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- **INABA, Shinichi**
Tokyo 131-0044 (JP)
- **FUJITA, Michiaki**
Tokyo 131-0044 (JP)

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(74) Representative: **Vossius & Partner**
Patentanwälte Rechtsanwälte mbB
Siebertstrasse 3
81675 München (DE)

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(73) Proprietor: **Kao Corporation**
Chuo-ku,
Tokyo 103-8210 (JP)

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(72) Inventors:

- **SUGAWARA, Hirokatsu**
Tokyo 131-0044 (JP)
- **MORIYA, Motoaki**
Tokyo 131-0044 (JP)

EP 2 660 165 B1

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Description

Technical Field

5 **[0001]** The present invention relates to a package composed of a stretch blow molded container made of a synthetic resin for storing contents, and an outer bag encasing the stretch blow molded container.

Background Art

10 **[0002]** Recently, for synthetic-resin containers that store various liquids and other contents, various thin-walled containers have been developed which are intended to have less environmental impact and which use less resin (see JP 2007-308598 A, for example). Refillable containers that employ a standing pouch or the like are often used as containers for storing various detergents, foodstuffs, and the like. The stored contents are refilled or replenished in a refilled container having a pouring part that employs a pour nozzle or the like, whereby the refillable container can be used over a long
15 period of time without discarding an expensive refilled container each time (see JP 2010-132339 A, for example).

[0003] The thinner the walls of the body part of the synthetic-resin container for storing contents, the lesser the shape-retaining rigidity, the lower the strength, and the greater difficulty involved in affixing labels or other decoration for advertising or providing descriptions to the external peripheral surface of the container. Though reinforcing ribs may be provided to the body part of the container, for example, to improve shape-retaining rigidity and strength (see JP
20 2006-16076 A, for example), there is a limit to the thinning of the body part formed as being thin-walled.

[0004] In cases in which a solution having a surfactant as a primary component is stored as a content in the container, for example, the temperature of the content decreases below the temperature at the time of filling, the head space or liquid volume is reduced or oxygen in the air remaining inside is absorbed by the content, and when the interior of the container reaches negative pressure, the container easily deforms inward, and the outward appearance is severely
25 compromised.

[0005] JP 2001 097399 A discloses a package according to the preamble of claim 1. Related technology is shown in DE 202 20 282 U!, US 4 645 078 A, or DE 10 2008 012973 B3.

Summary of the Invention

30 **[0006]** The present invention relates to a package (a refillable package) according to claim 1 and a combination of a package and a container to be refilled according to claim 6.

Brief Description of Drawings

35 **[0007]**

[Fig. 1] Fig. 1 is a perspective view for describing the configuration of a package according to a preferred embodiment of the present invention.

40 [Fig. 2] Fig. 2 is a perspective view of the sensor main bodies and the plug.

[Fig. 3] Fig. 3 is a schematic perspective view for describing the conditions in which liquid detergent stored in the stretch blow molded container is refilled in a refilled container.

[Fig. 4(a)] Fig. 4(a) is an enlarged perspective view of the plug.

[Fig. 4(b)] Fig. 4(b) is an enlarged side view of the plug.

45 [Fig. 5] Fig. 5 is a schematic perspective view for describing the conditions in which liquid detergent stored in the stretch blow molded container is refilled in a refilled container.

[Fig. 6(a)] Fig. 6(a) is an explanatory drawing of a test for piercing the package.

[Fig. 6(b)] Fig. 6(b) is an explanatory drawing of a test for piercing the package.

[Fig. 6(c)] Fig. 6(c) is a chart showing the results of evaluating the degree of depressurized deformation.

50 [Fig. 7] Fig. 7 is a perspective view for describing the configuration of a pour cap having a pour spout.

[Fig. 8] Fig. 8 is a partial perspective view for describing the conditions in which a plug member is prevented from being attached to the pour spout in an incorrect direction.

[Fig. 9] Fig. 9 is a partial perspective view for describing the conditions in which the plug member is positioned and attached correctly in the pour spout.

55 [Fig. 10(a)] Fig. 10(a) is a top view of a plug according to another embodiment.

[Fig. 10(b)] Fig. 10(b) is a side cross-sectional view of a plug according to another embodiment.

[Fig. 11] Fig. 11 is a side cross-sectional view for describing the conditions in which a plug according to another embodiment is attached to the pour spout.

Summary of Invention

[0008] A standing pouch used in conventional practice is a bag formed by sticking together multilayered resin films, and while the standing pouch has excellent characteristics such as thermal fusion sealing, airtightness, and aroma retention, characteristics such as oil resistance and chemical resistance are insufficient. When a liquid detergent or a liquid containing a surfactant or the like such as a softener is accommodated and a long period of time passes, components such as the surfactant permeate through a sealant film and deteriorate the adhesive. There is a risk that a substrate film and the sealant film will thereby peel off, the outward appearance will be compromised by wrinkles between the films, and further peeling will occur, causing falling strength to decrease and the accommodated content to leak out. Because the resin films have a multilayered structure, when the capacity is 1000 mL or less, for example, the percentage of the resin amount relative to the capacity increases, and the effect of reducing the resin amount is reduced. Furthermore, due to an easily-elongated resin film being bonded to an elongation-resistant resin film, when the films are pierced by something pointed at the tip such as a needle, the films tear readily without elongating much overall. Specifically, it is believed that the load imposed by piercing is not readily distributed.

[0009] The present invention relates to a package wherein even if the container has a capacity of, e.g., 1000 mL or less, the container can be formed with less resin while the percentage of the resin amount relative to capacity remains low, and compromising of the outward appearance, decreasing of strength, and compromising of the stability of the accommodated content can be effectively avoided by reducing the resin amount.

[0010] The inventors had the idea that by using a two-layer structure including a molded container and an outer bag encasing the molded container as a form of a marketable product for refilling content and by suitably allotting functions to both the molded container and the outer bag, the percentage of the resin amount relative to the capacity can be effectively reduced even if the capacity is, e.g., 1000 mL or less, while avoiding compromising of the outward appearance of the commercial product, decreasing of strength, and compromising of the stability of the content accommodated in the container.

[0011] The present invention relates to a package (a refillable package) having a stretch blow molded container made of a synthetic resin for storing a content containing a surfactant, a plug attached to a mouth/neck part of the stretch blow molded container, and an outer bag encasing the entire stretch blow molded container with a space around the periphery of the container, wherein the package can be displayed while the container stands unaided. The stretch blow molded container is formed including a bottom part having a standing arrangement part, a mouth/neck part for pouring out the content, and a body part between the bottom part and the mouth/neck part, and the outer bag is decorated.

[0012] A package 10 according to a preferred embodiment of the present invention shown in Fig. 1 is commercialized such that a refillable container 11 is encased by an outer bag 12, the refillable container being a stretch blow molded container for filling and storing a solution containing a surfactant as a content, an example of the solution being a refillable liquid detergent having a surfactant concentration of 15 wt% or more and 80 wt% or less. The refillable container 11 is stood unaided and displayed in a store together with the outer bag 12. Because the refillable container 11 constituting the package 10 of the present embodiment is a stretch blow molded container, there is no interlayer peeling and falling strength is superior to that of a standing pouch, even when the surfactant concentration of the liquid detergent accommodated as the content is 15 wt% or greater. The effect of ensuring that falling strength is not compromised is more pronounced particularly when the surfactant concentration is 50 wt% or greater. At 85 wt% or less, the content is expected to inspissate, and 80 wt% or less is a practical range.

[0013] A user who has purchased the package 10 of the present embodiment can take the refillable container 11 out of the outer bag 12 and refill the liquid detergent into a refilled container 60 having a pouring part 31 that employs a pour nozzle or the like (see Figs. 3 and 5), and after refilling the liquid detergent into the refilled container 60 the user can put the emptied refillable container 11 into the outer bag 12 and discard the two. Due to the use of the package 10 of the present embodiment, the discardable refillable container 11 and outer bag 12 can be formed with walls as thin as possible, effectively reducing the environmental impact, sufficient surface area can be ensured for decorations such as an advertisement or a product description, and the refillable container 11 can be displayed without compromising the outward appearance.

[0014] Specifically, the package 10 of the present embodiment is a refillable package having a refillable container 11 which is a synthetic-resin stretch blow molded container for storing a content (a liquid detergent) containing a surfactant, a plug 18 attached to a mouth/neck part 15 of the refillable container 11, and an outer bag 12 for encasing the entire refillable container 11 with a space around the periphery of the container; and the package is a product that can be displayed with the refillable container 11 standing unaided. Having the outer bag 12 encase the entire periphery of the refillable container 11 with a space around the periphery of the container means that the refillable container 11 in the outer bag 12 is housed in a state allowing some slack without being squeezed by the outer bag 12. The refillable container 11, which is a stretch blow molded container, is formed including a bottom part 14 having a standing arrangement part 13, a mouth/neck part 15 for pouring out the content, and a body part 16 between the bottom part 14 and the mouth/neck part 15. A decoration is appended to the outer bag 12. The wall thickness of the body part 16 of the refillable container

11, which is a stretch blow molded container, is 50 to 150 μm . Considering the balance between shrinkage deformability and strength of the container, the wall thickness of the body part 16 of the refillable container 11 is preferably 70 to 130 μm , and more preferably 80 to 120 μm . Furthermore, the wall thickness of the body part 16 of the refillable container 11, including the thickness of the outer bag 12, is preferably 100 to 180 μm , and considering the balance between shrinkage deformability and strength of the container, this wall thickness is more preferably 110 to 170 μm , and even more preferably 120 to 160 μm .

[0015] In the present embodiment, due to the body part 16 of the refillable container 11 being formed as thin-walled, the refillable container 11 is formed so that when the body part 16 is inverted such that the mouth/neck part 15 is disposed at the bottom, for example, the body part 16 is flexible enough to allow the liquid detergent filled and stored in the interior to be poured out to a certain extent while the body part 16 itself is shrunk-deformed without air being displaced through the pour hole (see FIG. 5).

[0016] In the present embodiment, the refillable container 11 constituting the package 10 together with the outer bag 12 is a stretch blow molded container, including the bottom part 14, the body part 16, a shoulder part 17, and the mouth/neck part 15 molded integrally, as shown in Figs. 1 and 2. For the blow molded container 11 and the outer bag 12, a value A ($A = W/V^{2/3}$), which is obtained by dividing the resin amount W (g) (the sum total of the resin amount of the blow molded container 11 and the resin amount of the outer bag 12, excluding the resin amount of the plug 18) by 2/3 th power of the container capacity V (mL) (the filled capacity of the container 11), is 0.13 to 0.25, and the capacity of the container 11 is 1000 mL or less. Due to the value A, which is the resin amount W (g) divided by 2/3 th power of the container capacity V (mL), being 0.13 to 0.25, even when the capacity of the container 11 is 1000 mL or less, the percentage of the resin amount relative to the capacity can be kept low with the resin amount reduced in the entire two-layered package 10 including the container 11 and the outer bag 12, and the package 10 can be formed with the resin amount effectively reduced.

[0017] To ensure satisfactory moldability of the refillable container 11 and satisfactory shrinkage deformability of the body part 16 during refilling, the value A ($A = W/V^{2/3}$) obtained by dividing the resin amount W (g) by 2/3 th power of the container capacity V (mL) is preferably 0.13 to 0.25. Furthermore, to achieve satisfactory stability of molding and a satisfactory degree of collapse in the body part 16 during shrinkage, the A value is preferably 0.13 to 0.18.

[0018] The resin amount W of the entire package 10 excluding the plug 18 is preferably 3 to 25 g, and is more preferably 4.5 to 18 g. The filled capacity V of the container 11 is preferably 1000 mL or less. Considering handling and inverted stability, the filled capacity V of the container 11 is preferably 100 to 800 mL, and more preferably 200 to 600 mL.

[0019] In the present embodiment, the synthetic resin for forming the refillable container 11 is preferably a polyolefin resin such as polypropylene or polyethylene, a polyester resin such as polyethylene terephthalate, or a bio-based material such as polylactic acid. The refillable container 11 is preferably a single-layer container stretch blow molded from a single-layer synthetic resin composed of a single material. Forming the refillable container 11 from a single-layer synthetic resin composed of a single material reduces the environmental impact during manufacturing and enables the bio-based material to be substituted, and also exhibits operative effects such as those described hereinafter. The refillable container 11 can also be a stretch blow molded multi-layered container.

[0020] Having the stretch blow molded container 11 be single-layered means that the polymer layer constituting the container 11 is one layer. For example, a container having a vapor deposition layer vapor-deposited on the surface of a single polymer layer would be such a stretch blow molded single-layer container.

[0021] The bottom part 14 of the refillable container 11 is a portion having a wall thickness slightly greater than that of the body part 16, i.e. about 80 to 500 μm . In the present embodiment, the bottom surface 14a of the bottom part 14 includes a portion formed into a flat surface, for example, thereby constituting the standing arrangement part 13. Due to the bottom part 14 of the container 11 having the standing arrangement part 13 which has thicker walls than the body part 16, when the weight of the liquid detergent filled in the refillable container 11 causes the bottom surface 14a to be pressed onto an arrangement surface while sandwiching the outer bag 12, the shape-retaining rigidity makes it possible to maintain the arrangement on a stable arrangement surface.

