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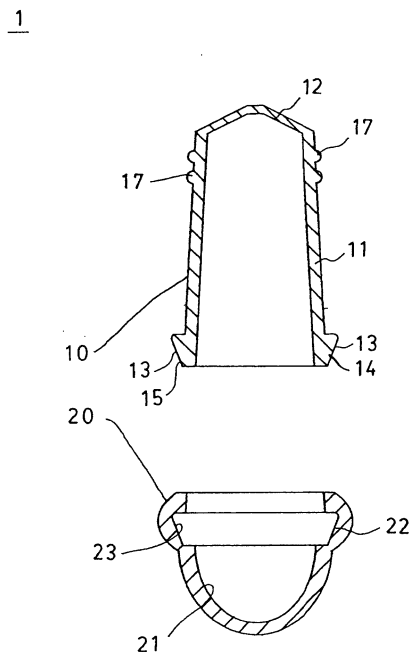
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(54) **PACKAGING CONTAINER**

(57) A fitted body comprises a cap 20 made of a rubber elastic material and a body 10 made of a rubber elastic material, and at least the body 20 or the body 10 expands or contracts in accordance with volumetric expansion or volumetric contraction of an article received in a container 1. The container 1 is arranged so as to enable the takeout of the article without any leakage of the article to the outside in a state where the container is restored to an original shape. In the body 10, a thin-film skin 12 is disposed in its bottom to expand and contract. A flange 18 having a notch 19 is disposed near an open end of the body 10. Cord-like projections 17 are disposed in a circumferential direction of a sidewall 11 near the skin 12.

FIG. 8



Description

Technical Field

[0001] The present invention relates to a packaging container. Specifically, the invention relates to a packaging container wherein even when a shape of a received article left under a high-temperature environment is deformed due to its melting, the article is restored to its original shape if it is placed again under a proper temperature, and the article can be taken out in the original shape, and more particularly to a container suited to packaging of material products such as suppositories used as medicines, cosmetics and foodstuffs repeatedly liquefied/solidified by a temperature change.

Background Art

[0002] A suppository is prepared by forming a drug (medial agent) which is a main drug into a given shape by a base, and it is a solid medicine administered to a rectum, a urethra, a vagina or the like. The suppository is softened or melted at a body temperature, or melted in a mucilaginous liquid. Then, a drug is absorbed through a mucosa into a body.

[0003] To prepare a suppository, normally, an oily base, an aqueous base or the other proper material is used as a base, drugs are uniformly mixed directly or by adding an additive such as an emulsifying agent or a suspending agent as occasion demands, these drugs are molded, sealed in or wrapped in proper skins, and formed into proper shapes. Regarding shapes, usually rectal suppositories are conical or spindle-shaped, vaginal suppositories are globular or oval, and urethral suppositories are long axis.

[0004] The suppositories obtained by the molding are wrapped one by one in, e.g., an aluminum foil, or each fills a packaging container made of hard plastic such as polyethylene or polypropylene to be packaged therein. Additionally, there is a case in which molding and packaging are simultaneously carried out, e.g., a melted base fills a packaging container made of hard plastic, and the base is cooled to be solidified in the container.

[0005] In use, the suppository is preferably stored at a room temperature or in a cold place to keep its shape. At a general household or at the time of being carried, however, the suppository is sometimes stored at a body temperature or more, causing melting of a part or all parts of the suppository.

[0006] However, in the conventional packaging form, e.g., in the case of packaging in an aluminum foil, there is a problem that the melted suppository composition may leak to the outside, not only losing a value as a medicine but also staining the surroundings. Additionally, not only in the case of the packaging in the aluminum foil but also in the case of using the packaging container made of hard plastic, the suppository once melted might not return to its initial shape of the filling and packaging,

and cannot be used as originally intended because of the shape change. The hard plastic packaging container is normally constituted by welding two plastic pieces together. Consequently, when the melted suppository composition oozes to the welded portion to be solidified again, swells (so-called flashes) or the like are generated. Besides, when the welding is bad, the melted composition might ooze to this portion to cause a great change in the weight of the suppository itself. When the suppository is completely melted, the container itself might be broken because its volume increases by 1.1 to 1.2 times.

[0007] Furthermore, in the conventional packaging form, it is necessary to take out the suppository from the container or the aluminum package by fingers at the time of insertion into the anus or the like, and to directly hold the suppository by the fingers. Consequently, there is a problem that a smooth and glistening feeling at the time of holding by the fingers will make insertion difficult and holding by fingers is unsanitary.

[0008] The invention has been made with the aforementioned conventional problems in mind, and it is an object of the invention to provide a packaging container wherein even when a part or all parts of an article similar to a suppository in the container melts as a result of storage under a relatively high temperature, the article is subsequently placed under a temperature to be restored to an original shape, and thus the article can be taken out in a shape of a reception time, and the suppository can be inserted sanitarily without being held by fingers.

Disclosure of the Invention

[0009] A packaging container of the present invention comprising a fitted body of a cap made of a rubber elastic material and a body made of a rubber elastic material is characterized in that at least the cap or the body expands or contracts in accordance with volumetric expansion or volumetric contraction of an article received in the container, and the article can be taken out without any leakage of the article into the outside in a state where the article is restored to an original shape. That is, sealing of the packaging container of the invention is secured as a container by making both of the cap and the body of rubber elastic materials and, by using the nature of the elastic materials, a function is exhibited to cool and solidify the received article a part or all parts of which melt to expand, and to restore its original shape.

[0010] In the packaging container, especially to deal with a large volumetric change, a part of the body or the cap preferably comprises a thin-film skin which easily responds volumetric expansion of the article. The skin is preferably disposed in a bottom of the body and/or the cap, and the other portion of the body comprising the skin and/or the other portion of the cap comprising the skin is preferably formed into a roughly thick cylindrical shape.

[0011] A cord-like projection is disposed in a circumferential direction of the cylindrical portion near the skin of the roughly cylindrical portion of the body or the cap.

[0012] A flange jumping out in an outer circumferential direction more than an open end is formed near the open end of the roughly cylindrical portion of the body or the cap. The flange preferably comprises a cut or a notch.

[0013] Further, according to the invention, the cap and the body are preferably fitted together through a fitting concave and a fitting convex slightly larger than the concave.

[0014] The fitted body of the cap and the body preferably comprises a taper swollen from an insertion end side in the outer circumferential direction.

[0015] One of the cap and the body can be a pedestal which comprises one or a plurality of fitting concaves to fit the opposite body or cap.

[0016] The packaging container of the invention is suitably used for a suppository. In the case of the packaging container used for the suppository, the open end of the body or the cap is preferably positioned near a maximum diameter position of suppository received in the body or the cap.

[0017] The packaging container is preferably made of silicon rubber in consideration of hygiene.

