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CA 2370373 C 2009/01/27

(11)(21) 2 370 373

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(86) Date de dépôt PCT/PCT Filing Date: 2000/03/31
(87) Date publication PCT/PCT Publication Date: 2000/11/16
(45) Date de délivrance/Issue Date: 2009/01/27
(85) Entrée phase nationale/National Entry: 2001/11/09
(86) N° demande PCT/PCT Application No.: JP 2000/002135
(87) N° publication PCT/PCT Publication No.: 2000/068105
(30) Priorités/Priorities: 1999/05/10 (JP11/127992); 1999/06/09 (JP11/163026); 1999/11/01 (JP11/311360); 2000/02/08 (JP2000/30030)

(51) Cl.Int./Int.Cl. *B65D 33/36* (2006.01), *B05B 11/04* (2006.01), *B65D 35/38* (2006.01), *B65D 75/48* (2006.01), *B65D 75/58* (2006.01)

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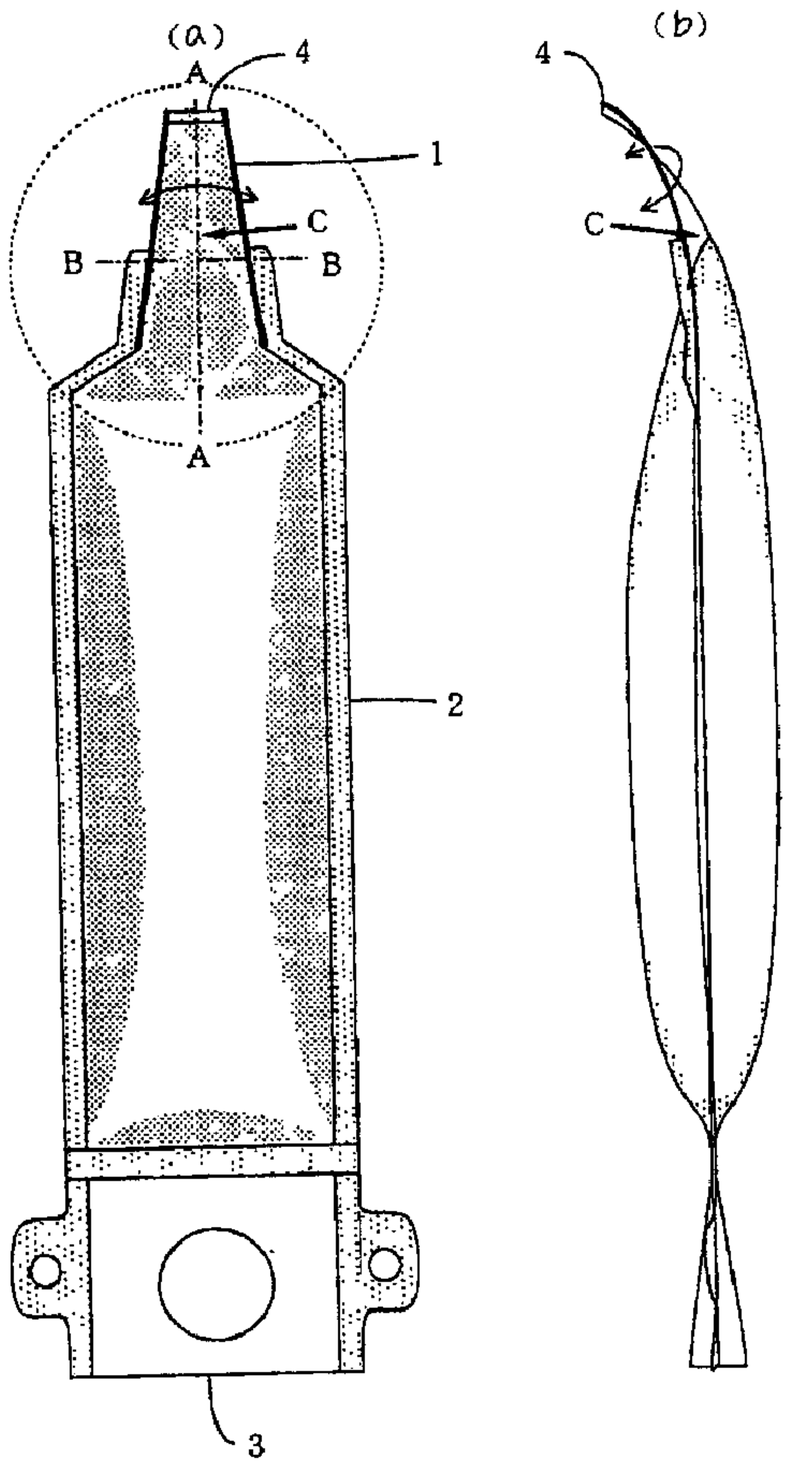
(54) Titre : BUSE DE CONTENANT A FLUIDE ET UN TEL CONTENANT COMPRENANT CETTE BUSE
(54) Title: NOZZLE OF FLUID CONTAINER AND FLUID CONTAINER HAVING THE NOZZLE




(57) Abrégé/Abstract:
A nozzle (1) attached to the tip of a fluid container which is formed of two flexible sheets (5) overlapped with each other and has their internal surfaces which are fitted to each other in a normal state after a content is filled into the container; a container (2)

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(57) Abrégé(suite)/Abstract(continued):
having such a nozzle (1), whereby even a very small portion of the content remaining in the container (2) can be removed by a required amount without being in contact, in the least, with air.

ABSTRACT:

A nozzle (1) attached to the tip of a fluid container which is formed of two flexible sheets (5) overlapped with each other and has their internal surfaces which are fitted to each other in a normal state after a content is filled into the container; a container (2) having such a nozzle (1), whereby even a very small portion of the content remaining in the container (2) can be removed by a required amount without being in contact, in the least, with air.

# NOZZLE OF FLUID CONTAINER AND FLUID CONTAINER HAVING THE NOZZLE

## Technical Field

The present invention relates to a nozzle of a flexibility fluid container such as a tubular like or a bag-like container adapted to discharge a content therein by pressing the body of the container, and also relates to a fluid container having the nozzle.

## Technical Background

Various products such as drinks, cosmetics or adhesives which are packed in tubes or bag-like containers, irrespective their natures or applications, have been commercially widespread.

Features which are common to these products packed in the flexible container are such that these products are generally gel-like fluid, and these products are incompatible with the air making contact therewith (anaerobic). That is, should the products make contact with the air, they would be oxidized, deteriorated or hardened.

The features of containers to be packed therein with such anaerobic fluid are such that the air should be prevented from being drawn into a container by a quantity corresponding to a volume of the fluid which has been discharged, and accordingly, a tube or a bag-like container which can be deformed itself, depending upon the remaining quantity of the content, has been preferably used. By the way, a conventional container of this kind has been composed of a charging part made of a flexible material, and a nozzle part made of a hard material and coupled to the charging part.

Further, since the body of the container is flexible, if a force exerted to the body of the container is released therefrom after the content thereof is discharged therefrom, the interior pressure of the body of the container becomes slightly negative since this container is to restore

its original shape. Accordingly, there may be such a feature that the content thereof is drawn through the tip of the nozzle.

Accordingly, a cap of the nozzle is formed in its inner bottom part with a protrusion for making up for a space defined by the content drawn from the tip of the nozzle.

However, an anaerobic substance is oxidized at once over its surface so as to start deteriorating when it makes contact with the air even in a short time even though it's quantity is small. If the substance does not deteriorate inward thereof although it does only at its surface which makes contact with the air, the content can be used next time by removing such a deteriorating part therefrom. However, it is usual that the deterioration progresses inward of the content and propagates in its entirety within the container.

Further, with the repetitions of removal of the deteriorating part several times, the quantity of the content to be discarded becomes considerable. If the content is expensive, it causes a serial problem.

Thus, there has been such a demand that the content is allowed to make contact with the air only by a required quantity, and further, the content is extracted by the required quantity, being prevented from making contact with the air.

Accordingly, the present invention is to devised in order to solve the above-mentioned problems, and accordingly, an object of the present invention is to provide a nozzle for a fluid container, which allows a content to be extracted by a required quantity, completely without making contact with the air even though the content remains by a small quantity in the container, and to provide a fluid container incorporating such a nozzle.

## Disclosure Of The Invention

To the end, according to the present invention, there is provided a nozzle for a fluid container, characterized in that

(1) the nozzle provided at the front end of the fluid container is composed of at least two flexible sheets which are superposed with each other, and which are made, at their inner surfaces, into close contact with each other in a normal state after a content is charged;

(2) the nozzle provided at the front end of the fluid container is composed of at least two flexible sheets which are superposed with each other, and which are made, at their inner surfaces, into close contact with each other in a normal state after a content is charged, and further, the close contact in the upstream side of the nozzle is released by the content expelled toward the nozzle by an internal pressure of the container, but the degree of the close contact becomes higher in the leading end part of the content since at least one of the flexible sheets constituting the nozzle is bent in this part, thereby inhibiting the content from flowing out;

(3) At least one of the flexible sheets constituting the nozzle is formed at a desired position thereof with a border line serving as a crease;

(4) The hardness of the flexible sheets constituting the nozzles is different between the upstream side and the downstream side of the crease;

(5) The thickness of the flexible sheets constituting the nozzle is different between the upstream side and the downstream side of the crease,

(6) The close contact parts of the sheets are curved in its normal state in a three-dimensionally curved surface-like manner;

(7) The close contact parts of the sheets are rolled in its normal state;

(8) The close contact parts of the sheets are bent in its normal state;

(9) Of the flexible sheets, the curved sheet or the sheet on the bending direction side is further provided on its inner side with an elastic member for forcing this sheet to curve or bend, and the flexible sheets constituting the nozzle are extended along the rear surfaces of the elastic member so as to be close contact therewith by an elastic force of the elastic member;

(10) The flexible sheets constituting the nozzle are superposed with each other so as to be formed into a dish-like shape;

(11) In a welded part of the nozzle defining therein a fluid passage, widthwise of the nozzle, the width of the welded part of the nozzle is larger by a desired length on the upstream side of the nozzle than on the downstream side thereof;

(12) In a welded part of the nozzle defining therein a fluid passage, widthwise of the nozzle, after once welding, welding is again made by a clamping force higher than that of the first welding;

(13) A tubular part is formed by a desired length in the upstream part of the nozzle;

(14) The upstream part and the downstream part of the nozzle are made respectively of different materials, and are integrally joined with each other on one and the same axis;

(15) The joint means is thermal welding process;

(16) The inner surface of the upstream tubular part of the nozzle is subjected to a non-thermal welding process; and

(17) Two passages are formed.

Further, the fluid container according to the present inventions characterized by:

(1) In a fluid container composed of a nozzle part and a container body part which are integrally incorporated with each other, the nozzle part being formed with at least two flexible sheets which are superposed with each other and are welded to each other along their peripheries, the nozzle part is characterized by either the above-mentioned item (1) or (2);

(2) In a fluid container which is formed by flatting a tubular body made of flexible sheet materials, and then by welding and cutting the periphery thereof in a contour shape of the container, a nozzle part is characterized by any one of the above-mentioned items (1) to (12);

(3) A nozzle is attached to the fluid container removably or incorporated integrally with the fluid container, stated in any one of the above-mentioned items (1) to (17);

(4) The fluid container body is tubular;

(5) The fluid container is a gusset bag;

(6) A member for preventing the flexible sheets from being made into close contact with each other is provided between the nozzle part and the fluid container part; and

(7) A filler port is provided, in addition to the nozzle.

Brief Description Of The Drawings

Fig. 1(a) and Fig. 1(b) are a front view and a side view, respectively, illustrating a first embodiment of the present invention;

Fig. 2 is a sectional view illustrating an essential part of the first embodiment;

Fig. 3 is a view for explaining a method of forming a nozzle and a container body;

Fig. 4 is a view for explaining the operation of the nozzle of the present invention;

Fig. 5 is a view for explaining effects of the nozzle of the present invention;

Fig. 6 is a view for explaining a method of using thereof;

Fig. 7 is a view for explaining a method of using thereof;

Fig. 8 is a view for explaining variation of the shape of the nozzle;

Fig. 9 is a view for explaining the shape of a tip of the nozzle;

Fig. 10 is a view for explaining a curving direction of the nozzle;

Fig. 11 is a view for explaining a shape of the nozzle;

Fig. 12 is a view for explaining a shape of the nozzle;

Fig. 13 is a view for explaining a shape of the nozzle;

Fig. 14 is a view for explaining a method of forming the nozzle and the container body;

Fig. 15 is a view for explaining a charging method;

Fig. 16 is a view for explaining a charging method;

Fig. 17 is a view for explaining an example of the configuration of the container;

Fig. 18 is a view for explaining an example of the configuration of the container;

Fig. 19 is a view for explaining an example of the configuration of the container;

Fig. 20 is a view for explaining an example of the configuration of the container;

Fig. 21 is a view for explaining another example of the configuration of the container;

Fig. 22 is a view for explaining a forming method thereof:

Fig. 23 is a view for explaining an example of attachment thereof;

Fig. 24 is a view for explaining a using method;

Fig. 25 is a view for explaining an attaching method;

Fig. 26 is a view for explaining an example of configuration of the nozzle with the container;

Fig. 27 is a view for explaining another example of the configuration of the nozzle with the container; and

Fig. 28 is a view for explaining another example of the configuration of the invention.

The Best Mode For Carrying Out The Invention

Explanation will be hereinbelow made of embodiments of the present invention with reference to the accompanying drawings:

Figs. 1(a) and 1(b) show a first embodiment of a nozzle for a fluid container, according to the present invention, among which Fig. 1(a) is a front view and Fig. 1(b) is a side view.

Referring to the figures, there are shown a nozzle body 1, a container body 2 and a filling port 3, a liquid content being filled therein. The arrows shown in this figures indicate that the nozzle body 1 is curved in a curved surface shape, that is, a spoon-like shape.

Figs. 2(a) and 2b are sectional views illustrating essential part within a dotted line shown in Fig. 1, among which Fig. 2(a) is a sectional view along line A-A, and Fig. 2(b) is a sectional view along line B-B. The container explained in this embodiment is a bag-like container, and is formed of two flexible sheets which are welded to each other at their outer peripheries, as will be detailed later. The nozzle 1 of this fluid container has a right side surface which is depicted by a continuous line from the container body 2 to a nozzle tip end 4 as shown in Fig. 1(b) while it has the left side which is curved in a part indicated by the arrow C. With this curve, two flexible sheets constituting the nozzle 1 are made into close contact with each other so as to block the content in the container body 2 in order to prevent the same from flowing out.

The fluid container in this embodiment is formed in, for example, a method as shown in Figs. 3(a) to 3(d):

At first, (a) two flexible sheets 5 having a desired shape (rectangular shape) are superposed with each other, and (b) are welded at their peripheries, except a filling opening part 6. At this stage, a shaded part 7 may be cut off, simultaneously. The nozzle tip end 4 is welded but the rear end 6 of the container body is opened in order to define the filling port 3 in the opening part 6. The filling port 3 shown in Fig. 1 is a filling port which is formed separately and is then welded. After filling of the container, the opening part (rear end of the container body) 6 is welded.

The nozzle body 1 is curved vertically and horizontally, as shown in Fig. 1(b), and is formed in a curved surface-like shape, that is, spoon-like shape as a whole. Fig. 3(d) is a side view which shows a condition in which no content is filled.

It is desirable to weld the nozzle tip end 4 in such a case that the content is foodstuffs, particularly in view of a sanitary reason. However, since after the content is filled, the nozzle part 1 is curved, and accordingly, the degree of adhesion is increased between the flexible sheets in the nozzle part 1 so that the content is extremely hard to leak, thereby the welding is not always necessary.

Figs. 4(a) to 4(c) show the operation of the nozzle 1 of this fluid container.

In these figures, Fig. 4(a) is a perspective view illustrating a condition in which the content is filled, Figs. 4(b) and 4(c) are longitudinal sectional views thereof.

In a normal state, when the container body 2 is pressed by a finger or the like (D point) so as increase the internal pressure, the content in the container body 2 is pushed toward the nozzle 1. Although the nozzle 1 had been curved at a point C at the time of filling the content, as shown in Fig. 4(b), a part E shown in this figure bulges out due to the internal pressure of the container, and as a result, the point C is further curved greatly. Thus, the two flexible sheets constituting the nozzle 1 tightly adhere to each other, and are curved further in order to hold such a condition that the passage is automatically blocked, thereby it is possible to prevent the content from flowing out.

At this time, by depressing the part E shown in the figure with a finger or the like, the curvature of the point C is decreased, and accordingly, the passage is ensured so that the content flows into the nozzle tip end 4.

The principle utilized by the present invention will be explained as follows:

The above-mentioned operation will be explained in detail with reference to Figs. 5(a) to 5(c).

The container body 2 is planer when it is empty, and after the content is filled therein, it is formed into a substantially tubular shape. When the part D of the container body is pressed so as to increase the internal pressure thereof, the container itself is deformed into a cylindrical shape, and then into a spherical shape. Accordingly, the point C of the nozzle 1 which has been already curved, increases the degree of its curvature.

The nozzle of the fluid container according to the present invention, is the one from which a cap is evitable.

Next, explanation will be made of a method of using the container incorporating the nozzle according to the present invention.

As shown in Fig. 6(a), the nozzle tip end 4 is at first cut, and as shown in Fig. 6(b), the fluid passage in the nozzle 1 is taper-like, being blocked forward, and accordingly, the cutting position is changed in order to obtain an opening area, depending upon a required discharge rate.

In order to discharge the content, at first, as shown in Fig. 4(b), the container body 2 is depressed by a finger or the like so as to increase the internal pressure thereof. When the joint base part E of the nozzle body 1 is depressed by another finger, thicknesswise of the container, the content stretches the curve of the point C, and accordingly, the content forces to open the passage by itself while it is pushed toward the nozzle tip end 4. After the content is discharged by a substantially required quantity, the content in the nozzle 1 is squeezed out by a finger, a spatula 8 or the like.

