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(11) **EP 1 036 742 A1**

(12) **EUROPEAN PATENT APPLICATION**  
published in accordance with Art. 158(3) EPC

(43) Date of publication:  
**20.09.2000 Bulletin 2000/38**

(21) Application number: **99929750.0**

(22) Date of filing: **08.07.1999**

(51) Int. Cl.<sup>7</sup>: **B65D 33/38, B65D 35/44**

(86) International application number:  
**PCT/JP99/03688**

(87) International publication number:  
**WO 00/02790 (20.01.2000 Gazette 2000/03)**

(84) Designated Contracting States:  
**DE FR GB**

(30) Priority: **08.07.1998 JP 19288498**

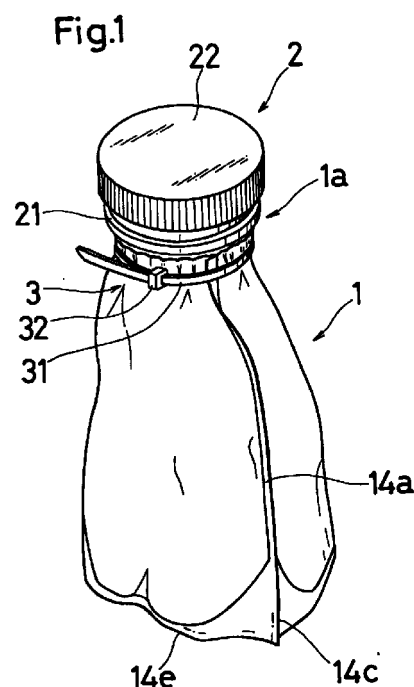
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(54) **WIDE-MOUTHED POUCH**

(57) A wide-mouthed pouch which has a small volume in a condition where any contents are not contained, and which can easily collect sample water or the like in water examination is provided. As a wide-mouthed pouch for this purpose, used is a lid holding 2 having a detachable lid 22 at one end, and an opening end on the other end side, and configured by a resin molded product having a substantially cylindrical shape as a whole is attached in a fluid-tight manner to an opening portion 1a of a bag-like freestanding flexible container 1 including the opening portion at one end. A bore diameter of the lid holding member is set to be 35 mm. Therefore, the work of collecting water into the flexible container 1 is facilitated. In a condition where the lid holding member 2 is inserted into the opening portion 1a of the container 1, a band 3 is tightened from the outside of the container 1, so as to perform integration. With this configuration, a required space in an unused condition is reduced, and such a usage as that the flexible container 1 is disposable and the lid holding member 2 is recycled can be realized. Thus, the resources saving and the cost reduction are attained.



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## Description

### Technical Field

**[0001]** The invention relates to a wide-mouthed pouch (a bag-like flexible container) suitable for collecting a sample of water, soil, sand, sludge, or the like, and a spout which is suitably used in the wide-mouthed pouch.

### Background Art

**[0002]** A bag-like flexible container, i.e., a so-called freestanding pouch is practically used in which a plurality of films made of a resin or the like are joined together into a bag-like shape, and the joint portion is provided with an appropriate strength, thereby allowing a bottom portion to be unfolded by the own weight of the contents such as liquid when the contents are put into the container.

**[0003]** In such a pouch, usually, one side is opened, and, after the pouch is filled with the contents, the opening portion is sealed by heating and fusion, or another method. A freestanding pouch with a lid is also practically used in which an opening portion of such a pouch is integrated with a molded piece (a so-called spout) to which a screw-type lid having a bore diameter of about 20 mm is attached, by heating and fusion in a condition where the molded piece is interposed, so that the contents can be taken out in small quantities. A base portion of the molded piece to which the lid is attached has a boat-shaped or streamline-type lateral profile, in order to attain high conformability with the opening portion of the pouch so as to easily come into close contact with each other.

**[0004]** In recent years, for the purposes of researches for environmental pollution problems including dioxin and pollution problems, water examination, soil examination, and the like are more frequently performed as compared with the previous years. In such water examination, or the like, generally, a procedure in which water or the like to be examined is sampled in a wide-mouthed bottle at the site, and the wide-mouthed bottle is carried back to an analysis division is employed.

**[0005]** Wide-mouthed bottles used for collecting sample water for water examination or the like are mostly various plastic molded products. Such wide-mouthed bottles are light weight, but have a predetermined volume so as to be bulky even when the bottles include no contents. Thus, there exists a problem in that a large space is required for storage when they are not used, transportation, or the stock of the products. There are further problems in that, since such a kind of wide-mouthed bottle is a plastic molded product, recycling can be performed with a certain degree, but the recycling requires a high cost, and that the operation of washing the inside for the recycling expends time and

effort.

**[0006]** On the other hand, the above-mentioned freestanding pouch is superior in that it occupies almost no space when it includes no contents, and also in that it requires a low cost and is disposable. However, such a pouch is not suitable as a container for collecting a sample in the above-mentioned water examination, or the like.