[0022] In the present embodiment, a bottom part peripheral wall 14b, which extends while expanding in diameter at an incline above the bottom surface 14a of the bottom part 14, is gradually reduced in wall thickness and connected to the body part 16 which has a wall thickness of 50 to 150 μm . It is preferable to use hammering rather than screwing for the fitting section between the mouth/neck part 15 and the plug 18, because the resin amount can be reduced.

[0023] In the present embodiment, the body part 16 of the refillable container 11 is a cylindrical portion between the bottom part 14 and the shoulder part 17, the diameter being about 40 to 150 mm and the height being about 60 to 250 mm. The body part 16 has a wall thickness of 50 to 150 μm , preferably has a wall thickness of 60 to 130 μm , and more preferably has a wall thickness of 70 to 120 μm . When the walls of the body part 16 are too thin, issues with quality arise, such as diminished upright-standing capability, falling-resistant strength, and stability during refilling. When the walls are too thick, air must be replaced through the pour hole during refilling, pulsation occurs when the air replacement is not smooth, and inconveniences arise such as longer replacement time, higher costs, and more garbage when the container is discarded. Due to the wall thickness of the body part 16 being 50 to 150 μm , stability during refilling is

preserved and the container deforms without air being replaced, whereby refilling is possible in a short amount of time. Also due to the wall thickness of the body part 16 being 50 to 150 μm , the body part 16 has a level of flexibility such that during an inverted state in which the mouth/neck part 15 is disposed at the bottom, for example, the liquid detergent filled and stored in the refillable container 11 can be poured out to a certain extent while the body part 16 itself is shrunk-deformed, without air needing to be replaced through the pour hole (see Fig. 5).

[0024] In the present embodiment, because the refillable container 11 is a stretch blow molded container made of a synthetic resin, compared with a standing pouch formed by sticking multi-layered resin films together, there is virtually no interlayer peeling due to the effect of liquid detergent containing a surfactant accommodated in the interior, and characteristics such as falling strength can thereby be improved.

[0025] Because the refillable container 11 is a stretch blow molded container, the piercing resistance of the package 10 can be improved over that of a standing pouch composed of multi-layered resin films. In the case of multi-layered resin films, a printing substrate layer that resists elongation in the multi-layered structure has high rigidity, while a sealant layer which elongates readily compared to the printing substrate layer has low rigidity. When the package is pierced, the sealant layer follows the printing substrate layer, whereby it is difficult for the load to escape, and the multi-layered resin films as a whole resist elongation and tear readily. In the case of the package 10 including the refillable container 11, which is a stretch blow molded container such as the one of the present application, the elongation of the container 11 when pierced allows the load to escape readily, whereby tearing is less likely than in a standing pouch. This is particularly effective when the refillable container 11 is formed from a single layer of polyethylene, polypropylene, polyethylene terephthalate, or the like. Furthermore, because the outer casing is constituted of a bag, the outer bag 12 causes a more pronounced effect to be added by the distribution of the load, and piercing resistance can therefore be more effectively improved.

[0026] Particularly, by making the refillable container 11 into a stretch blow molded single-layer container, the effects of the liquid detergent containing the surfactant accommodated in the interior do not cause any interlayer peeling in which the bonded layers of the multi-layered resin films peel. A possible situation in which piercing strength is needed is a case such as when there is a risk of the refillable container 11 of the package 10 being pierced by a sharp obstacle when being displayed or transported. Another possible case is when a consumer has purchased the package 10 or taken the package 10 home and the consumer carries the package 10 together with an object having a tapered tip, and there is a risk of the refillable container 11 tearing due to being pierced by the tapering-tipped object. The piercing strength can be evaluated by the elongation rate of the package 10, because when the package 10 is pierced and the refillable container 11 actually tears, the film constituting the package 10 elongates and the force thereby escapes.

[0027] In the present invention, the surfactant included in the content accommodated in the stretch blow molded container (the refillable container) 11 can be one or more selected from the following: an anionic surfactant, a nonionic surfactant, a cationic conveying unit, and a bipolar surfactant.

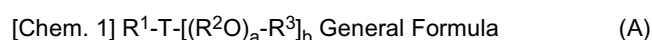
[0028] The effects of the present invention can be expected to be greater when the concentration of the surfactant is 15 to 80 wt%, and the effects are even more pronounced particularly when the concentration of the surfactant exceeds 50 wt%.

[0029] Concerning the type of surfactant, the effects of the present invention are better observed when the stored content contains a surfactant having either an ethylene oxide group or an ethylene oxide group/propylene oxide group in the molecules. Of these, the effects of the present invention are better observed when the stored content contains either an anionic surfactant exemplified by a polyoxyethylene (average additional mole number of 1 to 10) alkyether ester sulfate salt or a polyoxyethylene (average additional mole number of 1 to 10) alkyether acetate salt, or a nonionic surfactant represented by the general formulae (A1) and (A2) below.

[0030] Furthermore, the effects of the present invention are better observed when the stored content contains either 0.01 to 2 wt% of a fragrance of hydrocarbon typified by limonene, or 1 to 10 wt% of a water-soluble solvent represented by the general formula (B) below.

[0031] Possible examples of a typical anionic surfactant include alkyl benzene sulfonate having a C8-18 alkyl group or an alkenyl group, an alkane sulfonate, an α -olefin sulfonate, an alkyl ester sulfate salt, a polyoxyethylene (average number of added moles: 1 to 10) alkyl ether ester sulfate salt, a polyoxyethylene (average number of added moles: 1 to 10) alkyl ether acetate salt, and the like.

[0032] Possible examples of a typical nonionic surfactant include an alkyl polyglycoside (average number of added moles: 1 to 10) or an alkyl polyglyceryl ether (average number of added moles: 1 to 10) having a C8-18 alkyl group or alkenyl group of the general formula (A) below.



R¹: C8-18 alkyl or alkenyl group

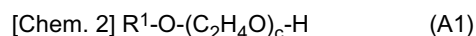
R²: 2 or 3 alkylene groups

R³: C1-3 alkyl group or hydrogen

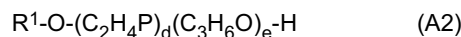
a: 1 to 100; preferably 5 to 40

T: -O-, -COO-, -CON-, or -N-; when T is -O- or -COO-, b is 1, and when T is -CON- or -N-, b is 1 or 2.

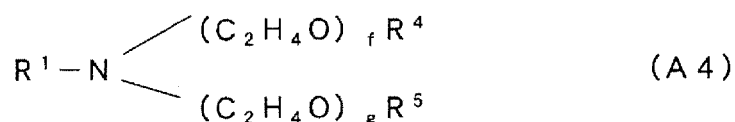
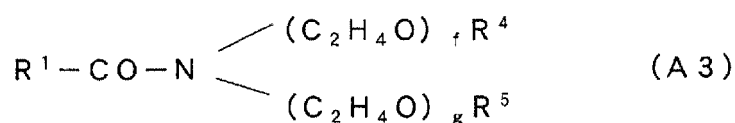
[0033] The following compounds are given as specific examples.



wherein R¹ has the meaning previously described, and C is 1 to 100 and preferably 5 to 40.



wherein R¹ has the meaning previously described, d and e are each independently 1 to 20, the ethylene oxide and propylene oxide may be random or block adducts, and the order in which they are added is arbitrary.



wherein R¹ has the meaning previously described, f and g are each independently 0 to 40 and preferably 0 to 20, f+g is 1 to 20, R⁴ and R⁵ are each independently a hydrogen atom or alkyl groups with a carbon number of 1 to 3.

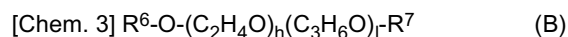
[0034] Possible examples of a typical cationic surfactant are a monoalkyl trimethyl ammonium salt, a monoalkyl dimethyl benzyl ammonium salt, a dialkyl dimethyl ammonium salt, or the like having a C8-18 alkyl group or alkenyl group.

[0035] Possible examples of a typical bipolar surfactant include alkyl dimethyl amino oxide, alkyl amide dimethyl amino oxide, alkyl amide propyl carboxy betaine, alkyl hydroxy sulfobetaine, alkyl sulfobetaine, or the like having a C8-18 alkyl group or alkenyl group.

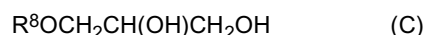
[0036] The higher the hydrophobicity (lyophilicity), the more readily interlayer peeling occurs in a standing pouch composed of multi-layered resin films. Therefore, the present invention is believed to have a strong effect on eliminating peeling of the bonding layers which is caused by permeation of the surfactant.

[0037] A fragrance or solvent can also be used as the content containing a surfactant. Possible specific examples of the fragrance include one or more selected from the following: hydrocarbons, alcohols, phenols, esters, carbonates, aldehydes, ketones, acetals, ethers, nitriles, carbons, lactones, and other natural essential oils or natural extracts. Specifically, the fragrance can be limonene, linalool, guaiacol, linalyl acetate, n-hexyl salicylate, methyl jasmonate, methyl anthranilate, n-octanol, rose ketone, acetaldehyde ethyl phenyl propyl acetol, rose oxide, geranyl nitrile, benzenecarboxylic acid, γ-decalactone, orange, or the like.

[0038] Possible specific examples of the solvent include monovalent C2-5 alcohols, polyvalent C4-12 alcohols, and compounds expressed by the general formulae (B) and (C) below.



wherein R⁶ and R⁷ are independently a hydrogen atom, C1-8 alkyl group, phenyl group, or benzyl group, excluding cases in which R⁶ and R⁷ are both hydrogen atoms; and h is 0 to 10 and i is 0 to 10, excluding cases in which h and i are both 0.



wherein R⁸ is a C1-8 alkyl group.

[0039] The more hydrophobic (lyophilic) the fragrance and solvent, the more readily interlayer peeling occurs in a standing pouch composed of multi-layered resin films. Therefore, the present invention is believed to have a strong effect of eliminating peeling of the bonding layers which is caused by permeation of the fragrance or solvent. It is also believed that adding a decoration to the outer bag causes light to not directly reach the surface of the stretch blow molded container and can suppress increases in surface temperature, and there is therefore a strong effect of protecting the

content and a strong effect of preventing leakage of the fragrance component.

[0040] In the present embodiment, the shoulder part 17 of the refillable container 11, which is connected to the top of the body part 16, is a portion having a dome shape constituting the top end portion of the refillable container 11. Integrally provided to the shoulder part 17 is a cylindrical mouth/neck part 15, which protrudes upward from the top end center portion of the shoulder part 17. The portion of the shoulder part 17 adjacent to the body part 16 has a wall thickness of about 50 to 300 μm , which is equal to or greater than the wall thickness of the body part 16. This portion is formed with a wall thickness that deforms easily similar to the body part 16, and the wall thickness gradually increases toward the top end center portion. Due to the shape-retaining rigidity of the portion approaching the mouth/neck part 15 where the wall thickness increases, the shoulder part 17 supports the mouth/neck part 15 in a stable state.

[0041] In the present invention, it is not absolutely necessary to interpose a thick-walled shoulder part 17 between the body part 16 and the mouth/neck part 15, and a thin-walled body part can be directly joined to the proximal end portion of the mouth/neck part.

[0042] Due to the mouth/neck part 15 of the refillable container 11 being formed with thick walls, the shape-retaining rigidity makes it difficult to deform the mouth/neck part by force of hand, and the top end is opened as a pour hole 15a. The plug 18 for sealing is fitted in and attached to the mouth/neck part 15 so as to cover the pour hole 15a. The mouth/neck part 15 is also provided with a nozzle hooking part 15b for the sake of operability and other factors when the plug 18 is capped.

[0043] The plug 18 is a plug member made of a synthetic resin molded separately from the refillable container 11, preferably by injection molding. In the present embodiment, a refilled container 60, into which the liquid detergent is refilled or replenished by the refillable container 11, is a container in which the mouth/neck part has a conventionally known pour cap 19 provided with a spout as a pouring part 23, as shown in Fig. 3. In the plug 18, a ceiling plate 25 for closing off the pour hole 15a of the refillable container 11 has a thin-walled part 28 which can be torn by the spout 23 provided to the refilled container 60, as shown in Figs. 4(a) and 4(b).

[0044] Specifically, the plug 18 is composed of the ceiling plate 25, and an annular skirt part 26 extending downward from the peripheral edge of the ceiling plate 25. An interlocking rib, for example, is provided to the internal peripheral surface of the annular skirt part 26. The interlocking rib fastens to an interlocking ridge part provided to the external peripheral surface of the mouth/neck part 15 of the refillable container 11, whereby the plug 18 is fitted in and attached to the mouth/neck part 15 of the refillable container 11 so as to not be easily taken out.

[0045] The ceiling plate 25 of the plug 18 is also provided with a positioning guide wall 27 which stands upright from the top surface of the ceiling plate, the purpose of which is to position the mouth/neck part 15 and plug 18 of the refillable container 11 in the pour cap 19 of the refilled container 60 when the liquid detergent is refilled. The positioning guide wall 27 is formed including a peripheral wall part 27a having an inner peripheral shape that runs along the outer peripheral shape of the spout 23 of the pour cap 19, and an insertion part 27b inserted and interlocked into an opening 23a (see Fig. 3) of the spout 23.