Brief Description of the Drawings

[0018]

FIG. 1 is a perspective view showing a packaging container according to a first embodiment of the present invention;

FIG. 2 is an exploded perspective view showing a used state of the packaging container of FIG. 1;

FIG. 3 is a sectional view showing an exploded state of the packaging container;

FIG. 4 is an exploded perspective view showing a used state of a packaging container according to another embodiment of the invention;

FIG. 5 is a sectional view showing an exploded state of the packaging container of FIG. 4;

FIG. 6 is a sectional view showing an exploded state of a packaging container according to yet another embodiment of the invention;

FIG. 7 is a perspective view showing a packaging container according to yet another embodiment of the invention;

FIG. 8 is a sectional view showing an exploded state of the packaging container of FIG. 7;

FIG. 9 is a plan view of a body of the packaging container of FIG. 7 seen from an open end;

FIG. 10 is a plan view of a body of a packaging container seen from an open end according to yet another embodiment of the invention; and

FIG. 11 is a sectional view of a body of a packaging container cut along a horizontal surface according to yet another embodiment of the invention.

Best Mode for Carrying out the Invention

[0019] Next, the present invention will be described in detail with reference to the accompanying drawings. FIG. 1 is a perspective view showing a packaging container 1 according to a first embodiment of the present invention; FIG. 2 is an exploded perspective view showing a used state of the packaging container 1; and FIG. 3 is a sectional view showing an exploded state of the packaging container 1.

[0020] The packaging container 1 shown in FIG. 1 is a container for a suppository, and such containers can be carried one by one. The packaging container 1 comprises a body 10 which receives a body portion of a suppository 2, and a cap 20 which fits the body 10. In FIGS. 1 to 3, the cap 20 is drawn to cap the body 10 from above. Each of the cap 20 and the body 10 is made of a rubber elastic material. Rubber elasticity means a large elastic deformation behavior observed in the case of a high molecular material of a rubber state, and the rubber elastic material means a material which exhibits such an elastic deformation behavior. As rubber elastic materials used in the invention, for example, in addition to natural rubber and silicon rubber, there can be cited thermosetting types such as styrene-butadiene rubber, chloroprene rubber, urethane rubber, n-butyl rubber, chlorinated butyl rubber, fluorine-containing rubber, and polybutadiene rubber, and thermoplastic elastomer such as styrene elastomer (TPS), olefin elastomer (TPO), vinyl chloride elastomer (TPVC), urethane elastomer (TPU), and polyester elastomer (TPEE). Specifically, the material is selected from these types in accordance with an article to be received. From the standpoint of hygiene and takeout from the container, the silicon rubber is suitably used for the container for the suppository. Among others, a rubber elastic material having rubber hardness of 25 to 95° (JIS K-6253, International Rubber Hardness by a hardness testing method of vulcanized rubber and thermoplastic rubber) is especially preferable. The cap 20 and the body 10 are formed by a general molding method in which the received article is a prototype.

[0021] The packaging container 1 of the invention is characterized in that at least one of the body 10 and the cap 20 expands or contracts in accordance with volumetric expansion or volumetric contraction of the suppository 2 (article) received in the packaging container 1, and the suppository 2 can be taken out without leakage of the melted article to the outside in a state where the article is restored to an original shape. That is, the packaging container 1 of the invention is constituted in such a manner that even when the suppository 2 received therein reversibly expands or contracts and melts to increase its internal volume, no damage or liquid leakage occurs and, when the internal volume contracts due to cooling and solidifying, the article is restored to its original shape. In other words, the packaging container 1 of the invention is formed such that an

internal shape thereof is almost similar to that of the suppository at a proper temperature, and the container received article (suppository 2) and the inside of the container are almost bonded together. Then, even when the article is melted once by a temperature increase and then cooled to be solidified at a proper temperature, the suppository 2 and the packaging container 1 are almost bonded together as in the case of the receiving time to restore the original shape of the suppository 2. Besides, volumetric expansion by the melting of the suppository 2 due to the temperature increase is accompanied by expansion of the packaging container 1 itself. However, no liquid leakage occurs from the fitting portions 13, 22 of the body 10 and the cap 20. Thus, according to the invention, the volume increased when the suppository 2 melts is absorbed by the expansion of the body 10 and/or the cap 20, and the liquid leakage through the fitting portions 13, 22 is prevented by a fitting concave and a fitting convex 23, 14 of the cap 20 and the body 10.

[0022] The packaging container 1 shown in each drawing employs a constitution that the body 10 mainly expands to absorb the volume increase of the article. A constitution may also be employed in which the body 10 and the cap 20 are set equal in rubber hardness and thickness, the cap 20 also expands itself, and the volume increase of the article is absorbed by both of the body 10 and the cap 20. However, if both of the body 10 and the cap 20 expand, liquid leakage from the fitting portions 13, 22 thereof may occur. Therefore, it is preferred to realize a structure of little expansion by using the cap 20 which is equal to, or larger in rubber hardness, and/or equal to, or larger in thickness than the body 10. Incidentally, in the explanation, one to cover is the cap 20, and one to be covered is the body 10. However, one to cover may be the body 10, and one to be covered may be the cap 20.

[0023] The restoration to the original shape according to the invention does not strictly mean physical restoration of an original shape but simply means practical or product-value restoration of an original shape. That is, in an actual product, very small concaves and convexes may exist on the surface due to a manufacturing process or so-called flashes may be generated during product manufacturing. According to the invention, however, there will be no problem even if such very small concaves and convexes or flashes on the product surface cannot be reproduced. The very small concaves and convexes or flashes are generated in the manufacturing process of the article, and lost when the article melts. Very small concaves and convexes formed at the time of resolidification may be a problem of manufacturing accuracy (accuracy of container inner surface) of the packaging container 1. Restoration accuracy of such a level is permitted as a restoration error. In other words, the invention does not guarantee the original accuracy of the conventional manufacturing process. In this regard, in the case of the packaging container made of hard plastic, the internal volume thereof is made larger

than the article in consideration of the expansion of the article, and there is almost no restoration to the original shape even at the time of resolidification.

[0024] The proper temperature in the above explanation is decided by a relation with an article to be received, and it means a temperature range in a general living environment, a manufacturing environment, and a storage environment, specifically a range of approximately 0 to 30°C, a temperature range in which the article can keep its given shape within a normally intended use temperature range. However, within the intended use temperature range, strictness that the article must always have a given shape at any temperatures is unnecessary. The article only needs to have a given shape approximately within the temperature range. The proper temperature is used in meaning that the shape of the article itself is changed when the temperature range is exceeded. For example, the suppository 2 is used at a room temperature, approximately 0 to 30°C which is a general living environment, and it must have a given shape at the room temperature. However, the suppository or the like becomes soft when this temperature range is exceeded, and completely melts, e.g., near 40°C over a body temperature. Thus, a temperature zone which enables keeping of a given shape is referred to as a proper temperature, which varies from article to article. In the above example of the suppository, the room temperature is a proper temperature. However, as a specific temperature, it is not necessary to discriminate 0 to 30°C from 1 to 31°C, but it is enough to consider both to be proper temperatures for the suppository according to the invention. Even at the room temperature, depending on a composition, there may be a suppository 2 which melts at a temperature near 30°C lower than the body temperature to lose a given shape. A proper temperature for such a suppository 2 means not a room temperature but a low temperature before the start of the melting.