**[0007]** Specifically, in a work of collecting such a kind of sample water or the like, usually, a container is held by, for example, one hand, and the sample water is dipped and put into the container by a dipper held by the other hand, or a container is directly immersed into the water to be examined for dipping, so that the sample water is accommodated in the container. As for a freestanding pouch, the opening portion is almost in a closed condition in a natural condition in which any contents are not included. Therefore, the freestanding pouch is not suitable for the above-mentioned collecting procedure of the sample water or the like. Even if a pouch with a lid in which (a spout) capable of attaching a lid is attached to the opening portion by fusion is used, the bore diameter is small, so that the pouch with a lid is not suitable for putting the sample water therein by a dipper or the like, or for being immersed in the water for dipping. Originally, a pouch of this kind and having a lid is used in such a manner that, after the inside is filled with liquid via the opening portion of the pouch, a molded piece with a lid is attached by fusion to the opening portion. The lid is attached exclusively for taking out the contents of the pouch, and it is not considered that the liquid or the like is put into the pouch through the lid.

**[0008]** The invention has been conducted in view of the above-mentioned circumstances. It is an object of the invention to provide a wide-mouthed pouch which has a small volume in a condition where no contents are included, and which can easily collect sample water or the like in water examination, and also a lid holding member which is suitably used in such a wide-mouthed pouch.

### Disclosure of Invention

**[0009]** In order to attain the above-mentioned object, (1) the wide-mouthed pouch of the invention is characterized in that the pouch comprises: a bag-like freestanding flexible container formed by joining a plurality of films and having an opening portion at one end; and a lid holding member in which a lid is detachably attached to one end side of a resin molded piece having a substantially cylindrical shape as a whole, and another end side is opened, the pouch is used in a condition where the other end side of the lid holding member is fitted into and attached to the opening portion of the freestanding flexible container in a fluid-tight manner, and a bore diameter of the lid holding member is 35 mm or more (claim 1).

(2) The invention may adopt a configuration in which a male screw for detachably screwing a nut-like tightening member inserted from the other end side (the inserting side into the flexible container) is formed on an outer circumferential face of the lid holding member, the nut-like tightening member is inserted from a bottom portion side of the flexible container in a condition where another holding member is fitted into the freestanding flexible container, and the nut-like member is screwed to the lid holding member with interposing the flexible container therebetween, thereby attaching the lid holding member to the freestanding flexible container in a fluid-tight manner (claim 2). In the invention according to claim 2, as for the male screw formed on the outer circumferential face of the lid holding member, a portion to which the lid is screwed and a portion to which the nut-like tightening member is screwed may be continuous, or may not be continuous.

(3) As another configuration of the invention, a configuration may be employed in which the lid holding member is attached to the freestanding flexible container in a fluid-tight manner by a band which is tightened from an outer side of the container in a condition where the lid holding member is fitted into the container (claim 3). The band referred to herein is a band in a broad sense and including all articles having a function of tightening an object, and including a linear member, a string-like member, and a strip-like member which are made of any of various materials.

(4) In the case where the attaching structure of the lid holding member by such a band is employed, it is preferable to adopt a configuration in which a groove into which the band is to be fitted is formed in a circumferential direction and on an outer circumferential face of the other end side (the side which is to be inserted into the freestanding flexible container) of the lid holding member (claim 4).

(5) Moreover, it is preferable to adopt a configuration in which an outer circumferential face of the other end side of the lid holding member inserted into the freestanding flexible container is a tapered face in which a diameter is decreased as moving toward an end side (the inserting end) (claim 5).

(6) On the other hand, a lid holding member for a wide-mouthed pouch of the invention according to claim 6 is a lid holding member which is suitably used in the above-mentioned wide-mouthed pouch of the invention, and is characterized by comprising: a main-body portion that is a resin molded piece having a substantially cylindrical shape as a whole, a male screw being formed on an outer circumferential face on one end side of the resin molded piece, a tapered face having a diameter decreasing as moving toward an end being formed on an outer circumferential face of the other end

side; a lid member which is to be detachably screwed from the one end side to the male screw; and a nut-like tightening member which is to be detachably screwed from the other end side to the male screw. Also in the invention according to claim 6, as for the male screw formed on the outer circumferential face of the main-body portion, a portion to which the lid member is screwed and a portion to which the nut-like tightening member is screwed may be continuous, or may not be continuous.

**[0010]** The invention has been conducted as a result of intensive study on relationships between procedures of collecting sample water, sample earth and sand, or the like in water examination or the like, and a sampling container used in the examination, and on the treatment of the container. In order to attain the intended object, fundamentally, a freestanding flexible container (pouch) which has a small volume in a condition where contents are not included is used, a structure in which a lid holding member is attached to an opening portion of the freestanding flexible container in a fluid-tight manner so as to facilitate the work of putting the collected sample into the inside is employed, and a bore diameter of the lid holding member is set to be 35 mm or more.

**[0011]** In other words, it has been confirmed that, when a rigid opening portion having a bore diameter of 35 mm or more is disposed in the flexible container, the work of collecting sampling water by putting the sample water or the like therein by using a dipper, or by immersing the container into water can be performed as easily as in the case of a wide-mouthed bottle which is a molded product of a rigid material.

