32 is formed. In the upper inner face of the housing, a lower rubber holding portion 22b to hold the lower side stem rubber 24a, and in the upper inner face, an upper rubber holding portion 22c to hold the upper side stem rubber 24b are formed. Further, in the flange portion 33 of the housing 22, a slit 33a extending vertically is formed, and a through hole 33b is formed facing the center hole 21a from the upper end (between the upper and the lower rubber 22b, c) of this slit 33a.

**[0027]** The stem 23 is equipped with a first recessed portion 36a formed annularly in the side lower portion, a second recessed portion 36b formed annularly in the side medium portion, the second center hole 36c, extending to the position of the second recessed portion 36b from the upper end center, a first center hole 36d of a ring-like shape extending to the position of the first recessed portion 36a from the upper end, being formed so as to surround the second center hole 36c, a first stem hole 23a extending to the lower end of the first center hole 36d from the first recessed portion 36a, and a second stem hole 23b extending to the lower end of the second center hole 36c from the second recessed portion 36b. Moreover, the upper end of a first cylindrical portion 36g composing the first center hole 36d is arranged in a position lower than the upper end of a second cylindrical portion 36f composing the second center hole 36c. Thereby, when each content is charged in the first space S1 and the second space S2 from the stem 23, sealing which leaves one of the second center hole 36c or the first center hole 36d can be done simply. Hence, each content

can be charged securely.

**[0028]** The first stem rubber 24a and the second stem rubber 24b are those which are ring like, and each center hole engaging with the first recessed portion 36a and the second recessed portion 36b while keeping sealing performance.

The fixing member 25 is a cylindrical shaped member tapered so as to become large as the inner face goes upward. The first stem rubber 24a is held by a lower end 25a and a lower rubber holding portion 22b, the second stem rubber 24b is held by the upper end 25b, an upper rubber holding portion 22c, and the inner face of the mounting cup. Moreover, a member through hole 25c penetrating inside and outside so as to communicate with a through hole 33c of the housing is formed. The fixing member 25 is provided between the two stem rubbers 24a, 24b, and fixes the vicinity of the outer circumference of the two stem rubbers. Moreover, since it prevents falling off and jumping of the stem 23 and it bends the inner circumference portion of the stem rubbers 24a, 24b, when the stem 23 is pushed down, it does not disturb the pushing down of the stem 23.

**[0029]** Being configured thus, in the housing 22 of the valve, a storage A chamber 30a which stores the first content, compartmentalized by the center hole 22a of the housing 22, the stem 23, and the first stem rubber 24a of the lower side, and a storage B chamber 30b which stores the second content, compartmentalized by the upper and the lower stem rubbers 24a, 24b and the fixing member 25 are formed.

And, the first content A flowing from the connecting member 17 reaches the storage A chamber 30a through the communicating hole 31a. Meanwhile, the second content B charged in the intermediate container reaches the storage B chamber 30b through the slit 33 of the housing, the through hole 33b, and the member through hole 25c of the fixing member.

**[0030]** Further, if the stem 23 is pushed down, the first content A in the storage A chamber 30a is pushed out to outside or to a spout member (not in the figure) from the first center hole 36d through the first stem hole 23a, the second content B in the second storage B chamber is pushed out to outside or to a spout member from the second center hole 36c through the second stem hole 23b.

**[0031]** Next, the manufacturing method of this aerosol container 10 is described using Figure 4. First, the intermediate container 12 is inserted into the outer container 11, the second content B is charged in the intermediate container 12 (refer to Figure 4a). At this time, the flange portion 12a of the intermediate container 12 is positioned upper than the bead portion 11a of the outer container 11. In other words, it becomes in the state that the upper end of the intermediate container protrudes from the outer container. Then, the edge face of the laminated sheet is protection-processed, the inner container 13 in which the first content A is charged is connected to the valve 14. In the connected state, the inner container 13 is in-

serted into the intermediate container 12 (refer to Figures 4b, c). At this time, since the inner container 13 is composed of the laminated sheet, it can be simply folded or simply bent, the insertion is simple. When the inner container 13 is inserted into the intermediate container 12, before the bottom portion of the inner container 13 reaches the bottom portion of the intermediate container 12, the flange portion 12a of the intermediate container 12 contacts the inner face of the curved flange 21a of the mounting cup 21. Stated differently, the inner container 13 is supported by the flange portion 12a of the intermediate container 12, and becomes in a state floating in the intermediate container 12.

**[0032]** In this embodiment, a ring like shaped seal member 37 is provided between the curved flange 21a and the flange portion 12a. Hence, the curved flange 21a, the seal member 37, and the flange portion 12a are piled. However, seal performance may be secured by crushing the flange portion 12a of the intermediate container 12 without using the seal member 37. In this state, a propellant P is charged in the space between the outer container 11 and the intermediate container 12 from the lower side of the flange portion 12a of the intermediate container 12 (arrow head direction, under cup charge). And, together with the charge of the propellant P, the mounting cup 21 of the valve 14 is cramped to the outer container 11, the valve 14 is fixed to the outer container 11, thereby the aerosol product is manufactured (refer to Figure 4d). In addition, the first content can also be charged in the inner container 13 while closing the second center hole 36c, after the propellant is charged and the valve 14 is fixed to the outer container 11. In this case, since the inner container 13 can be deflated in a vacant state, the insertion into the intermediate container 12 becomes easy, no air entering the intermediate container. Further, the first content A and the second content B can be separately charged also from the stem after the valve 14 is fixed to the outer container 11 and the air in the first space S1 and the second space S2 is exhausted simultaneously by pushing down the stem, after the propellant is under-cup charged in the third space S3 between the outer container 11 and the intermediate container 12.

**[0033]** As the content to be charged in the aerosol container 10, contents which reacts by mixing two contents such as two-liquid type hair dyes, two-liquid type permanent wav agents, two-liquid type adhesive agents can be preferably cited. Particularly, when a two-liquid type dye is charged, from the point that the shielding effect of two liquids is easy to obtain, it is preferable that an alkaline first agent is housed in the inner container (the first space S1), and an acid second agent is housed in the intermediate container (the second space). However, even if it is inverse, the effect of the present invention can be exerted.

**[0034]** Moreover, as the propellant, compressed gas such as nitrogen gas, carbon dioxide gas, nitrous oxide gas, compressed air, and mixed gas of those, liquefied gas such as liquefied petroleum gas, dimethyl ether, hy-

drofluoro-olefin, hydrofluorocarbon, and mixed gas of those can be cited.

In addition, as the spouting condition of the content, other than liquid, cream, gel, it can be made to be post expansion cream and gel which foams after spouting by adding a foaming agent such as n-butane, isopentane.

**[0035]** An aerosol product 50 shown in Figure 5 is equipped with an outer container 51, an inner container 52 inserted into the outer container thereof, and a valve 53 to close those openings. The aerosol product 50 is operated by being inverted. Moreover, the second content B and the propellant P are charged between the outer container 11 and the inner container 52, the first content A is charged in the inner container 52. The outer container 51 is substantially same as the outer container 11 of Figure 1.

**[0036]** The inner container 52 comprises a bag body 56 and a connecting member 57 fixed to the bag body 57. Moreover, in the edge of a bonded portion 58, the protecting coat 18a is provided. This is same as the inner container 12 of Figure 1, excepting that the connecting member 57 is cylindrically shaped.

**[0037]** As shown in Figure 6, the valve 53 comprises a mounting cup 61, a housing 62, a stem 63, a lower side first stem rubber 64a, an upper side second stem rubber 64b, a cylindrically shaped fixing member 65, and a spring 66. The mounting cup 61 and the stem rubbers 64a, 64b are substantially same as the mounting cup 21 and the stem rubbers 24a, 24b of Figure 3.

**[0038]** The housing 62 comprises a cylindrically shaped inner housing 71, and an outer housing 72 into which the inner housing is inserted. The inner housing 71 comprises a center hole 71a which allows the vertical movement of the stem, a tube like connecting member 73 which is connected by inserting the connecting member 57, a communicating hole 74 which communicates the center hole 71a and the connecting portion 73, and a rubber engagingly stopping portion 75 which engagingly stops the first stem rubber 64a formed in the upper portion of the inner face. Moreover, the inner housing 71 is equipped with a flange portion 76 annularly protruding toward outside in a radial direction in the upper portion, in the flange portion 76, a through hole 76a penetrating the flange portion 76 vertically is formed.

The outer housing 72 is a cylindrical shaped housing, and comprises an upper portion 72a contacting the flange portion 76 of the inner flange 71 and a lower portion 72b covering the outer face of the inner housing 71 with a clearance provided in between.

**[0039]** The stem 63 is equipped with the first recessed portion 36a of the side lower portion, the second recessed portion 36b of side medium portion, the first center hole 63a extending to the position of the first recessed portion 36a from the upper end center, the ring like shaped second center hole 63b extending to the position of the second recessed portion 36b from the upper end formed so as to surround the first center hole 63a, the first stem hole 23a, and the second stem hole 23b. Moreover, the

upper end of the first cylindrical portion 63c composing the first center hole 63a is arranged in a position higher than the upper end of the second cylindrical portion 63d composing the second center hole 63b. The stem 63 is same as the stem 23 of Figure 2 excepting that the first center hole 63a extends to the position of the lower side first recessed portion 36a, and the second center hole 63b extends to the position of the upper side second recessed portion 36b, hence the same reference numerals are respectively used.

**[0040]** The fixing member 65 is a cylindrical shaped member, and in which a step portion 65a protruding outward in a radial direction is formed facing upward. Further, in the step portion 65a, a through hole 65b which communicates with the through hole 76a of the inner housing and penetrates the step portion 65a is formed.

**[0041]** Being configured thus, the aerosol product 50 has a storage A chamber 70a which stores the first content, compartmentalized by a center hole 71a of an inner housing 71, the stem 63, and the first stem rubber 64a of lower side, and a storage B chamber 70b which stores the second content, compartmentalized by the upper and lower stem rubbers 64a, 64b and the fixing member 65.

**[0042]** And, the first content A in the inner container 12 reaches the storage A chamber 70a through a communicating hole 74 of the inner housing. Meanwhile, by making the aerosol product 50 inverted, the second content B between the outer container 51 and the inner container 52 reaches the storage B chamber passing through a gap 77 between the inner housing 71, the outer housing 72, and passing through a thorough hole 76a of a flange portion 76 and the through hole 65a of the fixing member. Further, if the stem 63 is pushed down below, in the inverted state, the first content A in the storage A chamber 70a is pushed out to outside or to the spouting member (not shown in the figure) from the first center hole 63a through the first stem hole 23a, the second content B in the storage B chamber 70b is pushed out to outside or to the spout member from the second center hole 63b through the second stem hole 23b.