The content in the nozzle 1 may be, of course, pushed back into the container body 2 without being discharge by its whole volume.

As mentioned above, by expelling the residual content from the nozzle 1, the sheets are made into close contact with each other so as to effect sealing, and accordingly, no air flows thereinto. Thus, the content remaining in the container body 2 is completely prevented from making contact with the air, thereby it is possible to prevent the content from being deteriorated, that is, being oxidized or discolored.

Only with this reason, since the content in the nozzle 1 can be throughly discharged so that the two flexible sheets 5 constituting the nozzle 1 make contact with each other, no content is discharged while no ambient air enters. Further, it is better to slightly increase the internal pressure in order to enhance the curvature of the nozzle by depressing the container body 2, as shown in Fig. 4(b).

It is noted that, as shown in Figs. 6(a) and 6(b), the welding width 9 is larger in the upstream part of the nozzle than in the downstream part (tip end side) of the nozzle, and accordingly, the deformation of a container edge part 10 extending toward the part E shown in Fig. 5a becomes greater by enhancing the rigidity of that part to intensify the force exerted to the point C so as to enhance the curvature while the deformation of the nozzle 1 caused by depressing the point E in order to discharge the content, becomes smooth so as to allow the discharge to be easier.

Further, after the two flexible sheets 5 constituting the nozzle 1 are one welded, the widthwise opposite ends are again welded, as shown in Fig. 3(c), by a clamping force which is greater than the initial force so that the rigidity of the nozzle 1 is enhanced in its entirety, and accordingly, the discharge becomes easier and functional.

Figs. 8(a) to 8(e) show variations of the nozzle 1 for a fluid container according to the present invention.

Fig. 8(a) shows the one in which the welding width is constant throughout the nozzle 1.

Figs. 9 and 10, show variations in which the fluid nozzle is curved. Referring to Fig. 9(a), the tip end 4 is rolled while referring to Fig. 9(b), it is substantially bifolded, and referring to Fig. 9c, the nozzle is clamped in order to completely close the nozzle 1. Further, referring to Fig. 10(a), the nozzle 1 is curved only in the widthwise direction, and referring to Fig. 10(b), it is curved in the direction of the passage.

Further, the shape of the nozzle is contrivable as follows:

Figs. 11a and 11b show such a case that a curving line (crease) 12 has been previously formed at a desired position (substantially center position in this figure). With arrangement, the curved condition can be easily maintained even in a normal state. As to the process of forming the curving line 12, there may be preferably used a press method (the so-called press line, that is, hot-pressing or cold pressing).

In addition, it may be considered that the thickness and the hardness (or flexibility) of the flexible sheets 5 are different between the parts forward and rearward from the curving line 12 as

a border line. In this case, it may considered such a way that the upstream side (the container body side) 13 of the nozzle 1 is thin or soft while the downstream side (tip end side or the close-contact side) 14 thereof is thick or hard.

Further, as shown in Fig. 12, the part forward from the curving line 12 is provided therein with an elastic member 15 for forcing the nozzle to curve inward in the tip end part in order that the flexible sheets 5 constituting the nozzle 1 is extended while they are made into close contact with each other. In this case, as to the elastic member 15, a Belleville spring is most preferable. However, it should not be limited to this spring together with the material thereof.

Fig. 13(a) show such a case that the nozzle 1 has be previously formed in a dish-like shape, and Fig. 13(b) is a sectional view along line F-F in Fig. 13(a). In this case, there may be considered to be combined with such a case that the hardness and the thickness are different between the parts forward and rearward from the curving line 12 as a border line, as mentioned above. This can enhance the degree of adhesion between the flexible sheets 5 at the curving line 12, rather than the merely spoon-like shape, thereby it is possible to enhance the reliability.

Figs. 14 to 20 show another example of the fluid container incorporating the nozzle according to the present invention.

Although the separate two flexible sheets 5 are superposed with each other in the method shown in Figs. 3(a) to 3(e), the container body 2 may be formed by a single flexible sheet 5 which is bifolded as shown in Fig. 14(a) while the container body 2 may be formed by using a flexible sheet 5 which has been originally tubular, as shown in Fig. 14(b). Fig. 14(c) is a view which shows the completed container 1. This method is such an advantage that the number of welded parts is less than that in the method shown in Fig. 3.

It is noted that the welding of the tip end 4 of the nozzle is not always necessary, but the welding may be made as necessary in view of a kind of the content.

In all embodiments of the present invention, as to the material of the flexible sheet 5 used for the nozzle 1 and the container body 2, a flexible composite sheet made of synthetic resin is preferably used. Specifically, polyethylene (PE), polypropylene (PP), nylon or the like is

preferable. Further, the sheet to be used preferably has the so-called high barrier property so as to be excellent in the moisture proof and the air or gas impermeability.

As mentioned above, a nozzle such as a filler which is not shown is inserted into the container body 2 configured as mentioned above, through the bottom opening 6 which has not yet welded so as to fill the content therein, as shown in Figs. 15(a) and 15(b), and thereafter, the bottom opening 6 is welded.

The nozzle 1 according to the present invention allows the content to be filled while the content can be prevented from leaking even though the content is a low viscous fluid such as water. In order to completely prevent leakage in view of leakage due to capillary action, the nozzle tip end 4 may be welded or it may be fastened by a claming member.

It is noted that since the curve is formed, the content can be prevented from being accidentally discharged even though a pressure which is more or less high is exerted to the container body 2. Further, the more the pressing of the container discharging the content, the higher the curvature of the nozzle, in view of a certain kind of the content, the content can hardly be discharged.

Fig. 16 is a front view which shows a third embodiment of the present invention.

That is, in this embodiment, a hanging part 16 is incorporated with the bottom part 6 of the container body 2 in order to aim at enhancing the efficiency of filling of the content, as mentioned above.

The hanging part 16 is provided with hanging holes 17 for filling and a hanging hole 18 for displaying the commodity. The hanging part 16 may have previously been integrally incorporated with the sheet 5 of the container body, or the hanging part 16 which has been separately prepared may be incorporated with the bottom part 6 of the container body by means of welding or the like.

With this arrangement, when the content is filled, as shown in this figure, the hanging holes 17 are inserted onto hangers 19, and thereafter, the hangers 19 are moved toward each

other so as to open a filling port 20. Thus, the filling nozzle 21 is inserted therein for filling the content. Further, after the filling, the bottom part 6 is thermally welded.

Fig. 17 shows a fourth embodiment.

As shown in the figure, the container 2 is formed therein with a filling port 23 incorporating a screw cap 22 or the like, and accordingly, the container 2 can be used repeatedly. Further it may be used as a container having a large volume.

Fig. 18 is a front view which shows a fifth embodiment.

In this embodiment, a pot-type container is used, being incorporated with the filling port 3 and the nozzle 1 which are located at the top part of the container body 2, and which are directed upward.

Fig. 19 shows a sixth embodiment.

Is noted that a gusset bag is used as the container body 2 in this embodiment.

Further, in the case of a large-sized gusset bag, reinforcements 24 may be provided in the welded vertical side parts in order to prevent the container from falling down.

Figs. 20(a) and 20(b) show a variant form of the embodiment shown in Fig. 19, in which the bottom part 6 is formed therein with the filling port 3.

Referring to Figs. 21(a) to 27(c) show a second embodiment of the nozzle 1 according to the present invention. Although the nozzle which has been explained hereinabove is integrally incorporated with the container body, this embodiment is of a general purpose type, and accordingly, it may be used being substituted for a cap of an existing container.

Referring to Figs. 21(a) and 21(b), the nozzle 1 is composed of a tubular part 25 and a close contact part 26. Fig. 21(a) is a front view while Fig. 21(b) is a side view.

This nozzle 21 is configured as shown in Fig. 22(a) to 22(d). That is, as shown in Fig. 22(a), two flexible sheets 5 which have been cut into a desired shape for preparation, are superposed with each other, and are then thermally welded at their peripheries, except the lower

side parts thereof as shown in Fig. 22(b). In this case, the two flexible sheets are not always essential, but a single flexible sheet which is bifolded along one side, and which is then thermally welded along its periphery may also be, of course, used so as to form the same one.

Referring to Fig. 22(c) which shows a tubular member 25 as an upstream part, the inner surface of the tubular member 25 is subjected to a nonthermal welding process 27 which is desirable for satin-finishing the surface. That is, with this the satin-finishing process, micro unevenness is formed in the surface so that heat-transmission is extremely lowered, and accordingly, the surface to be made into contact is prevented from being fused (can hardly be fused). It is noted that there may be used another method in which a sheet made of a material which is different from the material of the tubular member 25 and which is not thermally welded, may be held in a hollow part.

Next, the above-mentioned tubular member 25 is inserted into an opening part 28 of a downstream part 26 which has been previously prepared, and both are then thermally welded in their parts to be welded.

As to the materials, the upstream part 25 is made of polyethylene (PE) or polypropylene (PP), but the downstream part is preferably formed of a flexible composite sheet made of synthetic resin which is specifically and preferably polyethylene (PE), polypropylene (PP), nylon or the like. Further, the sheet to be used preferably has the so-called barrier property which is excellent in water-proof and air or gas impermeability.

It is important that when the downstream part 26 is welded, the thickness of the sheets to be welded or the tension thereof during welding is suitable adjusted so as to curve the downstream part 26 in order to obtain a high degree of adhesion between the sheets 5 after welding. Further, as to the curving direction, there may be considered a direction (trough-like shape) orthogonal to the flowing direction as shown in Fig. 10(a), a flowing direction (arcuated shape) shown in Fig. 10(b), or a spherical surface shape as shown in Fig. 10(c). However, since the spherical surface shape such as a spoon-like shape can be simply manufactured, and since the degrec adhesion between the superposed sheets 5 becomes higher in this shape, it is possible to surely prevent leakage.

As mentioned above, there may be considered various methods such as to cause the tensions of two sheets to be different from each other in order to allow one of the sheets to shrink, or to press them at such a temperature that the sheets are not welded with each other.

During use of the nozzle 1 for the container according to the present invention, which is configured as mentioned above, as shown in Figs. 23(a) and 23(b), the upstream part 25 may be fitted in a discharge port 29 of the container 2. There may be used, as the container 2, a bag-like container such as a stand pouch, in addition to the tubular container as shown in Figs. 23(a) and 23(b), which is made of a flexible material. The material and the shape should not be specifically limited.

Further, the welded part of the nozzle tip end 4 is cut off by scissors or the like so as to open the nozzle tip end 4. Referring to Figs. 24(a) to 24(c), in a normal state shown in Fig. 24(a), when the content is to be discharged by depressing the container body 2, the content forces two superposed sheets 5 of the downstream part 26 to separate from each other so that the content is discharged from the tip end 4 as shown in Fig. 24(b). Finally, the downstream part 26 is squeezed by a spatula, rollers 30 or the like so that the content is pushed out, and as a result, the two sheets 5 of the downstream part 26 are again made into close contact with each other in the widthwise direction (trough-like shape), the flowing direction (arcuated shape) or in a spherical surface shape, as shown in Figs. 10(a) to 10(c). In this case, the spherical shape can surely prevent leakage since the degree of adhesion between the superposed sheets 5 becomes higher, as mentioned above.

It is noted here that as to the shape of the downstream part, any of those shown in Figs. 8(a) to 8(e) may be used.

Further, the downstream part 26 may not only be curved as mentioned above, but may be curled as shown in Fig. 9(c), be bent as shown in Fig. 9(d), or be clamped at its tip end by a clamping means as shown in Fig. 9(e).

Further, as a method of fitting the nozzle 1 to the container body 2, there may be used a method of inserting the nozzle 1 into the discharge port 29 of the container body as shown in Fig. 25(a), a method of inserting the nozzle 1 onto the exterior of the discharge port 29 as shown in

Fig. 25(b) and a method of screwing the discharge port as shown in Fig. 25(c). Further, the nozzle 1 may be, of course, integrally welded to the container body 2 as in the above-mentioned embodiment.

Figs. 26(a) and 26(b) are views which show a configuration of the second embodiment of the present invention.

In this configuration, three sheets 5 are superposed with one another so as to define two passages G, H. This arrangement is effective for simultaneously discharging two kinds of contents.

In this configuration, if the sheets 5 which are formed in a desired shape and which are arranged in parallel with each other, may be three-folded at their common side, and may then be thermally welded at their peripheries so as to form the same shape as mentioned above, the three superposed sheets are not always essential.

Thus, the two passages are merged in the later half K of the downstream part 26 into a single passage, and further, they are alternately welded so as to define an agitating passage 31. With this arrangement, two part adhesive or the like may be discharge in a mixed condition at one time. In this case, if the adhesive which is squeezed and mixed in the two passage parts is discharged by a whole quantity, it can be prevented from being solidified within the passages.

Figs. 27(a) to 27(c) show such a case that the nozzle in this embodiment which is applied to a pot-type, a filler port incorporating type or a gusset bag type container.

Figs. 28(a) and 28(b) shows a seventh embodiment.

Referring to the figures, there are shown a member 32 for preventing the flexible sheets 5 from making contact with each other, which may be a straw-like tubular member diametrically depressed or a planer member bifolded. This member 32 serves as a buffer and a guide when the content is pushed out.

That is, the nozzle 1 at the front end of the container is made into close contact in a normal state so that the liquid pushed out from the container forces the close contact part to open

while it advances in the nozzle 1. However, the joint base part 33 of the nozzle 1 is likely to bend, and accordingly, the liquid itself advances, forcing the close contact part to open while it has to reform the nozzle 1 from its bent shape. Thus, the resistance becomes excessively high. If the curving of this part is rather inconvenient, the above-mentioned member 32 is provided so as to previously open the close contact part in order to allow the liquid to smoothly advance.

Thus, the member 32 should not be limited to the tubular member the planar member if its shape can exhibit the above-mentioned function.

The nozzle part 1 or the curving of the point C can rather prevent accidental discharge of the content, and accordingly, the member 32 may be incorporated as is necessary in view of a kind of the content. The member 31 severs as a flow rate adjusting mechanism.

The nozzle for a fluid container and fluid container having the nozzle according to the present invention as shown in the respective embodiments can basically be used with no cap, and can prevent the content from leaking due to capillary action even though the content is a low viscous fluid such as water.

Further, since the content can be prevented from making contact with the air even with no cap, the condition of reservation of a material such as an adhesive which would be deteriorated through reaction with moisture in the air, or foodstuffs which would be oxidized is extremely satisfactory. Further, it may be smoothly discharged when the container is reused after storage thereof. Further, with no removable of a cap, it is convenient.

Further, it may be optionally combined with any of various bag-like containers including a stand pouch and a gusset bag, in addiction to the tubular container, and accordingly, it can be widespreadly used. Further, by selecting a material adjusted to the content of the container (in particular, a material having a high degree of barrier property is preferable), it can be used for reservation of liquid in various fields with extreme satisfaction.

Industrial Applicability

Since the nozzle for the container, and the container incorporating thereof have been configured as mentioned above, a required volume of the content can be discharged while the content remaining in the container after the discharge can be completely prevented from making contact with the air.

Thus, even though the condition of reservation of the content is remarkably satisfactory, in comparison with a conventional container, even though the content therein cannot be consumed at one time, thereby it is possible to prolong the period of reservation in a useable condition.

Claims:

1. A nozzle for a fluid container, which is incorporated to the front end of the fluid container, characterized in that the nozzle is formed of at least two flexible sheets superposed with each other, and having their inner surfaces made into close contact with each other in a normal state after a content is filled in the fluid container, the close contact of an upstream part of the nozzle is released by the content pushed toward the nozzle by an internal pressure in the container, and at the same time, at least one of the sheets constituting the nozzle is bent in the leading end part of the content so as to enhance the degree of adhesion in that part, thereby it is possible to inhibit the content from flowing out, characterized in that the welding width of the part constituting the nozzle is larger on the upstream side of the nozzle with respect to the middle part of the nozzle as a border line than on the downstream side and narrower on the downstream side of the nozzle than on the upstream side.

2. A nozzle for a fluid container as set forth in claim 1, wherein a border line serving as a crease is formed in at least one of the sheets constituting the nozzle.

3. A nozzle for a fluid container as set forth in claim 2, wherein the hardness of the sheets constituting the nozzle is different between the upstream side and the downstream side of the nozzle with respect to the crease as the border line.

4. A nozzle for a fluid container as set forth in any one of claims 2 or 3, wherein the thickness of the sheets constituting the nozzle is different between the upstream side and the downstream side of the nozzle with respect to the crease as the border line.

5. A nozzle for a fluid container as set forth in claim 1, wherein the close contact is curved in a three-dimensional surface shape in the normal state.

6. A nozzle for a fluid container as set forth in any one of claims 1 to 5, wherein a plurality of flexible sheets constituting the nozzle are previously superposed with one another so as to form a dish-like shape.

7. A nozzle for a fluid container as set forth in any one of claims 1 to 6, characterized in that widthwise welded parts of the nozzle defining a fluid passage are first welded to each other to produce a first welding, and thereafter, are again welded to each other with a clamping force which is higher than that of the first welding.

8. A nozzle for fluid container as set forth in any one of claims 1 to 7, wherein a plurality of passages are defined.

9. A fluid container characterized in that a fluid container body is removably or integrally incorporated with the nozzle for the fluid container as set forth in any one of claims 1 to 8.

10. A fluid container as set forth in claim 9, characterized in that the fluid container body is tubular.

11. A fluid container as set forth in claim 9, characterized in that the fluid container is a gusset bag.

12. A fluid container as set forth in any one of claims 9 to 11, wherein a filling port is provided in addition to the nozzle.