**[0012]** According to the invention recited in claim 2 or 3, a structure is employed in which the lid holding member is fixed to the flexible container in such a manner that a nut-like tightening member is screwed to the lid holding member from the side of the bottom portion of the flexible container in a condition where the lid holding member is inserted into the flexible container, or a band is tightened from the outside in a condition where the lid holding member is inserted into the flexible container. With such a structure, it is possible to attach the lid holding member at a required timing, for example, immediately before the use of a pouch. In an unused condition, the flexible container can be set to have a folded sheet-like form, so that a required space can be reduced as small as possible for the storage, the transportation, the stock, and the like thereof.

**[0013]** In the case where a structure of tightening and fixing the lid holding member to the flexible container by using a band is employed, according to the invention of claim 4, a structure where a groove into which a tightening band is to be fitted is formed on an outer circumference of the side of the lid holding member which is to be inserted into the flexible container

may be also employed. As a result, the work of attaching the lid holding member in a fluid-tight manner can be easily and surely performed.

**[0014]** According to the invention of claim 5, the outer circumferential face of the side of the lid holding member which is to be inserted into the flexible container is formed as a tapered face in which the diameter is decreased as moving toward the end side. With such a configuration, also the work of inserting the lid holding member into the flexible container can be easily and surely performed.

**[0015]** The invention of claim 6 is an invention relating to a lid holding member which is effectively applied to the wide-mouthed pouch of the invention. By the adoption of the lid holding member according to the invention, the inserting work on the flexible container can be easily performed, and the attachment can be performed at any desired time. In addition, recycling of the lid holding member is enabled by the detachment after the use.

#### Brief Description of Drawings

##### **[0016]**

Fig. 1 is a perspective view of an embodiment of the invention in a use condition.

Fig. 2 is a front view of a freestanding pouch 1 used in the embodiment of the invention, in an unused condition.

Fig. 3 is a bottom view of Fig. 2.

Fig. 4 is a section view taken along the line A-A of Fig. 3.

Fig. 5 is a longitudinal section view of a lid holding member 2 used in the embodiment of the invention.

Fig. 6 is a partial longitudinal section view of a lid holding member in another embodiment of the invention.

#### Best Mode for Carrying Out the Invention

**[0017]** Hereinafter, preferred embodiments of the invention will be described with reference to the drawings.

Fig. 1 is a perspective view of an embodiment of the invention in a use condition.

A freestanding flexible container 1 (hereinafter, referred to as a freestanding pouch 1) has an upper end which is opened. To the opening portion 1a, a lid holding member 2 with a detachable lid member 22 is attached in a fluid-tight manner by inserting a main-body portion 21 thereof and tightening a band 3 from the outside of the flexible container 1.

**[0018]** Figs. 2 and 3 are front and bottom views of the free-standing pouch 1 in a non-use condition, and Fig. 4 is a section view taken along the line A-A of Fig. 2. As shown in the figures, the freestanding pouch 1 has a known structure in which three films 11, 12, and 13

are joined.

**[0019]** Specifically, the two films 11 and 12 constituting a side-wall portion are overlapped, and opposite two sides thereof are joined together to form side joint portions 14a and 14b. To respective lower end regions of the side joint portions 14a and 14b, both end portions of the other film 13 constituting a bottom member are joined to form three-film joint portions 14c and 14d, in a condition where the film 13 is folded along a fold line 13a formed in a center portion. Both side edge portions of the film 13 for the bottom member are individually joined to base portions of the films 11 and 12, respectively, so as to form bottom joint portions 14e and 14f. Accordingly, a bag-like container which has an opening portion 1a only on an upper side is formed.

**[0020]** The fold line 13a of the film 13 constituting the bottom member elongates along the width direction of the films 11 and 12. Accordingly, in a non-use condition, i.e., in a condition where no contents are included, the freestanding pouch 1 takes a sheet-like shape having substantially no thickness by being folded along the fold line 13a as shown in Figs. 2 and 3. In the joint portions 14c, 14d, 14e, and 14f between the film 13 for the bottom member and the films 11 and 12, the joint region reaches a higher position as moving toward the right and left sides in a front view. The joint portions 14a to 14f have higher rigidity as compared with the films 11 to 13. For this reason, when the pouch 1 accommodates liquid or a powdery material in the inside thereof, as shown in Fig. 1, the bottom portion is expanded by its own weight, so that the pouch is freestanding.

**[0021]** As shown in the longitudinal section view of Fig. 5, the lid holding member 2 includes the main-body portion 21 and a detachable screw-type lid member 22 which are configured by resin molded pieces, respectively. The main-body portion 21 has a cylindrical shape as a whole, and a male screw 21a for attaching the lid member 22 is formed on an outer circumference on one end side. A flange portion 21b is formed under the male screw 21a at an interval of a predetermined dimension. A groove 21c which elongates in a circumferential direction and into which a band 3 is to be fitted is formed under the flange portion. An outer circumferential face lower than the groove 21c is formed as a tapered face 21d in which the diameter is decreased as moving toward the end side (the lower end side).