As the content discharged from this aerosol product, since the second content can be combined with liquefied gas, the spouting condition can be changed such as foam and cream, foam and gel. Moreover, by utilizing vaporization heat, the discharged object is cooled, obtaining also a cooling effect.

**[0043]** The bonded portions 80a, b, c of Figures 7a, b, c show the other embodiments of the bonded portion 18 of the inner container of Figure 2 or the inner container of Figure 5. The laminated sheets whose end portions are folded inwardly are overlapped, and the outer peripheral portions thereof are bonded.

In the bonded portion 80a of Figure 7a, the laminated sheet whose end portions 81a are folded inwardly one time is overlapped so that the folded end portions 81a face each other. In other words, the folded end portions 81a are arranged so as to be inside of the inner container. The folded portions are bonded mutually. Being config-



ured thus, the end portions of the laminated sheet are arranged to be inside of the inner container, the metal plate composing the laminated sheet never contact the second content B housed in the intermediate container (the second space S2), or the second content B housed in the outer container of Figure 5. However, in this case, since the first content A in the inner container and the end portions 81a of the laminated sheet contact, as the first content A, it is preferable to use that of which the reactivity is low.

**[0044]** In the bonded portion 80b of Figure 7b, the laminated sheet in which the end portions 81a are folded inwardly one time, and the folded portions 81b are further folded inward is overlapped so that the folded end portions face each other, the outer peripheral portions are bonded mutually. In this case, since the end portions 81a are surrounded by the laminated sheet, the end portions 81a do not exposed to the inner face or the outer face of the inner container. Accordingly, the metal foil composing the laminated sheet is not exposed also. In the bonded portion 80c of Figure 7c, the laminated sheet in which the end portions 81a are folded inward one time, further, the folded portions 81b are folded inward is overlapped so that the folded portions face opposedly, and are bonded mutually. In this case also, the end portions 81a are not exposed also to the inner face and to the outer face. Thus, in the bonded portions 80a, b, c of Figures 7a, b, c, the end portion of the laminated sheet is not exposed to the interior of the second space, and it prevent the corrosion of the metal foil by the second content B in the second space.

**[0045]** A bonded portion 82 of Figure 7d is that in which two laminated sheets of three-layer structure consisting of a metal foil 85 made of aluminum foil etc. and synthetic resin sheets 83, 84 laminated on the both sides thereof are bonded in the peripheral edge portion. As shown in Figure 7e, the metal foil 85 is made to be smaller than the synthetic resin sheets 83, 84, thereby, when bonded, the end portion of the metal foil 85 is wrapped around by synthetic resin sheets 83, 84 of inside and outside, and therefore the exposure can be prevented. Moreover, in the laminated sheet of the three-layer structure such as Figure 7d, in the inner face side, since the synthetic resin sheets 83, 83 mutually contact, by making the synthetic resin sheet 83 of the inner face made of thermoplastic resin, heat sealing can be exerted. When the synthetic resin sheet 83 of the inner face side is omitted, the synthetic resin sheets 84 of the outer face side are mutually heat-sealed, and the metal foils 85 are mutually bonded by adhering with an adhesive.

**[0046]** Figure 8 shows the container in which an inner container 90 and an intermediate container 91 are integrated, and the edge (the edge portion of the laminated sheet) of the bonded portion of the inner container 90 protrudes from the intermediate container.

The inner container 90 comprises a bag body 92 in which two laminated sheets are overlapped and the outer edge portions thereof are bonded, and a connecting member

93 fixed to the bag body, and is substantially same as that of Figure 52.

The intermediate container 91 comprises an intermediate bag body 95 equipped with two housing chambers 95a, 95b composed so that laminated sheets are overlapped on the both sides of this inner container 90, the outer edge portions thereof are bonded, and two connecting members 96a, 96b which communicate each housing chamber 95a, 95b and outside, being fixed to the intermediate bag body 95.

Stated differently, the inner container 90 and the intermediate container 91 are those in which four laminated sheets are overlapped, and three independent spaces are formed. Being configured thus, the edge (an end portion 97a of the laminated sheet) of a bonded portion 97 of the inner container 90 becomes to be exposed to the outside of the intermediate container 91. Hence, the edge never contact with the content housed in the housing chambers 95a, 95b of the intermediate container 91.

**[0047]** A valve 100 of Figure 9 is attached to the inner container 90 and the intermediate container 91, and comprises a main body 101 and a mounting member 102 attached to the lower end thereof. The main body 101 is the valve 53 of Figure 6 where the lower end of the outer housing 72 is extended below, and the lower end of the communicating hole 72 and the gap 77 between the inner housing 71 and the outer housing 72 being same position. Moreover, in the outer circumference of the lower portion of the main body 101, an engaging protrusion 101a for engaging with the mounting member 102 is formed. The mounting cup 61, the housing 62, the stem 63, the lower side first stem rubber 64a, the upper side second stem rubber 64b, the fixing member 65, and the spring 66 which are the other components are substantially same as those of the valve 63 of Figure 5.

**[0048]** The mounting member 102 is equipped with three through holes 102a, b, c extending vertically. The position relation is such that a through hole 102a is formed in the center, through holes 102b, c are formed in the periphery thereof, and are aligned in the position of the connecting members 93, 96a, b.

By attaching the mounting member 102 to the main body 101, the through hole 102a formed in the center communicates with the communicating hole 74 of the main body 101. The through holes 102b, c communicate with the gap 77 between the inner housing 71 and the outer housing 72.

When the inner container 90 is connected to the valve 100, the connecting member 93 of the inner container 90 is connected to the through hole 102a, the connecting members 96a, 96b of the intermediate container 91 are connected to the through holes 102b, c respectively. Thereby, the first content A in the inner container 90 is induced to the storage A chamber 70a, the second content B in the intermediate container 91 is induced to the storage B chamber 70b.

**[0049]** An inner container 105 of Figure 10 comprises a bag body 106 in which one laminated sheet is folded

into halves, the outer peripheral edge thereof is bonded, and a connecting member 107 fixed to the bag body 106. Moreover, in the bonded portion 18, the protecting coat 18a is provided. However, it may be that in which the end portion of the laminated sheet is folded inward, then the folded into halves, and the outer peripheral edge is bonded. In this also, since the end portion of the laminated sheet is not exposed in the second space same as the other inner container, it is hard to corrode, and the durability is high.

**[0050]** In the above described embodiment, the protecting coat 18a is adopted, but it is also possible that, for example, as shown in Figure 11, a protecting sheet 108 folded into two is covered on the outside of the bonded portion 18 by thermal adhesion to make it a protecting means. This protecting sheet 108 is that in which two sheets of a frame 110 are made into a frame shape by providing a large window portion 109 so that the bag body 106 of the inner container 105 of Figure 10 can expand, and are connected each other by the side edge, and are folded into two. In the center of the upper end, a semi-cylinder portion 111 which passes through the connecting portion 107 of Figure 10 is provided. The protecting sheet 108 can be manufactured so that, as shown in Figure 12a, an opening 109 of right and left two places and the semi-cylinder portion 111 are fabricated in one sheet, and is folded in the center.

**[0051]** As shown in Figure 12a and Figure 12b, this protecting sheet 108 is larger than the bonded portion 18 of the inner container 105, and the window portion 109 is smaller than the bonded portion of the inner container. Thereby, the bonded portion 18 of the inner container 105 can be sandwiched between the two frames 110. And after sandwiching it, if thermal adhesion is performed, the end edge of the bonded portion 18 can be covered. Thereby, the metal foil exposed from the end edge is not exposed. In addition, as the inner container 105 of Figure 10, in the case that there is not the bonded portion 18 in the one side edge, the frame corresponding to the portion thereof can be omitted, for example, in the protecting sheet 108 of Figure 12a, the longitudinal frame of the center can be omitted. Moreover, as Figure 11, Figure 12a, the protecting sheet 108 is formed by two sheets other than that is formed by one sheet. Such protecting sheet covering the outside of the bonded portion 18 can also be adopted in Figures 2a, b, c.

**[0052]** An aerosol product 120 shown in Figure 13 has the outer container 11, the intermediate container 12, the inner container 13 and the valve 14, which are identical with the aerosol product 10 of Figure 1, further, a spout member 121 is mounted on the stem 23 of the valve 14. In the first space S1 of the inner container 13, though not particularly restricted, for example, the first content A composed of a liquid of low viscosity, a liquid of high viscosity such as cream or gel is housed. As the first content A, it is preferable to be a liquid of high viscosity such as cream or gel from the point that dripping can be prevented when spouting. In the second space S2 be-

tween the intermediate container 12 and the inner container 13, the second content B spouted in a foam state and the propellant P are housed. As the second content B, post expandable creams and gels in which, when discharged in a mixed state with a propellant, the propellant vaporizes slowly and gradually, foams, creams, gels, or low viscosity liquids which foam just after spouted can be cited. Dripping can be prevented by foaming. Moreover, as the propellant, compressed gas or liquefied gas used in the aerosol product 10 of Figure 1 can be cited. In the third space S3 between the outer container 11 and the intermediate container 12, the propellant is not charged, and air entered when the intermediate container 12 is inserted into the outer container 11 remains. Other points are same as the aerosol product 10 of Figure 1.

**[0053]** In the spout member 121, a first path 122 which communicates with the first center hole 36d of the stem 23 and a second path 123 which communicates with the second center hole 36c are provided. The first path 122 extends concentrically so as to surround the circumference of the second path 123. The first path 122 and the second path 123 are not communicated, Therefore, the first content A and the second content B are spouted outside from the spout member 121, then, applied to hair etc. after mixing by the palm of the hand, a brush, a tray etc. In the case that the spouted object is cream, gel, or foam, those are easy to be mixed, applied, and dripping is hard to occur when applied.

**[0054]** In this aerosol product 120 also, the inner container 13 is immersed in the second content B, but same as the aerosol product 10 of Figure 1, since the edge face of the metal foil layer is covered by the protecting means such as the protecting coat, and is not exposed, even if the second content B is a reactive liquid, the corrosion/deterioration of the metal foil layer is prevented. Further, in the third space S3 between the outer container 11 and the intermediate container 12, since air is charged, even if the outer container 11 is made of metal such as aluminum, corrosion is prevented. In addition, as the gas existing in the third space S3, other than to leave air existing when housing the intermediate container in the outer container, it may be the gas replacing the air with vaporization gas such as nitrogen gas and liquefied gas. Moreover, it may be such that the intermediate container is made to be a simple layer structure of PE having permeability to gas, and that the propellant agent charged in the second space S2 is made to permeate from the intermediate container into the third space S3.

**[0055]** In the aerosol product 120 of Figure 13, the propellant is not charged between the outer container 11 and the intermediate container 12, and the propellant is charged in the intermediate container 12. Hence, the intermediate container 12 may be made of hard synthetic resin not having flexibility. Moreover, this propellant depresses the inner container not only to discharge the first content, but also can make the second content into foam. Further, this product is not equipped with a dip tube which suctions the second content B to supply to the valve 14.