[0046] The ceiling plate 25 of the portion of the peripheral wall part 27a that runs along the inner proximal end is provided with a thin-walled part 28 composed of a half-cut line, a half-cut groove, a tip-guiding slanted groove (something tapered so as to guide the tip of the spout 23 so that stress is locally concentrated), or the like, whereby the ceiling plate 25 can be torn by the spout 23 when the refillable container 11 is inverted and the spout 23 is inserted into the mouth/neck part 15 (see Fig. 3). When the liquid detergent is refilled, the ceiling plate 25 is torn along the thin-walled part 28 by the spout 23, whereby the interior of the refillable container 11 and the interior of the refilled container 60 can be easily interconnected.

[0047] The pour cap 19 of the spout 23, as described hereinafter, is a conventionally known component, configured including an attachment skirt part 20 fitted over the external peripheral portion of the mouth/neck part of a container main body 61 of the refilled container 60, an inner cylinder wall 21 disposed along the internal peripheral surface of the mouth/neck part of the container main body 61, and a bottom surface wall 22 connected to the bottom end of the inner cylinder wall 21 (see Fig. 7). The spout 23 has a U-shaped or substantially U-shaped cross section in which the opening 23a is in the side opposite the tilt direction when the content solution is poured out, and the spout 23 is separated from the inner cylinder wall 21 and stood upright from the bottom surface wall 22. A pour hole 24 is opened and formed in the inner area of the spout 23 in the bottom surface wall 22.

[0048] The tip of the spout 23 preferably has a shape which becomes convex or concave toward the center, in which one or two convex parts are formed. The contact surface area between the plug 18 and the thin-walled part 28 can thereby be reduced, and the thin-walled part 28 can therefore be easily torn by concentrating stress in one part of the thin-walled part 28. Even if the shape of the tip is flat, the same effect can be achieved by thinning the wall of the tip. Furthermore, although the tip shape of the spout 23 has an effect on tearing force, the tip shape would not make tearing impossible, and other shapes may therefore be used.

[0049] The plug 18 may be in the form of a screw cap or a pull ring. The liquid detergent can also be refilled through usage whereby the plug 18 is taken out and the liquid detergent is poured from the pour hole 15a of the mouth/neck part 15. The refillable container 11 of the present embodiment has excellent operability in the mouth and the form is

highly stable, and the liquid detergent can therefore be replaced in a stable manner.

[0050] The outer bag 12, which encases the entire refillable container 11, has thinner walls than the body part 16 of the refillable container 11, and is composed of a synthetic-resin sheet material having a thickness of 20 to 140 μm , for example. In the present embodiment, the synthetic resin for forming the outer bag 12 encasing the entire refillable container 11 is preferably a stacked film formed from a resin selected from the following: a polyolefin resin such as polypropylene or polyethylene, a polyester resin such as polyethylene terephthalate, or a polyamide resin such as nylon, for example. In the present embodiment, the resin amount W, which is the combined total of the resin amount of the refillable container 11 and the resin amount of the outer bag 12, is less than the resin amount of a standing pouch having the same capacity (filled capacity) as the container capacity V (filled capacity) of the refillable container 11.

[0051] The outer bag 12 encasing the entire refillable container 11 may be formed from a single-layer film such as polypropylene varnished with a heat seal. In this case, different environmental impacts can be reduced. A resin that has undergone vapor deposition may also be used in order to increase oxygen barrier properties.

[0052] Furthermore, the outer bag 12 is formed by joining predetermined locations of a synthetic-resin sheet material cut into predetermined sizes and shape by heat-sealing or applying an adhesive, and is formed as a bag capable of accommodating an entire container 11 one size larger than the refillable container 11, with a space around the periphery of the container, as shown in Fig. 1. In the present embodiment, the outer bag 12 is preferably formed so as to be capable of encasing the refillable container 11 in a stable state with an excellent outward appearance. Such a form having an excellent outward appearance can be a form in which, for example, a substantially square-shaped bottom surface part 12a is disposed below the bottom surface 14a of the refillable container 11 a, from the peripheral edges of the bottom surface part 12a, a pair of front and back front surfaces 12b and a pair of left and right side surfaces 12c join at the top, the pair of left and right side surfaces 12c are folded in at the tops, and the top edges of the pair of front and back front surfaces 12b are joined together as a belt-enclosed seal part 12d. Thereby, the top parts of the pair of front and back front surfaces 12b are shaped as curved surfaces, and the entire refillable container 11 can be encased by the outer bag 12.

[0053] Due to the outer bag 12 being provided as covering the entire refillable container 11, a decorated surface having a large surface area for an advertisement or a description can be included using the front surfaces 12b and/or side surfaces 12c of the outer bag 12. Because the entire refillable container 11 is encased by the outer bag 12 with a space around the periphery, even if the temperature of the liquid detergent stored in the refillable container 11 decreases below the temperature during filling and reduces capacity, the oxygen in the air remaining in the interior is absorbed by the liquid detergent, and the interior of the container 11 deforms from negative pressure; the deformation of the container 11 does not extend to the outer bag 12, and the excellent outward appearance of the outer bag 12 can be easily preserved. Furthermore, because the refillable container 11 is enclosed in the outer bag 12, the refillable container 11 can therefore be effectively prevented from being tampered with until the container is used, and light can be blocked from reaching the refillable container 11 by the outer bag 12. Furthermore, even if the refillable container 11 is soiled during refilling, the container can be put in the outer bag 12 and discarded, and the outer bag 12 can therefore be effectively reused as a discarding bag.

[0054] Due to the outer bag 12 being provided as covering the entire refillable container 11, the outer bag can supplement the functions of the thin-walled refillable container 11, and problems such as strength decreasing in the finished product of the package 10 and compromised stability of the content accommodated in the refillable container 11 can be effectively avoided. Specifically, because the package 10 has a two-layered structure in which the entire refillable container 11 is covered by the one-size-larger outer bag 12, an air layer in the gap between the refillable container 11 and the outer bag 12 functions as a cushion, for example, whereby impact during falling can be lightened. When a needle pierces through the outer side of the package 10, for example, the load of piercing is temporarily borne by the outer bag, whereby the load can be further borne in a dispersed state by the container 11, and piercing resistance can therefore be more effectively improved along with the load distribution by elongation during piercing due to the excellent ductility of the container.

[0055] Furthermore, because the outer bag 12 covering the refillable container 11 does not contact the content containing a surfactant and does not cause interlayer peeling, the functions of the refillable container 11 can be supplemented by suitably providing the outer bag 12 with a layer that contributes to the stability of the content, such as an aluminum vapor deposition layer or an alumina vapor deposition layer. Problems such as discoloration, changes in viscosity, and color fading, for example, can thereby be avoided, and content stability can be effectively improved.

[0056] With a standing pouch composed of a multi-layered resin film, content stability can be improved by stacking vapor deposition layers, but the surfactant, the solution, the fragrance, and other components in the content that have permeated are blocked by the vapor deposition surface, whereby lamination strength decreases and interlayer peeling therefore readily occurs. With the package 10 of the present application, there is an air layer in the gap between the refillable container 11 and the outer bag 12, whereby the surfactant, the solution, the fragrance, and other components are prevented from permeating to the vapor deposition surface. Therefore, no problems such as decreased falling strength due to interlayer peeling are brought about by the use of vapor deposition layers, and content stability can be

improved.

[0057] Therefore, with the package 10 of the present embodiment, even if the refillable container 11 encased by the outer bag 12 has a capacity of 1000 mL or less, for example, the resin amount can be effectively reduced with the percentage of the resin amount kept low relative to the capacity, reducing the resin amount makes it possible to easily avoid problems such as compromising the outward appearance of the finished product, reducing strength, and compromising the stability of the accommodated product, and the environmental impact can thereby be effectively reduced.

[0058] The package 10 of the present embodiment having the configuration described above can be displayed in a stable upright state, with the bottom surface 14a of the refillable container 11 and the bottom surface part 12a of the outer bag 12 arranged on a display shelf of a store, for example. A hanging hole can also be formed in the belt-enclosed seal part 12d of the outer bag 12, for example, and the package can be displayed in a hanging state.

[0059] A user who has purchased the package 10 of the present embodiment takes the refillable container 11 out of the outer bag 12, and refills the filled and stored liquid detergent in a detergent container as the refilled container 60. The act of refilling is easily performed by inverting the refillable container 11 (see Fig. 3), and interconnecting the refillable container 11 and the refilled container 60 by inserting the spout 23 into the mouth/neck part 15 and tearing the ceiling plate 25 of the plug 18.

[0060] In the refillable container 11 of the present embodiment, because the wall thickness of the body part 16 is 50 to 150 μm , in the inverted state in which the outer bag 12 is disposed at the bottom as shown in Fig. 5, the liquid detergent filled and stored in the interior can be poured out to a certain extent while the body part 16 is shrunk-deformed, without air being replaced via the pour hole 15a. A certain amount of liquid detergent is thereby easily replaced even if the hand is taken away, for example, and the ease of use of the refillable container 11 can be improved. After the body part 16 itself has shrunk-deformed, the liquid detergent remaining in the container 11 can be refilled in the refilled container 60 by air replacement via the pour hole 15a, or by pressure-deforming the body part 16 by hand, for example.

[0061] Therefore, with the package 10 of the present embodiment, the body part 16 can be made flexible such that when the synthetic-resin refillable container 11 is inverted with the mouth/neck part 15 disposed at the bottom, for example, the liquid filled and stored in the interior can be poured out to a certain extent while the body part 16 itself is shrunk-deformed without air being replaced via the pour hole 15a, and the package can be displayed with an effective decoration added without compromising the outward appearance.

[0062] With the package 10 of the present embodiment, forming both the refillable container 11 and the outer bag 12 into thin walls makes it possible to further reduce the resin amount used, and thereby more effectively reduce the environmental impact, in comparison to conventionally known thin-walled bottle containers or standing pouches.

[0063] With the package 10 of the present embodiment, in addition to the operational effects described above, the following unique operational effects are also exhibited.

a) Even if the content is a liquid detergent containing a surfactant and the content creates negative pressure inside the refillable container 11 by absorbing the oxygen in the air remaining inside the container 11, and causing the container to readily deform, this does not make the package any less saleable because the deformation of the container 11 is not seen due to the container 11 being covered by the outer bag 12.

b) Due to being formed by a single-layer synthetic resin composed of a single material, the refillable container 11 has no bonding layers; therefore, there is no interlayer peeling in the container 11, and no loss of strength resulting from interlayer peeling. Specifically, there is no peeling of bonding layers resulting from permeation of the surfactant, and loss of strength in the refillable container 11 can be prevented.

c) Because the entire refillable container 11 is encased by the outer bag 12, temperature increases near the surface of the refillable container 11 caused by direct light exposure can be prevented by endowing the outer bag 12 with light-blocking properties, and the stability of the liquid detergent as the content can be guaranteed. Because light-blocking properties are guaranteed in the outer bag 12, there is no need to print on the entire surface as is the case with a standing pouch, and the inside refillable container 11, which is a stretch blow molded container, can be formed to as to be transparent or semitransparent. When the refillable container 11 is transparent or semitransparent, the content can be made visible, and the ease of refilling when the container is refilled can therefore be improved.

d) Combining the refillable container 11 and the outer bag 12 makes it possible, with a small resin amount, to implement an appropriate barrier design for the barrier properties of the container 11 such as gas barrier properties.

e) Because the entire refillable container 11 is encased by the outer bag 12, the refillable container 11 cannot be touched directly by hands or the like, which is effective for preventing the container from being altered in the store.

f) Due to the entire refillable container 11 being encased by the outer bag 12 with a space around the periphery of the container, there is an air layer between the refillable container 11 and the outer bag 12, and impact from external disturbances can therefore be softened.

g) Because the refillable container 11 has appropriate shape-retaining rigidity due to the mouth/neck part 15 for attaching the plug 18 being formed with thick walls, and because the body part 16 easily deforms to an extent such that the body part can be easily swollen by water pressure from a water service faucet, for example, after the liquid

detergent has been refilled, for example, the interior of the container 11 can easily be washed by holding the mouth/neck part 15 and pouring in the service water through the pour hole 15a. h) Due to the capacity of the refillable container 11 being 1000 mL or less, the container can be given a design that has improved handling during refilling.

[0064] The present invention is not limited to the above embodiments, and can be varied in many ways. For example, the content stored in the refillable container, which is a stretch blow molded container, for example, does not need to be a liquid detergent, and may be other various types of content containing a surfactant. The refillable container is also not limited to something that is used by pouring out liquid while the body part itself is shrunk-deformed, without air being replaced via the pour hole. The refillable container may also be used with other methods. Furthermore, the outer bag is not limited to the forms described above, and the container can be covered in other various forms that would encase the entire container while maintaining space. The outer bag may be made of something other than a synthetic resin, such as paper, for example.

[0065] Pertaining to the embodiment described above, the present invention also discloses the following packages.