**[0022]** The bore diameter of a lid-attaching portion of the lid holding member 2 is 35 mm or more. Preferably, the bore diameter should be set appropriately in accordance with a combination with the capacity of the pouch 1. Specifically, in the case where the capacity of the pouch 1 is in the range of 500 cc to 1,000 cc, the bore diameter may be about 35 to 80 mm. In the case of 2,000 cc, the bore diameter may be about 60 to 120 mm. In the case of 3,000 cc or more, the bore diameter may be about 100 to 120 mm. The reason is as follows. In order to collect water by using a dipper or the like, or to collect water by immersing the pouch into water, a

bore diameter of 35 mm or more can facilitate the sampling work. In the case where the pouch 1 having a large capacity is used, however, the volume of the sample water or the like to be contained is increased, and therefore the sampling work should be speedily performed.

**[0023]** The outer diameter of the flange portion 21b is larger than the inner diameter of the opening portion 1a of the free-standing pouch 1. In all positions lower than the flange portion, the outer diameter is slightly smaller than the inner diameter of the opening portion 1a.

**[0024]** In this example, the band 3 is a resin molded product in which a buckle portion 32 is molded integrally with one end of the band main-body portion 31. As the band, a product which is commercially available for bundling electric cables or the like is used. Although known in the art, the structure of such a band will be briefly described. A number of ratchet-like teeth are formed on one face of the band main-body portion 31, and a claw which bites the teeth of the band main-body portion 31 is formed on an inner face of the buckle portion 32. In a condition where the band main-body portion 31 is inserted into the buckle portion 32, due to the action of the teeth and the claw, the sliding operation can be performed only in a direction in which a loop formed by the band main-body portion 31 becomes small, but cannot be performed in the opposite direction. Therefore, in a condition where the band main-body portion 31 is inserted into the buckle portion 32 to cause the band main-body portion 31 to have a loop shape, and an article is inserted into the loop, when an end of the band main-body portion 31 is pulled, the article is gradually tightened by the band main-body portion 31. The last tightening condition is maintained. The tightening condition is released by cutting the band main-body portion 31.

**[0025]** In the above-described embodiment of the invention, in a non-use condition or an unused condition, the freestanding pouch 1 and the lid holding member 2 are separately stored, and are integrated by the band 3 as required, immediately before the collection of water at the site or at any timing.

**[0026]** For the integration, the main-body portion 21 of the lid holding member 2 is inserted into the opening portion 1a of the freestanding pouch 1, and the tightening is then performed by the band 3. The work of inserting the lid holding member 2 can be easily performed because the outer circumferential face on the inserting side of the main-body portion 21 is formed as the tapered face 21d. As shown by the two-dot chain line in Fig. 5, the work is surely performed by inserting the lid holding member 2 until the end of the opening portion 1a abuts against the flange portion 21b. The work of tightening the band 3 can be simply performed by winding the band 3 along the groove 21c formed on the lid holding member 2, and by strongly pulling the end of the band main-body portion 31 after the band main-body portion is inserted into the buckle portion 32.

**[0027]** In the above-described embodiment of the invention, it should be especially noted that the lid holding member 2 and the freestanding pouch 1 are integrated by externally tightening them by the band 3 in a condition where the lid holding member 2 is inserted into the opening portion 1a of the free-standing pouch 1. Accordingly, for the storage in an unused condition or for the transportation, the freestanding pouch 1 with almost no volume can be separated from the lid holding member 2 having a short cylindrical shape, so that the required space can be greatly reduced as compared with a wide-mouthed bottle or the like. In addition, for the collection of water or the like into the pouch 1, since the bore diameter of the lid holding member 2 is as large as 35 mm or more, the workability for the collection of water or the like in relation to the environmental pollution problem attains the same degree as that of a wide-mouthed bottle which is conventionally used in such a work.

**[0028]** Since a commercially available resin product in which the buckle portion 32 is integrated with the band main-body portion 31 is used as the band 3, the work of integrating the freestanding pouch 1 with the lid holding member 2 can be extremely easily performed. After the use, the pouch 1 and the lid holding member 2 can be easily separated from each other by cutting the band. Therefore, the usage can be realized in which the pouch 1 and the band 3 are disposable, and the lid holding member 2 is recycled. When the lid holding member 2 is to be recycled, the washing work is extremely easily performed as compared with a wide-mouthed bottle because the main-body portion 21 has a short cylindrical shape with no bottom.

**[0029]** Next, another configuration of the lid holding member which can be recycled and can be attached to the freestanding pouch 1 at any timing will be described. Fig. 6 is a partial longitudinal section view of the lid holding member.

**[0030]** A lid holding member 20 in this example includes a main-body portion 201, a screw-type lid member 202 which is detachably attached to the main-body portion 201, and a nut-like tightening member 203 which is similarly detachably attached to the main-body portion 201.