Fig. 1

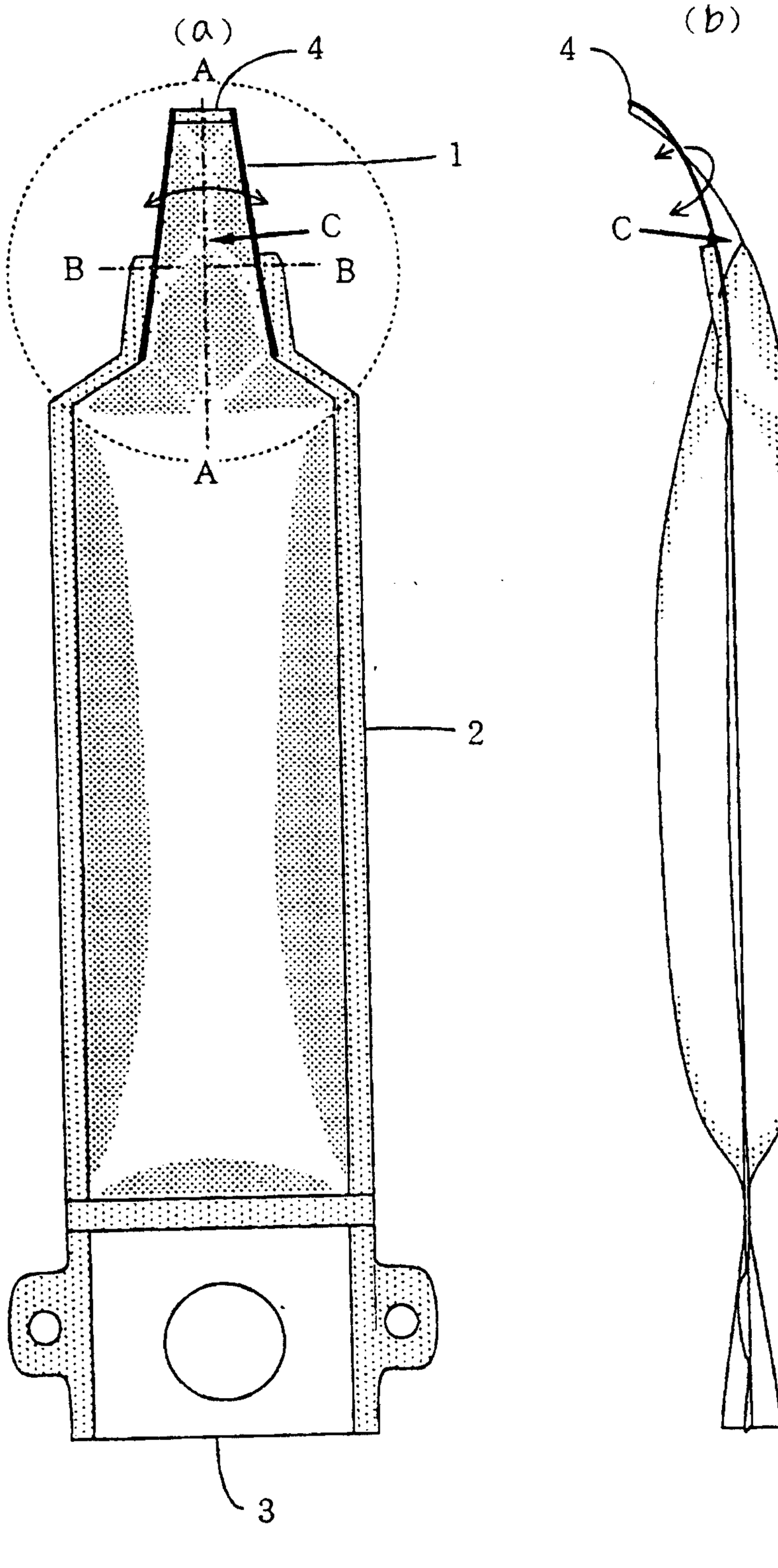


Fig. 2

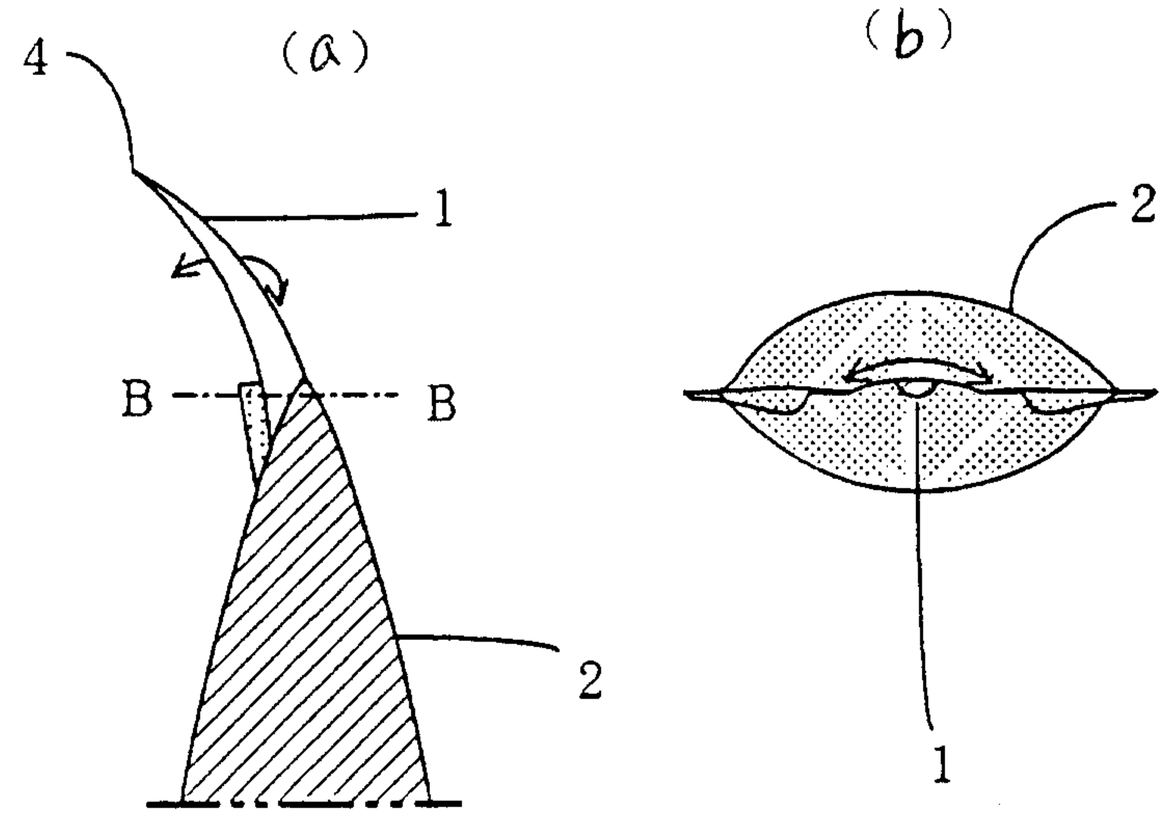


Fig. 3

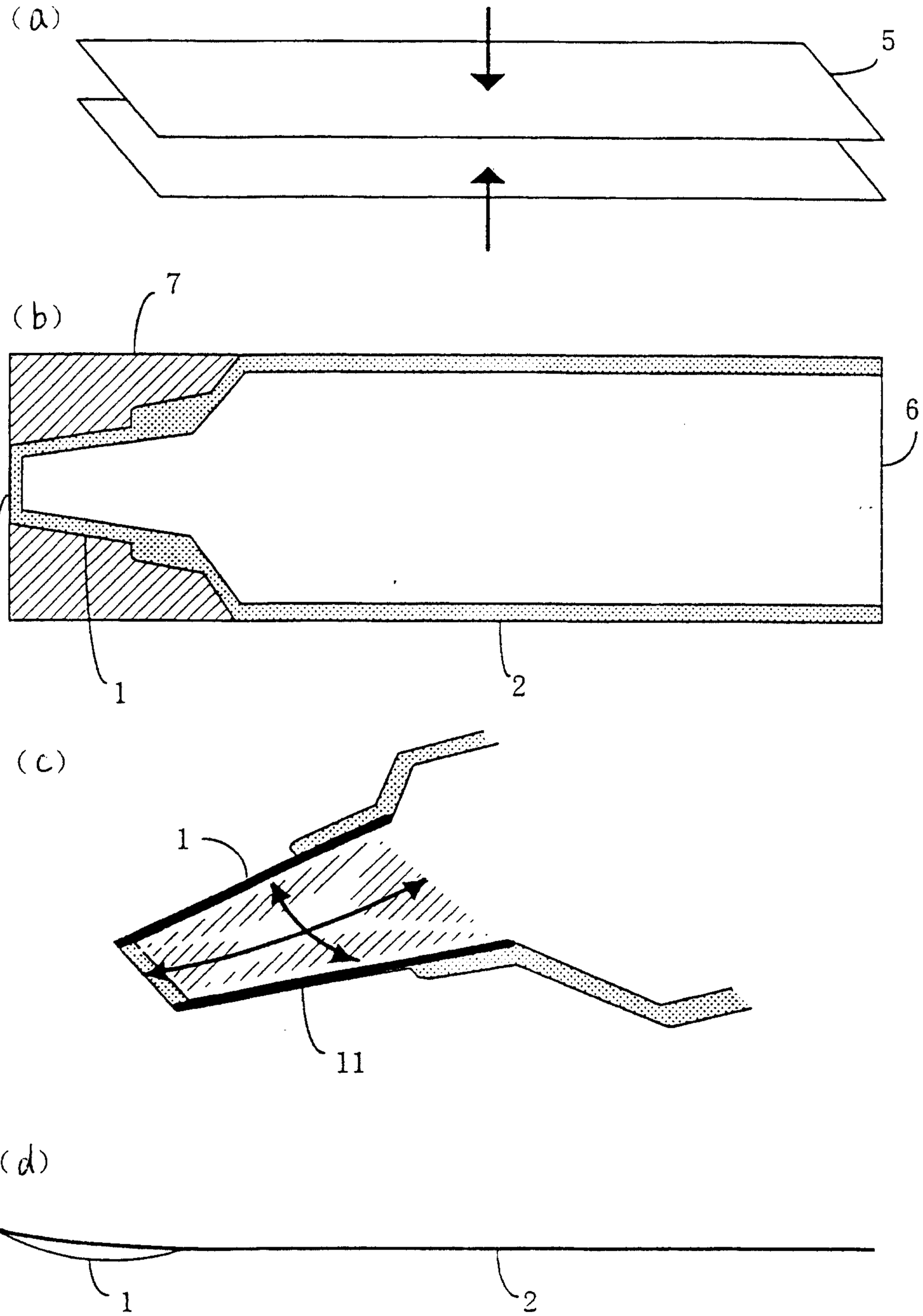


Fig. 4

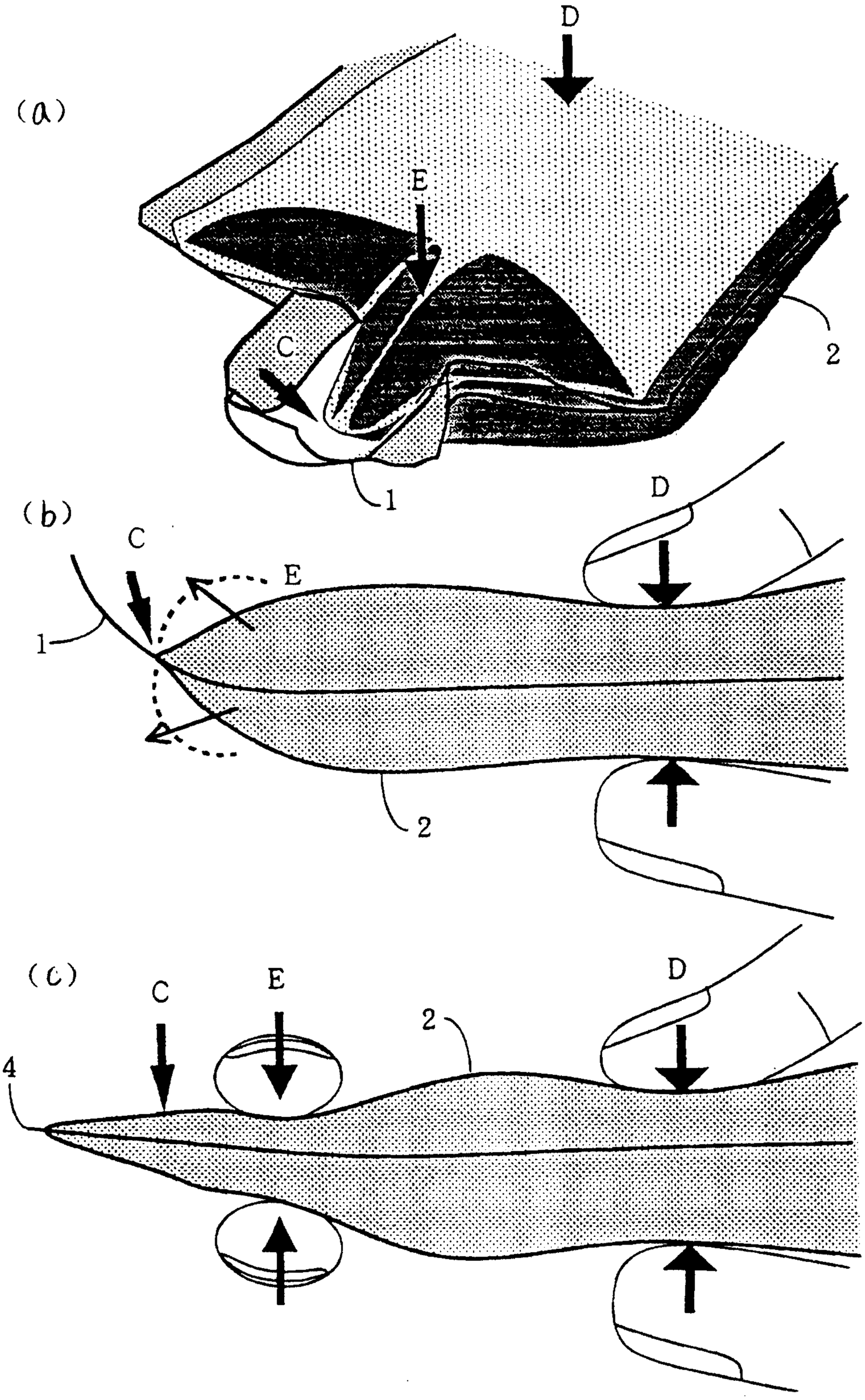


Fig. 5

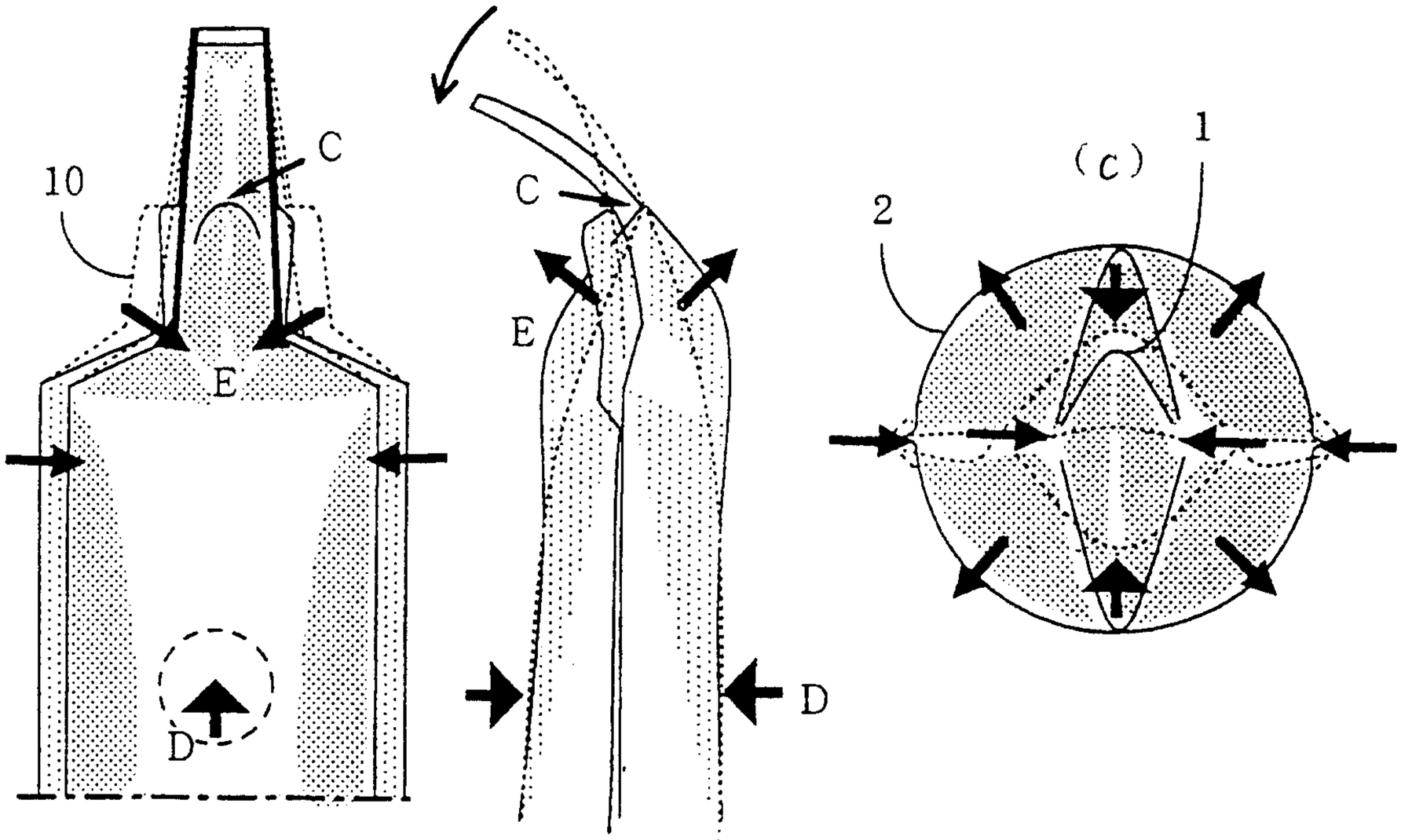



Fig. 6