<1> A package having a synthetic-resin stretch blow molded container for storing a content containing a surfactant, a plug attached to a mouth/neck part of the stretch blow molded container, and an outer bag for encasing the entire stretch blow molded container with a space around the periphery of the container; and the package can be displayed with the container standing unaided; wherein

the stretch blow molded container is formed including a bottom part having a standing arrangement part, a mouth/neck part for pouring out the content, and a body part between the bottom part and the mouth/neck part, a decoration being appended to the outer bag; and

the surfactant contained in the content stored in the stretch blow molded container is a surfactant containing an EO group or an EOPO group.

<2> A package having a synthetic-resin stretch blow molded container for storing a content containing a surfactant, a plug attached to a mouth/neck part of the stretch blow molded container, and an outer bag for encasing the entire stretch blow molded container with a space around the periphery of the container; and the package can be displayed with the container standing unaided; wherein

the stretch blow molded container is formed including a bottom part having a standing arrangement part, a mouth/neck part for pouring out the content, and a body part between the bottom part and the mouth/neck part, a decoration being appended to the outer bag; and

the stretch blow molded container is a bottle container composed of polypropylene or polyethylene terephthalate and having a wall thickness of 80 to 120 μm .

<3> The package according to <2>, wherein the plug is a press-fitted type of hollow plug composed of polypropylene.

<4> The package according to <2> or <3>, wherein the outer bag is made of stacked films that have a decoration appended by printing and that can be heat sealed, having an oxygen transmission rate of less than 1100 $\text{mL/m}^2\cdot\text{day}\cdot\text{atm}$ and a layer thickness of 70 μm or less.

Examples

[0066] The package of the present invention is described below in further detail through examples and comparative examples, but the present invention is not limited to these examples.

[0067] The refillable packages of the examples are refillable packages 1 to 12 having the same configuration as the package of the above embodiment wherein the value A ($A = W/V^{2/3}$), which is obtained by dividing the resin amount W (g) by $2/3$ th power of the container capacity V (mL), is suitably varied, the packages also having two-layered structures configured as shown in table 1. For the refillable packages 1 to 12, "content stability," "piercing strength (rate of elongation of the refillable packages)," and "shrinking deformation" were evaluated by the evaluation methods below. Standing pouches 1 to 3, having the same capacity as the containers of the refillable packages 1 to 12 and having the configurations shown in table 1, were used as standing pouches for the comparative examples. For the standing pouches 1 to 3, "content stability" and "piercing strength (rate of elongation of the packages)" were evaluated by the evaluation methods below.

[0068] For piercing strength, which is the strength against piercing of the container and is one indicator of the strength of the container, the rate of elongation of the container is important because force escapes due to the elongation of the film when the container is pierced and actually torn. In the examples and the comparative examples, these piercing strengths were evaluated by the elongation rates of the refillable packages or the standing pouches.

[Table 1]

Form	A value	Stretch blow molded container	Outer bag	Total resin amount W [g]	Content stability				Piercing strength of refillable package (elongation rate)	Shrinkage deformation [mmHg]
					collective evaluation	liquid discoloration	viscosity change	liquid color fading		
Refillable package 1	0.10	OPP	OPP 30	5.2	×	× 2.0	○ 0.3	△ 68	○ 122	○ 10
Refillable package 2	0.12	OPP	OPP 30	6.2	×	× 2.0	○ 0.3	△ 69	○ 92	○ 10
Refillable package 3	0.13	OPP	PET 12/LLDPE 30	6.4	○	△ 1.8	○ 0.3	△ 69	○ 107	○ 10
Refillable package 4	0.13	OPP	PET 12/Al vapor deposition LLDPE 30	6.5	○	○ 1.2	○ 0.1	○ 95	○ 93	○ 10
Standing pouch 1	0.14	-	ONy 15/LLDPE 150	9	△	△ 1.6	△ 0.9	△ 70	× 58	-
Refillable package 5	0.14	OPP	PET 12/LLDPE 30	7.4	○	△ 1.8	00.3	△ 72	○ 108	○ 10
Refillable package 6	0.15	OPP	PET 12/Al vapor deposition LLDPE 30	7.5	○	○ 1.2	○ 0.1	○ 95	○ 96	○ 10
Refillable package 7	0.17	OPP	Al vapor deposition PET 12/LLDPE 40	8.8	○	○ 1.2	○ 0.1	△ 72	○ 138	○ 10
Standing pouch 2	0.17	-	PET 12/ONy 15/LLDPE 150	11	△	△ 1.4	△ 0.6	△ 71	× 65	-
Standing pouch 3	0.18	-	ONy 15/Al vapor deposition PET 12/LLDPE 150	11.5	○	○ 0.1	○ 0.3	○ 96	× 56	-
Refillable package 8	0.22	PET	PET 12/LLDPE 30	15.1	○	○ 0.8	△ 0.9	△ 70	○ 123	○ 35
Refillable package 9	0.22	PET	PET 12/Al vapor deposition LLDPE 30	15.3	○	○ 0.8	○ 0.4	○ 95	○ 150	○ 35

(continued)

Form	A value	Stretch blow molded container	Outer bag	Total resin amount W [g]	Content stability				Piercing strength of refillable package (elongation rate)	Shrinkage deformation [mmHg]
					collective evaluation	liquid discoloration	viscosity change	liquid color fading		
Refillable package 10	0.25	PET	Al vapor deposition PET 12/LLDPE 40	17.2	○	○ 0.8	○ 0.4	△ 73	○ 132	○ 35
Refillable package 11	0.32	PET	PET 12/LLDPE 30	14.4	○	○ 0.5	△ 0.5	△ 74	△ 77	× 75
Refillable package 12	0.32	PET	PET 12/Al vapor deposition LLDPE 30	14.5	○	○ 0.5	○ 0.3	○ 95	△ 76	× 75

[Evaluation of Content Stability]

[0069] The content stability was evaluated by being comprehensively determined from the evaluation results of the hue change (liquid discoloration) of the content, the weight reduction rate (viscosity change), and fading of the liquid color (liquid color fading). The evaluated sample (content) was a synthetic liquid detergent containing a surfactant which constituted 60% or more of the total percentage of the content.

[0070] Hue change was evaluated by measuring deterioration of the content by temperature, oxygen, and the like through an accelerating test of keeping the content at 50°C (no humidity management) for 20 days. The hue change was measured by a color-difference meter at room temperature, the evaluation was made using an initial b^* value before the preservation and a difference Δb^* value after keeping, cases of the Δb^* value being " $\Delta b^* < 1.4$ " were determined as "O," cases of " $1.4 \leq \Delta b^* \leq 1.9$ " were determined as " Δ ," and cases of " $\Delta b^* > 1.9$ " were determined as " $\times$." The measurement method involved transferring the content after the preservation to a glass bottle and measuring the content in this state with a color-difference meter (the measurement time was 1 second, the observation conditions were approximately a color matching function of a CIE2° field of vision, and the observation light source was a C light source/6774k (equivalent to daylight including blue sky)). The evaluation results of the hue change (the liquid discoloration) are shown together with the Δb^* value in table 1.

[0071] The weight reduction weight that affected content viscosity was evaluated through an accelerating test of keeping the content at 40°C and a relative humidity of 20% for one month. With the weight reduction rate r [wt%] referring to the percentage of the weight ratio between the weight before preservation and reduction amount obtained from the weight of the content before preservation and the weight after preservation, cases of " $r < 0.5$ " were determined as "O," cases of " $0.5 \leq r \leq 1$ " were determined as " Δ ," and cases of " $r > 1$ " were determined as " $\times$." The evaluation results of the weight reduction rate (viscosity change) are shown together with the weight reduction rate r [wt%] in table 1.

[0072] The fading of the liquid color was evaluated by the average of the pigment residual rate found from the change in light absorbance of post-test content, according to a fade test (for 24 hours at an irradiance of 60 W/m² (300 to 400 nm), a black panel temperature of 65°C, an internal tank temperature of 40°C, a relative humidity of 75%, and a cumulative irradiance of 10 MJ/m²) using a cumulative illuminance of 10 MJ/m² (over a period of about two weeks in summer) from a sunlight exposure test and a xenon fade meter. For the pigment residual rate, the percentage of the ratio between initial light absorbance before preservation and the light absorbance after preservation was designated as the pigment residual rate C [%], cases of " $C > 80$ " were determined as "O," cases of " $50 \leq C \leq 80$ " were determined as " Δ ," and cases of " $C < 50$ " were determined as " $\times$." The evaluation results of the fading of the liquid color (the liquid color fading) are shown together with the pigment residual rate C [%] in table 1.

[0073] For the collective evaluation of content stability, in the above-described evaluation results of the hue change (liquid discoloration), the weight reduction rate (the viscosity change), and the fading of the liquid color (the liquid color fading), cases of one or more "O" were determined as "O," cases of one or more " $\times$ " were determined as " $\times$ " (cases of the "O" and " $\times$ " together are " $\times$ "), and cases of three or more " Δ " were determined as " Δ ."

[Evaluation of piercing strength]

[0074] The elongation rate according to a piercing test was evaluated as follows through the test method shown in Figs. 6(a) and 6(b). In the case of the refillable packages 1 to 12, samples were created by filling the refillable containers with water, attaching the plug, and inserting and sealing the outer bag. In the case of the standing pouches 1 to 3, samples were created by filling the pouches with water and sealing. Water was filled so that the refillable containers and the standing pouches had the same void rate. These samples filled with water were used for measurement after being kept for one day or more at 20°C.

[0075] A tool 73 equipped with a piercing needle 72 is installed on an installation board 71 at the top of a measurement apparatus 70. Both ends of a sample 74 are fixed using tape 75 or the like to a rising stand 76 so that the body part of the sample 74 hangs out. The position is adjusted so that the center (the middle) of the body part of the sample 74 contacts the tip of the piercing needle 72, and the sample 74 is installed/fixed in place. The piercing needle 72 is a metal needle in which the tip has a semicircular cross section measuring 1 mm in diameter. The rising speed of the rising stand 76 was 50 mm/min. The pierced elongation rate of the samples 74 was calculated by measuring the rising stroke of the rising stand 76, from the contact of the tip of the piercing needle 72 with the samples 74 until the samples 74 were torn. The pierced elongation rate was a value obtained by dividing the stroke amount [mm] by the thickness [mm] of the sample 74. Quality was determined by a relative evaluation of the measurement results. Cases of the elongation rate s being " $s > 90$ " was determined as "O," cases of " $75 \leq s \leq 90$ " was determined as " Δ ," and cases of " $s < 75$ " was determined as " $\times$." The evaluation results of piercing strength are shown together with the elongation rate s in table 1.

[Evaluation of shrinkage deformability]

[0076] Concerning the shrinkage deformability of the refillable containers, the containers naturally collapse readily when the inside and outside pressure difference ΔP of the container is 60 mmHg or less, and cases of " $\Delta P < 60$ mmHg" were therefore evaluated as "○" while cases of " $\Delta P > 60$ mmHg" were evaluated as "x." The inside and outside pressure difference ΔP is measured by filling the container with water to 90% of the filled capacity, affixing a cap with a syringe connected to a pressure sensor, and pulling out the syringe. When the syringe has been pulled out, the pressure difference rises. Immediately before the container deforms, the pressure difference reaches a peak value and decreases. The shrinkage deformability of the containers were evaluated using the peak value of the pressure difference at this time as ΔP . The evaluation results of shrinkage deformability are shown together with the inside and outside pressure differences ΔP in table 1.

[0077] According to the evaluation results of table 1, the packages 3 to 10 in particular have an A value range of 0.13 to 0.25, whereby it is established that these packages have excellent content stability, piercing strength, and shrinkage deformability.

[Preservation evaluation when concentration of surfactant is varied]

[0078] A preservation evaluation test was conducted by the following method, wherein the test specimens were six refillable packages having the same configuration as the package of the above embodiment, and the value A ($A = W/V^{2/3}$) obtained by dividing the resin amount W (g) by $2/3$ th power of the container capacity V (mL) was $A = 0.13$, $A = 0.15$, $A = 0.22$, $A = 0.32$, $A = 0.57$, and $A = 0.78$.

[0079] In the preservation evaluation test, the refillable containers of the test specimens which were stretch blow molded containers were filled with samples of a content solution in which the surfactant concentrations C were 10 wt%, 29 wt%, 37 wt%, 45 wt%, 50 wt%, 63 wt%, and 74 wt%. The refillable containers filled with the samples were put into outer bags, kept at 20°C for one month, then returned to room temperature, and the amount of deformations in the body parts at the time were measured. The difference between the body part width of the refillable containers before preservation and the body part width of the refillable container after preservation was divided by the body part width of the refillable containers before preservation, and the percentage of this value was used as a degree of reduced pressure deformation to conduct a preservation evaluation of the time that the surfactant concentration was varied. For example, when the body part width of the refillable container before preservation was 60 mm and the degree of reduced pressure deformation was 5%, the deformation was 3 mm. The evaluation results are shown in Fig. 6(c). In Fig. 6(c), areas of a deformation amount of 5% or more are, in terms of outward appearance, areas where deformation of the refillable container is conspicuous.

[0080] According to the evaluation results shown in Fig. 6(c), it is established that when the surfactant concentration C of the content solution accommodated in the refillable container is 50 wt% or more, and when the next surfactant concentration C is 15 to 50 wt%, the outward appearance of the refillable container is readily compromised, and the operational effects of the present invention are therefore effectively exhibited by covering the refillable container with an outer bag.