[0025] To repeat, the invention is suitably used for the article which has a given shape within the intended use environment, cannot keep the shape when this range is exceeded (irrespective of upper and lower limits), and for example softened or melted to change its shape and whose shape at the time of use is important. Especially, in the case of melting or expanding, the invention is suitably used for an article whose volume increase rate per temperature is large. In the case of the above suppository 2, a given shape is kept until about 35°C. However, when the suppository starts to melt at 35 to 37°C and completely melts near 40°C, the volume increases by about 1.1 to 1.2 as described above. Thus, the packaging container 1 of the invention is suitably used for the article which is a solid in the normal use and storage states, and melts to change its shape outside the proper temperature, and to increase the volume. By applying the container to such an article, even when the article is placed at storage conditions outside the proper temperature to lose its shape, the original shape can be restored by returning the temperature without losing its

shape. Thus, at the proper temperature, the article can always be taken out in the shape of the packaging time (at the time of filling the container), and used in a proper shape.

[0026] The body 10 shown in FIG. 1 comprises a roughly cylindrical and slightly thick sidewall 11, and a thin-film skin 12 which becomes a bottom of the body 10. A fitting portion 13 is disposed in an open end of the body 10. The packaging container 1 absorbs the volumetric expansion of the article by the body 10 as described above. In the body 10, the skin 12 mainly expands, and the volumetric expansion is absorbed by this portion. Needless to say, the bottom of the body 10 may be set equal in thickness to the sidewall 11, the entire body 10 may be uniformly made thick, and the entire portion thereof may expand. In such a case, however, the expansion of the article increases a risk of damaging the body 10, and liquid may leak from the fitting portions 22, 13 of both depending on rubber hardness of the cap 20 and the body 10. The slightly thick formation of the sidewall 11 facilitates pushing-out of the suppository 2 which is a received article. Incidentally, a thickness of the skin 12 is approximately 0.03 to 0.3 mm, preferably 0.1 to 0.15 mm, and a thickness of the sidewall 11 is approximately 0.4 to 2 mm, preferably 1.0 to 1.5 mm. However, these ranges are in no way limitative.

[0027] The skin 12 is roughly formed into a mountain shape when it is seen from the side face, which matches the shape of the suppository 2 to be received. However, the shape is not limited to such and, for example, it may be semispherical.

[0028] The body 10 is manufactured so that the open end of the body 10 will be almost positioned in a maximum diameter position of the received suppository 2. That is, the open end of the body 10 is positioned in a most swollen place of the suppository 2. The body 10 is manufactured to be a size so that a so-called head of the suppository 2 can be exposed when the cap 20 is removed from the body 10. Most of suppositories are spindle-shaped or circular conic. Accordingly, by positioning the open end near the maximum diameter, the cap 20 can be surely removed in a state in which the suppository 2 is received in the body 10 without leaving the suppository 2 in the cap 20 side. Since a structure is employed in which an inner diameter of the body 10 is enlarged toward the open end of the body 10, the suppository 2 is easily pushed out by holding the portion near the bottom of the body 10 by fingers. Thus, by applying the head of the suppository 2 to the anus or the like without taking out the suppository 2 from the body 10, then the suppository 2 is easily inserted into the anus only by pushing out the suppository 2 from the body 10. Therefore, in contrast to the conventional packaging form, the process of the takeout of the article from the packaging container 1 to insertion can be carried out without directly touching the suppository 2 by fingers. Moreover, since the cap 20 and the body 10 are fitted together in this position, a stronger fit state can be ob-

tained. Needless to say, the suppository 2 can be taken out by pinching the body 10 even without positioning the open end in the maximum diameter position. A shape is not limited to a spindle shape, and the invention can be applied to a linear suppository such as a urethral suppository. In such a case, the open-end position of the body 10 is set so that a portion to be received in the cap 20 is not large.

[0029] In an outer peripheral portion of the open end of the body 10, a fitting convex 14 is formed to constitute the fitting portion 13 of the body 10 side. The fitting convex 14 prevents liquid leakage between itself and a fitting concave 23 of the cap 20, and constitutes a sealing structure which uses rubber elasticity of the body 10 and the cap 20. The fitting convex 14 is formed slightly larger than the fitting concave 23, and surely prevents liquid leakage caused by expansion of the body 10 or the cap 20. For example, as shown in FIG. 3, the fitting convex 14 comprises a flange 14a disposed near the open end of the sidewall of the body 10, and an R portion 14b projected from a tip of the flange 14a to a closed end side of the body 10.

[0030] The cap 20 shown in FIG. 1 is roughly formed into a hat shape. The entire cap 20 is formed thick, and it has almost no expansion characteristics. There is no limitation on an appearance shape of the cap 20 as in the case of the body 10, but its shape is decided in consideration of design or portability. The cap 20 comprises a receiving concave 21 almost bonded to the head of the suppository 2 exposed from the body 10. In an inner surface of the cap side more than the receiving concave 21, a groove-shaped fitting concave 23 is disposed to fit the fitting convex 14 of the body 10, constituting a fitting portion 22 of the cap 20 side. The body 10 is fitted to the cap 20 to obtain a fitted body, constituting a sealed space in the packaging container which is almost bonded to receive the suppository 2.

[0031] When the suppository 2 is packaged in such a packaging container 1, even if the suppository 2 melts to change its shape as a result of being left under bad storage conditions such as at a high temperature, e.g., 40°C or higher, the suppository 2 is restored to the original shape by returning the temperature to a room temperature. The packaging container 1 is made of a rubber elastic material. Thus, even when it is carried in a bag or the like, the packaging container 1 is not broken up different from the case of packaging in a hard plastic container, a soft feeling is provided when it is touched by hand, and thus the container 1 is very convenient for carrying. Further, even when the suppository melts in the bag or the like, the article does not leak to stain the inside thereof. Besides, while the cap 20 is removed and the suppository 2 is received in the body 10, the suppository can be inserted without directly touching it by fingers. Apparently, the packaging container 1 of the invention has many advantages. By using the packaging container 1, it is possible to provide a very hygienic and highly convenient suppository product.

[0032] FIG. 4 is an exploded perspective view showing a used state of a packaging container 1 according to another embodiment of the present invention, and FIG. 5 is a sectional view showing an exploded state of the packaging state. A cap 20 of the packaging container 1 is formed into a so-called pedestal shape, and comprises a plurality of fitting concaves 23, five fitting concaves 23 as shown. For the cap 20, a plurality of bodies 10 can be fitted to one cap 20, and a plurality of suppositories 2 can be supplied by one product form (package). For example, the cap 20 is mounted on a desk, and holds the body 10 substantially in a vertically erected state. According to the embodiment, the bodies 10 are removed one by one from the cap 20 to be used.