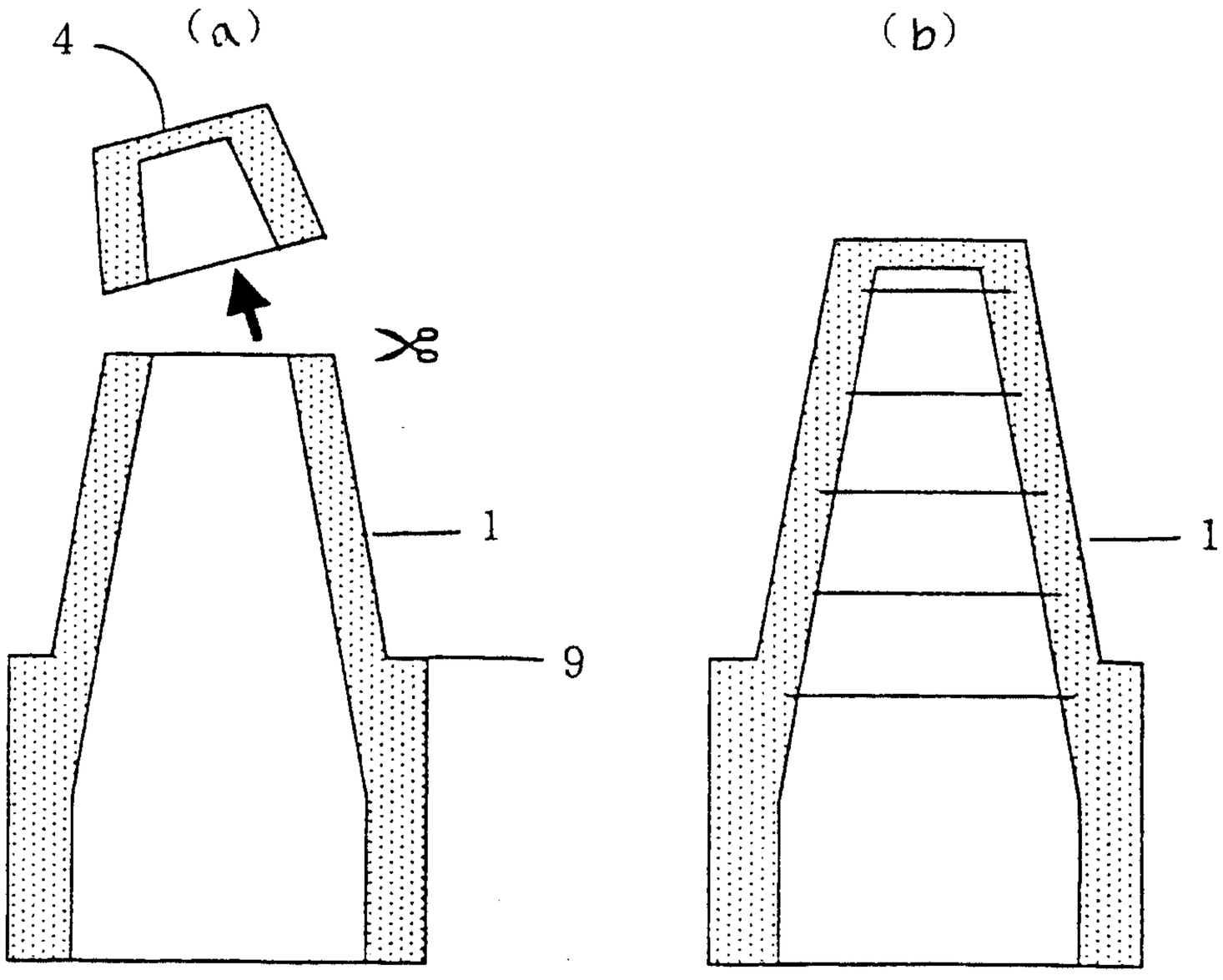


Fig.7

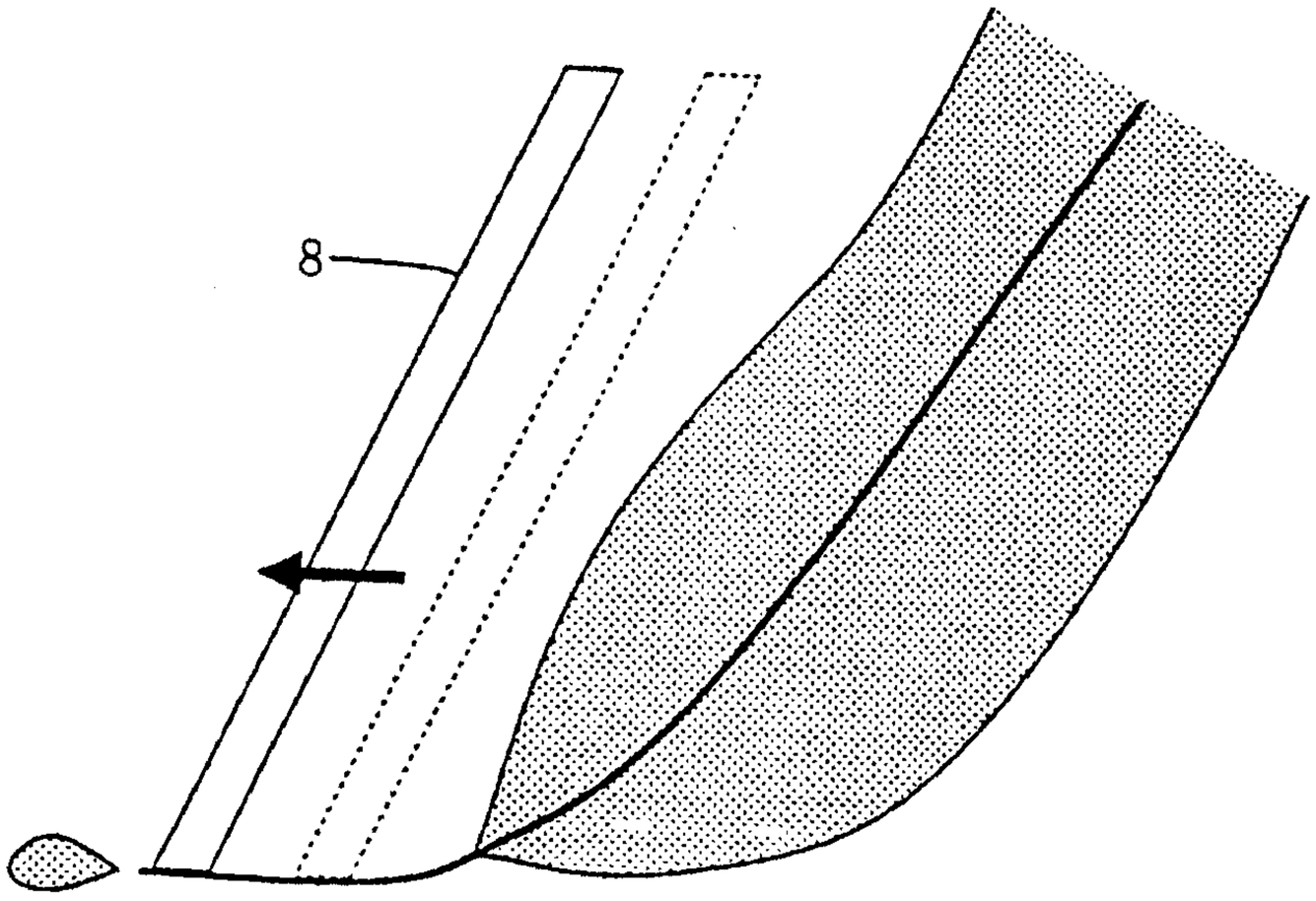



Fig.8

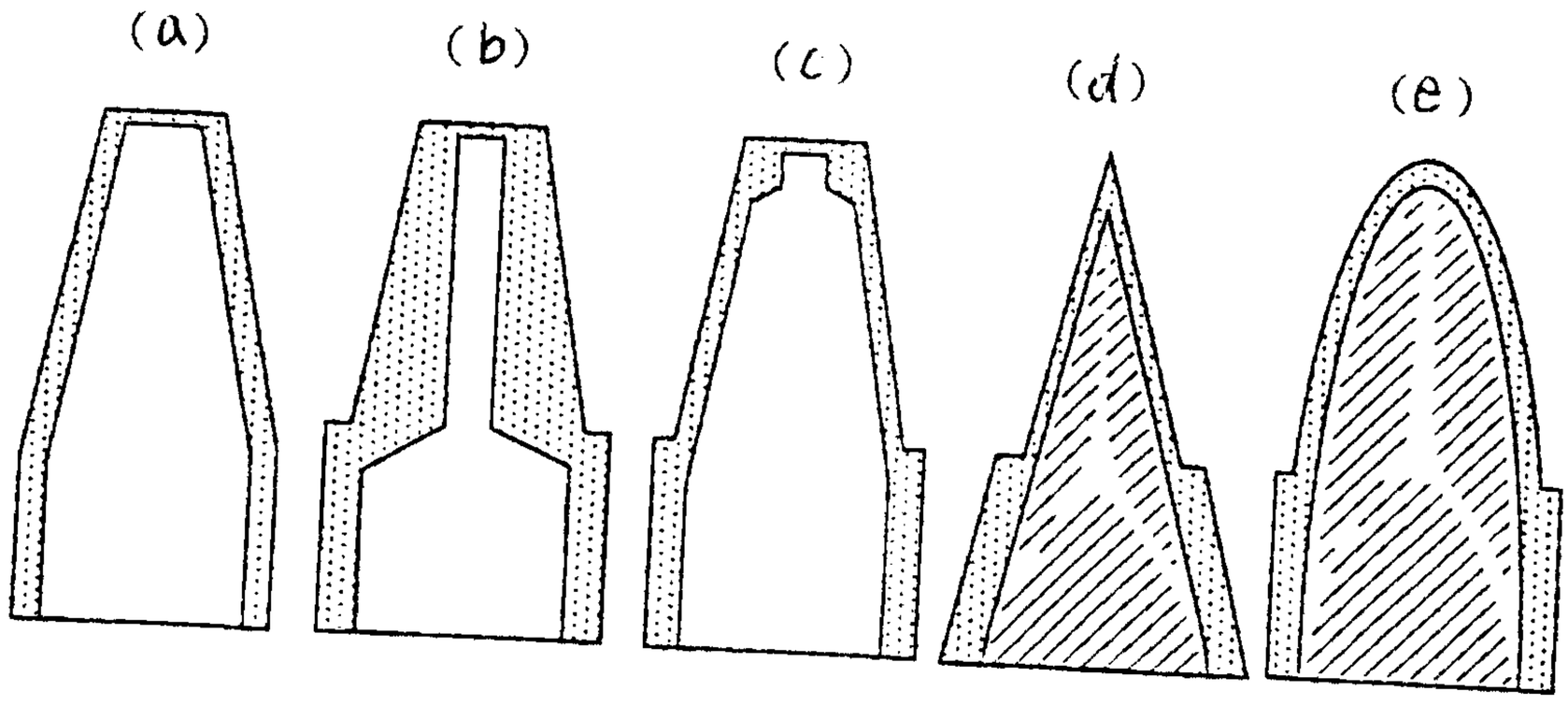


Fig. 9

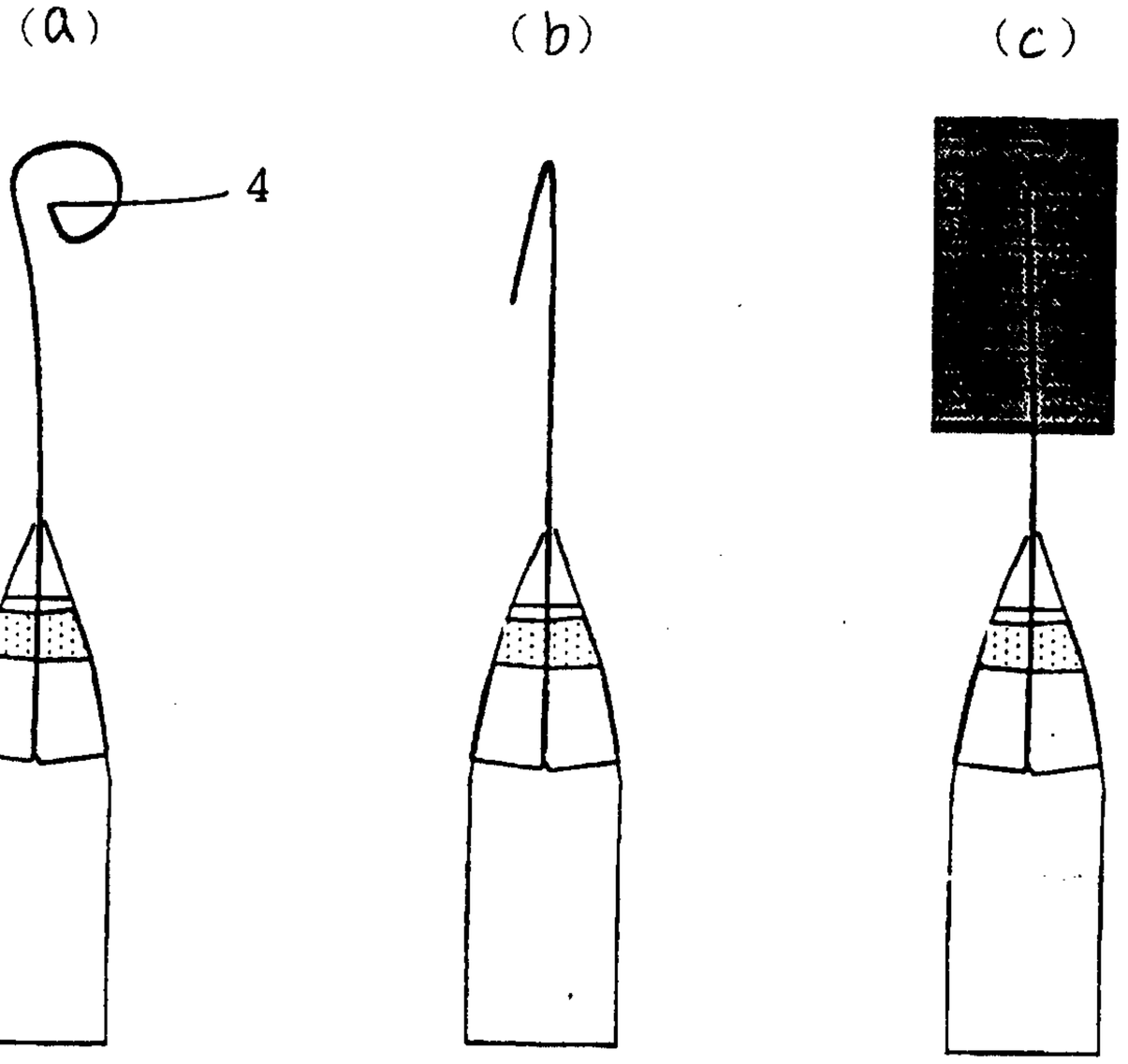



Fig. 10

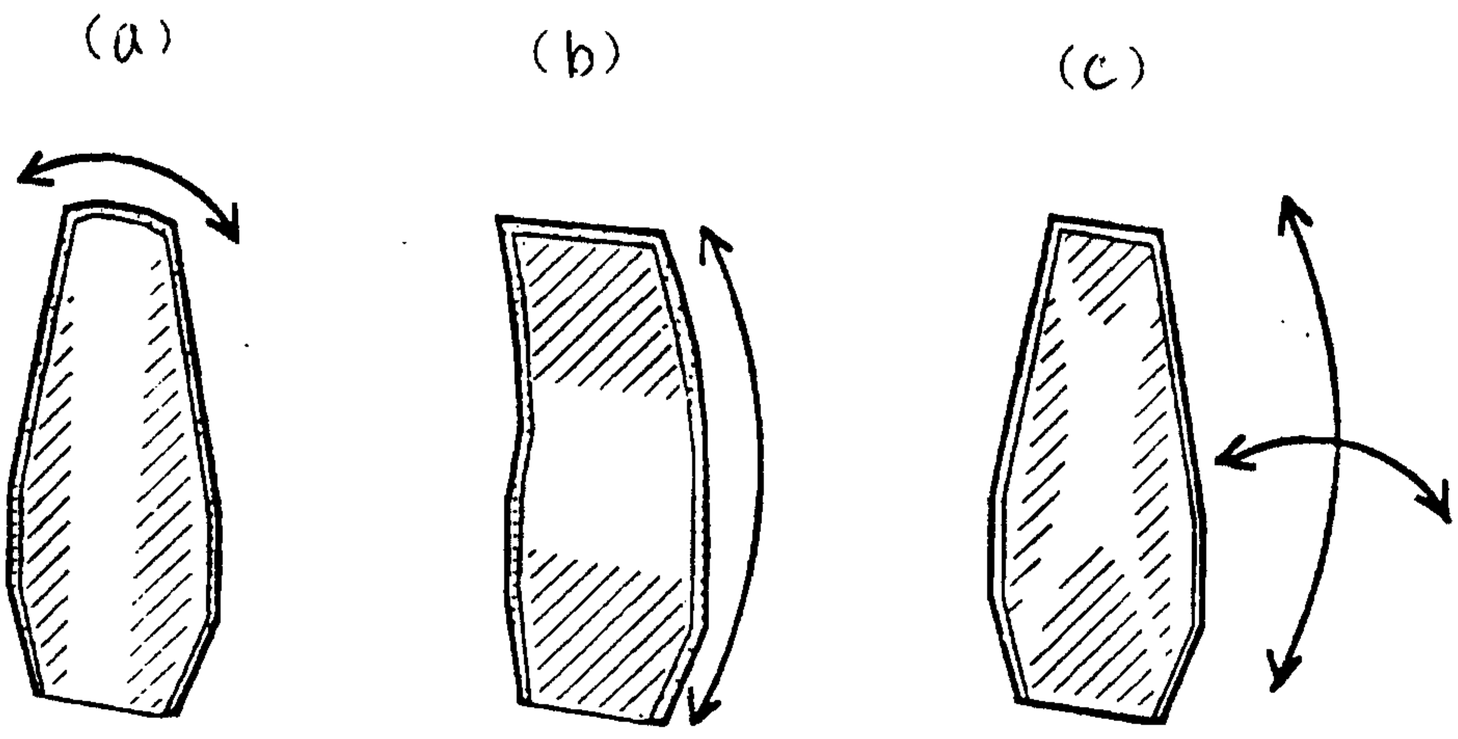


Fig. 11

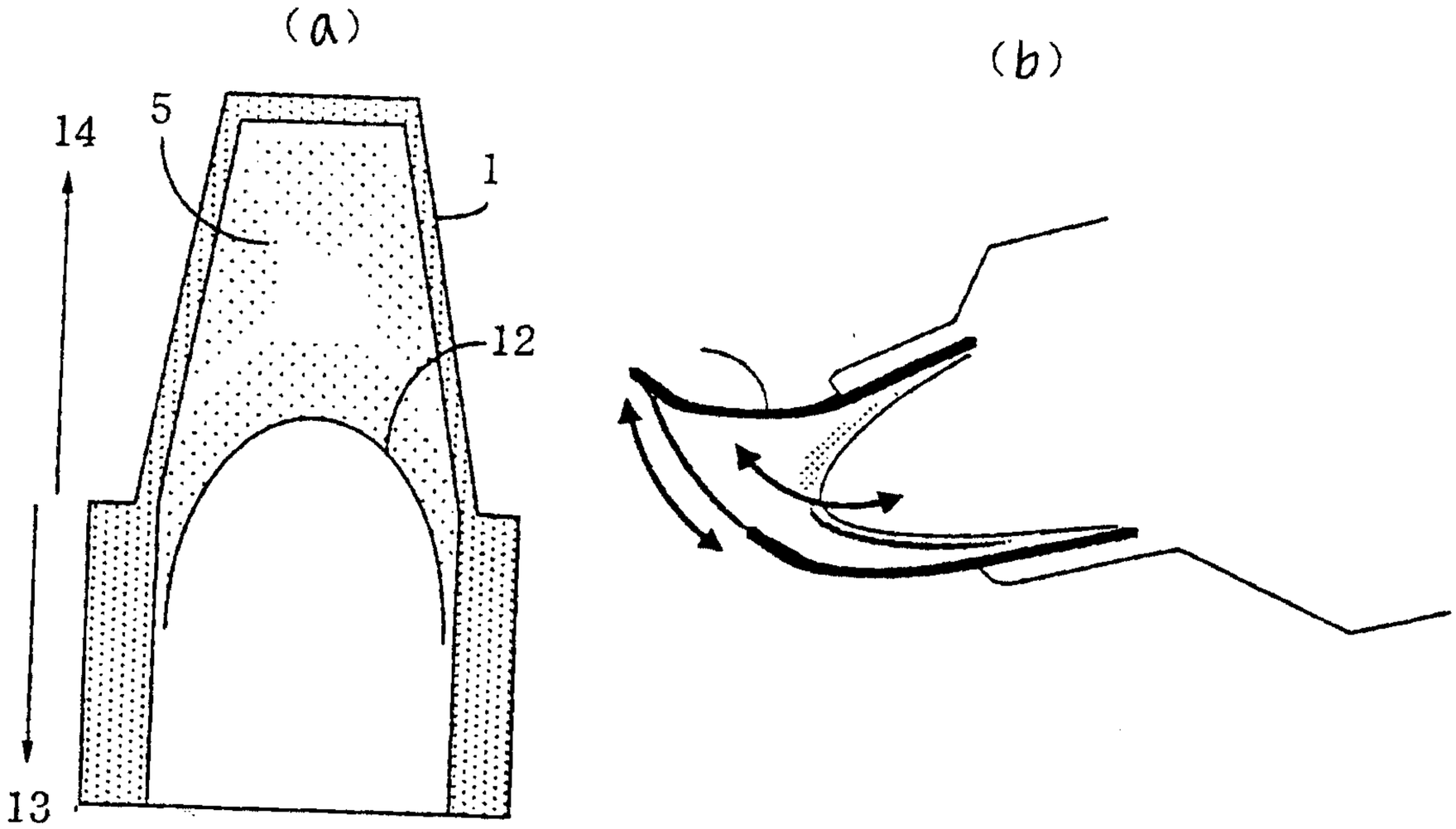