[0081] A refillable container that uses a standing pouch or the like is formed from a highly pliant or flexible soft packaging material, and the container readily deforms during the act of refilling and readily becomes very unstable. Because of this, refillable containers that can preferably be refilled in a hands-free manner have been developed as refillable containers for refilling a content into a refilled container in which a pour cap having a spout is attached to a mouth/neck part, for example (see Japanese Patent Publication No. 4352671, for example).

[0082] In the hands-free refillable container disclosed in Japanese Patent Publication No. 4352671, a transition cap having a female thread part threaded with a male thread part provided to the external peripheral portion of a pour cap of a refilled container is fitted to the mouth/neck part of the refillable container, and the transition cap is designed to seal the refillable container by an inner lid provided with a score formed therein, which is a perforation (a score). When the content is refilled, the female thread part of the transition cap is threaded with the male thread part of the pour cap, the seal is opened by tearing the inner lid of the transition cap by the pour spout of the pour cap, and the refillable container is communicated with the refilled container. Thereby, the content in the refillable container flows down into the refilled container without leaking out the exterior, because of the airtight bond with the mouth/neck part of the container achieved by the threading of the female thread part of the transition cap and the male thread part of the pour cap.

[0083] In the hands-free refillable container of Japanese Patent Publication No. 4352671, because the inside diameter of the female thread part of the transition cap must be greater than the outside diameter of the male thread part of the pour cap, the cap is excessively larger than the main body part of the refillable container, and the bonded portion is sealed closed by the threading of the female thread part of the transition cap and the male thread part of the pour cap, whereby air is not readily replaced in the interior of the container and it is difficult to refill the container smoothly. To ensure air is readily replaced in the interior of the container, a plurality of mechanisms for air replacement must be

provided to the refilled container or the pour cap.

[0084] Mouth plugs for refillable containers have been developed wherein a pour spout of a refilled container is inserted into a cylindrical spout part provided encircling a seal plate, whereby the seal plate is torn by the pour spout, a gap is maintained between a spout part and the pour spout of the refilled container, and air is replaced easily (see JP 2010-235151 A and JP 2010-235152 A, for example).

[0085] However, in the mouth plugs for refillable containers of JP 2010-235151 A and JP 2010-235152 A, the refillable container readily becomes unstable when the act of refilling is performed, because a gap of equivalent width is preserved substantially around the entire periphery of the pour spout, between the cylindrical spout part and the pour spout of the refilled container having a U shaped or substantially U shaped cross section in a certain part. After the tearing of the inner side of the spout part of the refillable container, when the seal plate is inserted too far into the pour spout of the refilled container, air replacement becomes difficult, and reverse air flow causes the liquid to spill readily.

[0086] Another invention of the present application relates to a plug member (a plug) for a refillable container, whereby a refillable container can be positioned in a stable manner on a refilled container in which a pour cap having a pour spout is attached to the mouth/neck part of a container main body, and a content of the refillable container can be made to flow down smoothly and refill the container through a simple configuration without the need for complex mechanisms for air replacement.

[0087] Another invention of the present application is a plug member (a plug) fitted covering a refilling outflow mouth of the refillable container, the plug member being for refilling a content into a refilled container in which a cap having a pour spout is attached to a mouth/neck part of a container main body. The plug member is composed of a ceiling plate and an annular skirt part extending downward from the internal periphery of the ceiling plate, and the plug member is fitted covering the refilling outflow mouth of the refillable container via the annular skirt part. An insertion guide wall is provided to the ceiling plate and stood upright from the top surface thereof, and the insertion guide wall is formed including a peripheral wall part, a part of which is an inner peripheral shape that runs along the outer peripheral shape of the cross-sectional shape of the pour spout. In the ceiling plate of the portion running along the inner proximal end part of the peripheral wall part, a thin-walled part is formed for inducing tearing of the ceiling plate by the pour spout, and the insertion guide wall or a ceiling plate on the inner side of the insertion guide wall is provided with a flow channel adjusting wall part inserted into and disposed in the opening of the pour spout. When the refilling outflow mouth is opened by inserting the pour spout into the inner portion of the insertion guide wall and tearing the ceiling plate, the internal peripheral surface of the peripheral wall part is tightly fitted to the external peripheral surface of the cross-sectional shape of the pour spout, and the refillable container is positioned so as to maintain the area directly below the flow channel adjusting wall part as an air-bleeding opening.

[0088] A plug member (plug) 18 for a refillable container according to another invention of the present application is fitted to the mouth/neck part 15 of a thin-walled bottle-shaped container, for example, as the refillable container 11, and the plug member covers a refilling outflow mouth 15a (see Fig. 2) at the tip of the mouth/neck part 15, as shown in Figs. 2, 3, 4(a), and 4(b) described above. The refillable container 11 is formed including a bottom part 14 having a standing arrangement part 13, a mouth/neck part 15 for pouring out the content, and a body part 16 having thin walls of about 50 to 150 μm between the bottom part 14 and the mouth/neck part 15. The body part 16 is provided with flexibility such that in an inverted state in which the mouth/neck part 15 is disposed at the bottom, for example, liquid which is the content filled into and accommodated in the interior is poured out to a certain extent while the body part 16 itself is shrunk-deformed without air being displaced through the refilling outflow mouth 15a. The refillable container 11 is thereby a bottle container capable of being refilled with a certain amount of content even in a hands-free manner, for example (see Fig. 5).

[0089] In the refillable container 11 of the present embodiment, the pour cap 19 having the pour spout 23 is attached to the mouth/neck part of the container main body 61, the refillable container is for refilling or replenishing a liquid detergent into the refilled container 60 for a liquid detergent, for example, and the refillable container contains the liquid detergent as the content, as shown in Fig. 3. The plug member 18 for a refillable container, which is also the plug member described above, has a function that allows the liquid detergent accommodated in the refillable container 11 to flow through the pour cap 19 of the refilled container 60 having the spout 23, into the refilled container 60 via an inner pouring channel of the spout 23 through a simple configuration without spilling out from the pour cap 19, while air is being replaced.

[0090] Specifically, the pour cap 19 having the spout 23 is a conventionally known component configured including the attachment skirt part 20 which is fitted covering the external peripheral portion of the mouth/neck part of the container main body 61 of the refilled container 60, the inner cylinder wall 21 disposed along the internal peripheral surface of the mouth/neck part of the container main body 61, and the bottom surface wall 22 connected to the bottom end of the inner cylinder wall 21, as shown in Figs. 3 and 7. The spout 23 has a U-shaped or substantially U-shaped cross section in which the opening 23a is in the side opposite the tilt direction X (see Fig. 3) when the liquid detergent is poured out, and the spout 23 is separated from the inner cylinder wall 21 and stood upright from the bottom surface wall 22. Therefore, when the liquid detergent is poured through the pour cap 19 into the refilled container 60, the liquid detergent readily accumulates above the bottom surface wall 22 in the outer periphery of the spout 23 before reaching the inner pour hole

24 of the spout 23. Particularly, when the liquid detergent is highly viscous, there is a risk that closing the opening 23a and impeding air replacement will cause the liquid detergent to overcome the inner cylinder wall 21 of the pour cap 19 and spill out to the outside.

[0091] Because of this, the plug member 18 for a refillable container of the present embodiment is employed when the liquid detergent as the content is refilled or replenished, and the plug member 18 is employed to make it possible to limit the refilling outflow channel, which extends from the refillable container 11 to the refilled container 60, to a portion inside the spout 23; to make it possible to effectively prevent the liquid detergent from spilling out of the pour cap 19; to allow air to be replaced easily with the interior of the refilled container 60; and to allow the liquid detergent to flow smoothly into the refilled container 60.

[0092] The plug member 18 for a refillable container of the present embodiment is a plug member for refilling liquid detergent, for example, as a content into the refilled container 60 in which the pour cap 19 is attached to the mouth/neck part of the refilled container 60, and the plug member 18 is fitted covering the refilling outflow mouth 15a of the refillable container 11; wherein the pour cap 19 is a conventionally known component having an inner cylinder wall 21 disposed along the internal peripheral surface of the mouth/neck part of the refilled container 60, a bottom surface wall 22 connected to the bottom end of the inner cylinder wall 21, and a spout 23 standing upright from the bottom surface wall 22, as described above; the spout 23 has a U-shaped or substantially U-shaped cross section in which an opening 23a is in the side opposite the tilt direction X when the liquid detergent is poured out, and the spout 23 is separated from the inner cylinder wall 21 and stood upright from the bottom surface wall 22; and a pour hole 24 is opened and formed in an inner side area of the spout 23 in the bottom surface wall 22 (see Fig. 7).

[0093] As shown in Figs. 2, 4(a), and 4(b), the plug member 18 for a refillable container is composed of a ceiling plate 25, and an annular skirt part 26 extending downward from the peripheral edge of the ceiling plate 25, wherein the plug member 18 is fitted covering the refilling outflow mouth 15a of the refillable container 11 via the annular skirt part 26. The ceiling plate 25 is provided with an insertion guide wall 27 which stands upright from the top surface of the ceiling plate. The insertion guide wall 27 is formed including a peripheral wall part 27a having a U shaped or substantially U shaped inner periphery that runs along the outer peripheral shape of the U shaped or substantially U shaped cross section of the spout 23, and a flow channel adjusting wall part 27b inserted into and disposed in an opening 23a of the spout 23. The ceiling plate 25 of the portion running along the inner proximal end part of the peripheral wall part 27a is provided with a thin-walled part 28 for inducing tearing of the ceiling plate 25 by the spout 23.

[0094] The insertion guide wall 27 is provided with a stopper part 30 which disposes the insertion guide wall 27 in the middle portion of the spout 23 by interlocking with the external peripheral portion of the spout 23, and which maintains an air-bleeding opening 29 (see Fig. 9) through the opening 23a of the spout 23 between the bottom surface wall 22 of the pour cap 19 and the insertion guide wall 27. When the refilling outflow mouth 15a is opened by inserting the spout 23 into the inner portion of the insertion guide wall 27 and tearing the ceiling plate 25 (see Fig. 9), the internal peripheral surface of the peripheral wall part 27a is tightly fitted in the external peripheral surface of the U shaped or substantially U shaped cross section of the pour spout 23, and the refillable container 11 is positioned so as to maintain the air-bleeding opening 29 (see Fig. 9).

[0095] In the present embodiment, the stopper part 30 of the insertion guide wall 27 is composed of a contact wall part 27c, which is interposed between the peripheral wall part 27a and the flow channel adjusting wall part 27b, and which is provided so as to close off the open portion of the U shaped or substantially U shaped inner periphery of the peripheral wall part 27a, together with the flow channel adjusting wall part 27b. The contact wall part 27c is designed so as to dispose the insertion guide wall 27 in the middle portion of the spout 23 (see Fig. 9) by contacting and interlocking with contact reinforcing ribs 32 from above, the contact reinforcing ribs 32 extending from the external peripheral surface of rib stands 31 (see Fig. 7) which curve and extend inward from the side edges of the opening 23a in the bottom part of the spout 23.

[0096] In the present embodiment, the refillable container 11 is formed by stretch blow molding using a synthetic resin such as polypropylene, polyethylene, or polyethylene terephthalate, for example, and is configured including a bottom part 14 having a standing arrangement part 13, a mouth/neck part 15 having a refilling outflow mouth 15a for pouring out a liquid detergent, and a body part 16 between the bottom part 14 and the mouth/neck part 15 having a wall thickness of about 50 to 150 μm , as shown in Fig. 2. The refillable container 11 has a shoulder part 33 having a dome shape connected to the top of the body part 16 and constituting the top end portion of the refillable container 11, and the cylindrical mouth/neck part 15 is provided integrally, protruding upward from the top end center portion of the shoulder part 33.

[0097] Due to being formed with thick walls, the mouth/neck part 15 of the refillable container 11 has shape-retaining rigidity such that it is difficult to deform the mouth/neck part 15 by force of hand, and the top end of the mouth/neck part 15 is opened as a refilling outflow mouth 15a. The plug member 18 for a refillable container of the present embodiment is fitted with and attached to the mouth/neck part 15 so as to cover the refilling outflow mouth 15a. For the sake of characteristics of the plug member 18 such as operability during capping, the mouth/neck part 15 is provided with a nozzle hooking part 15b.

[0098] In the present embodiment, the refillable container 11 is designed to be made commercially available in a state of being covered by a synthetic-resin outer bag encasing the entire refillable container 11 with a space in between, and is designed to be displayed in a store or the like with a decoration such as an advertisement or a description appended to the outer bag.

[0099] In the present embodiment, the plug member 18 for a refillable container is a metal molded article that uses a synthetic resin such as polypropylene or polyethylene, for example, and is composed of a discoid ceiling plate 25, and a flat and cylindrical annular skirt part 26 extending downward integrally from the peripheral edge of the ceiling plate 25, as shown in Figs. 2, 4(a), and 4(b). Interlocking ribs, for example, are provided to the internal peripheral surface of the annular skirt part 26, and the ribs are fastened to interlocking ridges, for example, provided in the external peripheral surface of the mouth/neck part 15 of the refillable container 11, whereby the plug member 18 for a refillable container is fitted with and attached to the mouth/neck part 15 of the refillable container 11 so as to not be easily removable.