[0033] As shown in FIG. 5, a fitting portion 13 of the body 10 comprises a taper swollen from an insertion end side in an outer circumferential direction, i.e., a taper 15 swollen from an open end of the body 10 toward a closed end in the outer circumferential direction, and it is formed as a fitting convex 14 roughly trapezoidal or triangular in section. The insertion end side means the open-end side of the body 10 in which the fitting convex 14 is formed. In a fitting concave 23, the body is swollen toward the insertion end side (open end side of the cap 20) in the outer circumferential direction. Thus, the fitting portion 13 of the body 10 side is easily inserted into a fitting portion 22 (fitting concave 23) of the cap 20 side. Accordingly, automatic loading by a machine is facilitated without adversely affecting prevention of liquid leakage. Near the fitting portion 13 shown in FIG. 5, in a sidewall 11 on the closed end side more than the fitting portion 13, a grip 16 is formed to be thicker than the other sidewall 11. This grip 16 is used for chucking in the case of automatic loading by the machine. The thick formation thereof enables stable holding and inserting.

[0034] Therefore, by forming a plurality of fitting concaves 23 (receiving concaves 21) for one cap 20, a plurality of suppositories 2 can be supplied all at once by one packaging form. Besides, the cap 20 becomes relatively larger compared with the cap 20 for each loading of the first embodiment to be handled more easily. Additionally, since removal from the cap 20 is easy, operability is greatly improved. Furthermore, since the suppository 10 can be brought to an application position such as an anus in the state of being inserted in the body 10 after the body 10 is removed from the cap 20, it is very hygienic as in the previous case.

[0035] FIG. 6 is a sectional view showing an exploded state of a packaging container 1 according to yet another embodiment of the present invention. According to the invention, a fitting portion 13 of a body 10 and a fitting portion 22 of a cap 20 are only required to surely prevent liquid leakage when an internal volume expands, especially when the body 10 expands, and thus there is no limitation on a constitution. In the packaging container 1 shown in FIG. 6, the fitting portion 13 of the body 10 side comprises a taper 15 swollen from an open end of the body 10 to a closed end in an outer circumferential

direction, and a fitting convex 14 roughly semicircular in section is disposed on a closed end side of the taper 15. A thick grip 16 is formed on a closed end side of the fitting convex 14. By such a constitution of the fitting portion 13, the object of the invention can be achieved.

[0036] FIG. 7 is a perspective view of a packaging container according to yet another embodiment of the present invention. FIG. 8 is a sectional view showing an exploded state of the packaging container, and FIG. 9 is a plan view of a body 10 of the packaging container 1 seen from an open end. This body 10 comprises a roughly cylindrical and slightly thick sidewall 11, a flange 18 jumping out in an outer circumferential direction more than the open end, and cord-like projections 17 arranged in a circumferential direction of the sidewall 11. On the other hand, a cap 20 is formed to be uniformly thick as a whole, and a portion around a fitting portion 22 is formed to jump out by an amount equivalent to a formed fitting concave 23.

[0037] The flange 18 is disposed near the open end of the sidewall 11, and mainly designed to prevent erroneous insertion of the body 10 into an anus or a vagina at the time of inserting a suppository. As long as this object can be achieved, there is no particular limitation on shapes. For example, a shape similar to a guard used for a sword, a shape similar to a visor of a cap, or a shape jumping out in a cord shape may be employed. Preferably, the shape jumping out in the outer circumferential direction more than the fitting portion 13 of the body 10 is disposed. Additionally, the flange 18 only needs to be disposed partially in the circumferential direction of the shown sidewall 11, and may be disposed all around the sidewall 11 as described later. The flange 18 is formed integrally with the body 10.

[0038] The shown flange 18 comprises a notch 19. The notch 19 tears the flange 18 left and right, and subsequently triggers tearing of the sidewall 11 of the body 10. When the suppository 2 received in the packaging container 1 melts and is solidified again, the suppository 2 is bonded to the body 10, and the suppository 2 may not be taken out from the body 10 by pinching the body 10 to push out the same. This packaging container 1 enables the takeout of the suppository 2 by tearing the body 10 in such a case.

[0039] As long as the notch 19 tears the flange 18 left and right to trigger tearing of the body 10, there is no limitation on a shape. A shape may not be a notch 19 but a simple linear cut, or a composite shape having a linear cut directed from an intersection of the notch 19 to the sidewall 11 may be employed. However, the sidewall-tip of the notch 19 or the sidewall-tip of the cut must not reach the sidewall 11. It is because if the sidewall-tips reach the sidewall 11, strength of the sidewall 11 is reduced to increase a risk of rupture from this portion when the received suppository 2 melts.

[0040] The flange 18 shown in FIG. 10 comprises a brim 18a of a cap shown in FIG. 9, and a sword guard 18b almost all around the sidewall 11 except for the brim

18a. The brim 18a of the cap has a notch 19. In the flange 18, the guard 18b almost all around the sidewall 11 functions as a holding (fixing) member of a loading device used at the time of loading and packaging the suppository 2 and enables sure automatic loading. Only for the purpose of triggering tearing of the sidewall 11 of the body 10, the partially disposed flange 18 shown in FIG. 9 is more preferable than the flange 18 all around the sidewall 11. It is because the flange 18 can be pinched more easily, and torn left and right more easily. Thus, the sword guard 18b only may be cut off from the sidewall 11 after the suppository 2 is loaded. When the brim 18a and the sword guard 18b almost all around the sidewall 11 are combined together as shown in FIG. 10, the sword guard 18b is preferably caused to jump out in an outer circumferential direction more than the brim 18a. It is because gripping and tearing are easier.

[0041] Thus, the flange 18 having the notch 19 not only serves to prevent erroneous insertion of the body 10 but also facilitates insertion of the suppository 2 by tearing the body 10. Besides, since the flange 18 is disposed near the open end of the sidewall 11, when the body 10 is torn, a portion near the open end of the sidewall 11 is torn while a portion near the skin 12 is not torn to be left, and the suppository 2 can be inserted without direct touching by fingers as in the previous case. The flange 18 of the sword guard shape disposed almost all around the sidewall 11 functions as a holding portion by mechanical loading.

[0042] Two cord-like projections 17 are disposed all around the sidewall 11 near the skin 12 of the sidewall 11. The cord-like projection 17 functions as a skid when the suppository 2 is pushed out by the fingers. That is, because of the presence of the cord-like projection 17, the suppository 2 can be pushed out without slipping-off of the body 10 through the pinching fingers. Moreover, since the two cord-like projections 17 are arranged, a sure skidding function is exhibited.