Fig. 12

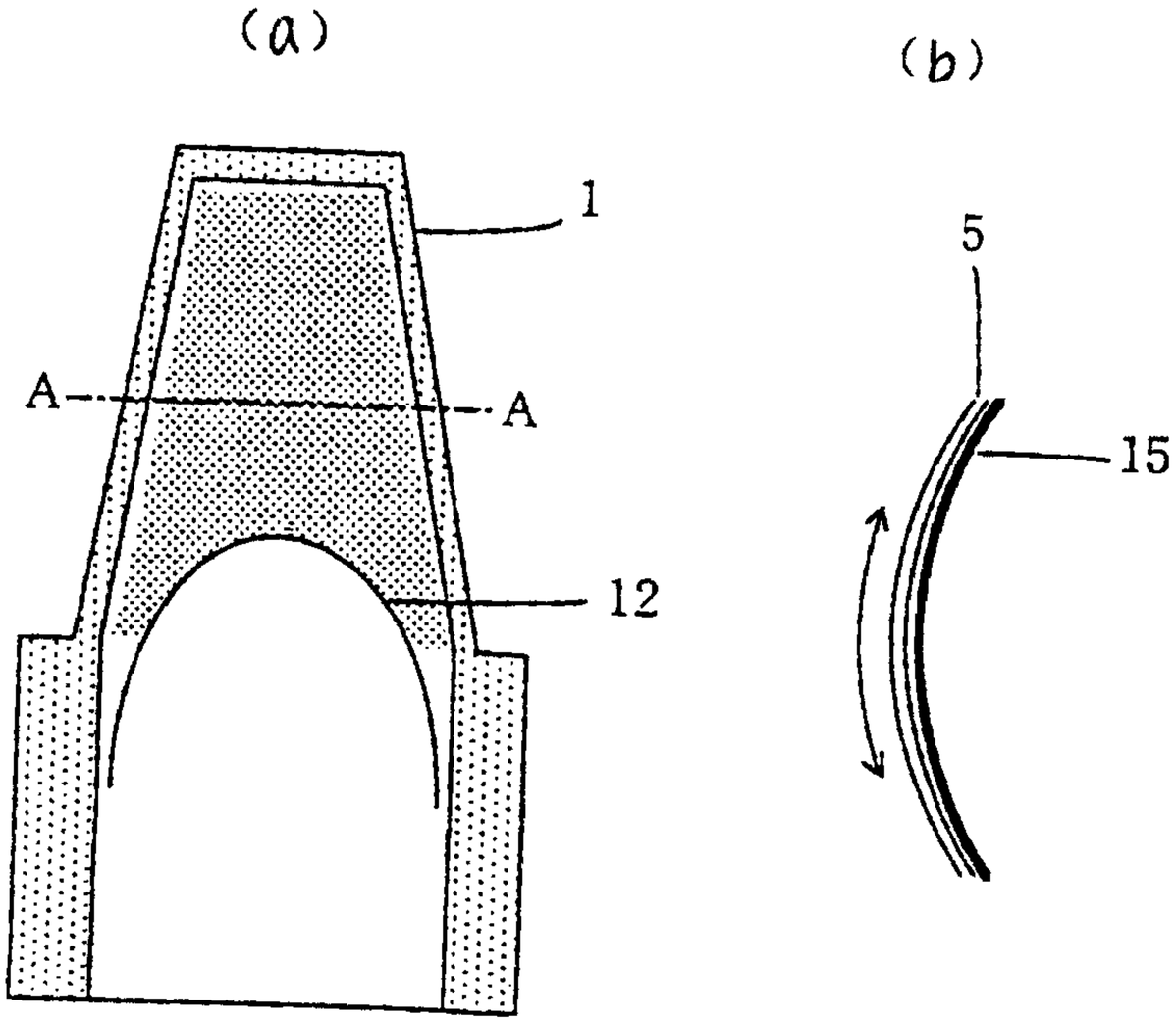


Fig. 13

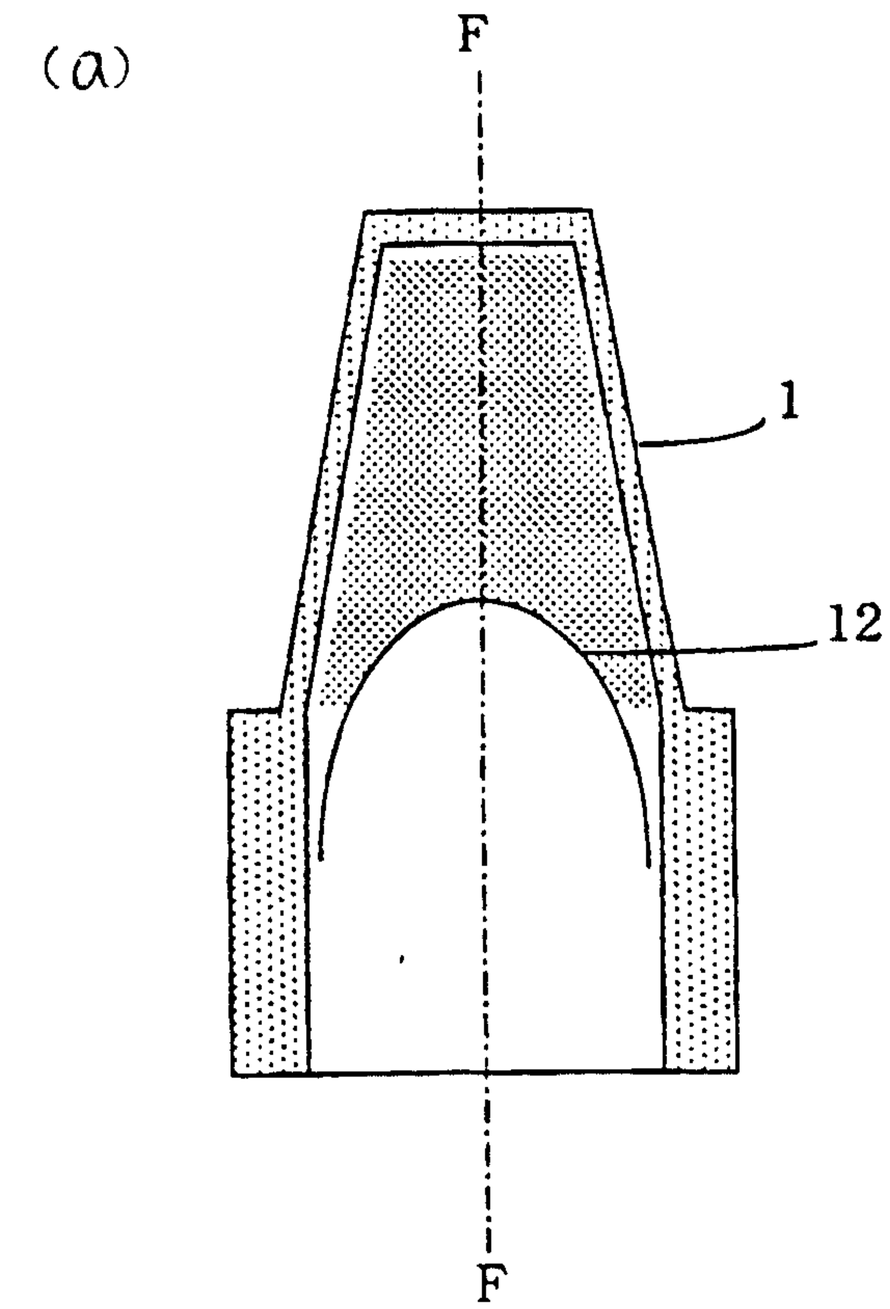


Fig.14

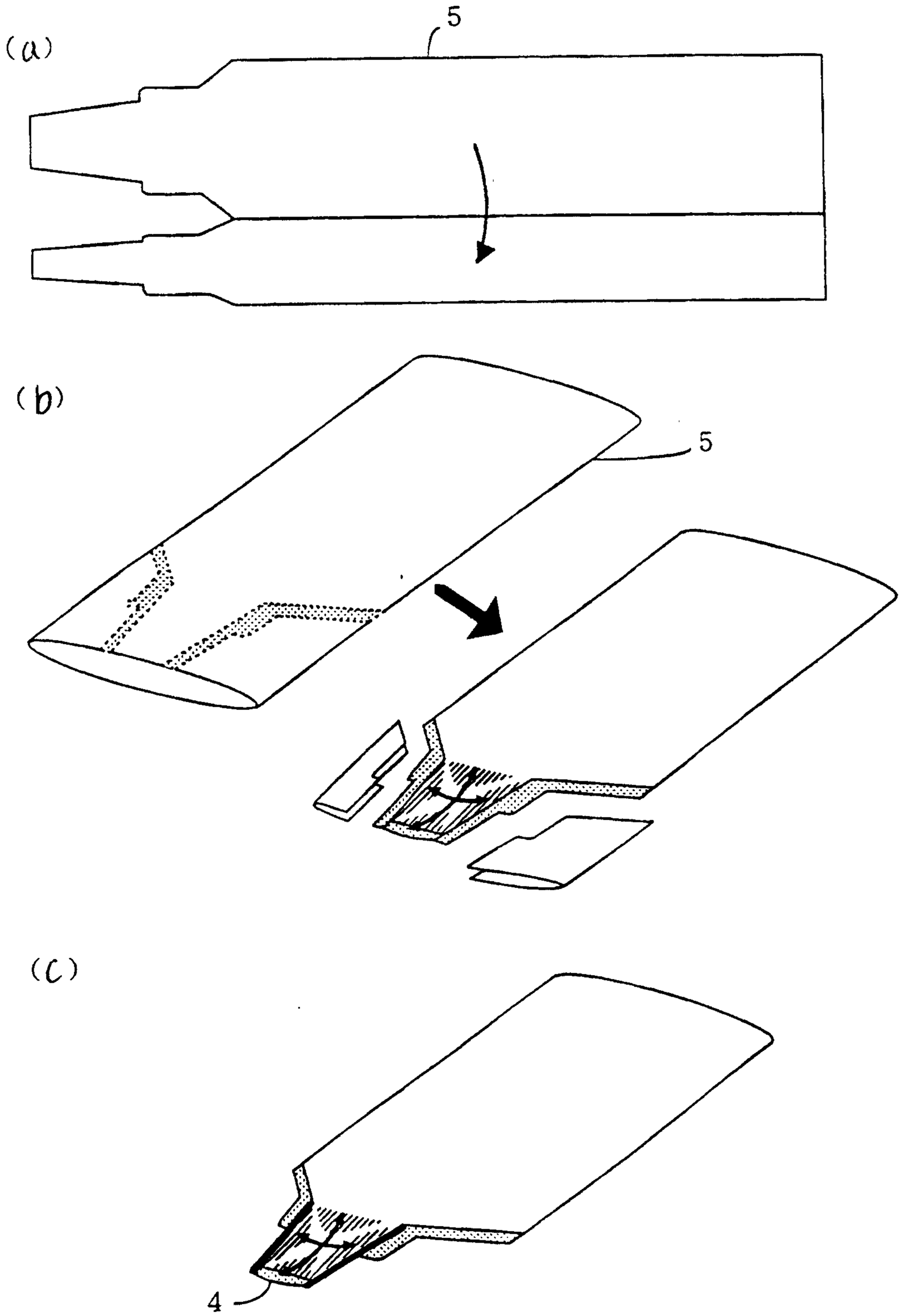


Fig. 15

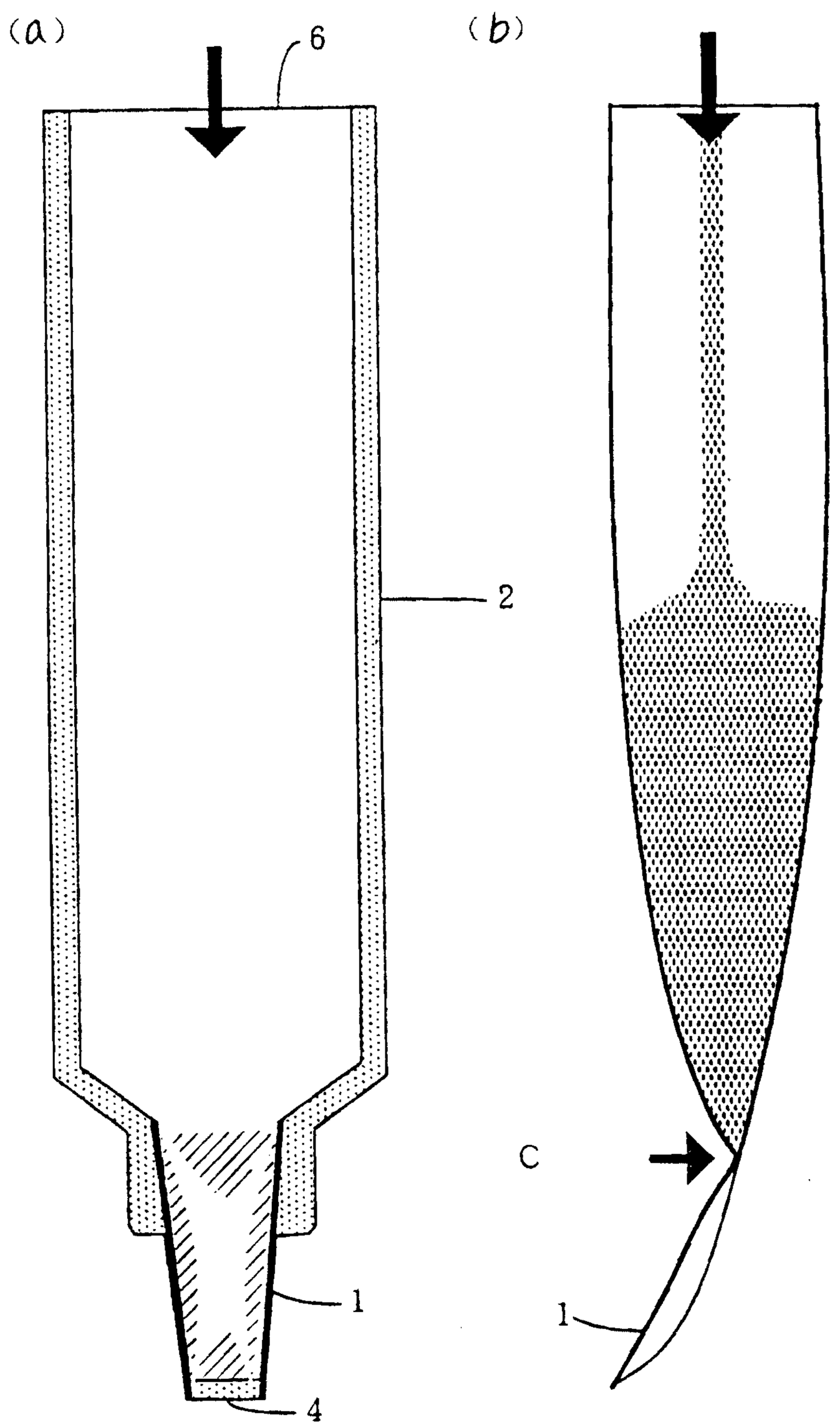


Fig. 1b

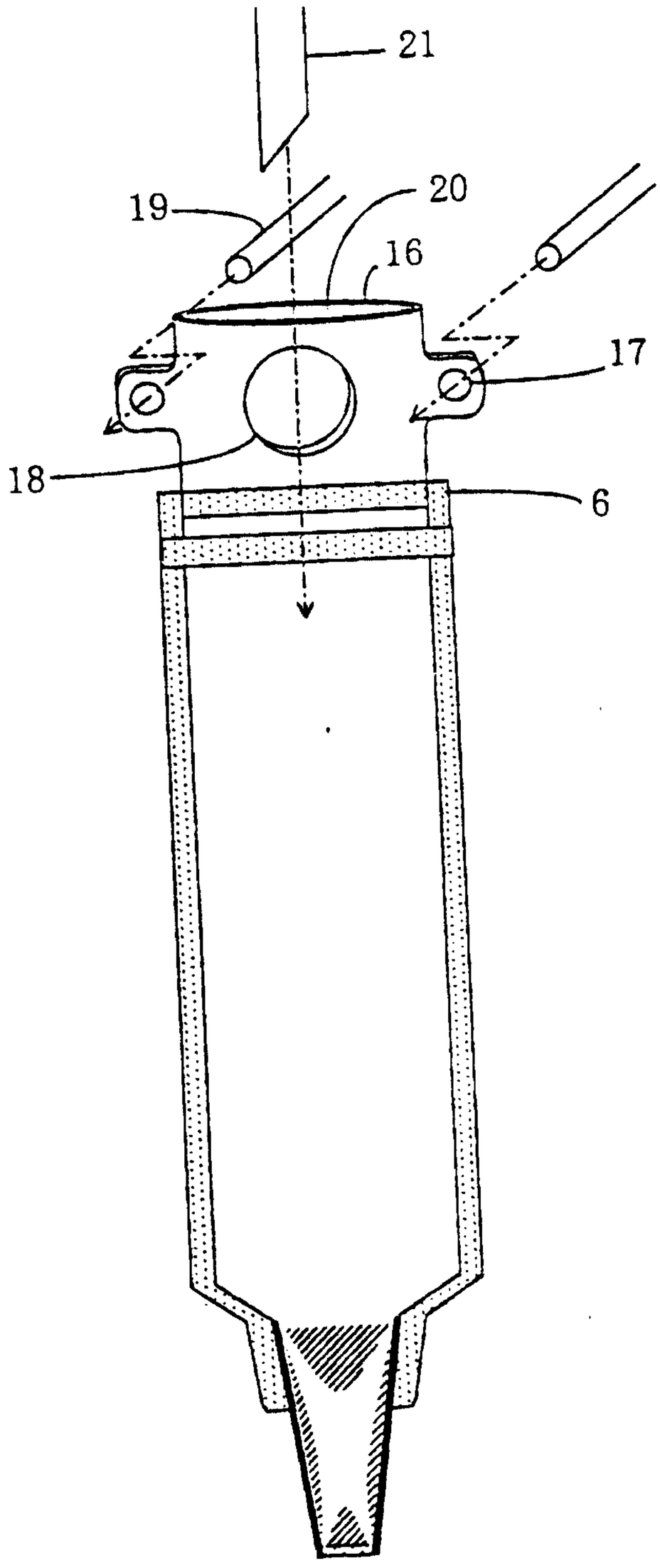