**[0031]** The main-body portion 201 has a cylindrical shape as a whole, a male screw 201a is formed on an outer circumferential face on one end side of the main-body portion, and an outer circumferential face on the other end side is formed as a tapered face 201b in which the diameter is decreased as moving toward the end side. The root diameter of the male screw 201a is larger than the maximum diameter of the tapered face 201b. Accordingly, a step portion 201c is formed in a boundary portion between the male screw 201a and the tapered face 201b. In the lid holding member 20 in this example, the bore diameter and the like are the same as those in the above-described example. The lid member 202 is screwed to the male screw 201a from the upper side of the figure, and the nut-like tightening member

203 is screwed to the male screw 201a from the opposite side. In the nut-like tightening member 203, a female screw 203a which is to be screwingly engaged with the male screw 201a is formed on an inner circumferential face on one end side (on an upper side in the figure). An inner circumferential face of the female screw 203a on the lower side is a right circular cylindrical inner face 203b having an inner diameter which is substantially equal to the maximum diameter of the tapered face 201b of the main-body portion 201. A step portion 203c is formed therebetween.

**[0032]** The lid holding member 20 is attached to the freestanding pouch 1 as required, for example, immediately before the collection of water or at any timing, as in the above-mentioned example. The usage method including the attaching method will be described below.

**[0033]** First, in a condition where the nut-like tightening member 203 is not attached, the main-body portion 201 is inserted into the opening portion 1a of the freestanding pouch 1 from the side of the tapered face 201b. Next, in a condition where the projection diameter of the freestanding pouch 1 is reduced by rounding or the like, the nut-like tightening member 203 is inserted from the side of the bottom portion. As shown by the two-dot chain line in Fig. 6, in a condition where the freestanding pouch 1 is interposed, the nut-like tightening member 203 is screwed onto the male screw 201a of the main-body portion 201. At this time, the step portion 201c of the main-body portion 201 abuts against the step portion 203c of the nut-like tightening member 203, so that firm tightening can be realized without causing any interference between the nut-like tightening member 203 and the lid member 202. By the screwing of the nut-like tightening member 203, the vicinity of the opening portion 1a of the freestanding pouch 1 is sandwiched between the right circular cylindrical inner face 203b of the nut-like tightening member 203 and the tapered face 201b of the main-body portion 201. Thus, the lid holding member 20 is attached to the freestanding pouch 1 in a fluid-tight manner.

**[0034]** In the case where the lid holding member 20 is to be recycled after the use, the contents of the freestanding pouch 1 are discharged, and the nut-like tightening member 203 is then screwed back to be detached from the main-body portion 201. The freestanding pouch 1 is removed from the tapered face 201b of the main-body portion 201.

**[0035]** The invention is not limited to the above-described embodiments. In summary, as far as a lid holding member having a bore diameter of 35 mm or more is attached to an opening portion of a freestanding flexible container in a fluid-tight manner, detailed structures and the like can be arbitrarily configured. When a nut-like tightening member is used as the means for integrating the freestanding flexible container with the lid holding member, for example, the male screw of the main-body portion for screwing the nut-like tightening member may not be continuous to the male screw for

attaching the lid member. In the case where the lid holding member is integrated with the freestanding flexible container by a band, instead of a band of a resin, an article of arbitrary material and shape, such as a metal band having a surface covered with a resin, a strip made of a metal, or a wire-like member can be used, as far as the article has a tightening function. Means such as that for bonding or fusingly attaching the lid holding member to the opening portion of the freestanding flexible container in an unused condition may be employed.

#### Industrial Applicability

**[0036]** As described above, according to the invention, an opening portion of a freestanding flexible container constituted by films, and a cylindrical lid holding member having a bore diameter of 35 mm or more are attached in a fluid-tight manner. Therefore, the invention can attain the same degree of workability as that of a conventional wide-mouthed bottle for the purpose of collecting water, earth and sand, dirty soil, or the like in relation to environmental pollution problems. In addition, it is possible to greatly reduce a required space for storage and transportation in an unused condition.

**[0037]** A total amount of resins to be used is small as compared with a wide-mouthed bottle, so that the resource saving can be attained. At the same time, since a pouch with superior disposable characteristics is used, the amount of garbage can be largely reduced.

**[0038]** Moreover, when a configuration in which a freestanding flexible container and a lid holding member are integrated by inserting and screwing a nut-like tightening member from the side of the bottom portion of the container, or by tightening a band from the outside of the flexible container is employed, they can be integrated at an arbitrary timing. In addition, the freestanding flexible container is disposable, and the lid holding member can be recycled, so that a great cost reduction can be attained as compared with a wide-mouthed bottle. Moreover, the cleaning work required for recycling the lid holding member is extremely easily performed as compared with the case where a wide-mouthed bottle is recycled.