Hence, it is used as an inverted type aerosol product in which the second content B is discharged in a state being inverted.

**[0056]** An aerosol product 125 shown in Figure 14, Figure 15 is equipped with two valves 126, 127 for discharging two liquids and one spout member 128 which operates those valves simultaneously. Any of the aerosol products 125 of Figure 1, Figure 5, Figure 13 etc. is that in which the discharge/shutoff of two contents is switched by one valve, is equipped with mutually independent two systems of a path in the interior of the valve, and is made to be a structure that those paths are simultaneously opened and closed by operating the spout member. Hence, the structure of the valve is complicated. Consequently, in the aerosol product 125 of Figure 14, mutually independent two valves 126, 127 are tightly attached to the mouth portion of the outer container 11 by one valve holder 129 and a mounting cover 130. Thereby, each valve 126, 127 can be made into a simple configuration. The valves 126, 127, the valve holder 129 and the mounting cover 130 are preferable to be assembled beforehand as an assembly 131.

**[0057]** The lower portion of the valve holder 129 is fitted in the upper end inner face of the outer container 11, and it has a hole (holder portion) to hold the two valves 126, 127 in the upper face thereof (refer to Figure 15). Each valve 126, 127 has the tubular housing 22, the stem 23 housed to be movable vertically in the interior thereof, the spring 26 energizing the stem 23 upward always, the stem rubber 24 which opens and closes the stem hole of the stem 23, being arranged in the upper face of the housing 22, and a cap 132 which fixes the stem rubber to the housing 22.

**[0058]** And, in the lower end of the housing 22 of the first valve 126, the inner container 13 which forms the first space S1 is attached. In the lower end of the valve housing of the second valve 127, a dip tube 133 is attached, which is communicated with the interior of the outer container 11 which forms the second space S2. In the inner container 13, a protecting tube 134 is provided, which is for securing a flow path, even when the remaining quantity becomes small. This aerosol product 125 does not use the intermediate container of Figure 1. In the inner container 13, the first content A is charged, and in the outer container 11, the second content B and the propellant P are charged. As the inner container 13, any of the above described pouch type inner container such as Figures 2a-c, Figures 7a-e, Figure 10, Figures 12a-c can be adopted. Since this aerosol product 125 has the dip tube 133, it can be used in an upright state.

**[0059]** Moreover, the outer container 11 of this aerosol product 125 is a pressure-resistant container made of synthetic resin, and is equipped with a cylindrical neck portion 135 in the upper end of the barrel portion, and is provided with a thick-walled flange portion 135a. This flange portion 135a is that which is for fixing the lower end of the mounting cover 130 to the outer container 11 by cramping. In the mounting cover 130, it is preferable

to provide a reinforcing rib for raising pressure resistance (refer to Figure 15).

**[0060]** Since the outer container 11 is made of synthetic resin, even if the second content B is housed directly, the inside face thereof is hard to be corroded. As the outer container 11, synthetic resin having translucency can be adopted. In this case, the remaining quantity of the second content B can be checked by eyes. Further, the remaining quantity of the first content A also can be estimated by the degree of bulge of the inner container 13. The outer container 11 can be shaped by biaxial stretch blow molding using synthetic resin such as polyethylene terephthalate, nylon, polypropylene. However it may be shaped by injection molding. The outer container 11 may be provided with a vapor-deposited film such as carbon, oxidized aluminum, silica in the inner face and or the outer face to suppress the permeation of the second content B and the propellant agent.

**[0061]** In this aerosol product 125 also, since the metal foil layer of the inner container 13 is not exposed outside, the metal foil layer does not directly contact the second content B. Hence the corrosion of the metal foil layer is prevented. Moreover, since two valves 126, 127 can open and close the path through which the first content A and the second content B flow, the structure of each valve is simple. Moreover, with the first valve 126 and the second valve 12, the ratio of the discharge amount of the first content A and the second content B can be adjusted. The ratio of the discharge amount of the first content A and the second content B can be adjusted in the range, for example, 1:1 to 1:5 by selecting the size of the stem hole and the hole of the bottom of the housing.

**[0062]** An aerosol product 136 shown in Figure 16, Figure 17 is equipped with the outer container 11 composed of a metal can, an intermediate container 12 made of synthetic resin housed in the interior thereof, the inner container 13 housed in the interior of the intermediate container 12, and a valve assembly 131 plugging the opening of the intermediate container 12 and the outer container 11. The outer container 11 is, same as the outer container 11 of Figure 11, made of aluminum, and is equipped with the bead portion 11a in the upper end, and expresses a bottomed cylinder shape. As the intermediate container 12 also, that which is same as Figure 1 can be used. For example, a blow molding of synthetic resin of three-layer structure of PE/EvOH/PE is used.

**[0063]** About the inner container 13 also, it is a pouch same as that of Figure 1, and is that which is made into a bag like shape by bonding the laminated sheet such as PE/PET/Al/PE (from inside to outside, or from outside to inside), PE/Al/PE. The interior of the inner container 13 is the first space S1, the first content A such as cream is charged therein. In the second space S2 between the inner container 13 and the intermediate container 12, the second content such as cream is charged. In the third space S3 between the intermediate container 12 and the outer container 11, the propellant agent P for discharging the first content A and the second content B is charged.

As the propellant P, compressed gas, for example, nitrogen gas etc can be adopted.

**[0064]** The valve assembly 131 is substantially same as that of Figure 14, and comprises the first valve 126, the second valve 127, the valve holder 129 and the mounting cover 130. The upper portion of the mounting cover 130 is, as shown in Figure 17, tube-like or taper-like, whose planar shape is oval, the lower portion is made into cylindrical shape so as to fit the mouth portion of the outer container 11. The lower end of the mounting cover 130 is cramped to the bead portion 11a of the upper end of the outer container 11. About the aerosol container 136 also, the valves 126, 127 are provided for every content A, B, the ratio of the discharge amount can be selected in a design stage.

**[0065]** An aerosol product 137 shown in Figure 18 is a modified version in which the inner container 13 of the aerosol product 136 of Figure 16 is made doubled. Since the first space S1 in the inner container 13 becomes two-fold, when the first content A is identical, the charged amount thereof can be made much. Moreover, different sorts of the first content A can be charged. Along with the inner container 13 being doubled, the valve attached to the valve assembly 131 is made to be three each; the first valve 138, the second valve 139, and the third valve 140. The valve holder 129 holds those three valves. The first valve 138 and the second valve 139 described herein are equivalent to the first valve 126 of Figure 16. Other points are same as the aerosol product 136 of Figure 16, the inner container 13 is composed by the pouch protecting the above described metal foil layer. In the case that three valves are provided as described above, when the forth valve for gas charging is provided, the upper portion of the mounting cover 130 is made into cylindrical shape, not oval shape.

## Claims

1. An aerosol container for multiple contents discharge which comprises an outer container and an inner container inserted into the outer container, and which has a first space being an inside of the inner container and a second space surrounding the first space and independent from the first space, and in which different contents are charged in the first space and the second space, wherein the inner container is formed of one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer, and formed by overlapping or folding the laminated sheets so as to make the synthetic resin layer face outward, and mutually bonding a peripheral edge of the laminated sheets, wherein an edge face of the metal foil layer do not expose in the second space.

2. An aerosol container for multiple contents discharge

according to Claim 1, further comprising an intermediate container inserted into the outer container and inserting the inner container,

wherein the second space is an inside of the intermediate container, and a third space is formed between the intermediate container and the outer container independent from the first space and the second space.

3. An aerosol container for multiple contents discharge according to Claim 1 or 2, wherein a protecting means is provided at the edge face of the laminated sheet.

4. An aerosol container for multiple contents discharge according to Claim 1 or 2, wherein the inner container is formed of the laminated sheets whose edge face is folded inward, and formed by overlapping or folding the laminated sheets, and mutually bonding the peripheral edge of the laminated sheets.

5. An aerosol container for multiple contents discharge according to Claim 1 or 2, wherein the inner container is formed of the laminated sheet or laminated sheets, in which the metal foil layer is smaller than the synthetic resin layer and the edge portion of the metal foil layer is arranged in a bonded portion of the synthetic resin layer.

6. An aerosol container for multiple contents discharge according to Claim 2, wherein the edge face of the laminated sheet which is the peripheral of the inner container, protrudes outward from the intermediate container.

7. An aerosol container for multiple contents discharge according to any of Claim 1-6, wherein a communication / shutoff between the first space and outside, and the communication / shutoff between the second space and outside are operated simultaneously by opening and closing of one valve.

8. An aerosol container for multiple contents discharge according to any of Claim 1-6, wherein the valve performing the communication / shutoff between the first space and outside, and the valve performing the communication / shutoff between the second space and outside are different.

9. An aerosol product for multiple contents discharge, comprising:

the aerosol container for multiple contents discharge according to any of Claim 1-8, a first content charged in the first space, a second content charged in the second space,

and  
a propellant charged in the first space and / or  
in the second space.

10. An aerosol product for multiple contents discharge, 5  
comprising:

the aerosol container for multiple contents discharge according to Claim 2 or 6,  
a first content charged in the first space, 10  
a second content charged in the second space,  
and  
a propellant charged in the third space.

11. An aerosol product for multiple contents discharge, 15  
comprising:

the aerosol container for multiple contents discharge according to Claim 2 or 6,  
a first content charged in the first space, 20  
a second content and a propellant charged in  
the second space, and  
a gas existing in the third space.

