



(11) **EP 2 025 259 A1**

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

(43) Date of publication:
18.02.2009 Bulletin 2009/08

(51) Int Cl.:
A45D 40/26 (2006.01) **A45D 34/04** (2006.01)
B05C 17/00 (2006.01) **B65D 83/00** (2006.01)

(21) Application number: **07828119.3**

(86) International application number:
PCT/JP2007/060856

(22) Date of filing: **29.05.2007**

(87) International publication number:
WO 2008/004383 (10.01.2008 Gazette 2008/02)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

- **TSUCHIYA, Eiji**
Fujioka-shi
Gunma 375-0002 (JP)
- **HASEGAWA, Tomoko**
Fujioka-shi
Gunma 375-0002 (JP)
- **UEHARA, Junya**
Fujioka-shi
Gunma 375-0002 (JP)
- **TAKACHIYO, Keiichiro**
Fujioka-shi
Gunma 375-0002 (JP)
- **ENDOU, Mitsuru**
Fujioka-shi
Gunman 375-0002 (JP)

(30) Priority: **29.05.2006 JP 2006147994**
01.11.2006 JP 2006297322

(71) Applicant: **MITSUBISHI PENCIL KABUSHIKI KAISHA**
Shinagawa-ku,
Tokyo 140-0011 (JP)

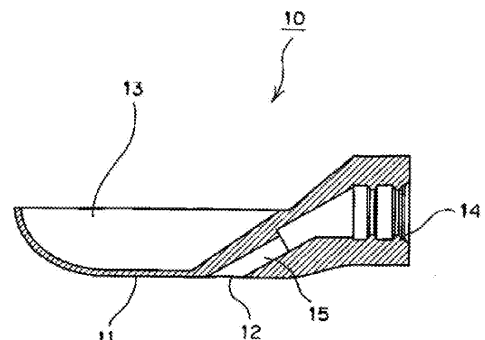
(72) Inventors:
• **FUKUMOTO, Takeo**
Fujioka-shi
Gunma 375-0002 (JP)
• **NAKAJIMA, Nobuyuki**
Fujioka-shi
Gunma 375-0002 (JP)

(74) Representative: **Stute, Ivo Peter**
Bahnstrasse 9
40212 Düsseldorf (DE)

(54) **APPLICATOR, AND CONTAINER FOR APPLICATION SUBSTANCE**

(57) An applicator of application substances, which can be repeatedly used and can be mounted on various containers, is provided. An applicator 10 comprising: an application surface 11 to be in contact with a target application surface and a support surface 13 to be in contact with a finger being formed as integrated front and back surfaces; a mounting port 14 matching an opening 21 of an application substance container 20 for housing an application substance; a discharge port 12 being opened in the application surface 11; and a flow path 15 guiding the application substance from the mounting port 14 to the discharge port 12, penetrating between the application surface 11 and the support surface 13.

Fig. 4



Description

Technical Field

[0001] The present invention relates to an applicator placed on a fingertip when an application substance is applied to skin or the like, and a housing container for such an application substance provided with such an applicator.

Background Art

[0002] Conventionally, application substances in the form of liquid, paste, powder or the like, which are intended to be applied to a target surface for application such as skin or bonding surfaces, include a wide variety of substances such as cosmetics, ointments, creams, adhesives or the like. Many of the application substances need to be applied and spread over the target surface for application by taking up an appropriate amount on a fingertip. This type of application substances include cosmetics or medicaments which are housed in a resin laminated tube or a metal tube and are squeezed out of a squeeze port in an appropriate amount, taken up on a fingertip and applied to skin or the like.

When such an application substance is applied by a fingertip, it is necessary to wipe or wash the substance attached to or remaining on the fingertip after the application. In order to avoid this situation, it is attempted that a fingerstall is fitted to the finger and that an application substance is applied therefrom. One of the attempts is an art disclosed in Patent Document 1 described below. In the art, liquid material is enclosed between two layers of a finger cover having a double layer structure, and a pull-cap is provided on the outermost layer. Then, by the finger cover being fitted on a fingertip and the pull cap being removed in use, a small hole is formed, and the enclosed liquid material is squeezed out therefrom to be capable of being applied.