[0043] An arranging place of the cord-like projection 17 is near the skin 12, preferably a position in which the suppository 2 is most easily pushed out. More specifically, for example, if a roughly mountain-shaped skin 12 is disposed, the cord-like projection is arranged on an open-end side slightly more than a bottom of the skin 12 (position which is a boundary between the skin 12 and the sidewall 11 and nearest the open end). By disposing the cord-like projection in this position, the suppository 2 can be pushed out by a small force. Incidentally, this position varies depending on a shape or the like of an article.

[0044] Accordingly, as long as the object can be achieved, a thickness, the number, and intervals of cord-like projections are not a problem, and the cord-like projection needs not always be disposed all around. For example, as shown in FIG. 11, the cord-like projection may be disposed in a part of the sidewall 11. In such a case, it is advisable to dispose the cord-like projection 17 in a position to be always pinching by two fingers. In

the above example, more preferably, the cord-like projection is disposed in a position in which the bottom of the skin 12 is nearest the open end. Such a position becomes an eyemark to indicate a position of pinching the cord-like projection 17, whereby usability of the packaging container 1 is improved more.

[0045] The cord-like projection 17 is not necessarily connected as a line. Dots may be linearly arrayed, or a broken line in which short lines are linearly arrayed may be employed. Incidentally, the lines, the dots, and the short lines are not planar lines but have swells. The cord-like projection 17 may be formed roughly semicircular or rectangular in section preferably.

[0046] The embodiment has been described mainly by way of the suppository 2 as an article to be packaged. However, the packaging container 1 of the invention can be applied to various articles other than the suppository 2, and suitably used for an article which has a given shape at a given temperature (proper temperature), and partially or entirely melts by a temperature change to increase a volume, or does not melt but increases the volume. For example, the container can be applied to a foodstuff such as chocolate. The chocolate has a composition similar to that of the suppository 2, and keeps a given shape at a normal temperature. However, the chocolate melts to lose its shape at a higher temperature, and is solidified in the broken shape upon a return to the normal temperature. On the other hand, when the packaging container 1 of the invention is used, even if the chocolate melts therein, the chocolate can be taken out in a shape before the melting (shape at a receiving time) by cooling and solidifying the packaging container 1 without opening it. Moreover, the container can be applied to articles such as cosmetics.

[0047] The packaging container 1 of the invention needs to expand in accordance with expansion of an article therein, and be restored to an original shape in accordance with contraction. When the received article contracts from the original shape, it is not always necessary for the packaging container 1 to accordingly contract. That is, in the packaging container 1 of the invention, the receiving space thereof only needs have a given shape in a normal state of the article, and there will be no problem even if a form change of the article causes a reduction in a volume occupied by the article and forms an aperture in the container. For example, ice cream or ice causes a volume reduction when it melts. However, by receiving such an article, the packaging container 1 does not contract itself, but an aperture is formed therein. Needless to say, the packaging container 1 may contract to be deformed. However, if the packaging container 1 is cooled together with the article after melting, the article is solidified again therein to return to its original shape. It is because at the time of receiving the article in the packaging container 1, the article is received to be bonded to an inner surface thereof. Thus, the packaging container 1 of the invention can be used as a container for an article which melts to reduce a vol-

ume. Incidentally, in this case, packaging is carried out under conditions which enable the ice cream or ice to keep a given shape.

[0048] The present invention is not limited to the embodiments. As long as the object of the invention can be achieved, there is no limitation on an appearance shape of the packaging container 1, a shape of the article or the like. For example, the body 10 and the cap 20 can both be constituted to expand/contract. In this case, portions around the fitting portion 13 of the body 10 and the fitting portion 22 of the cap 20 may be formed thick to prevent liquid leakage therefrom.

[0049] As described above, the packaging container of the invention comprises the fitted body of the cap made of the rubber elastic material and the body made of the rubber elastic material, at least the cap or the body expands or contracts in accordance with volumetric expansion or volumetric contraction of the article received in the container, and the article can be taken out without any leakage of the article into the outside in a state where the article is restored to an original shape. Accordingly, even when the article similar to the suppository is placed at a higher temperature than a proper temperature, and melts to lose its shape, the suppository as the received article is restored to its original shape by cooling the container with the article. As a result, within a range in which the article is not altered, the article never becomes unusable even if it melts to lose its shape, but the article can always be used in a proper shape. Storage conditions can be softened from cold place storage to room temperature storage, contributing to a reduction in storage costs and suppressing defects caused by bad storage conditions. The container is made of the rubber elastic material, and thus its portability can be improved compared with the conventional hard plastic container.

[0050] In the case of using the suppository, by positioning the open end of the body (cap) near the maximum diameter position of the suppository received therein, the cap and the body are fitted together in a strongest place to surely prevent liquid leakage when melting occurs. Moreover, in the case of a spindle-shaped suppository, pushing-out from the body can be facilitated, further improving handling.

[0051] Furthermore, according to the invention, the thin-film skin disposed in a part of the body or the cap, e.g., in the bottom thereof, to expand/contract absorbs the expansion of the article, whereby the object of the invention can be achieved without any loosening of the fitting between the cap and the body. If the other portion of the body (cap) comprising the skin is formed into a roughly cylindrical thick shape, the cap (body) can be removed in a state in which the article is received in the body (cap), and the article can be pushed out by pinching it from the cap (body). Accordingly, when the container is used for a suppository, the suppository can be inserted into an applied location without directly touching it by fingers, whereby a very hygienic and highly con-

venient suppository product can be provided.

[0052] The cord-like projection disposed in the circumferential direction near the skin of the roughly cylindrical portion of the body or the cap exhibits the skidding function from the fingers, and prevents pulling-off of the body or the cap through the fingers when the article is pushed out. Additionally, the cord-like projection becomes an eyemark of a pinching pushing out position, improving usability more.

[0053] Further, the flange jumping out in the outer circumferential direction more than the open end integrally formed near the open end of the roughly cylindrical portion of the body or the cap functions as, e.g., an erroneous insertion preventing member to the anus or the like when the suppository is used, whereby a product with consideration given to safety is provided.

[0054] The cut or the notch formed in the flange triggers tearing of the roughly cylindrical body or cap. Thus, the article can be taken out by tearing the body or the cap from the cut or the like. Especially, this becomes effective means when resolidification causes bonding of the article to the container. Moreover, since the flange is formed near the open end of the cap or the body, the portion gripped by the fingers is left without being torn, and the suppository can be inserted into the anus or the like without dirtying the fingers.

[0055] If the cap and the body are fitted together by a fitting concave and a fitting convex slightly larger than the concave, it is possible to surely prevent liquid leakage.

[0056] Further, the taper swollen from the insertion end side disposed in the fitted body of the cap and the body in the outer circumferential direction facilitates insertion into the opposite side body or cap, whereby automatic packaging by a machine can be carried out.