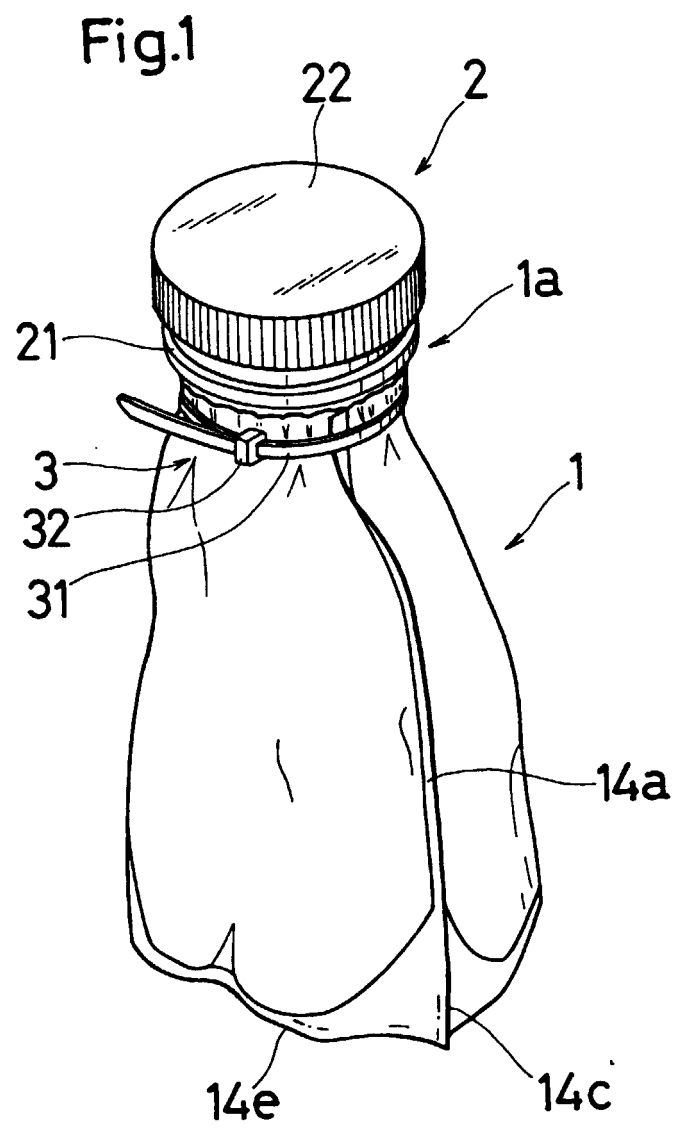
**[0039]** Moreover, as for the use of a freestanding flexible container which has a sheet-like shape in an unused condition, printing onto the surface can be easily performed as compared with a wide-mouthed bottle. In addition, there is an advantage in that the writing or the like can be easily performed before the work of collecting water or the like.

#### Claims

1. A wide-mouthed pouch characterized in that said pouch comprises: a bag-like freestanding flexible container formed by joining a plurality of films and having an opening portion at one end; and a lid holding member in which a lid is detachably

attached to one end side of a resin molded piece having a substantially cylindrical shape as a whole, and another end side is opened, said pouch is used in a condition where the other end side of said lid holding member is fitted into and attached to said opening portion of said freestanding flexible container in a fluid-tight manner, and a bore diameter of said lid holding member is 35 mm or more. 5

2. A wide-mouthed pouch according to claim 1, characterized in that a male screw for detachably screwing a nut-like tightening member inserted from the other end side is formed on said lid holding member, said nut-like tightening member is inserted from a bottom portion side of said flexible container in a condition where said lid holding member is fitted into said freestanding flexible container, and said nut-like member is screwed to said lid holding member with interposing said flexible container therebetween, thereby attaching said lid holding member to said freestanding flexible container in a fluid-tight manner. 10 15 20
3. A wide-mouthed pouch according to claim 1, characterized in that said lid holding member is attached to said freestanding flexible container in a fluid-tight manner by a band which is tightened from an outer side of said container in a condition where said lid holding member is fitted into said container. 25 30
4. A wide-mouthed pouch according to claim 3, characterized in that a groove into which said band is to be fitted is formed in a circumferential direction and on an outer circumferential face of the other end side of said lid holding member. 35
5. A wide-mouthed pouch according to claim 1, 2, 3, or 4, characterized in that an outer circumferential face of the other end side of said lid holding member is a tapered face in which a diameter is decreased as moving toward an end side of the other end side. 40
6. A lid holding member for a wide-mouthed pouch, comprising: a main-body portion in which a male screw is formed on an outer circumferential face on one end side of a resin molded piece having a substantially cylindrical shape as a whole, and in which a tapered face having a diameter decreasing as moving toward an end is formed on an outer circumferential face of the other end side; a lid member which is to be detachably screwed from the one end side to said male screw; and a nut-like tightening member which is to be detachably screwed from the other end side to said male screw. 45 50 55