[0003] Moreover, Patent Document 2 described below discloses a method of temporarily attaching cosmetics to a plate-shaped application surface that can be mounted on a finger, and of applying the cosmetics by a contact pressure.

Patent Document 1: JP 07-284508 A

Patent Document 2: JP 54-41806 Y

Disclosure of the Invention

[0004] In the aforementioned conventional arts, the application substance is not directly attached to a fingertip. However, when the application substance enclosed in the finger cover or temporarily attached to the application surface is used up, the finger cover or the application surface cannot be reused, and, as a result, is thrown away after use. Moreover, the aforementioned arts lack versatility in that the usable application sub-

stance is limited to the one enclosed in the finger cover or the one temporarily attached to the application surface. Thus, an object of the present invention is to provide an applicator of application substances, which can be repeatedly used and can be mounted on various containers.

[0005] In view of the above object, the present invention provides an applicator comprising: an application surface to be in contact with a target application surface; a support surface to be in contact with a finger; a mounting port matching an opening of an application substance container for housing an application substance; a discharge port being opened at a position in a surface including the application surface other than the support surface; and a flow path guiding the application substance from the mounting port to the discharge port, penetrating between the application surface and the support surface.

That is, the applicator according to the present invention is mounted on an opening, such as a squeeze port, of a container for application substances such as cosmetics, so as to directly enable application of the application substance. "Application substance" described herein is a generic term for liquid materials, highly viscous liquids such as pastes, gels and creams, or powders, which are intended to be applied to "target application surface" that is a target surface for application such as skin or bonding surfaces, and includes a wide variety of substances such as cosmetics, ointments, creams, adhesives or the like.

[0006] Any material that is normally used for a cosmetic container can be used as the material for the applicator. For example, the applicator can be formed by injection molding or compression molding by using an elastic material such as silicone resin, elastomer, rubber or the like. Further, by using the elastic material, even when the shape of the mounting port is formed smaller than an opening of a container that can be normally obtained, the opening of the container can be inserted into the mounting port, so that general versatility can be obtained. Metal or rigid plastic may be also employed as the material for the applicator depending on the property of application substance or the application object.

Moreover, the shape of the mounting port may be formed corresponding to the shape of the opening of the container. For example, when the opening of the container is formed as a male screw, the mounting port may be formed as a female screw that can be fitted into the male screw. Moreover, by forming an undercut portion in the mounting port at the time of molding with a mold, the opening of the container can be expected to be reliably mounted such that the opening of the container is pushed into the mounting port due to elastic deformation of the undercut portion.

[0007] As for the shape of the applicator, although the support surface may be formed to be a flat surface, it is preferable to form the support surface to be a curved surface in accordance with the fingertip shape, where the palmar surface of a finger can be housed. Further-

more, although the application surface may be a flat surface, the application substance can be smoothly applied when the application surface is formed to be a convex curved surface toward a target application surface. Moreover, the back surface side of the support surface may be formed open either when where the support surface or the application surface is formed to be such a curved surface, or the support surface is formed to be a flat surface. However, when a covering portion for covering at least a part of the back surface of a finger in contact therewith is formed, the finger is more reliably retained on the applicator by the covering portion. Moreover, when a wall portion is provided at least in a part of the outer periphery of the support surface even if such a covering portion is not provided, the finger is stabilized relative to the applicator by the wall portion.

[0008] Further, the application surface and the support surface may be formed as integrated front and back surfaces, or such a structure that the back side of the support surface is not the application surface exactly (for example, a case in which a surface continuing from the back side surface of the support surface is formed as the application surface) may be also employed.

The present invention is operated as follows.