[0057] If one of the cap and the body is formed into a pedestal shape which comprises one or a plurality of fitting concaves to fit the opposite body or cap, the cap or the body is enlarged to improve handling. In association, a plurality of suppositories are provided by one packaging form or one package.

[0058] As apparent from the foregoing, according to the invention, it is possible to not only soften storage conditions of an article such as a suppository which easily melts near a room temperature, especially an article whose physical shape is particularly necessary, but also to take out the article without directly touching it. The packaging container of the invention is especially suitable for a suppository, and provides a suppository product excellent in hygiene and handling.

Claims

1. A packaging container comprising a fitted body of a cap made of a rubber elastic material and a body made of a rubber elastic material,
characterized in that at least the cap or the

body expands or contracts in accordance with volumetric expansion or volumetric contraction of an article received in the container, and the article is capable of being taken out without any leakage of the article into the outside in a state where the article is restored to an original shape.

2. The packaging container according to claim 1, **characterized in that** a part of the body or the cap comprises a thin-film skin. 10
3. The packaging container according to claim 2, **characterized in that** the skin is disposed in a bottom of the body and/or the cap, and the other portion of the body comprising the skin and/or the other portion of the cap comprising the skin is formed into a roughly thick cylindrical shape. 15
4. The packaging container according to claim 3, **characterized in that** a cord-like projection is disposed in a circumferential direction of the cylindrical portion near the skin of the roughly cylindrical portion of the body or the cap. 20
5. The packaging container according to one of claims 1 to 4, **characterized in that** a flange jumping out in an outer circumferential direction more than an open end is integrally formed near the open end of the roughly cylindrical portion of the body or the cap. 25
30
6. The packaging container according to claim 5, **characterized in that** the flange comprises a cut or a notch.
7. The packaging container according to one of claim 1 to 6, **characterized in that** the cap and the body are fitted together through a fitting concave and a fitting convex slightly larger than the concave. 35
8. The packaging container according to one of claim 1 to 7, **characterized in that** the fitted body of the cap and the body comprises a taper swollen from an insertion end side in the outer circumferential direction. 40
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9. The packaging container according to one of claims 1 to 8, **characterized in that** one of the cap and the body is a pedestal which comprises one or a plurality of fitting concaves to fit the opposite body or cap. 50
10. The packaging container according to one of claims 1 to 9, **characterized in that** the packaging container is for a suppository.
11. The packaging container according to claim 10, **characterized in that** the open end of the body is positioned near a maximum diameter position of a suppository received in the body, or the open end 55

of the cap is positioned near the maximum diameter position of a suppository received in the cap.

12. The packaging container according to one of claims 1 to 11, **characterized in that** the rubber elastic material is silicon rubber.

FIG. 1

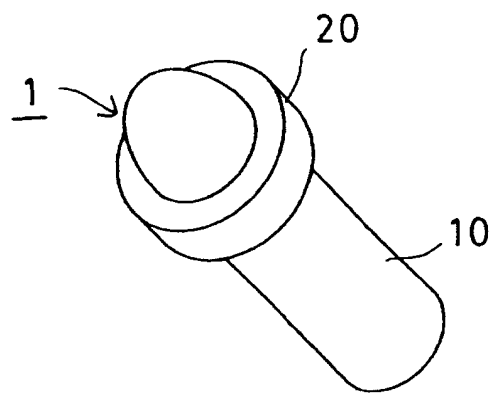


FIG. 2

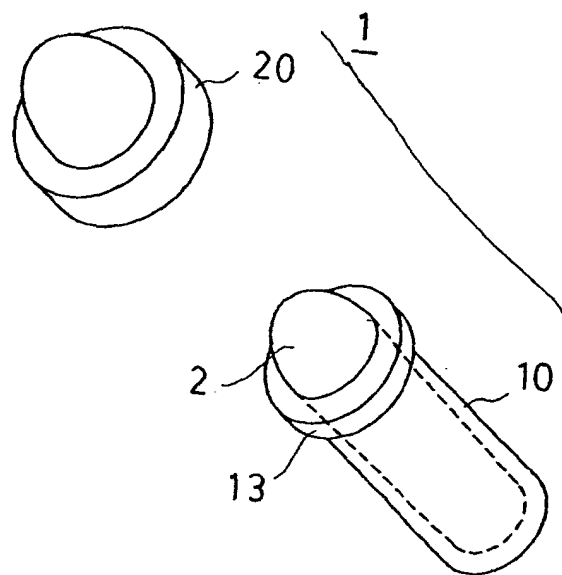


FIG. 3

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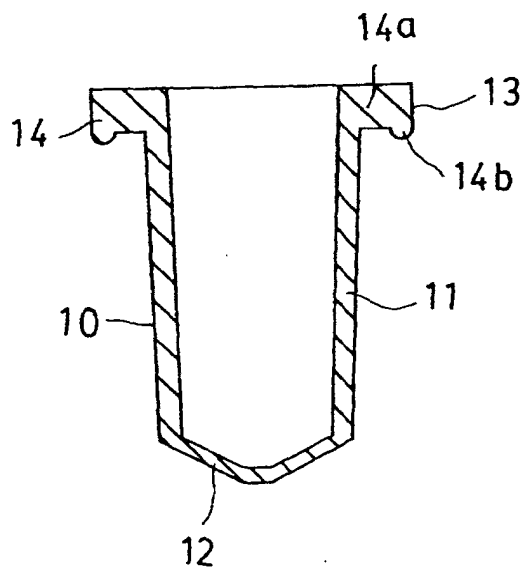
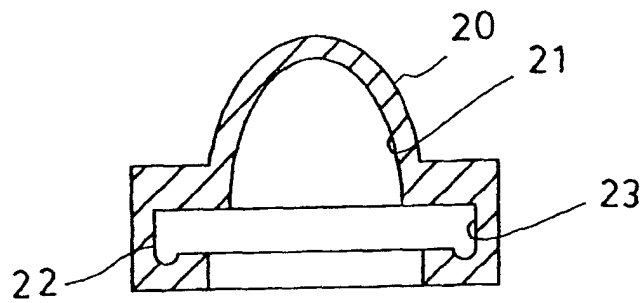