Fig. 17

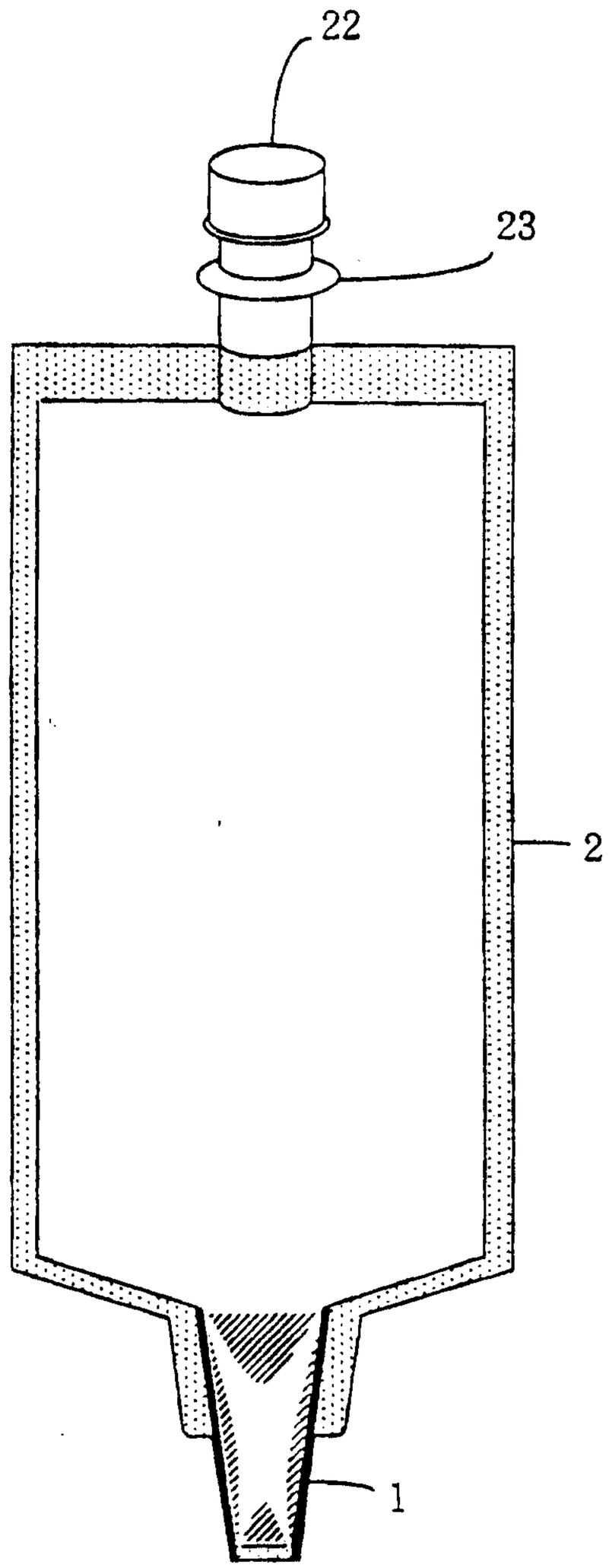


Fig. 18

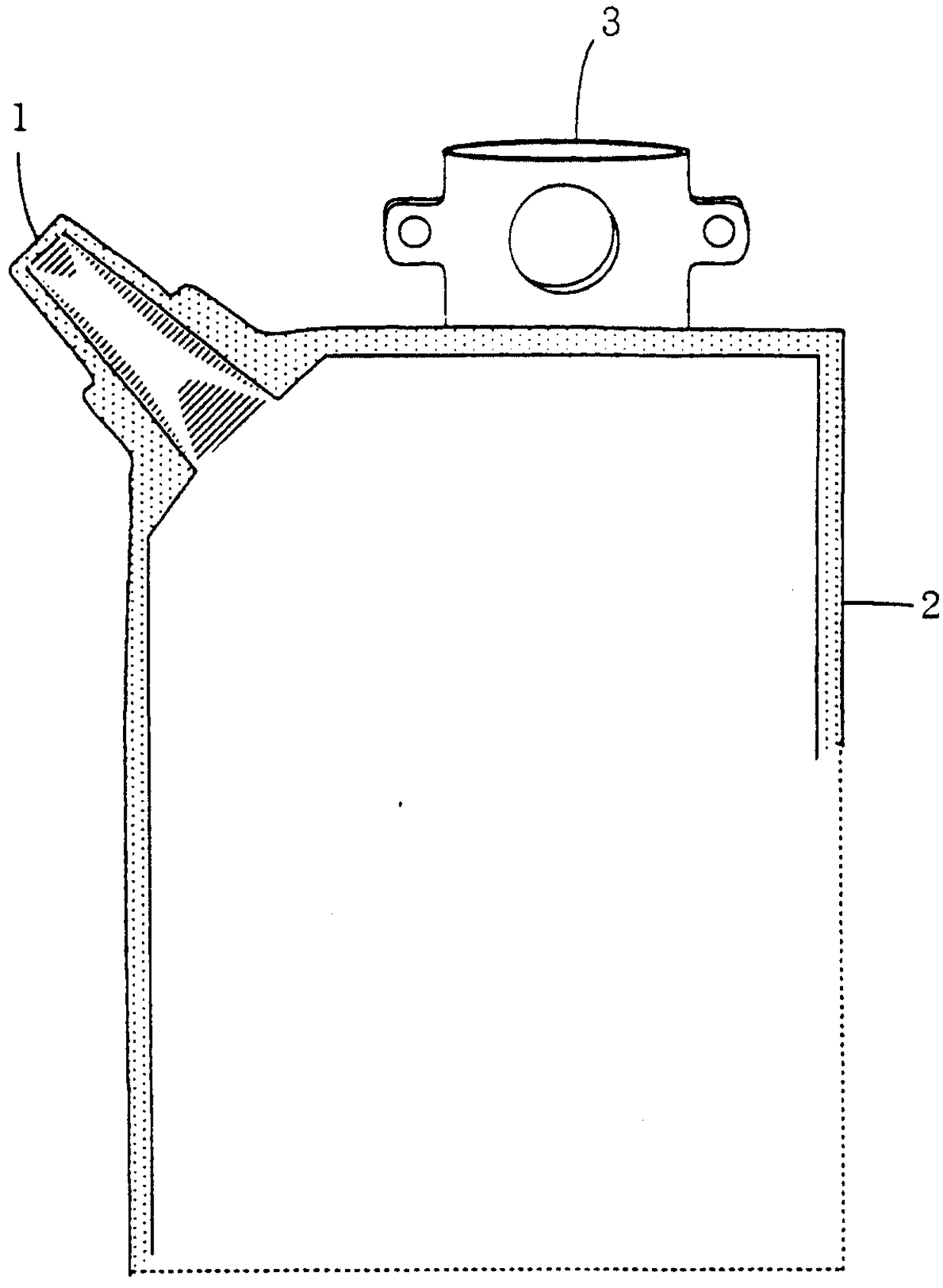


Fig. 19

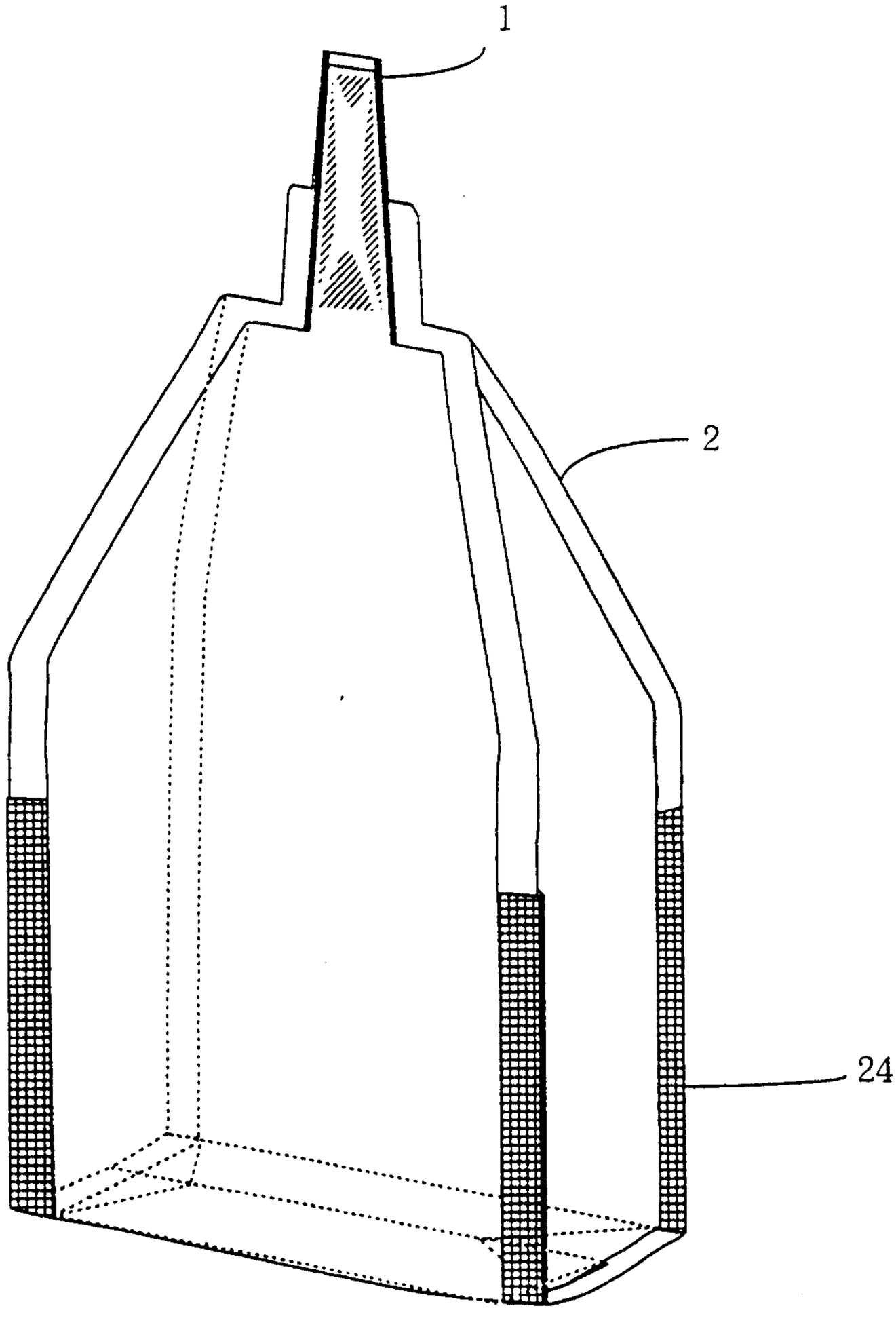


Fig.20

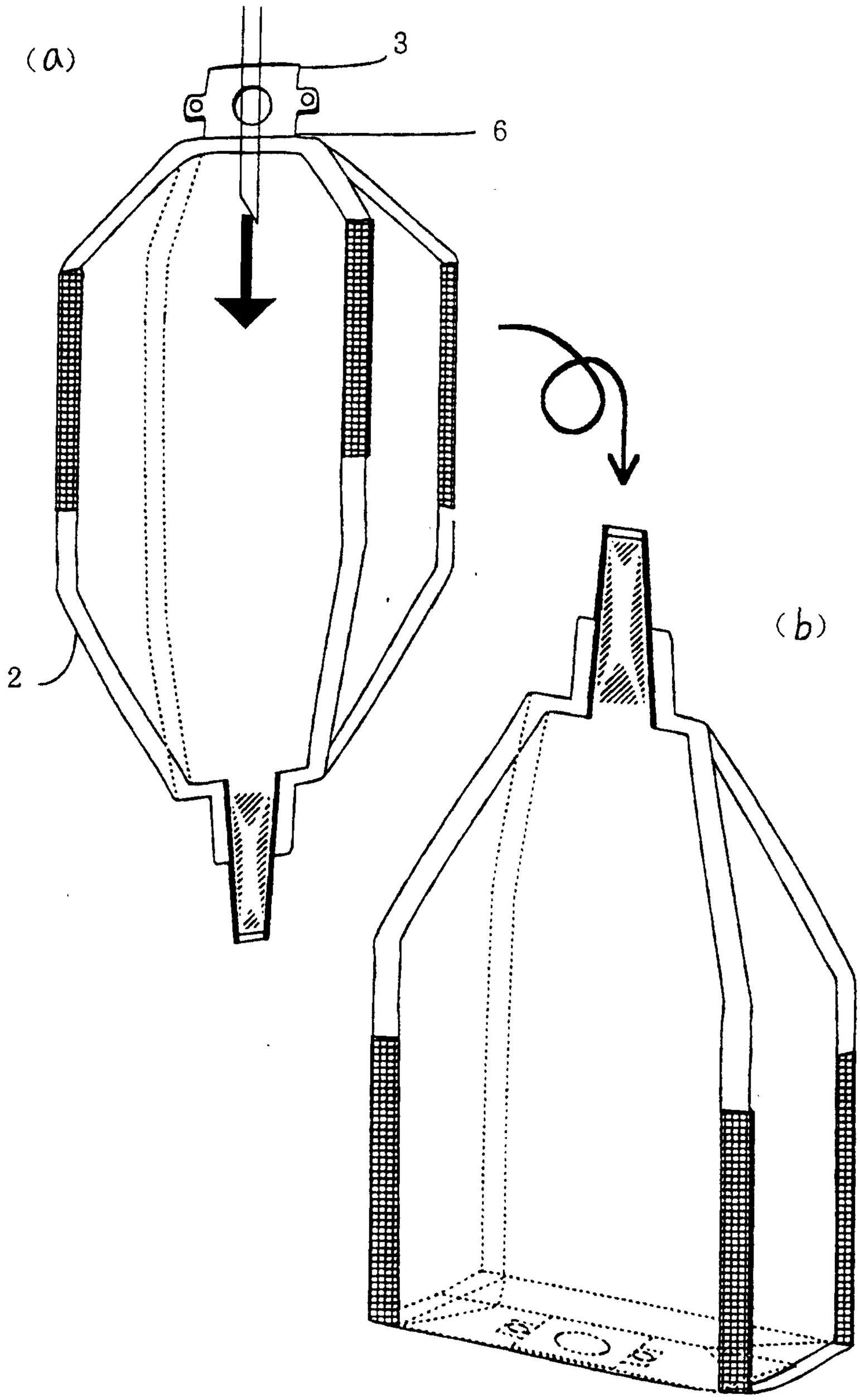


Fig.21

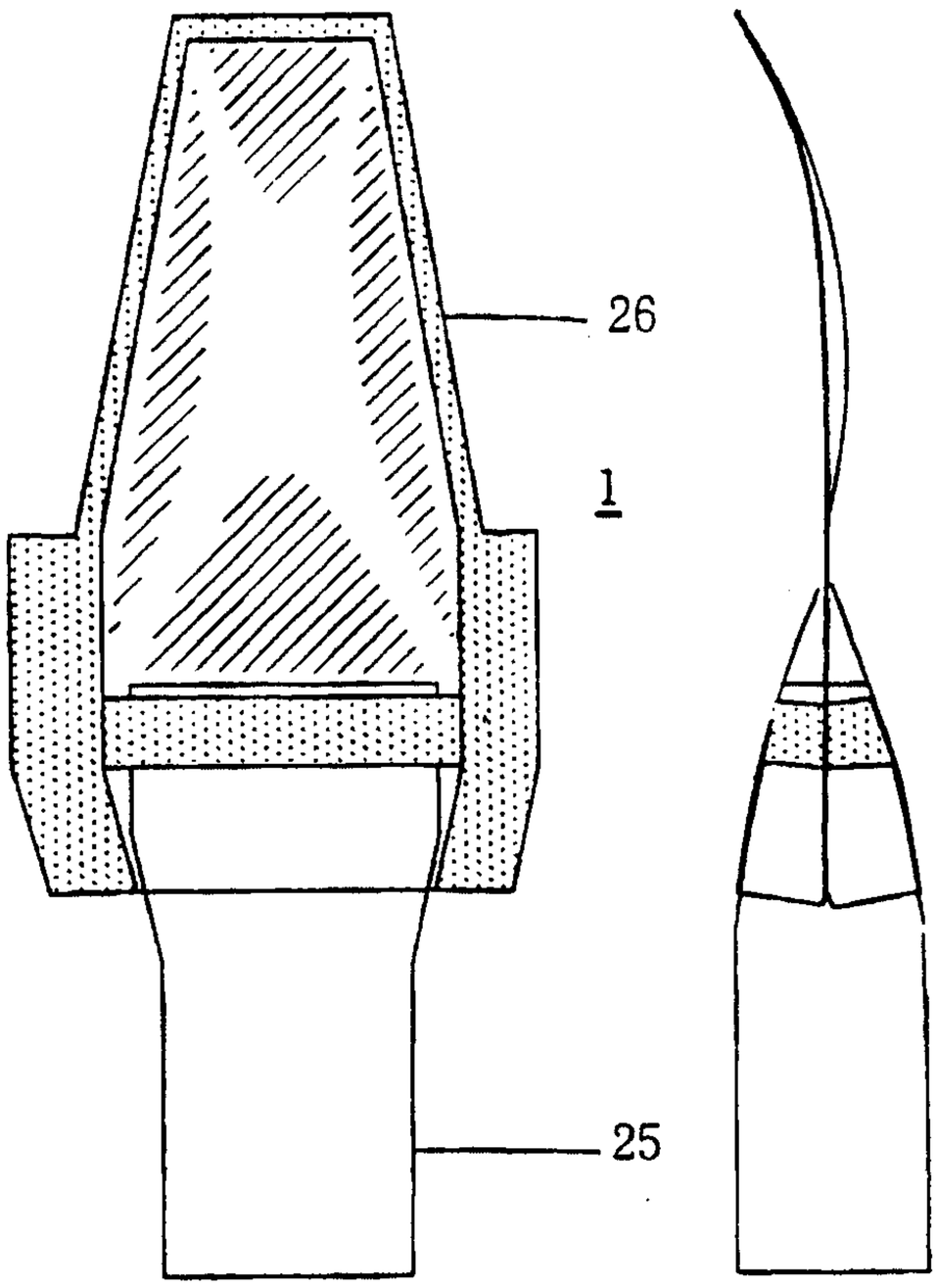


Fig. 22