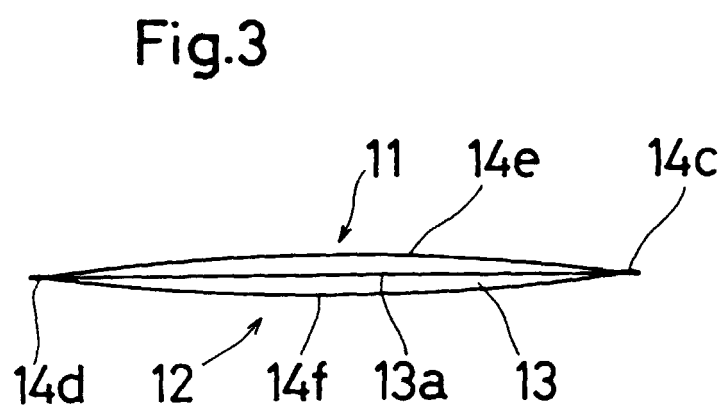
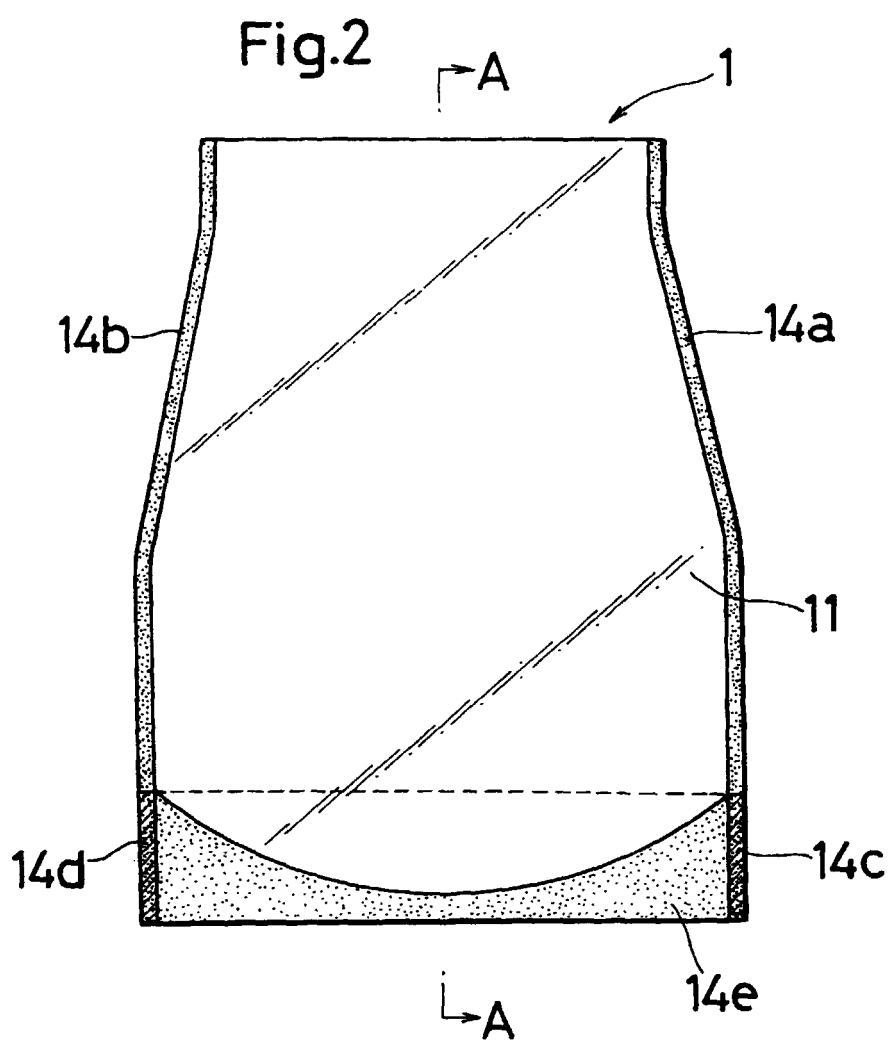