FIG. 4

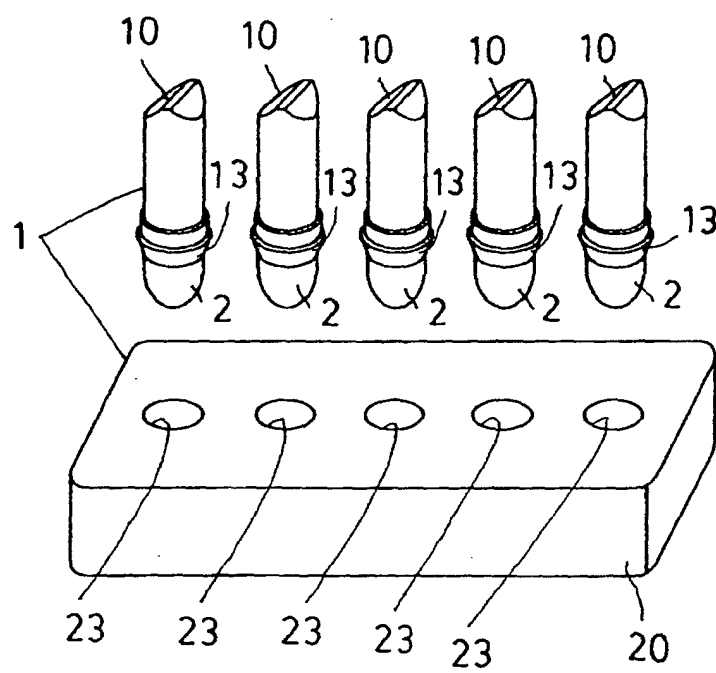


FIG. 5

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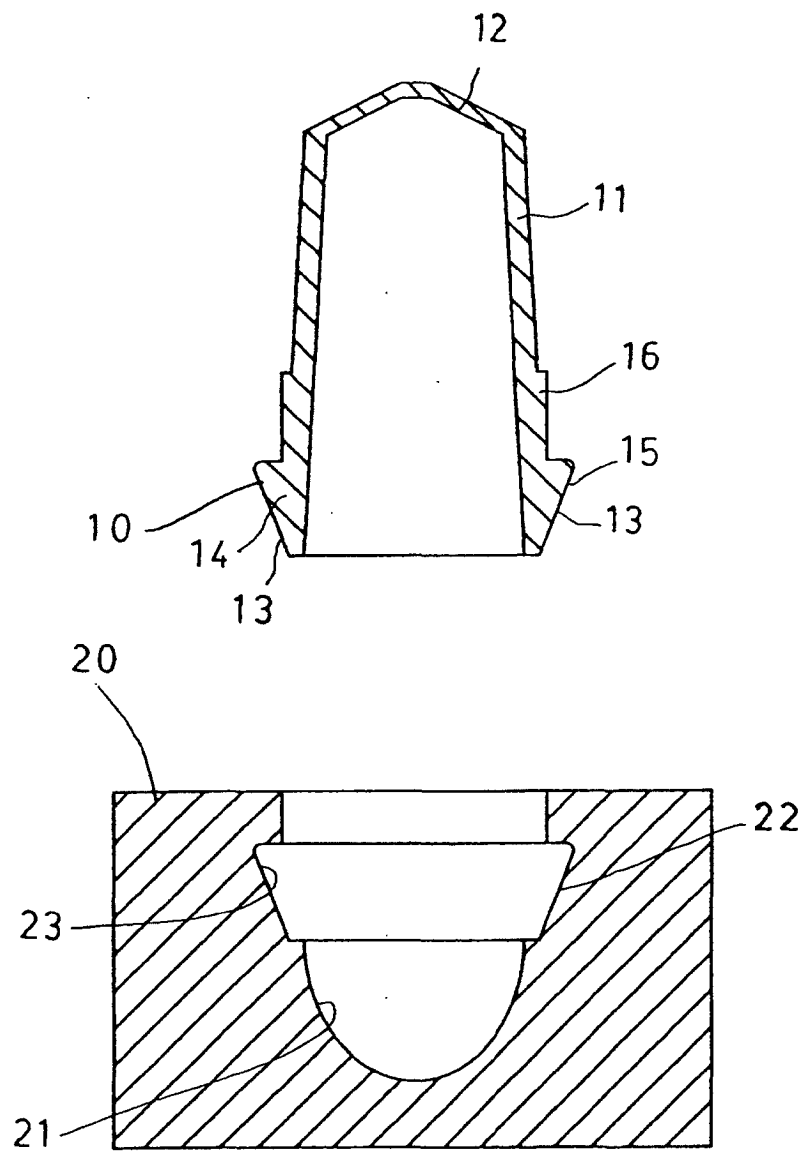


FIG. 6

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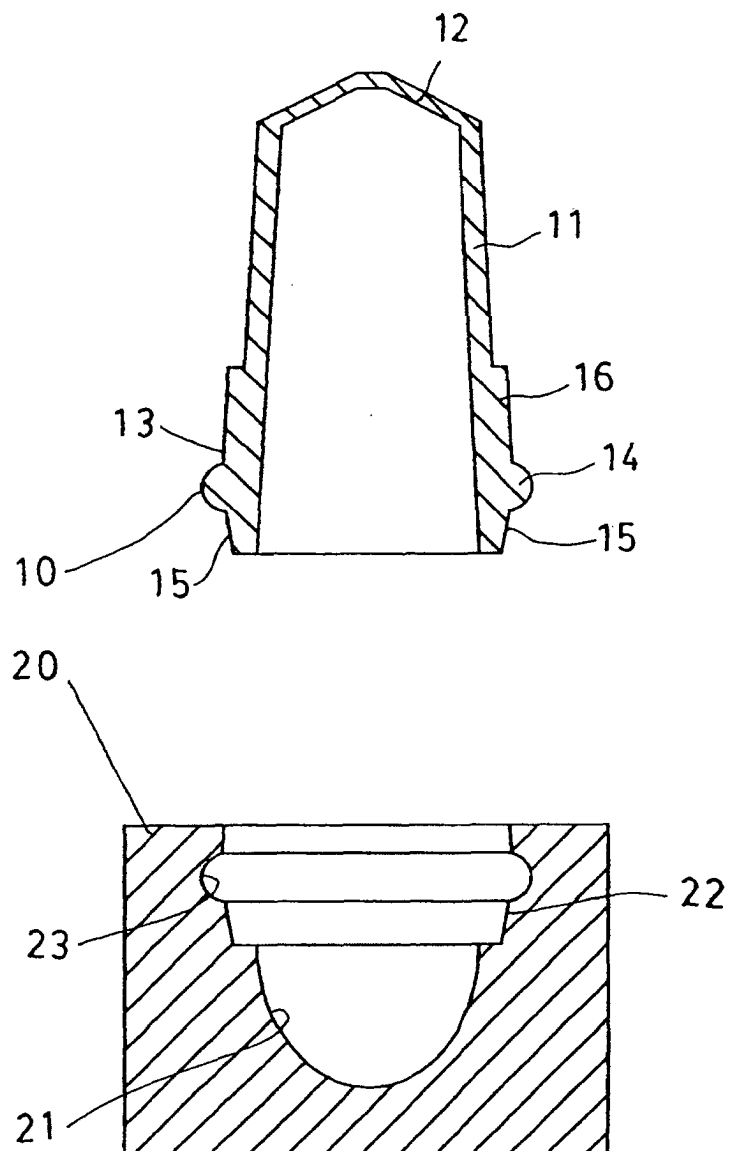