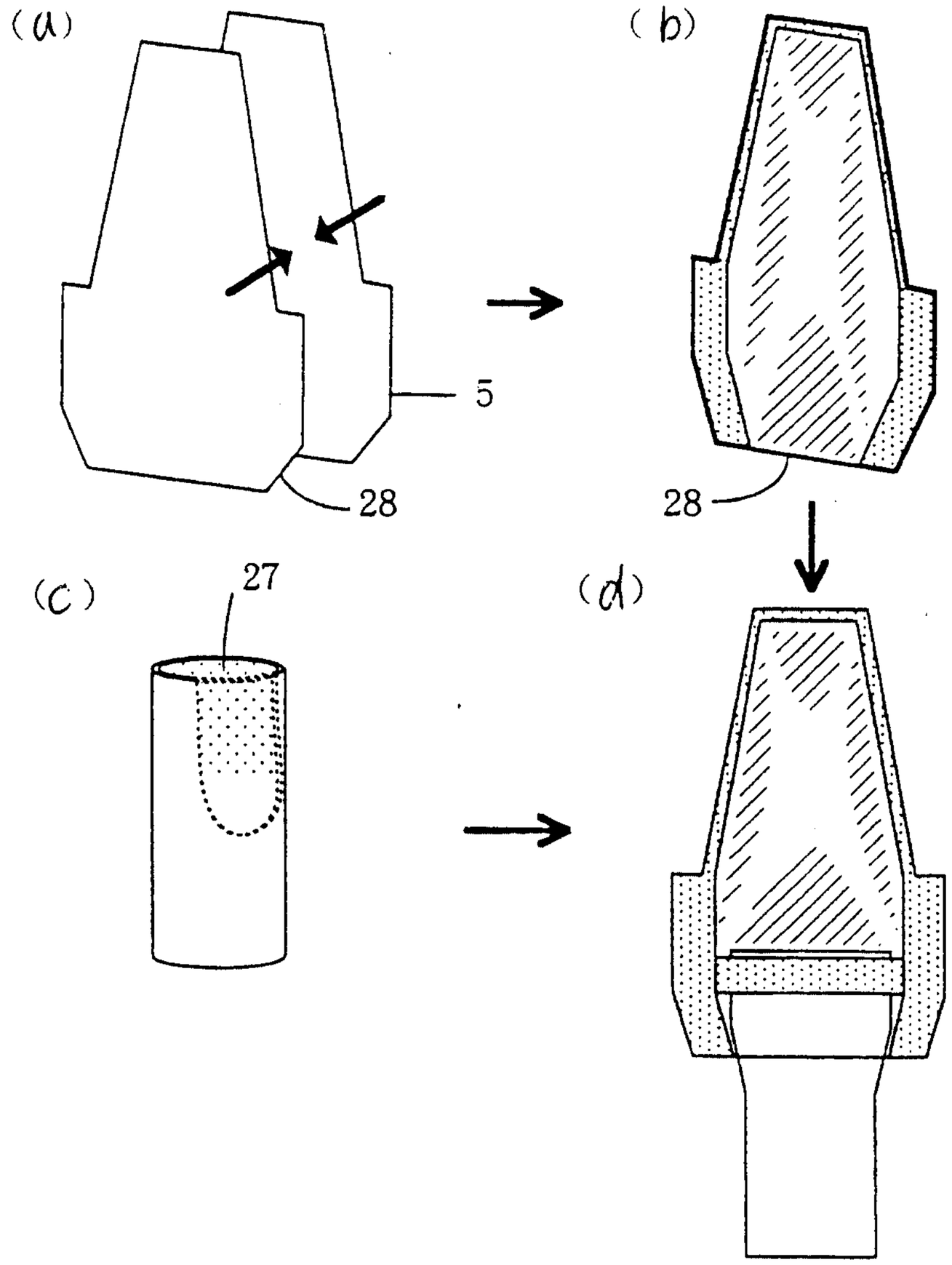


Fig.23

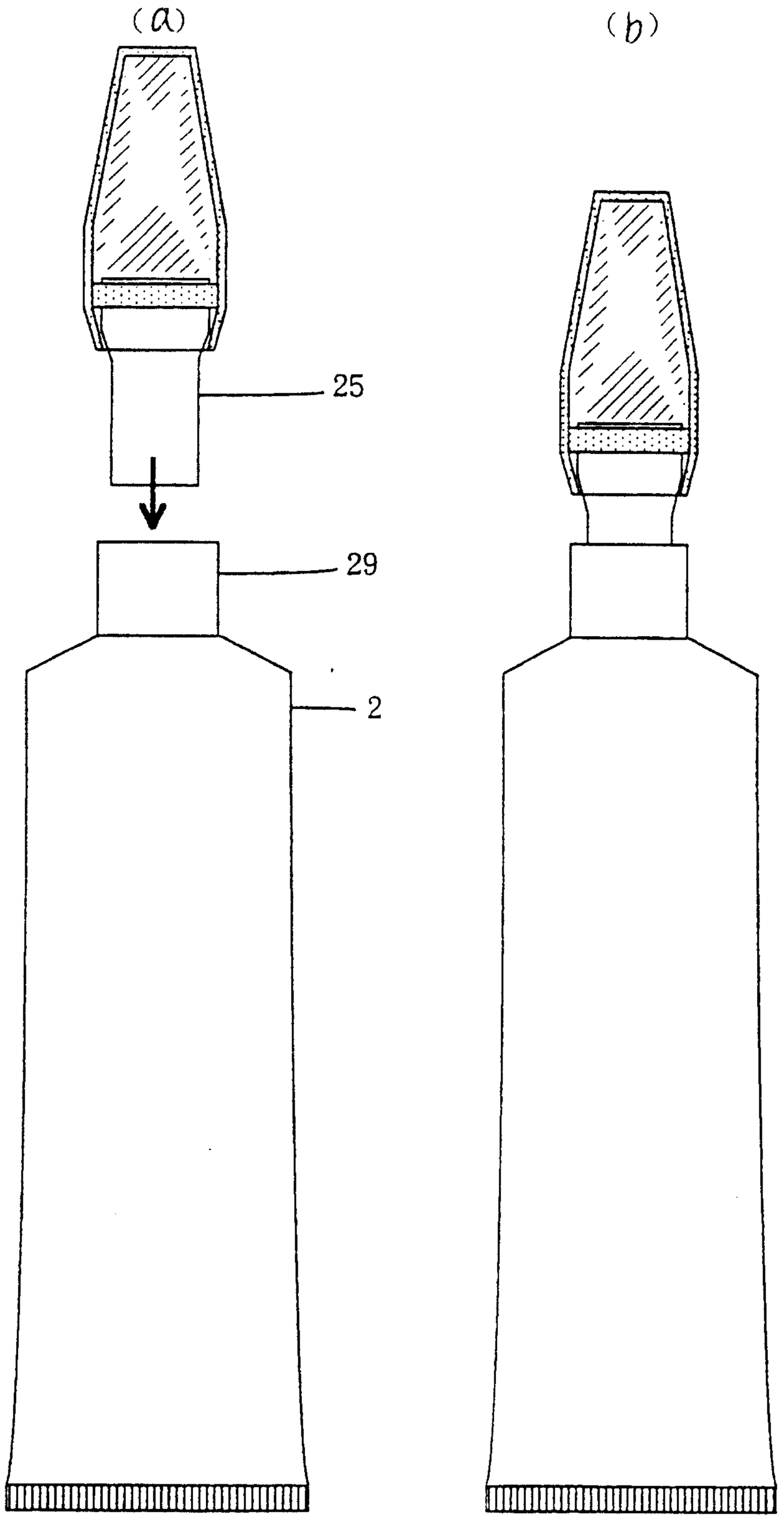


Fig.24

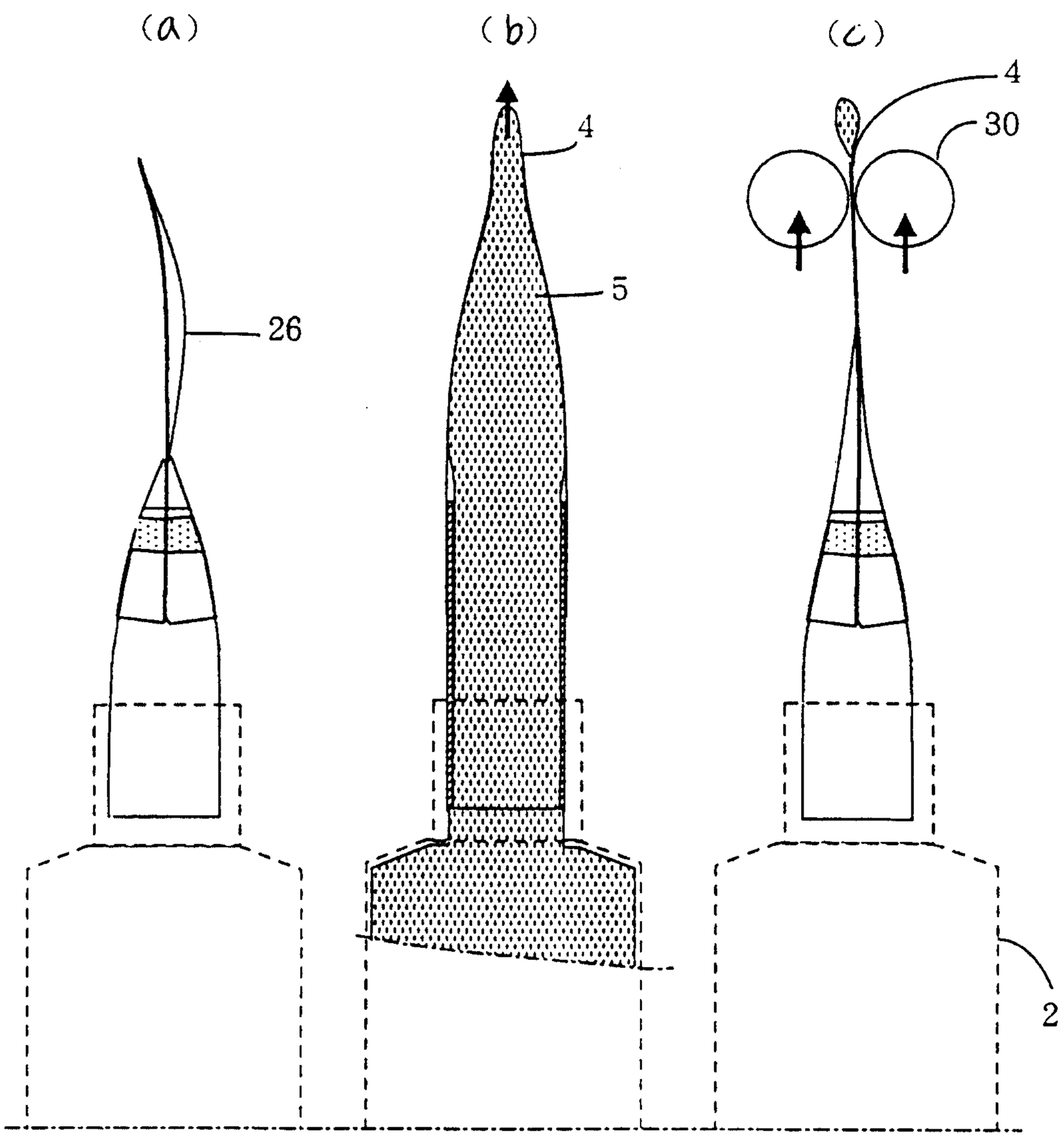


Fig.25

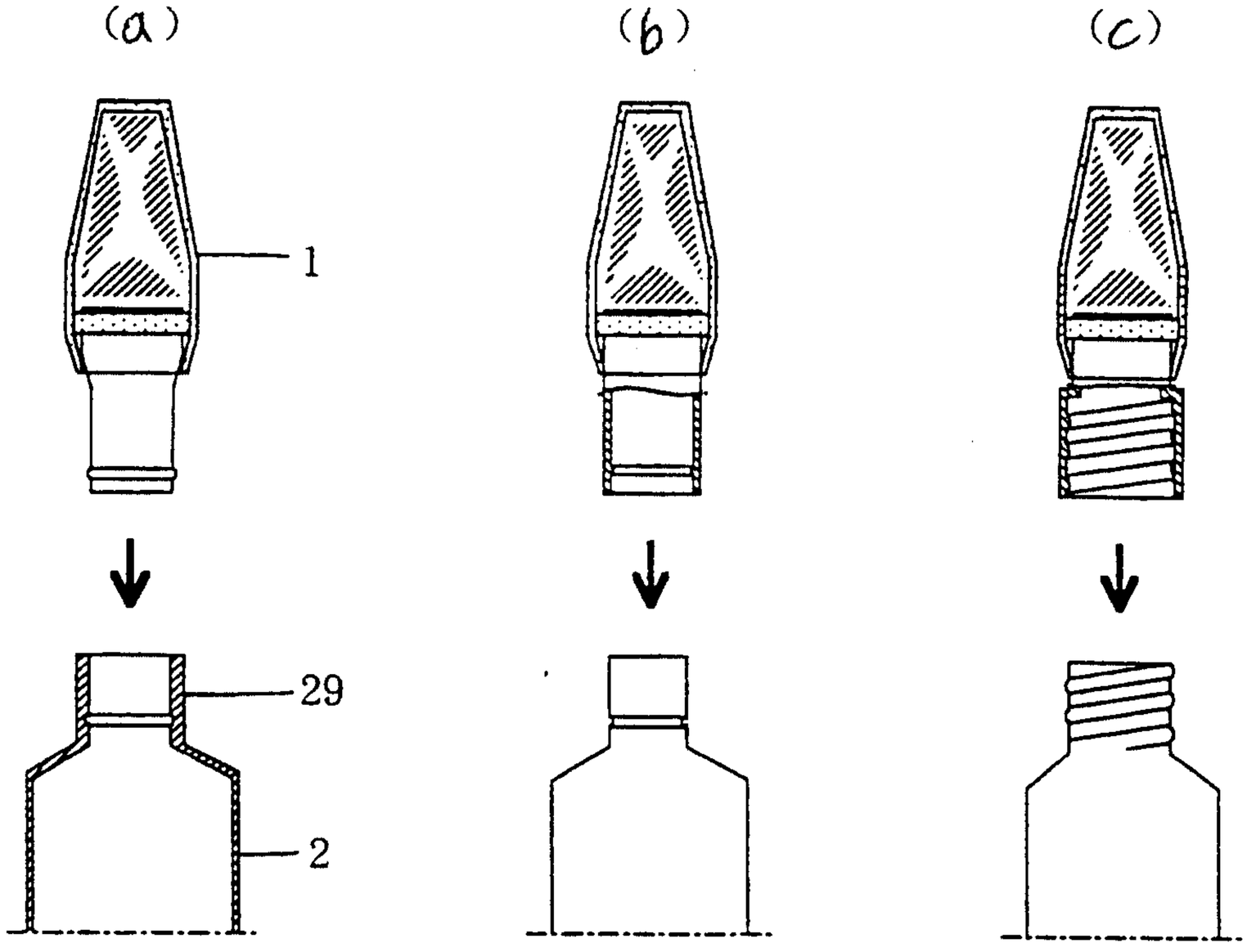


Fig. 26

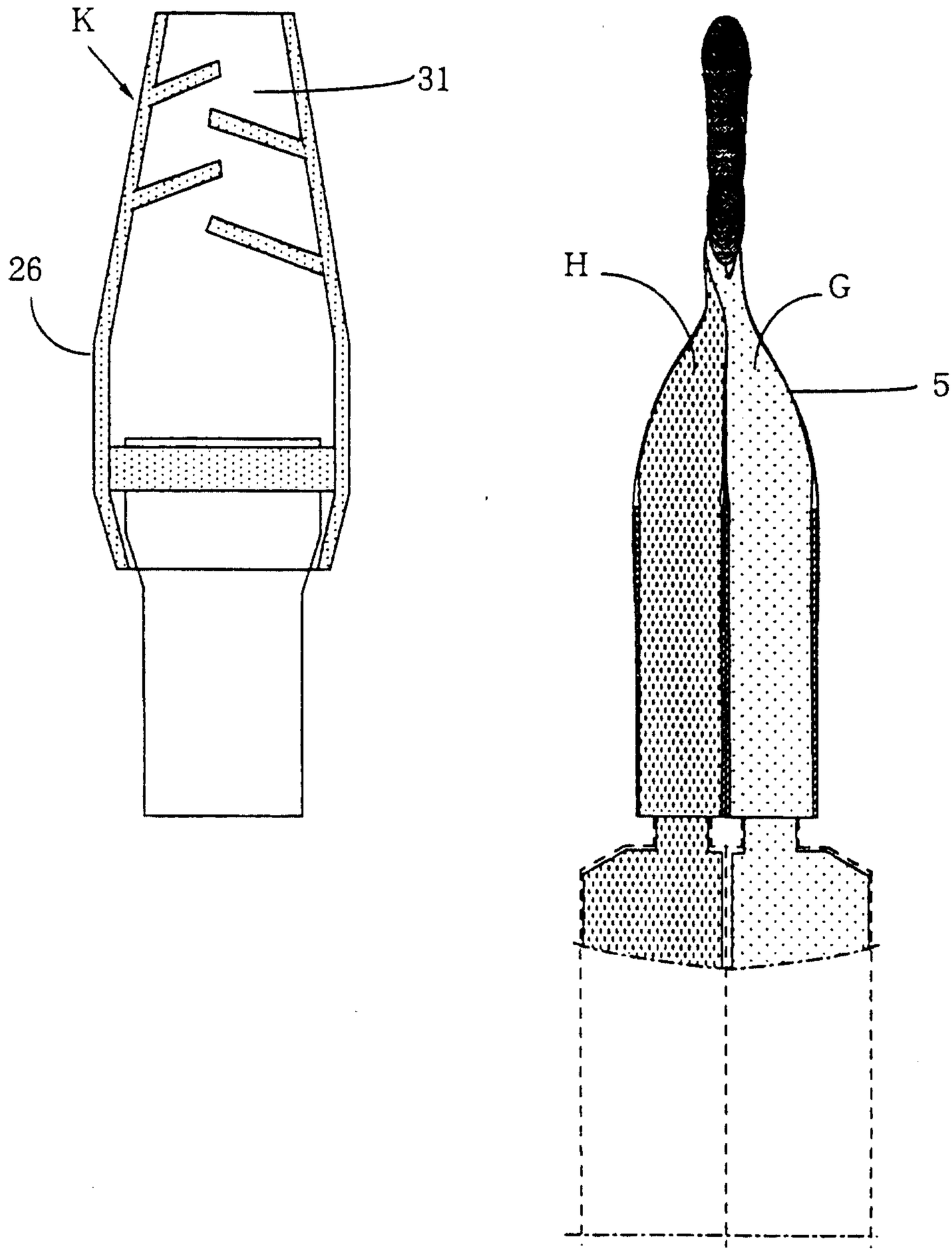


Fig. 27