Fig.4

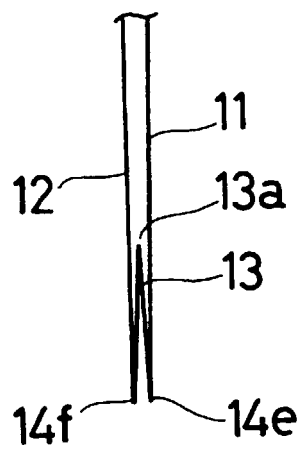


Fig.5

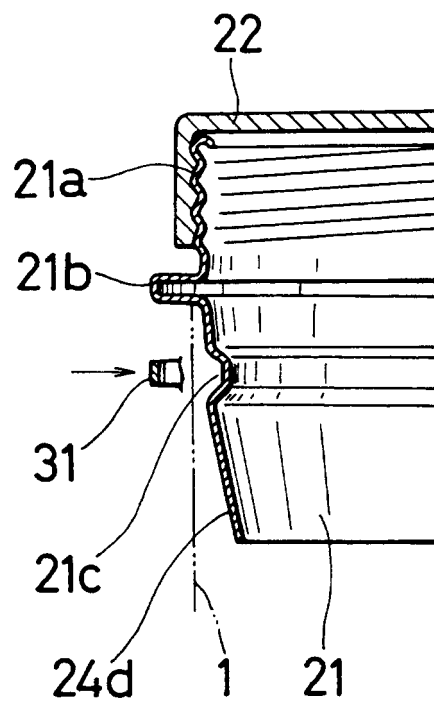
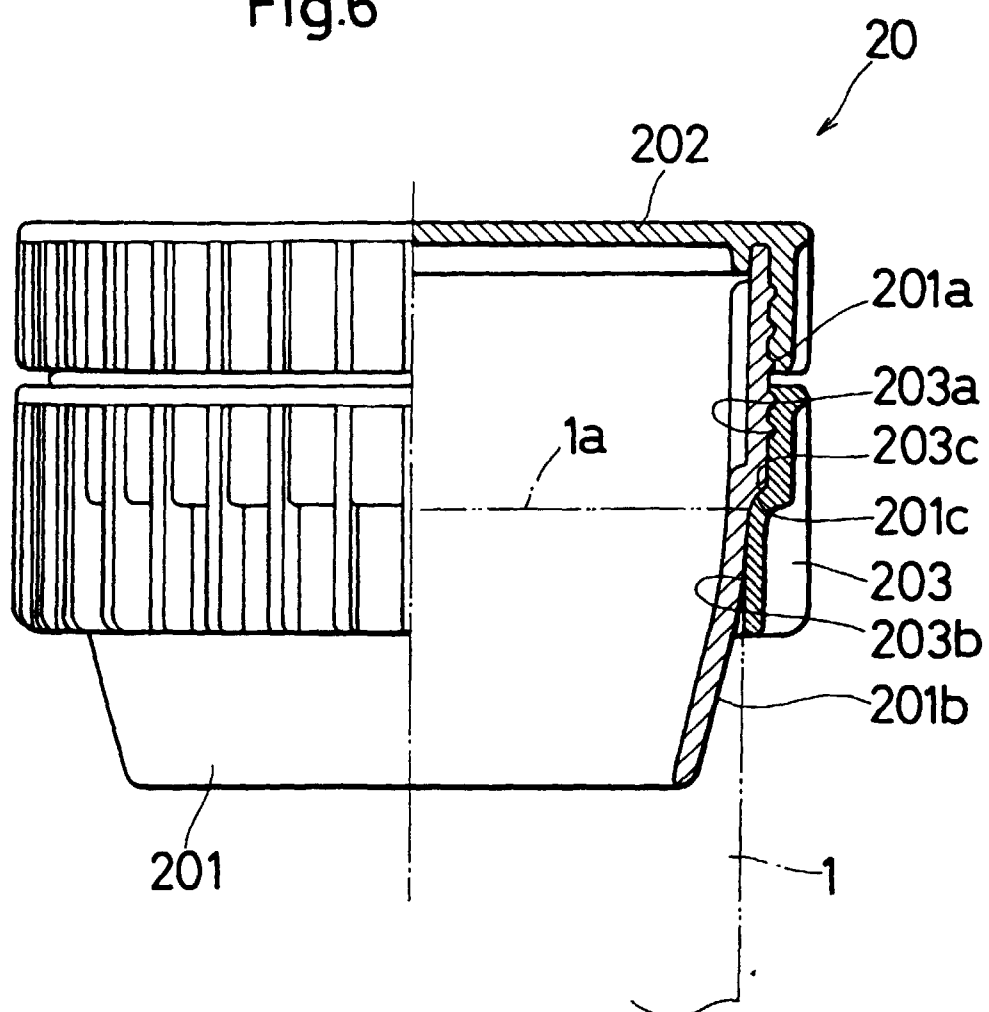


Fig.6



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/03688

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> Int.Cl <sup>6</sup> B65D33/38, 35/44		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) Int.Cl <sup>6</sup> B65D33/36-33/38, 35/44		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-1999 Kokai Jitsuyo Shinan Koho 1971-1999 Jitsuyo Shinan Toroku Koho 1996-1999		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 54-174978 (Laid-open No. 56-91250) (Tokuko Sakaba), 18 December, 1981 (18. 12. 81), Fig. 1 (Family: none)	1-6
Y	CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 5-60501 (Laid-open No. 7-28842) (Pola Chemical Industries Inc.), 30 May, 1995 (30. 05. 95), Fig. 1 (Family: none)	1-6
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 62-10804 (Laid-open No. 63-120856) (Dainippon Printing Co., Ltd.), 4 August, 1988 (04. 08. 88), Fig. 1 (Family: none)	2, 5, 6
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 6 October, 1999 (06. 10. 99)		Date of mailing of the international search report 19 October, 1999 (19. 10. 99)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/03688

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 60-63083 (Laid-open No. 61-178340) (Yoshigi Ishii), 7 November, 1986 (07. 11. 86), Figs. 2 to 9 (Family: none)	2, 5, 6
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 49-43642 (Laid-open No. 50-136618) (Choushirou Tokura), 11 November, 1975 (11. 11. 75), Fig. 1 (Family: none)	4, 5

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