[0100] The ceiling plate 25 of the plug member 18 for a refillable container is provided with an insertion guide wall 27 which stands perpendicularly upright from the top surface of the ceiling plate 25 at a height of about 5 to 20 mm, for example, and which is for positioning the mouth/neck part 15 and the plug member of the refillable container 11 in the pour cap 19 of the refilled container 60 when the liquid detergent is refilled. In the present embodiment, the insertion guide wall 27 is composed of a peripheral wall part 27a having a U shaped or substantially U shaped internal periphery that running along the U shaped or substantially U shaped external periphery of the spout 23 of the pour cap 19, a flow channel adjusting wall part 27b inserted into and disposed in the opening 23a of the spout 23 and preferably having a T shaped or substantially T shaped cross section, and a contact wall part 27c provided as interposed between the peripheral wall part 27a and the flow channel adjusting wall part 27b. The insertion guide wall 27 is provided as an annular wall to which these components are connected, having a shape running along the cross-sectional shape of the bottom part which has rib stands 31 of the spout 23.

[0101] In the present embodiment, a thin-walled part 28 is formed in the ceiling plate 25 of the portion running along the inner proximal end part of the peripheral wall part 27a. When the spout 23 is inserted into the inner side of the insertion guide wall 27 in the correct direction, the ceiling plate 25 is induced so as to tear along the thin-walled part 28 formed in the inner proximal end part of the peripheral wall part 27a, and the external peripheral surface of the spout 23 can be tightly fitted with the internal peripheral surface of the peripheral wall part 27a. In the present embodiment, the thin-walled part 28 is provided to a portion running along the inner proximal end part of the peripheral wall part 27a and the inner proximal end part of the flow channel adjusting wall part 27b, which serves as the portion at least running along the inner proximal end part of the peripheral wall part 27a, excluding the inner proximal end part of the contact wall part 27c. Thereby, when inserting the spout 23 tears an inner ceiling plate 25a, which is the ceiling plate 25 of the portion established by the insertion guide wall 27, the inner ceiling plate 25a causes the portions that bond with the contact wall part 27c on both sides of the flow channel adjusting wall part 27b to function as hinges, and the tearing direction is regulated so that the inner ceiling plate 25a turns about these bonding portions as a turning center. The inner ceiling plate 25a is thereby disposed so as to overlap the opening 23a in the upper side surface of the pour spout 23 (see Fig. 9). The flow rate of the liquid detergent flowing into the refilled container 60 via the refilling outflow channel on the inner side of the spout 23 from the refillable container 11 can also thereby be easily adjusted. Providing one or more concave or convex cut starting parts 28a to a position in the thin-walled part 28 where the tip of the spout 23 comes in contact during refilling makes it possible to open the plug even more easily.

[0102] Furthermore, in the present embodiment, on the external peripheral surface of the contact wall part 27c to either side of the flow channel adjusting wall part 27b of the insertion guide wall 27, insertion direction guiding ribs 34 are provided extending vertically in positions corresponding to the contact reinforcing ribs 32 protruding in the external peripheral surface of the rib stands 31 of the spout 23. Providing the insertion direction guiding ribs 34 to the contact wall part 27c of the insertion guide wall 27 enables the direction of insertion into the spout 23 to be more easily understood, by leading the insertion direction guiding ribs 34 so as to align positions with the contact reinforcing ribs 32. The insertion direction guiding ribs 34 can also be provided to the annular skirt part 26 of the plug member 18 or the attachment skirt part 20 of the pour cap 19.

[0103] Furthermore, in the present embodiment, the insertion guide wall 27 is formed so that the top end surface thereof is a curved surface slightly recessed into a concave shape when viewed from the side, as shown in Fig. 4(b). Due to the top end surface of the insertion guide wall 27 being a curved surface that is concave when viewed from the side, when the plug member 18 for a refillable container is used while having been inserted into the spout 23 of the pour cap 19, the tip of the spout 23 can easily be led to the inner side of the insertion guide wall 27.

[0104] With the plug member (plug) 18 for a refillable container of the present embodiment having the configuration described above, the refillable container 11 can be positioned in a stable manner in the refilled container 60 in which the pour cap 19 having the spout 23 is attached in the mouth/neck part of the container main body 61, and the content of the refillable container 11 can be made to flow smoothly downward to refill the container by a simple configuration without the need for complex mechanisms for air replacement.

[0105] Specifically, according to the present embodiment, the plug member 18 for a refillable container is provided

with an insertion guide wall 27 which stands upright from the top surface of the ceiling plate 25, and the insertion guide wall 27 is formed including a peripheral wall part 27a having a U shaped or substantially U shaped internal periphery running along the external peripheral shape of the U shaped or substantially U shaped cross section of the spout 23, and a flow channel adjusting wall part 27b inserted into and disposed in the opening 23a of the pour spout 23. A thin-walled part 28 for inducing tearing of the ceiling plate 25 by the spout 23 is provided to the ceiling plate 25 of the portion running along the inner proximal end part of the peripheral wall part 27a. Thereby, even if the spout 23 is inserted into the inner side of the insertion guide wall 27 at an incorrect direction, the flow channel adjusting wall part 27b comes in contact with the spout 23 as shown in Fig. 8, whereby the ceiling plate 25 can be effectively inhibited from being torn in a state in which the external peripheral surface of the spout 23 is not running along the internal peripheral surface of the insertion guide wall 27. If the spout 23 is inserted into the insertion guide wall 27 in the correct direction, the external peripheral surface of the spout 23 is tightly fitted to the internal peripheral surface of the peripheral wall part 27a and the flow channel adjusting wall part 27b engages with the opening 23a of the spout 23, whereby the refillable container 11 can be positioned in and attached to the refilled container 60 in a stable manner.

[0106] Because the peripheral wall part 27a of the insertion guide wall 27 has a U shaped or substantially U shaped internal periphery running along the U shaped or substantially U shaped external periphery of the spout 23, when the spout 23 is inserted while the ceiling plate 25 is torn via the thin-walled part 28, the internal peripheral surface of the peripheral wall part 27a is naturally led so as to fit tightly with the internal peripheral surface of the spout 23, and the internal peripheral surface of the peripheral wall part 27a fits tightly with the external peripheral surface of the spout 23. Thereby, the open shape of the refilling outflow mouth 15a which is opened to the inner side of the insertion guide wall 27 by the tearing of the inner ceiling plate 25a, and the pouring mouth 24 of the inner area of the spout 23 which is disposed facing the refilling outflow channel on the inner side of the spout 23 and the refilling outflow mouth 15a, are aligned linearly with substantially the same open shape. Thereby, the refilling outflow channel extending from the refillable container 11 to the refilled container 60 can be limited to the inner side portion of the spout 23, the flow rate can be suppressed, and spilling of the liquid detergent as the content out of the pour cap 19 can be effectively avoided. There is also no need for the peripheral wall part 27a of the insertion guide wall 27 to be U shaped or substantially U shaped, and if there is no unsteadiness or large clearance between the spout 23 and the insertion guide wall 27, the flow rate can be adjusted by the flow channel adjusting wall part 27b even with an arc of a semicircle or less, for example, and spilling can therefore be prevented.

[0107] Furthermore, the opening 23a in the topside surface of the spout 23 is closed by the inner ceiling plate 25a which turns about the hinge as shown in Fig. 9, whereby the amount of liquid detergent refilled can be adjusted, the locations of contact with the spout 23 can be increased, and the orientation of the container during refilling can be made more stable.

[0108] Furthermore, according to the present embodiment, the insertion guide wall 27 is provided with a stopper part 30 composed of a contact wall part 27c for interlocking with the external peripheral portion of the spout 23, and thereby disposing the insertion guide wall 27 in the middle portion of the spout 23 and maintaining the air-bleeding opening 29. Thereby, the liquid detergent can be easily and smoothly refilled or replenished with air being replaced in the interior of the refilled container 60 via the air-bleeding opening 29 held by the stopper part 30.

[0109] Therefore, according to the plug member 18 for a refillable container of the present embodiment, due to a simple configuration using the existing structure of the spout 23 of the pour cap 19, the act of refilling (including the act of replenishing) the liquid detergent as the content can be performed efficiently in a stable manner while the body part 16 itself of the refillable container 11 is shrunk-deformed, even in a hands-free manner such as is shown in Fig. 5, for example, without making the plug member 18 excessively large in comparison to the size of the refillable container 11 and without providing complex mechanisms for air replacement to the refilled container 60 or the pour cap 19.

[0110] Figs. 10(a), 10(b), and 11 describe a plug member 40 for a refillable container according to another embodiment. The plug member 40 for a refillable container of the present embodiment, which is substantially similar to the plug member 18 for a refillable container of the above embodiment, is composed of a ceiling plate 45 and an annular skirt part 46 extending downward from the peripheral edge of the ceiling plate 45, wherein the plug member 40 is fitted covering the refilling outflow mouth 15a of the refillable container 11 via the annular skirt part 46. The ceiling plate 45 is provided with an insertion guide wall 47 which stands upright from the top surface of the ceiling plate. The insertion guide wall 47 is formed including a peripheral wall part 47a having a U shaped or substantially U shaped inner periphery that partially runs along the outer peripheral shape of the U shaped or substantially U shaped cross section of the spout 23. The ceiling plate 45 of the portion running along the inner proximal end part of the peripheral wall part 47a is provided with a thin-walled part 48 for inducing tearing of the ceiling plate 45 by the pour spout 23.

[0111] In the plug member 40 of the present other embodiment, the ceiling plate 45a on the inner side of the insertion guide wall 47 is provided with a flow channel adjusting wall part 43 inserted into and disposed in the open part 23a of the spout 23. Formed in the insertion guide wall 47 is a stopper part 50 for interlocking with the external peripheral portion of the spout 23 and thereby disposing the insertion guide wall 47 in the middle portion of the spout 23 and maintaining an air-bleeding opening in the form of the opening 23a of the spout 23, the stopper part 50 being formed by a contact

wall part 47c provided so as to close off the open portion of the U shaped or substantially U shaped internal periphery of the peripheral wall part 47a.

[0112] Furthermore, the thin-walled part 48 is provided to a portion running along the inner proximal end part of the peripheral wall part 47a, excluding the inner proximal end part of the contact wall part 47c, whereby the inner proximal end part of the contact wall part 47c can be made to function as a hinge 49. Providing one or more concave or convex cut starting parts 48a to a position in the thin-walled part 48 where the tip of the spout 23 comes in contact during refilling makes it possible to open the plug even more easily.

[0113] In the plug member 40 of the present other embodiment, the spout 23 is inserted into the inner side portion of the insertion guide wall 47 to tear the ceiling plate 45a along the thin-walled part 48 as shown in Fig. 11, whereby the internal peripheral surface of the peripheral wall part 47a is tightly fitted to the external peripheral surface of the U shaped or substantially U shaped cross section of the spout 23 when the refilling outflow mouth 15a is opened. The ceiling plate 45a turns about the hinge 49, whereby the flow channel adjusting wall part 43 provided to the ceiling plate 45a proceeds to engage with the opening 23a of the spout 23 (see the dotted lines of Fig. 11). It is thereby possible for the refillable container 11 to be positioned in and attached to the refilled container 60 in a stable manner. By joining at a hinge, the parts close the flow channel and impurities do not enter the refilled container 60.

[0114] With the plug member 40 for a refillable container of the present other embodiment as well, the same operational effects as the plug member 18 for a refillable container of the above embodiment are achieved.

[0115] The present invention is not limited to the embodiments described above, and can be altered in various ways. For example, a refillable container to which a plug member for a refillable container is fitted does not absolutely need to be a thin-walled bottle-shaped container, and may be another container such as a standing pouch. The plug member can be fitted covering another refilling outflow mouth other than the mouth/neck part. The ceiling plate and annular skirt part do not absolutely need to be discoid or flat and cylindrical, and may also have other flat shapes such as ellipses, squares, or polygons. Furthermore, the stopper part for maintaining an air-bleeding opening between the bottom surface wall of the pour cap and the insertion guide wall can have another structure capable of disposing the insertion guide wall in the middle portion of the pour spout. Furthermore, the flow channel adjusting wall part does not absolutely need to have a T shaped or substantially T shaped cross section, and may have various other cross-sectional shapes, such as a rectangular or arcuate shape, as a shape that can be inserted into and disposed in the opening of the pour spout. The spout 23 does not need to have the rib stands 31 or the contact reinforcing ribs 32, and the plug member for a refillable container can also be disposed in the middle of the spout 23 due to the insertion guide wall coming in contact with the external periphery of the spout 23.

Industrial Applicability

[0116] According to the package of the present invention, even if the container has a capacity of 1000 mL or less, for example, the package can be formed with the resin amount effectively reduced while the percentage of the resin amount relative to the capacity remains small, reducing the resin amount makes it possible to easily avoid compromising of the outward appearance of the finished product, loss of strength, and compromising of stability of the accommodated content, whereby the environmental impact can be reduced.