12. An inner container for inserting into an aerosol container which independently houses a plurality of contents, and which directly separates at least two contents, 25  
wherein the inner container is formed by overlapping,  
or folding one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer so as to make the synthetic resin layer become an outer surface, and by mutually bonding the peripheral edge of the laminated sheets, 30  
wherein a protecting means is provided in an edge face of the laminated sheet. 35

13. An inner container for inserting into an aerosol container which independently houses a plurality of contents, and which directly separates at least two contents, 40  
wherein the inner container is formed by folding one or more than two flexible laminated sheets having a metal foil layer and a synthetic resin layer so as to make the edge face of the laminated sheet face inward, by overlapping or folding the folded laminated sheet so as to make the synthetic resin layer become an outer surface, and mutually bonding the peripheral edge of the laminated sheets. 45

50

55

FIG. 1

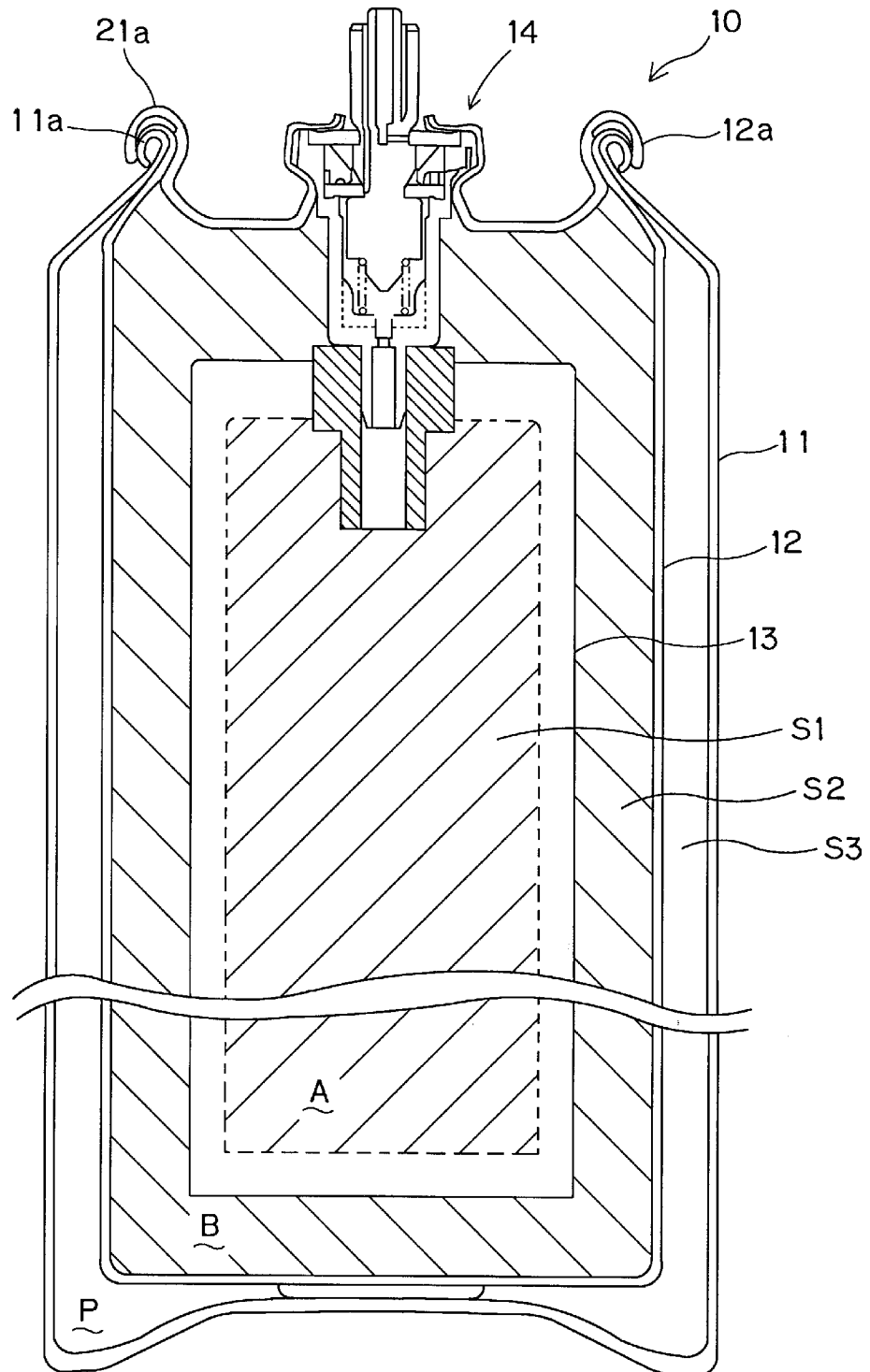


FIG. 2

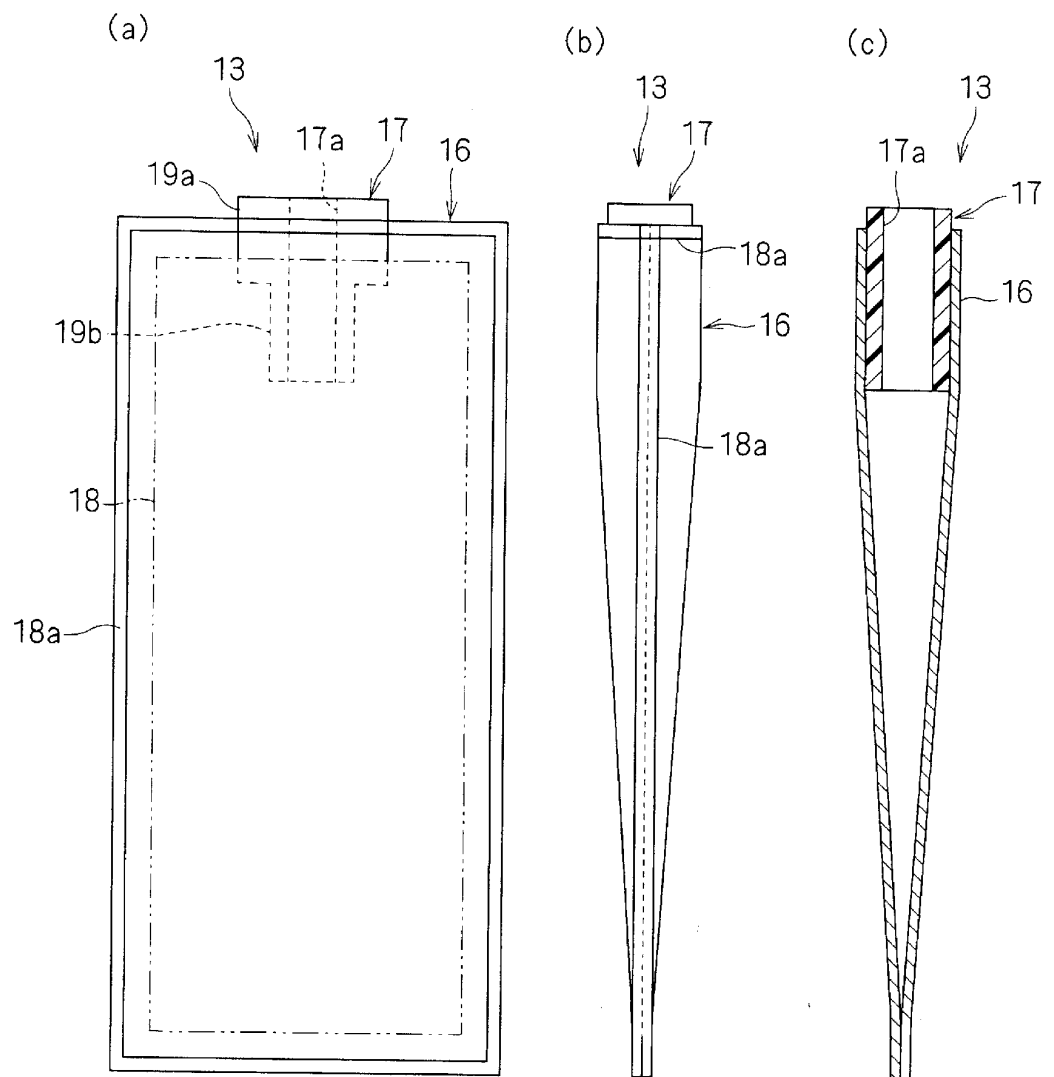


FIG. 3

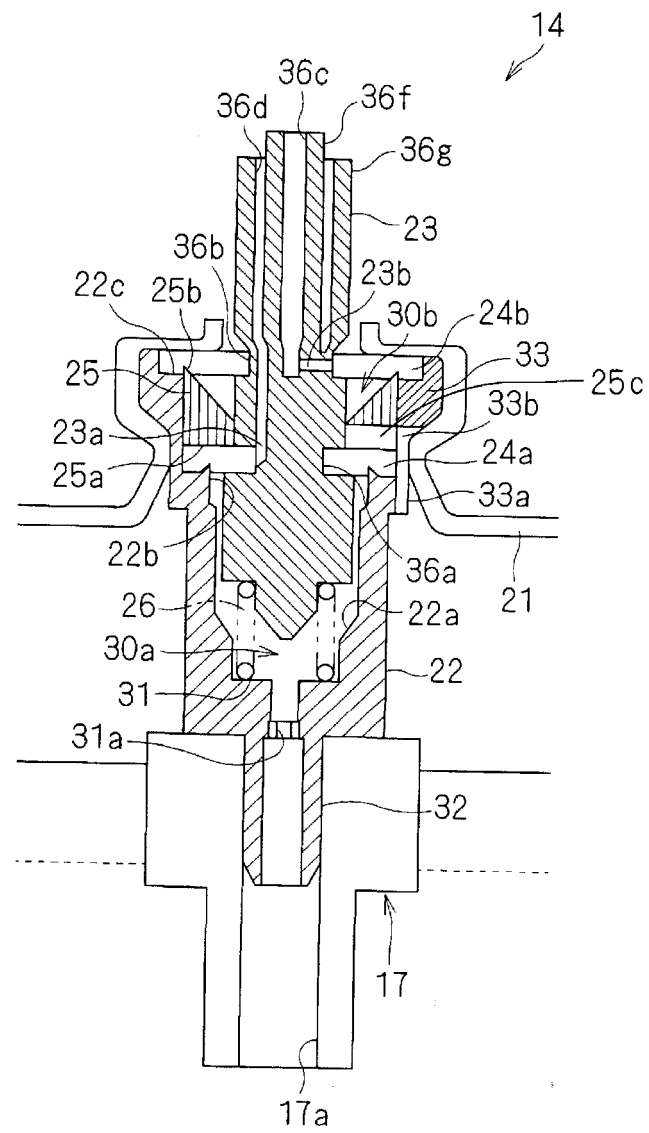




FIG. 4

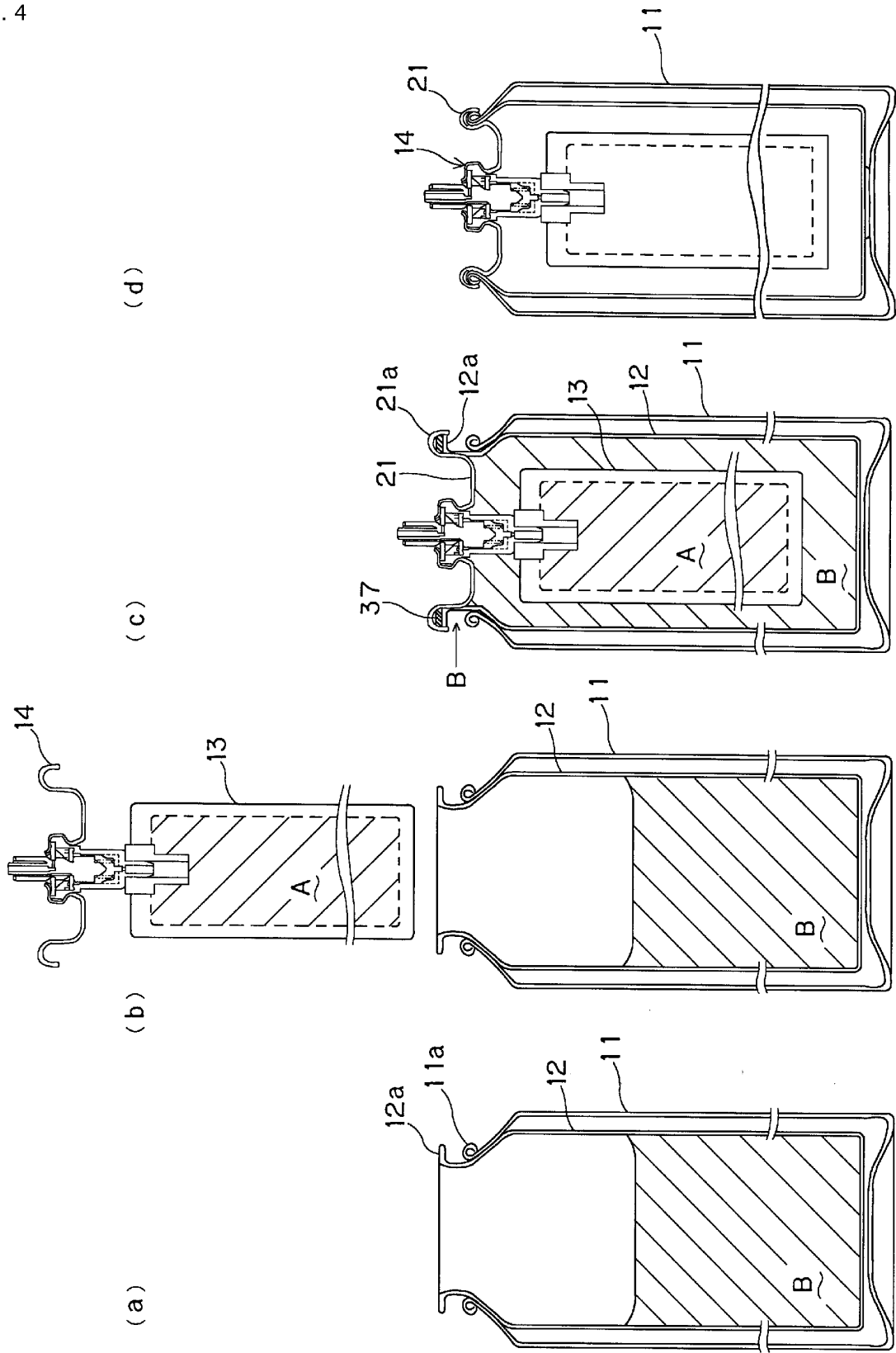


FIG. 5

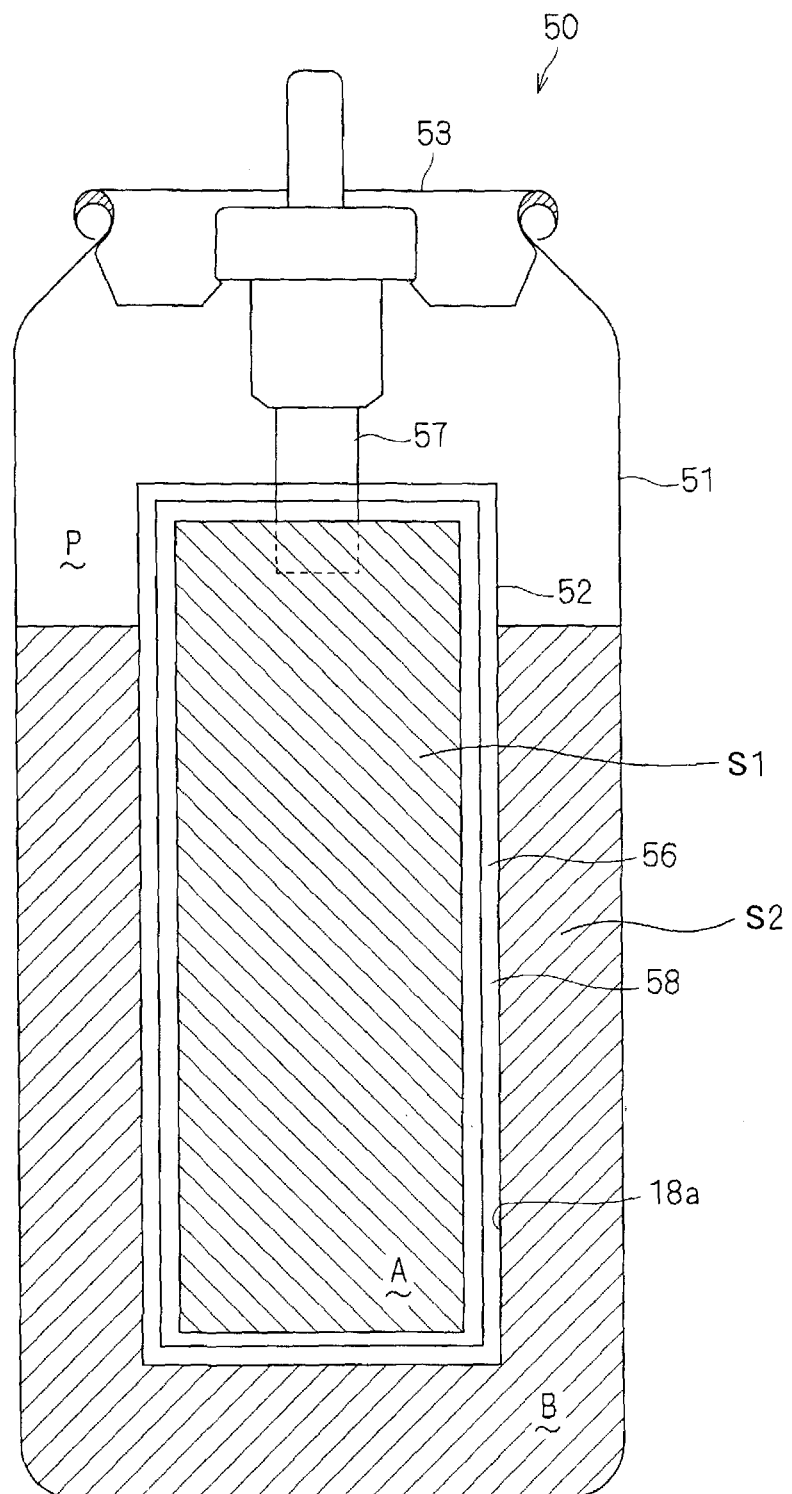


FIG. 6

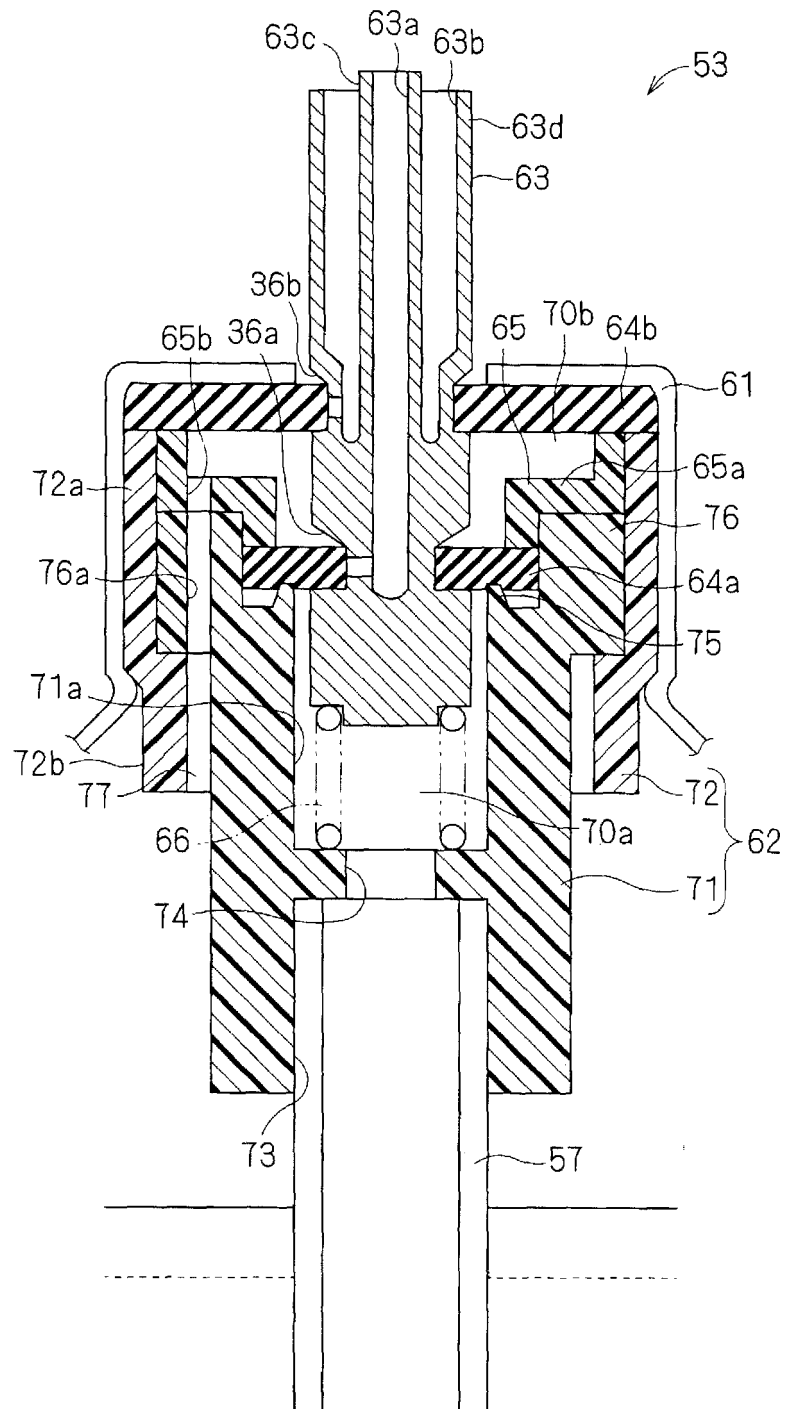


FIG. 7

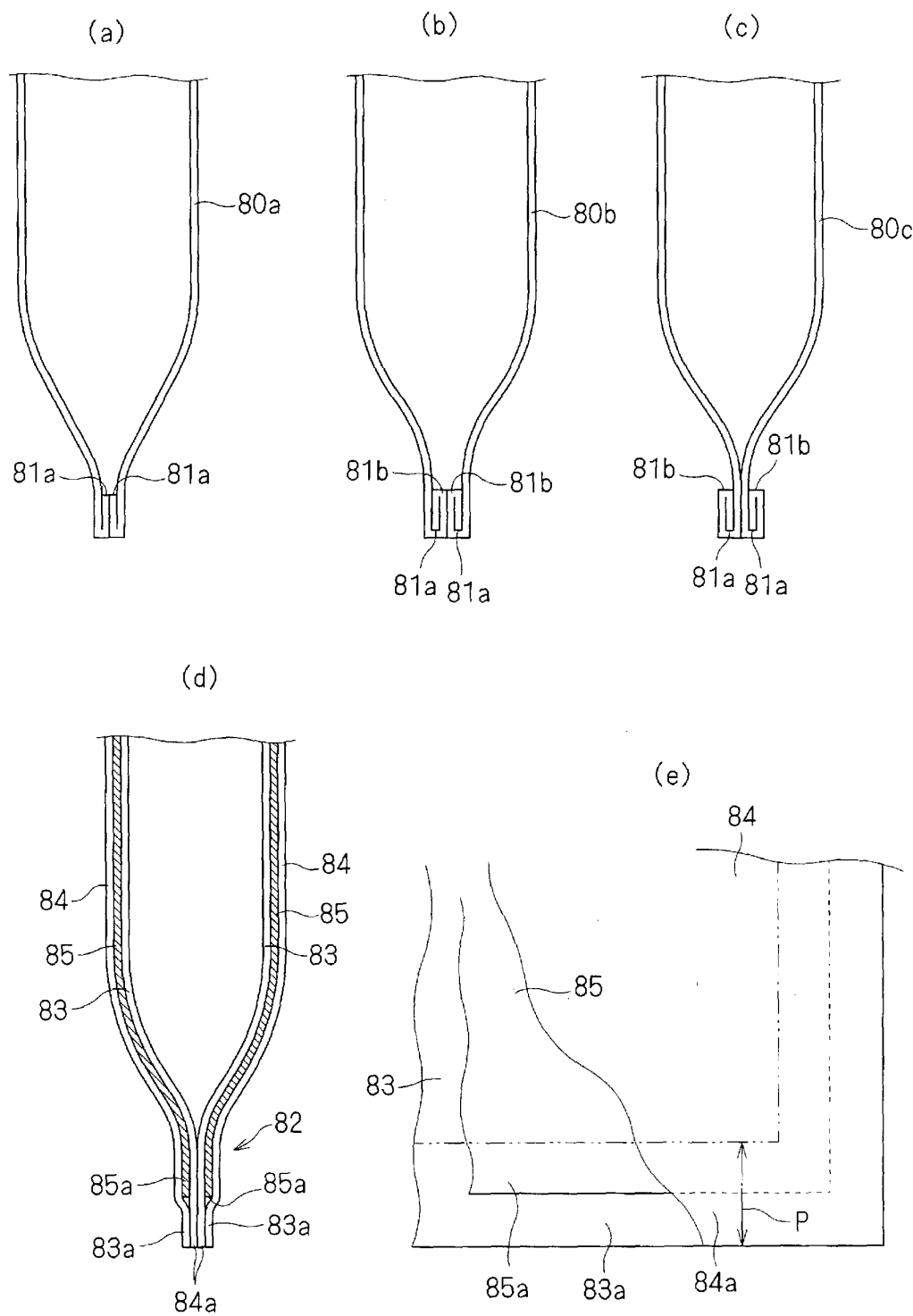


FIG. 8

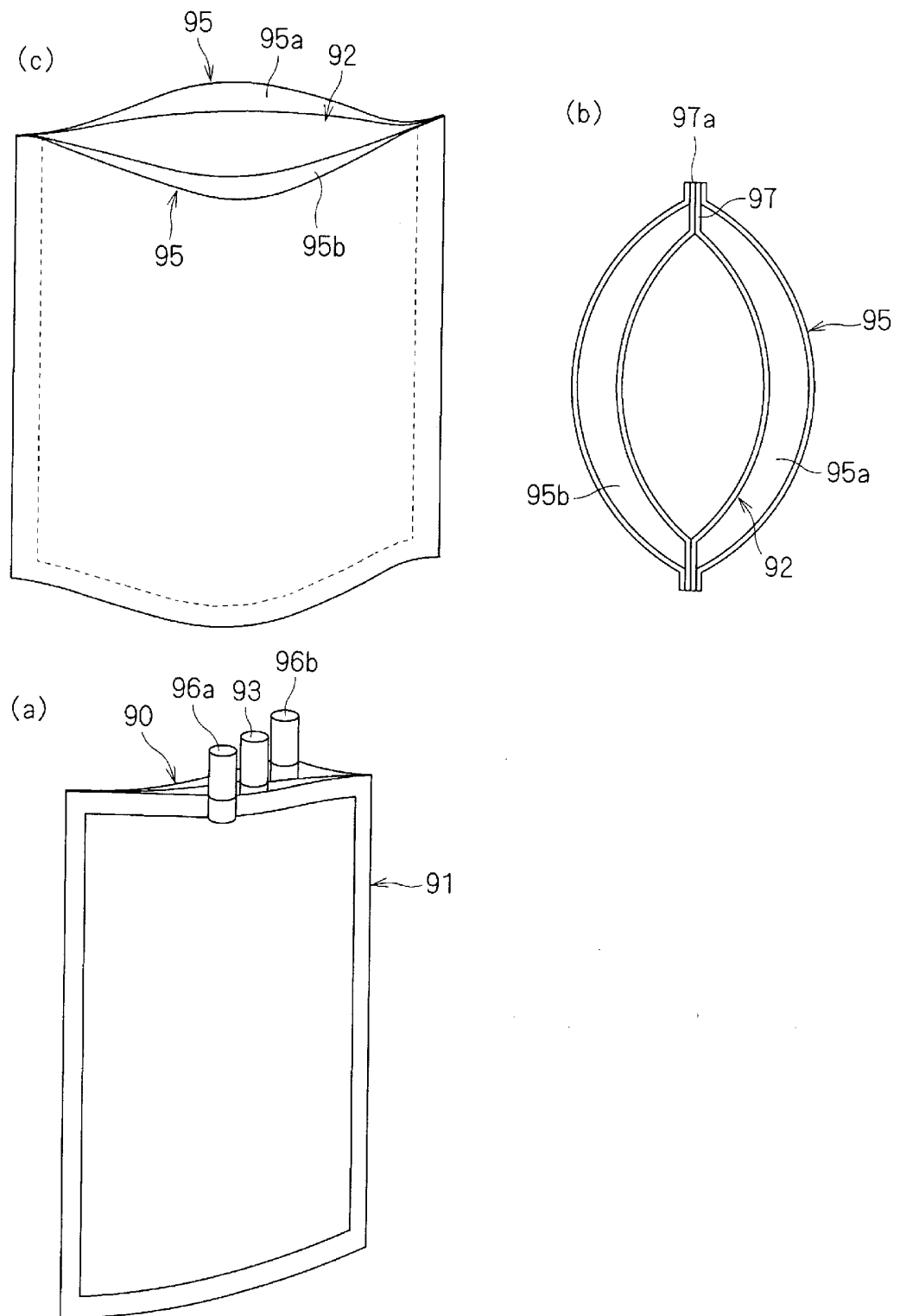


FIG. 9

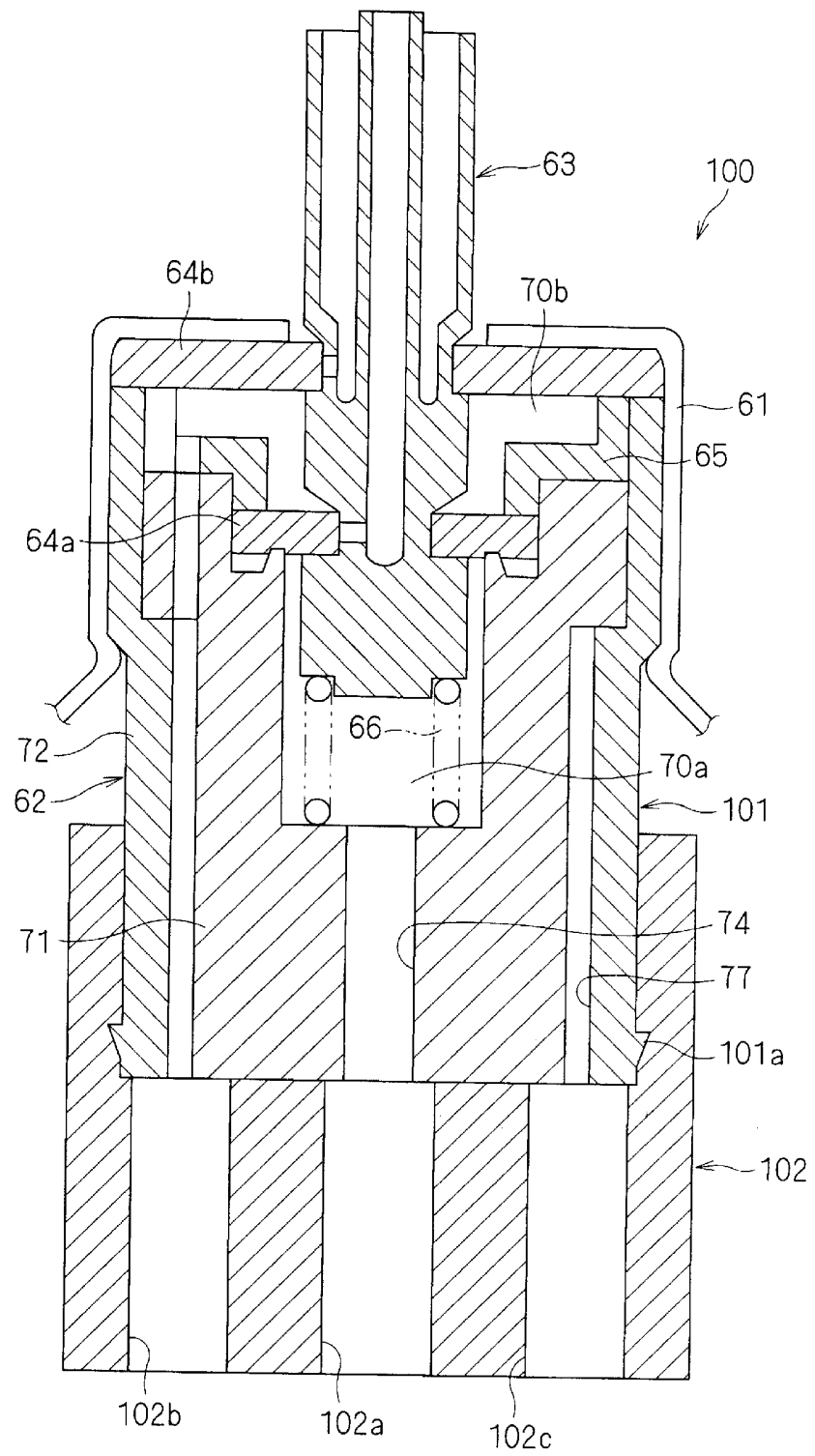


FIG. 10

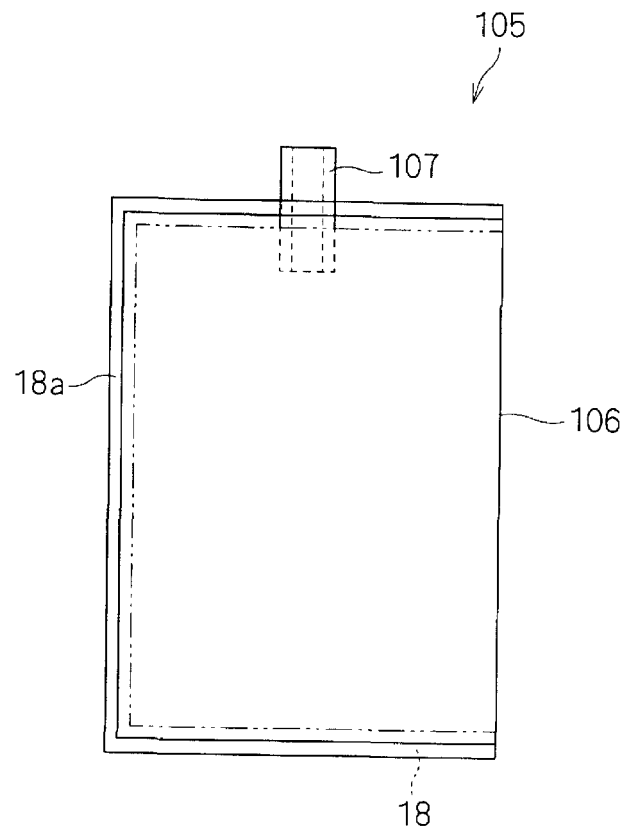


FIG. 11

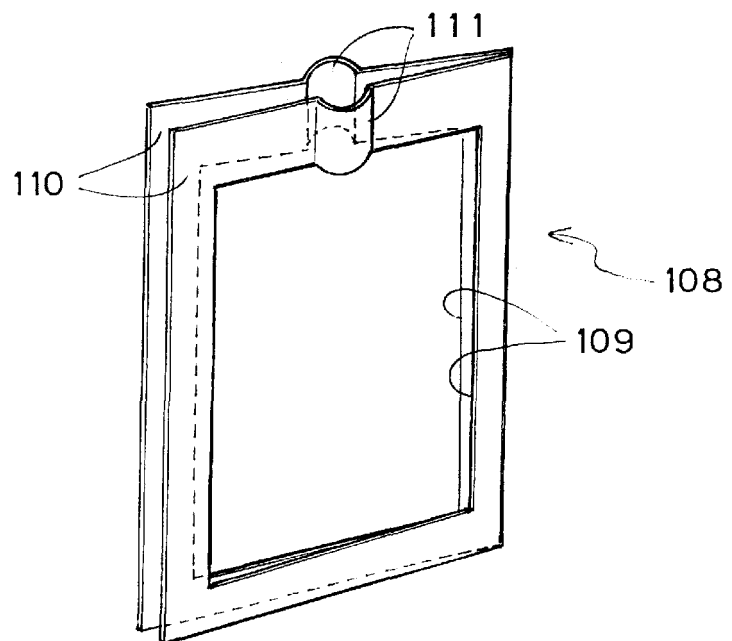


FIG. 12