FIG. 7

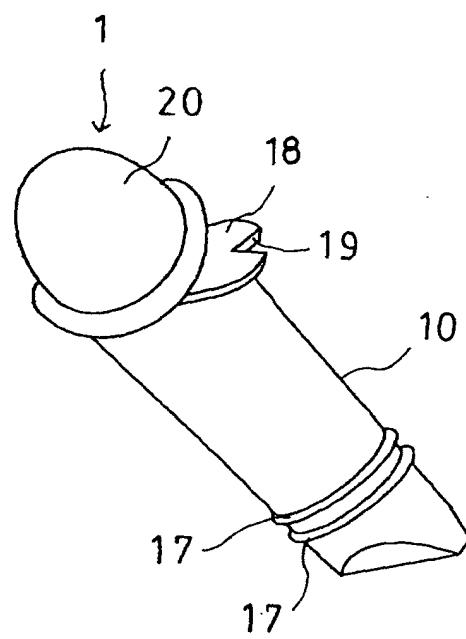


FIG. 8

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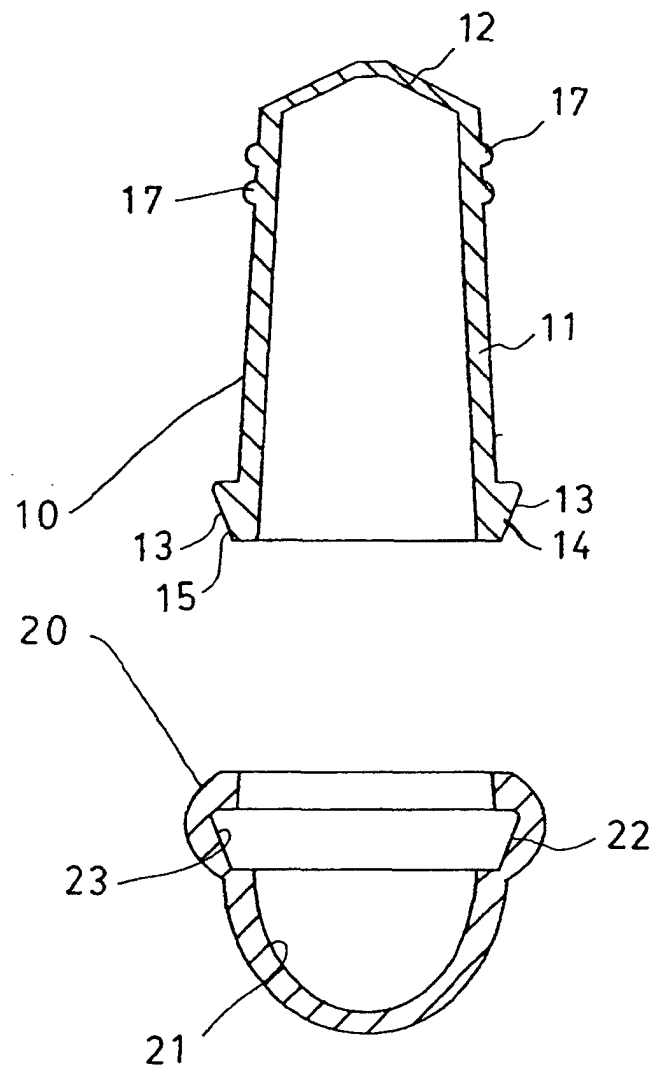


FIG. 9

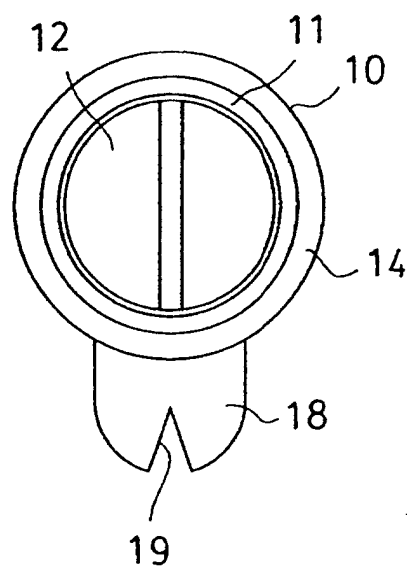


FIG. 10

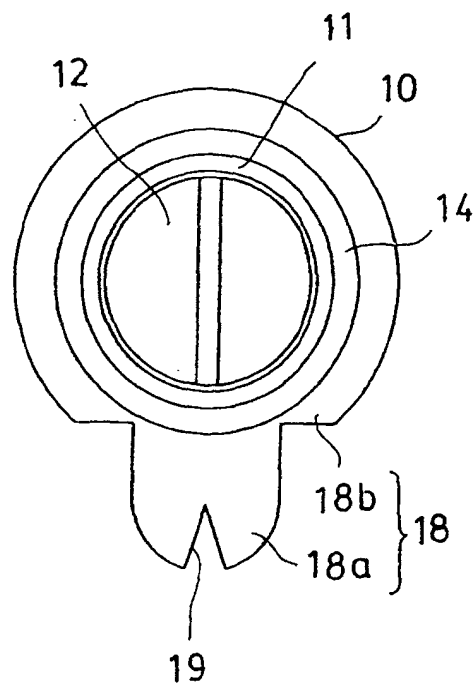
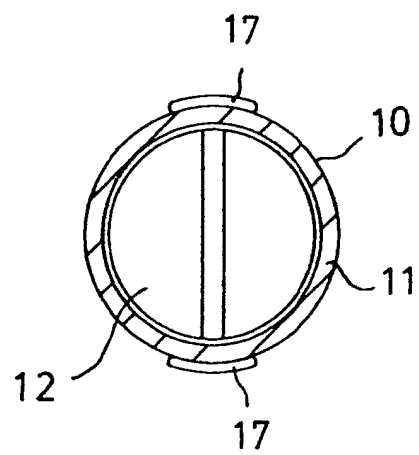


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/05414

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ B65D77/20, B65D85/50, A61J1/00

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ B65D77/20, B65D85/50, A61J1/00

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

Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2003

Kokai Jitsuyo Shinan Koho 1971-2003 Jitsuyo Shinan Toroku Koho 1996-2003

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 47-46196 A (Rune Deru'uino), 27 December, 1972 (27.12.72), (Family: none)	1-12
A	JP 3018072 B2 (Takaaki MORI), 07 January, 2000 (07.01.00), (Family: none)	1-12
A	JP 3-60750 B2 (A/S Nunc), 17 September, 1991 (17.09.91), & US 4501108 A	1-12
A	JP 26-5978 Y1 (Shiro KOHATA), 16 June, 1951 (16.06.51), (Family: none)	1-12

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

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

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"T"

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

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"&" document member of the same patent family

Date of the actual completion of the international search
24 July, 2003 (24.07.03)Date of mailing of the international search report
12 August, 2003 (12.08.03)Name and mailing address of the ISA/
Japanese Patent Office

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