[0117] With the package of the present invention, the stretch blow molded container can be a single-layer container, whereby the walls of the container can be further thinned and environmental impact can be reduced without causing a loss of strength of the container due to peeling of the bonding layers. Because there is no interlayer peeling, a satisfactory outward appearance can be preserved.

Claims

1. A package (10) comprising a refillable container (11) for storing a content containing a surfactant, a plug (18) attached to a mouth/neck part (15) of the refillable container (11), and an outer bag (12) for encasing the entire refillable container (11) with a space around the periphery of the refillable container (11); and the package (10) can be displayed with the refillable container (11) standing unaided; wherein

the refillable container (11) is formed including a bottom part (14) having a standing arrangement part (13), the mouth/neck part (15) for pouring out the content, and a body part (16) between the bottom part (14) and the mouth/neck part (15), and a decoration is appended to the outer bag (12);

the outer bag (12) encases the entire periphery of the refillable container (11) with a space around the periphery of the refillable container (11) which houses the refillable container (11) in the outer bag (12) in a state allowing some slack without being squeezed by the outer bag (12);

characterized in that

the refillable container (11) is a synthetic-resin stretch blow molded refillable container (11), and the wall thickness of the body part (16) of the refillable container (11) is 50 to 150 μm so that when the body part (16) is inverted such that the mouth/neck part (15) is disposed at the bottom, the body part (16) is flexible enough to allow the liquid detergent filled and stored in the interior to be poured out to a certain extent while the body part (16) itself is shrunk-deformed without air being displaced through the pour hole.

2. The package according to claim 1, wherein, concerning the blow molded refillable container (11) and the outer bag (12), a value A ($A = W/V^{2/3}$), which is obtained by dividing the resin amount W (g) by $2/3$ th power of the container capacity V (mL), is 0.13 to 0.25, and the capacity of the container is 1000 mL or less.
3. The package according to claim 2, wherein the surfactant concentration of the content is 15 to 80 wt%.
4. The package according to claim 3, wherein the stretch blow molded container (11) is a single-layer container that has been stretch blow molded.
5. The package according to claim 4, wherein the stretch blow molded container (11) comprises a polyolefin resin.
6. A combination of a package according to any of claims 1 to 5 and a container (60) to be refilled, wherein a pour cap (19) attached to a container (60) to be refilled comprises an inner cylindrical wall (21) disposed along the internal peripheral surface of the mouth/neck part (15) of the container main body (16), a bottom surface wall (22) connected to the bottom end of the inner cylindrical wall (21), and a pour spout (23) standing upright from the bottom surface wall (22); and the plug (18) attached to the mouth/neck part (15) of the stretch blow molded refillable container (11) is opened by the insertion of the tip of the spout (23).

Patentansprüche

1. Verpackung (10) mit einem wiederbefüllbaren Behälter (11), um einen ein Tensid aufweisenden Inhalt zu lagern, einem an einem Mund-/Halsteil (15) des wiederbefüllbaren Behälters (11) befestigten Pfropfen (18), und einer äußeren Tasche (12), um den gesamten wiederbefüllbaren Behälter (11) mit einem Abstand um den Umfang des wiederbefüllbaren Behälters (11) zu umschließen; und wobei die Verpackung (10) mit ununterstützt stehendem wiederbefüllbaren Behälter (11) dargestellt werden kann; wobei der wiederbefüllbare Behälter (11) so ausgebildet ist, dass er einen Unterteil (14) mit einem Aufstellanordnungsteil (13), den Mund-/Halsteil (15), um den Inhalt auszugießen, und einen Körperteil (16) zwischen dem Unterteil (14) und dem Mund-/Halsteil (15) aufweist, und wobei eine Dekoration an der äußeren Tasche (12) angebracht ist; die äußere Tasche (12) den gesamten Umfang des wiederbefüllbaren Behälters (11) mit einem Abstand um den Umfang des wiederbefüllbaren Behälters (11) umschließt, der den wiederbefüllbaren Behälter (11) in der äußeren Tasche (12) mit Spielraum aufnimmt, ohne dass dieser von der äußeren Tasche (12) gedrückt wird;
dadurch gekennzeichnet, dass
der wiederbefüllbare Behälter (11) ein streckblasgeformter wiederbefüllbarer Behälter (11) aus einem Synthetikharz ist, und
die Wanddicke des Körperteils (16) des wiederbefüllbaren Behälters (11) 50 bis 150 μm beträgt, so dass wenn der Körperteil (16) so umgedreht wird, dass der Mund-/Halsteil (15) sich unten befindet, der Körperteil (16) flexibel genug ist, dass das in das Innere gefüllte und dort gelagerte flüssige Reinigungsmittel bis zu einer bestimmten Menge ausgegossen werden kann, während der Körperteil (16) selbst schrumpfend verformt wird, ohne dass Luft durch das Ausgussloch verdrängt wird.
2. Verpackung nach Anspruch 1, wobei, in Bezug auf den streckblasgeformten wiederbefüllbaren Behälter (11) und die äußere Tasche (12), ein Wert A ($A=W/V^{2/3}$), der durch Teilen der Harzmenge W(g) durch $2/3$ der Kraft des Behälterinhalts V (mL) erhalten wird 0,13 bis 0,25 beträgt, und der Inhalt des Behälters 1000 mL oder weniger beträgt.
3. Verpackung nach Anspruch 2, wobei der Tensidgehalt des Inhalts 15 bis 80 Gewichts-% beträgt.
4. Verpackung nach Anspruch 3, wobei der streckblasgeformte Behälter (11) ein Einzelschicht-Behälter ist, der streckblasgeformt wurde.
5. Verpackung nach Anspruch 4, wobei der streckblasgeformte Behälter (11) ein Polyolefin-Harz aufweist.

6. Kombination einer Verpackung nach einem der Ansprüche 1 bis 5 und einem wieder zu befüllenden Behälter (60), wobei eine am wieder zu befüllenden Behälter (60) befestigte Gieß-Kappe (19) eine innere zylindrische Wand (21), die entlang der inneren Umfangsoberfläche des Mund-/Halsteils (15) des Behälter-Hauptkörpers (16) angeordnet ist, eine Bodenflächenwand (22), die mit dem unteren Ende der inneren zylindrischen Wand (21) verbunden ist, und einen Ausgießer (23), der senkrecht auf der Bodenflächenwand (22) steht, aufweist; und der am Mund-/Halsteil (15) des streckblasgeformten wiederbefüllbaren Behälters (11) angebrachte Pfropfen (18) durch Einführen der Spitze des Ausgießers (23) geöffnet wird.

Revendications

1. Emballage (10) composé d'un récipient rechargeable (11) destiné à recevoir un contenu comprenant un agent tensio-actif, d'un bouchon (18) fixé sur une partie de col/d'embouchure (15) du récipient rechargeable (11), et d'une poche extérieure (12) destinée à envelopper la totalité du récipient rechargeable (11) avec un espace entourant la périphérie du récipient rechargeable (11) ; ledit emballage (10) pouvant être exposé avec le récipient rechargeable (11) se tenant debout tout seul ; où le récipient rechargeable (11) est formé avec une partie de fond (14) présentant une partie de maintien vertical (13), la partie de col/d'embouchure (15) pour déverser le contenu, et une partie de corps (16) entre la partie de fond (14) et la partie de col/d'embouchure (15), un décor étant ajouté sur la poche extérieure (12) ; la poche extérieure (12) enveloppe toute la périphérie du récipient rechargeable (11) avec un espace entourant la périphérie du récipient rechargeable (11), le récipient rechargeable (11) étant logé dans la poche extérieure (12) dans un état permettant un peu de mou sans compression par la poche extérieure (12) ;
caractérisé en ce que
 le récipient rechargeable (11) est un récipient rechargeable (11) en résine synthétique moulé par étirage-soufflage, et en ce que
 l'épaisseur de paroi de la partie de corps (16) du récipient rechargeable (11) est comprise entre 50 et 150 μm , de sorte que, si la partie de corps (16) est retournée de manière à placer en bas la partie de col/d'embouchure (15), la partie de corps (16) est suffisamment flexible pour permettre au détergent liquide versé et contenu à l'intérieur d'être déversé dans une certaine mesure, la partie de corps (16) en tant que telle étant déformée et contractée sans passage d'air par l'orifice de versement.
2. Emballage selon la revendication 1, où, relativement au récipient rechargeable (11) moulé par étirage-soufflage et à la poche extérieure (12), une valeur A ($A = W/V^{2/3}$) obtenue par division de la quantité de résine W (g) par la capacité de récipient V (mL) à la puissance 2/3 est comprise entre 0,13 et 0,25, et la capacité du récipient est égale ou inférieure à 1000 mL.
3. Emballage selon la revendication 2, où la concentration en agent tensio-actif du contenu est de 15 à 80 % en poids.
4. Emballage selon la revendication 3, où le récipient (11) moulé par étirage-soufflage est un récipient à une seule couche moulé par étirage-soufflage.
5. Emballage selon la revendication 4, où le récipient (11) moulé par étirage-soufflage comprend une résine polyoléfine.
6. Combinaison d'un emballage selon l'une des revendications 1 à 5 et d'un récipient (60) rechargeable, où un bouchon verseur (19) fixé sur un récipient (60) rechargeable présente une paroi intérieure cylindrique (21) appliquée sur la surface périphérique intérieure de la partie de col/d'embouchure (15) du corps principal (16) du récipient, une paroi de surface de fond (22) raccordée au fond de la paroi intérieure cylindrique (21), et un bec verseur (23) dressé sur la paroi de surface de fond (22) ; et où le bouchon (18) fixé sur la partie de col/d'embouchure (15) du récipient rechargeable (11) moulé par étirage-soufflage est ouvert par insertion de la pointe du bec (23).