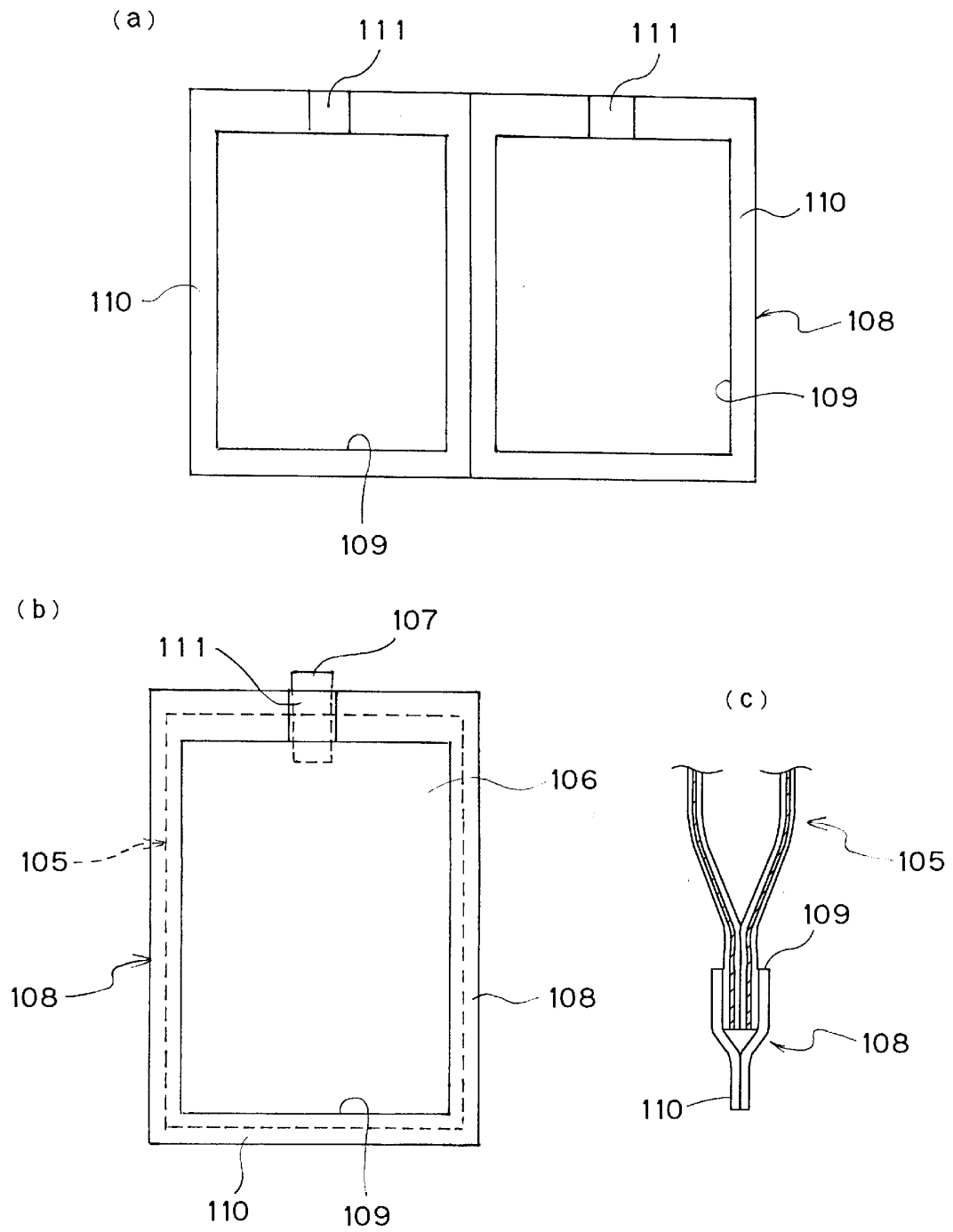




FIG. 13

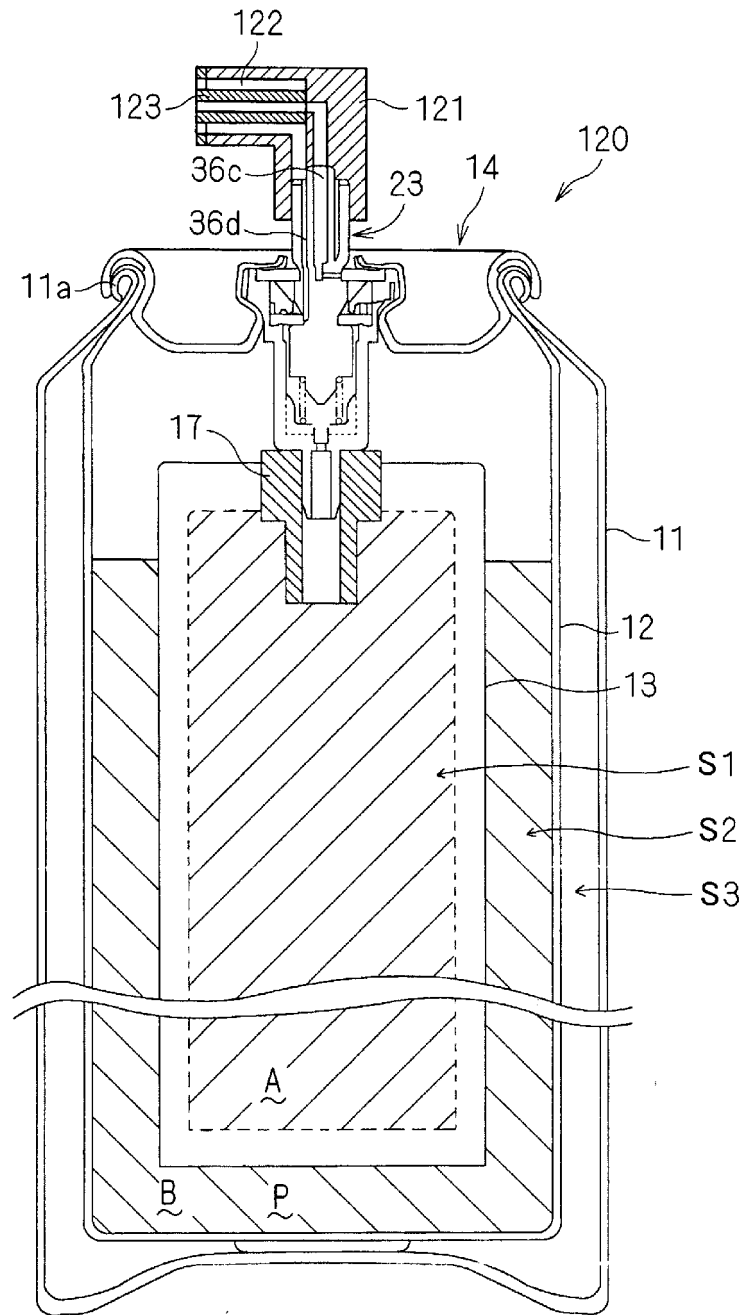


FIG. 14

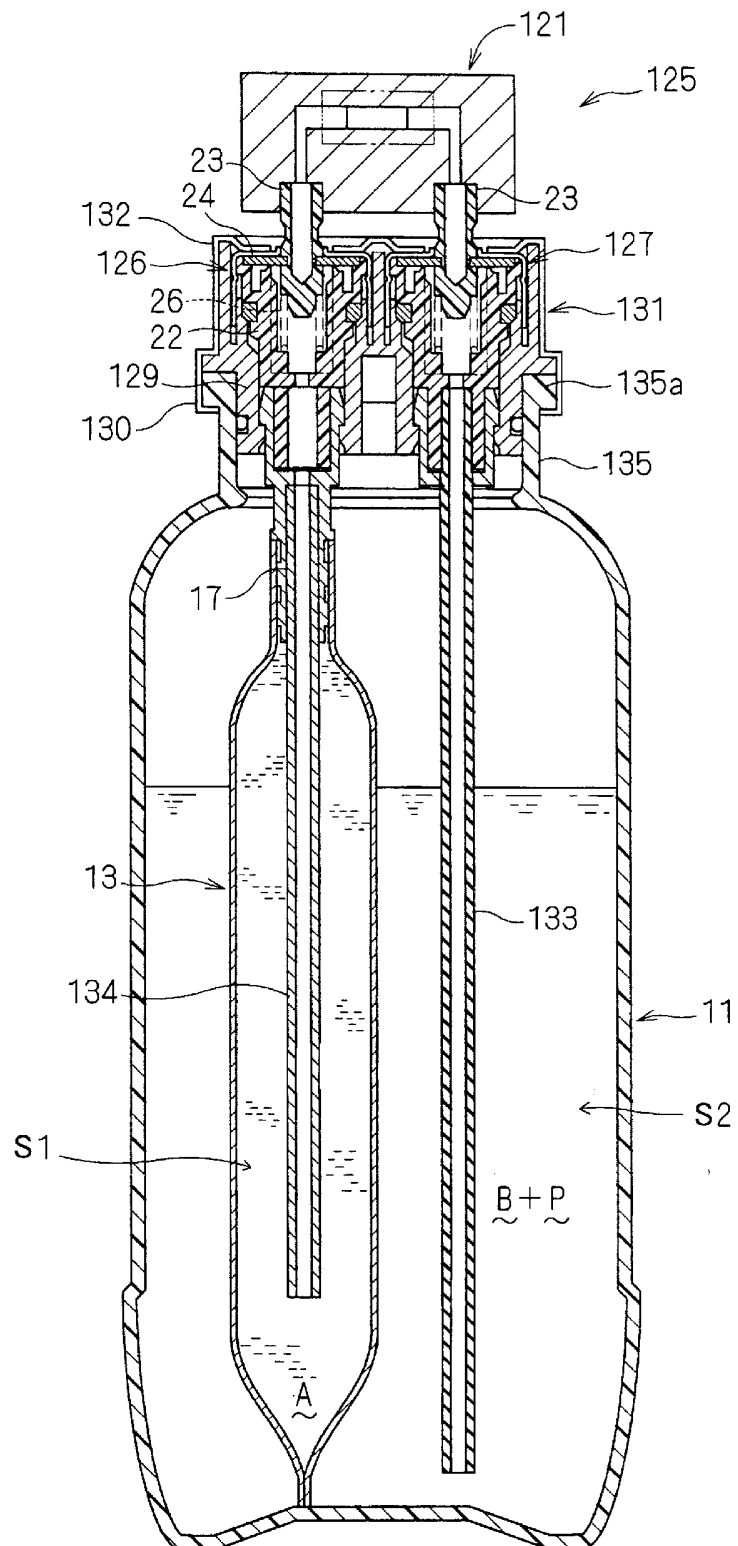


FIG. 15

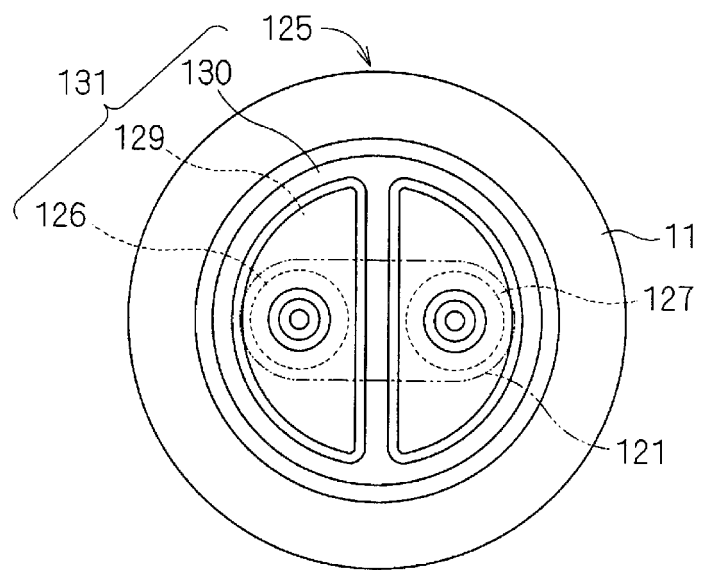


FIG. 16

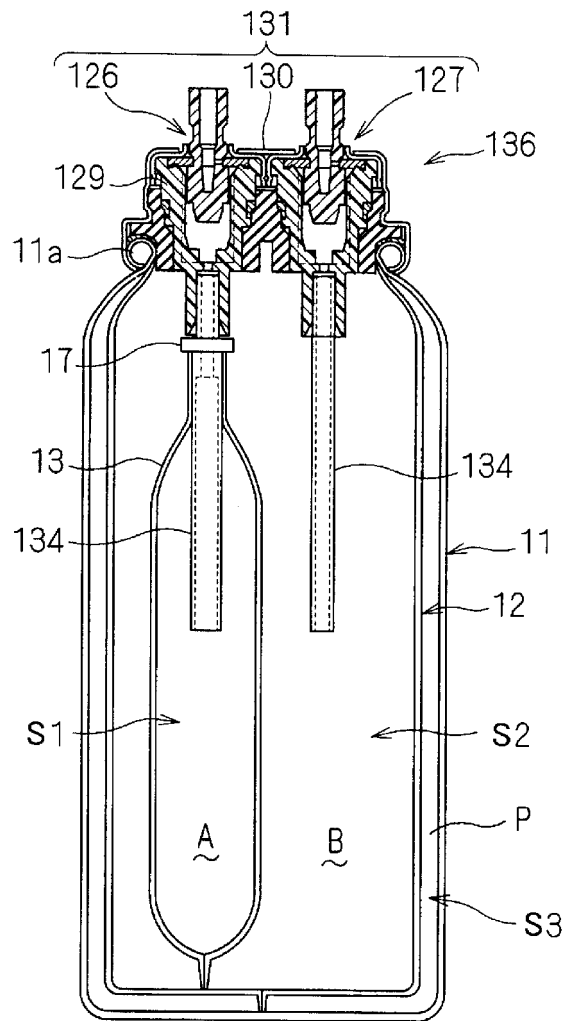


FIG. 17

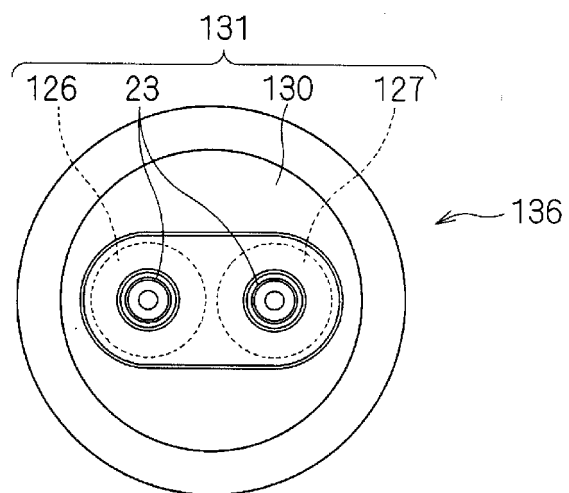
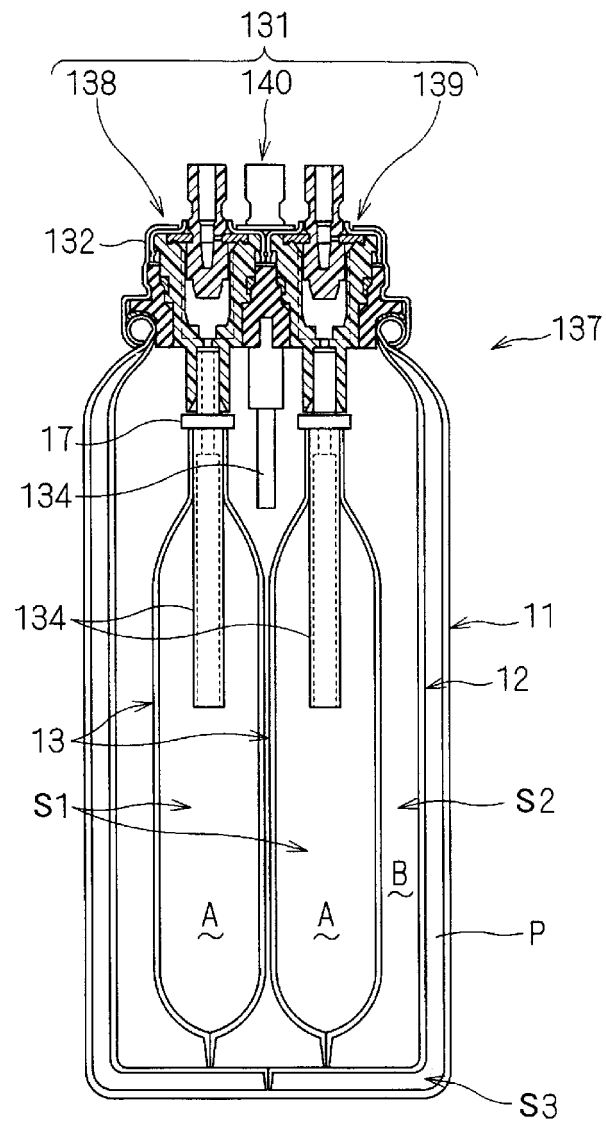


FIG. 18



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/075005

## A. CLASSIFICATION OF SUBJECT MATTER

B65D83/38(2006.01) i, B65D81/32(2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D83/38, B65D81/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2012

Kokai Jitsuyo Shinan Koho 1971-2012 Toroku Jitsuyo Shinan Koho 1994-2012

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 017983/1987(Laid-open No. 039288/1989) (Hoyu Co., Ltd.), 08 March 1989 (08.03.1989), entire text; all drawings (Family: none)	1-13

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

18 January, 2012 (18.01.12)

Date of mailing of the international search report

31 January, 2012 (31.01.12)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- JP S6328684 B [0004]
- JP 2009537403 A [0004]