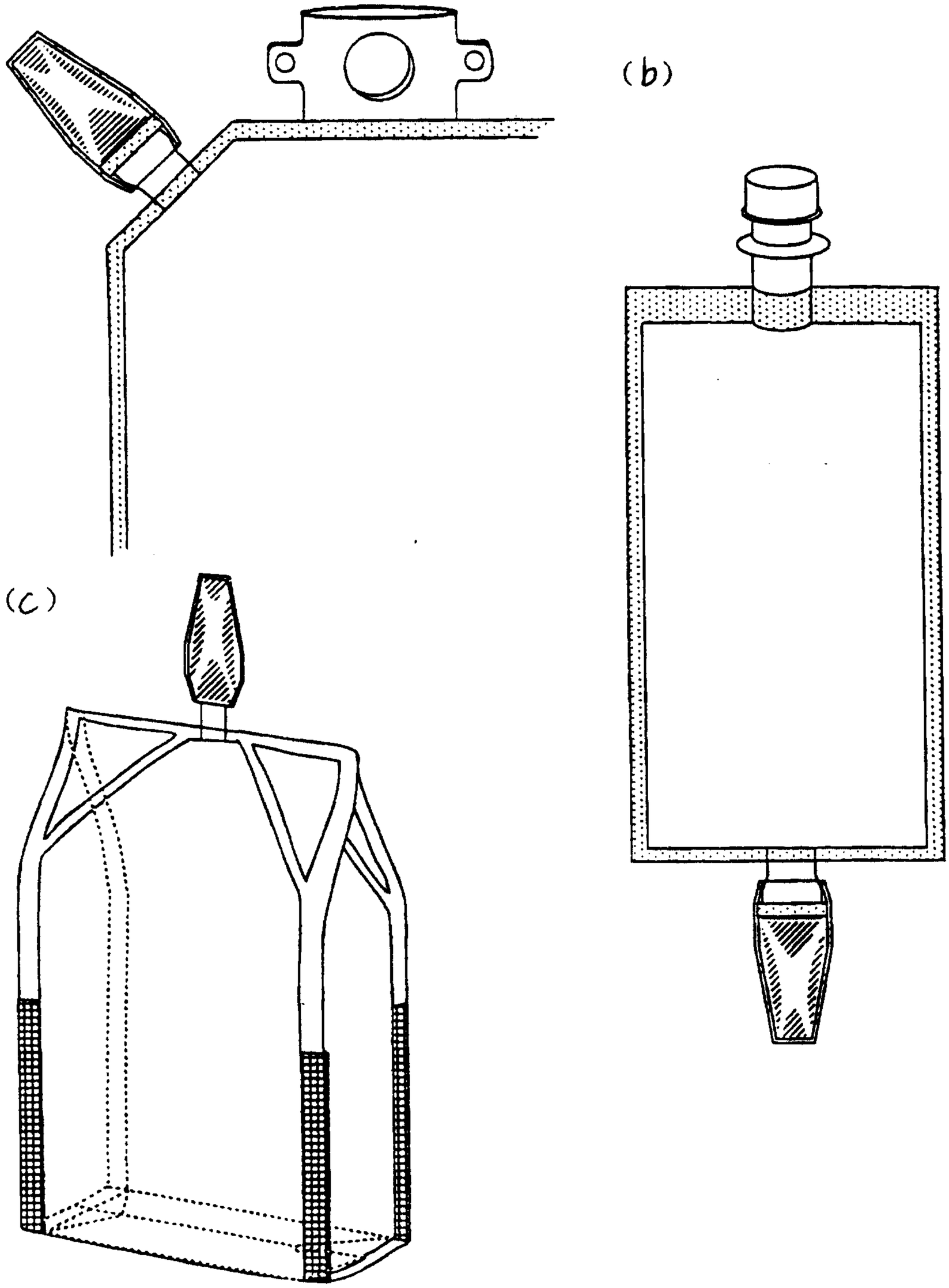
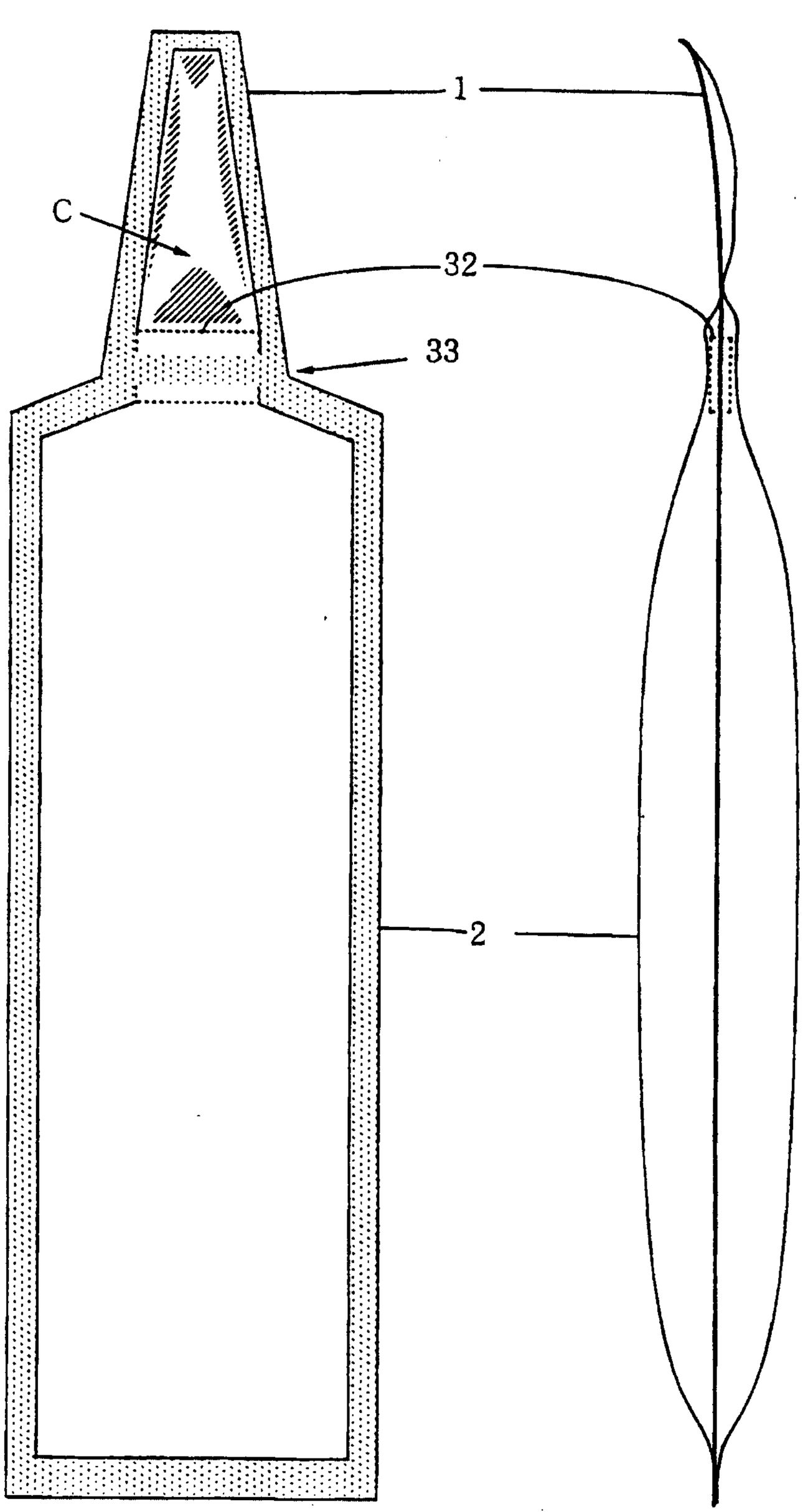
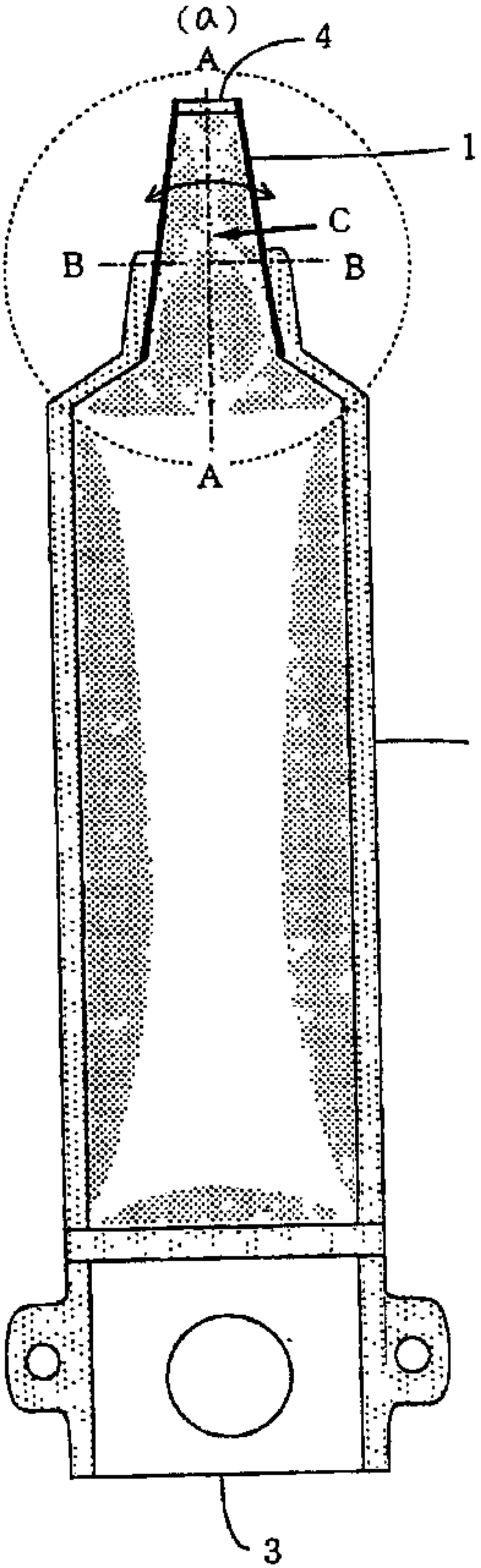


Fig. 28




(a)
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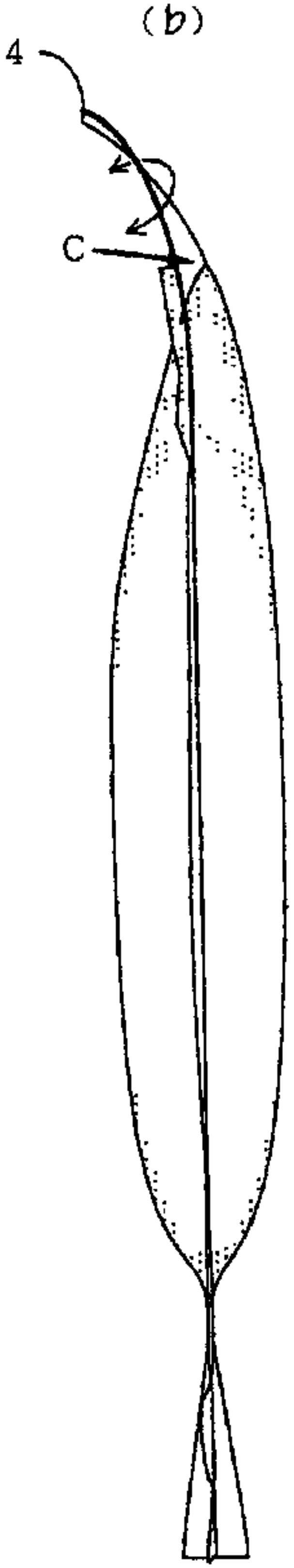
(b)
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C