Fig. 1

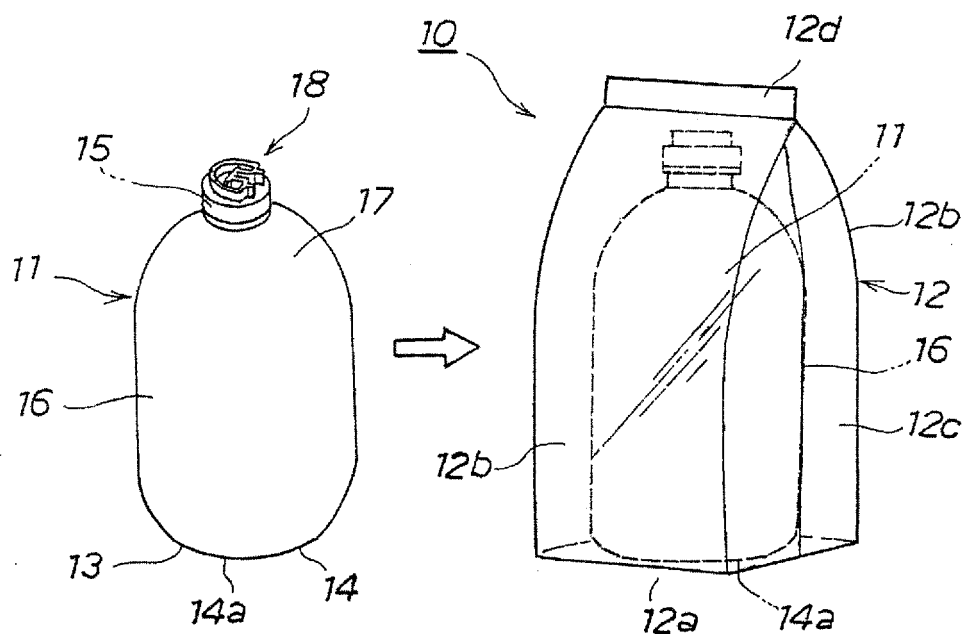


Fig. 2

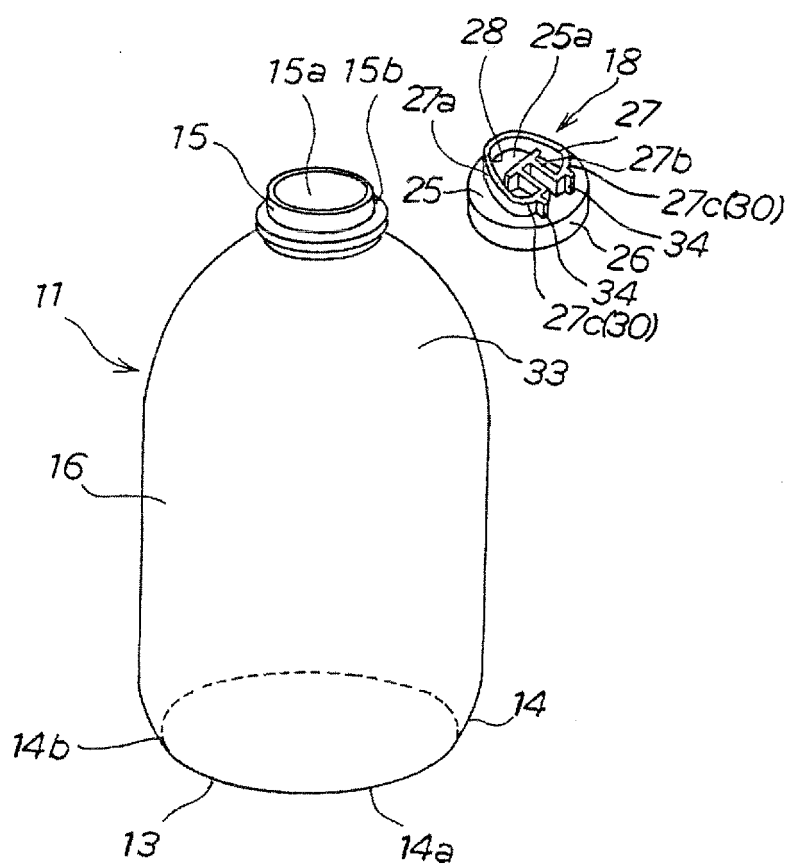


Fig. 3

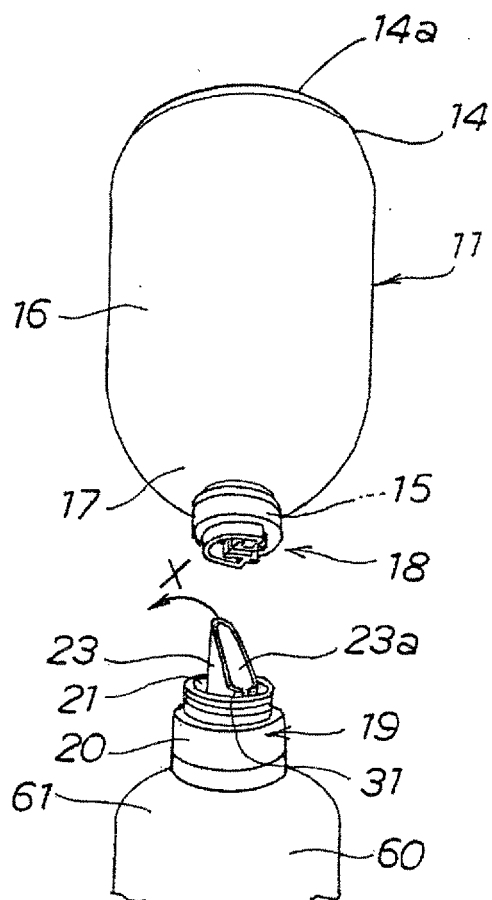


Fig. 4(a)

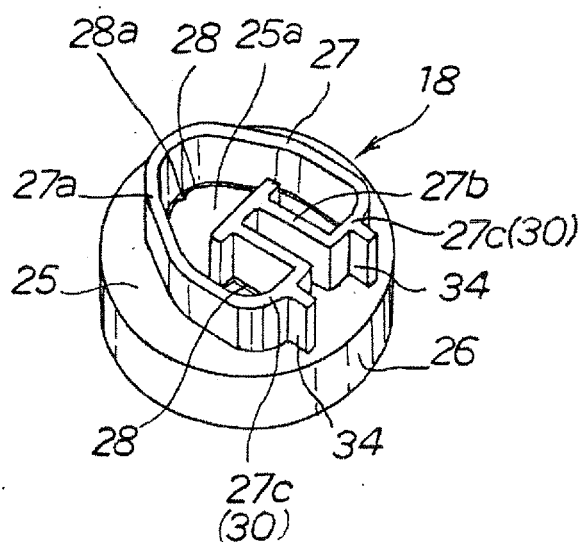


Fig. 4(b)

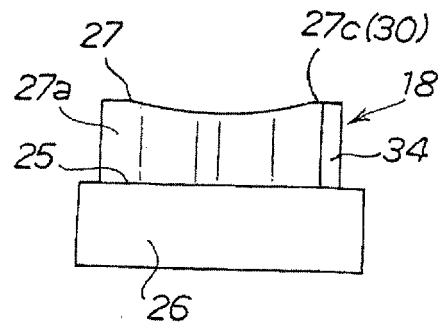


Fig. 5

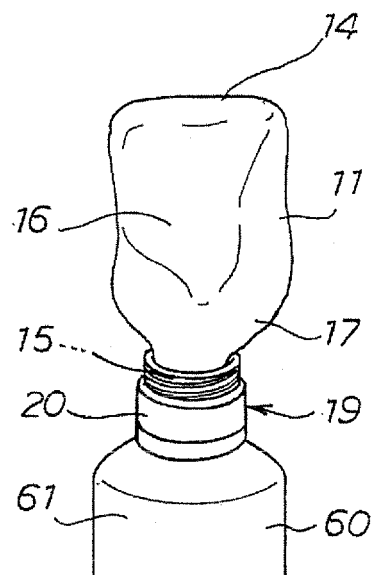


Fig. 6(a)

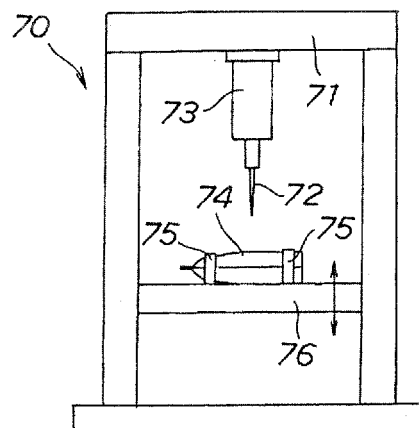


Fig. 6(b)

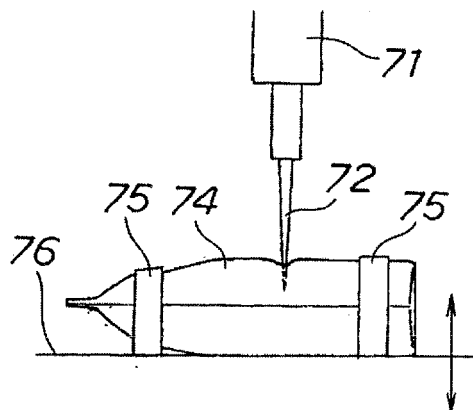


Fig. 6(c)

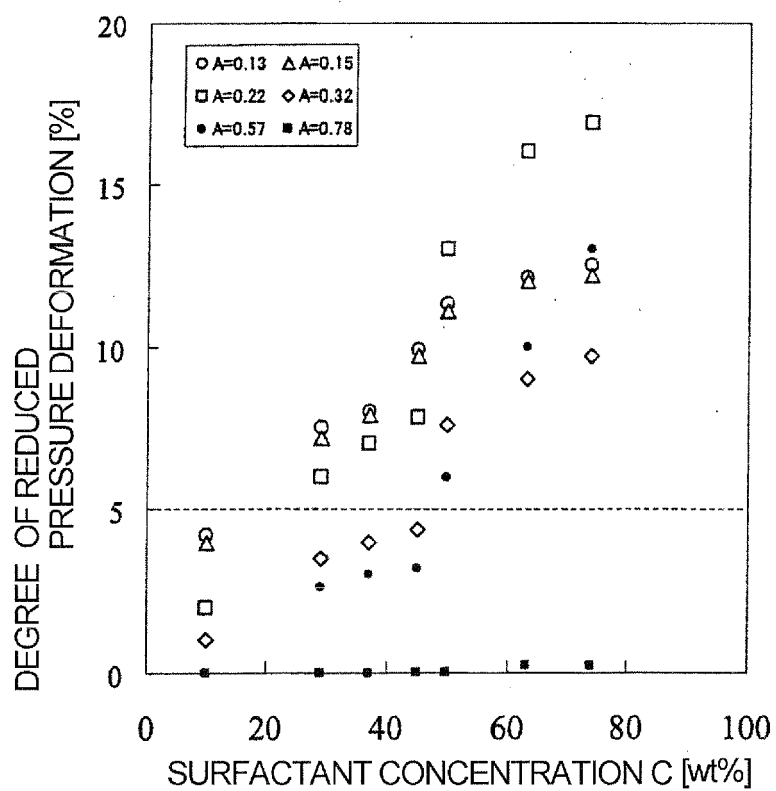


Fig. 7

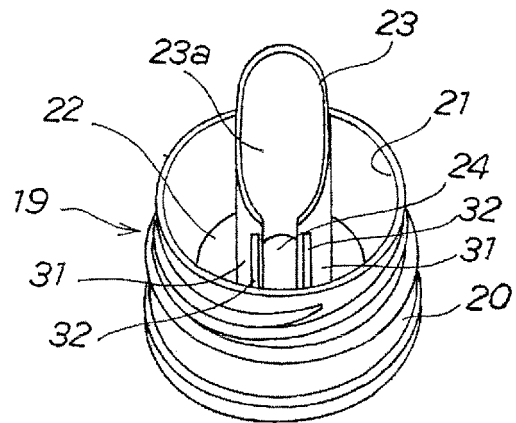


Fig. 8

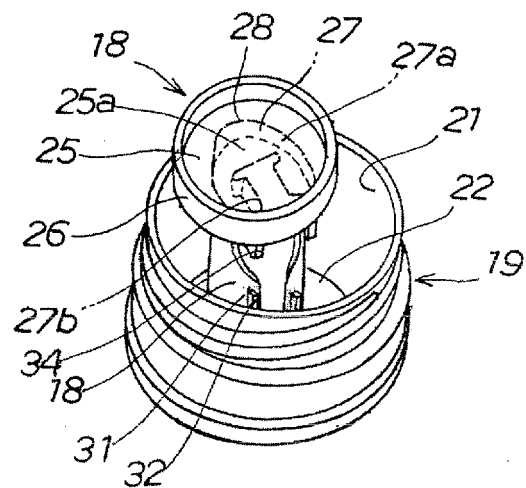


Fig. 9

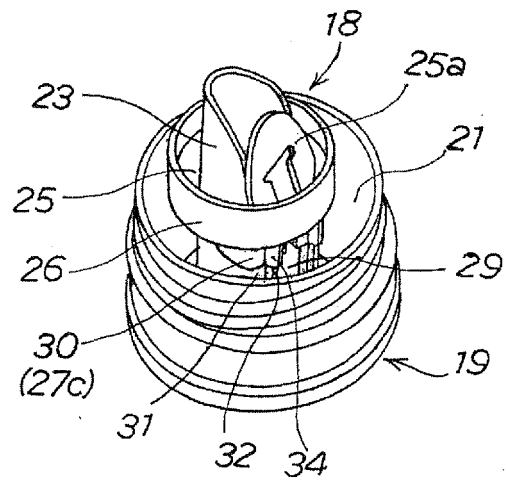


Fig. 10(a)

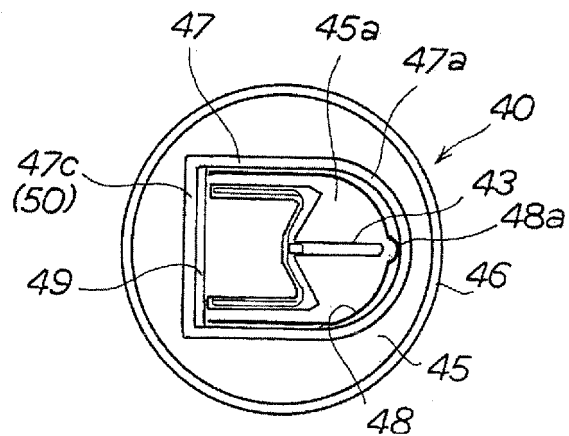


Fig. 10(b)

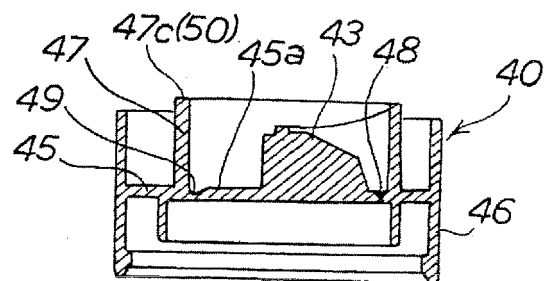
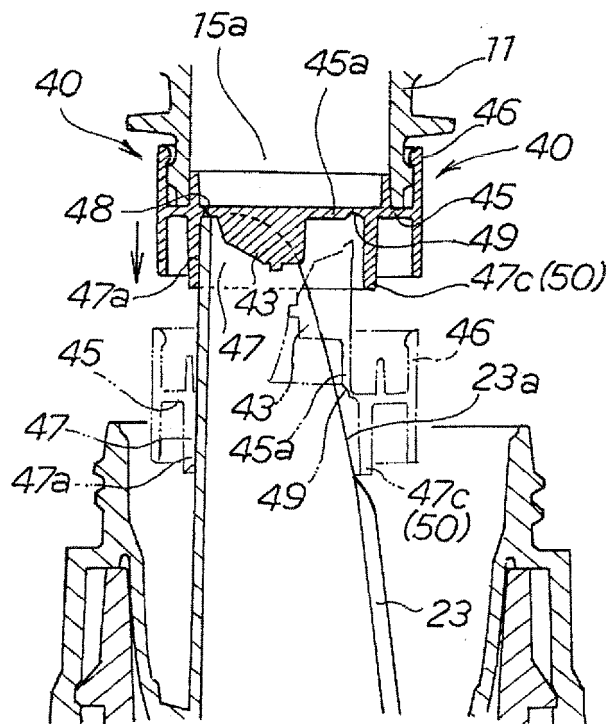


Fig. 11



REFERENCES CITED IN THE DESCRIPTION

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