That is, the present invention being mounted on the opening of the container, the application substance extruded from the opening of the container passes through the mounting port, and then through the flow path penetrating between the application surface and the support surface, and is extruded from the discharge port of the application surface. By the way, the discharge port may not be opened in the application surface itself but may be opened, depending on the shape of the applicator, at a position other than the support surface, which is not in direct contact with a target application surface. For example, in a case where the tip end portion of a surface continuing from the application surface has a reflex shape and the portion is not brought into direct contact with the target application surface at the time of application, the discharge port may be provided in a portion in the vicinity of the tip end. Then, the application substance extruded from the discharge port can be applied and spread over the target application surface by placing a fingertip on the support surface that is the back surface of the application surface while holding the container within a palm.

[0009] Although a circular shape or an oval shape is normally assumed to be employed as the shape of the discharge port, various other shapes may be also employed. For example, the discharge port may be formed to have a special shape such as a quadrangle, a triangle, and a star. Furthermore, when the discharge port is formed into a valve shape as a V-shaped slit, for example, the valve-shaped portion can be kept closed when not used while the valve-shaped portion is pressed from inside and opened at the time of extruding the application substance. Accordingly, especially when the application substance is highly viscous, it is possible to prevent the

application substance from oozing out more than is necessary when not used. Then, the discharge port described above may be provided singularly or a plurality of discharge ports may be provided. Moreover, plural types of discharge ports may be provided on one applicator.

[0010] Moreover, the discharge port may be covered by a seal member that can be peeled off in use, and the seal member may be peeled off when used. Accordingly, it is possible to prevent air from entering through the discharge port before use, and to prevent the application substance from changing in properties such as drying resulting therefrom.

Furthermore, a sphere may be fitted by insertion into the discharge port. Accordingly, the application substance can be smoothly applied by the rotation of the sphere. Further, when the applicator is formed of the above-described elastic material, a sphere having a larger diameter than the bore diameter of the discharge port is easily pressed and fitted by insertion into the discharge port.

[0011] Moreover, the discharge port may be covered by a reticulated member. Accordingly, it becomes easy to apply the application substance such as powder, for example, to a target application surface while holding the application substance by the reticulated member. Furthermore, even when the application substance is in a liquid form, application thereof is also facilitated by holding the liquid in the reticulation of the reticulated member. Moreover, the applicator according to the present invention may be integrally formed with an application substance container. That is, an application substance container comprises: a reservoir portion housing an application substance and has an opening; and an applicator having an application surface to be in contact with a target application surface and a support surface to be in contact with a finger; the applicator comprising: a mounting port matching the opening; a discharge port being opened in the application surface; and a flow path guiding the application substance from the mounting port to the discharge port, penetrating between the application surface and the support surface. Further, the applicator and the application substance container may be integrally molded together from the beginning, or may be separately molded and subsequently be integrated by bonding. Furthermore, by forming the opening and the mounting port matching the opening into shapes closely fitted into each other, sealing performance between the opening and the mounting port is improved. Further, the application surface and the support surface may be formed as integrated front and back surfaces, or such a structure that the back side of the support surface is not the application surface exactly (for example, a case in which a surface continuing from the back side surface of the support surface is formed as the application surface) may be also employed.

[0012] Moreover, the present invention may be an application substance container comprising: a reservoir portion housing an application substance; and an applicator

cator provided on a tip end side of the reservoir portion and having an application surface to be in contact with a target application surface and a support surface to be in contact with a finger; the reservoir portion and the applicator being integrally formed with each other; further comprising: a discharge port being opened at a position in a surface including the application surface other than the support surface; and a flow path guiding the application substance from the reservoir portion to the discharge port, penetrating between the application surface and the support surface. Further, the application surface and the support surface may be formed as integrated front and back surfaces, or such a structure that the back side of the support surface is not the application surface exactly (for example, a case in which a surface continuing from the back side surface of the support surface is formed as the application surface) may be also employed.

[0013] According to the present invention, it is possible to provide an applicator of application substances, which can be repeatedly used and can be mounted on various containers.

Brief Description of the Drawings

[0014]

Fig. 1 illustrates a rear lower perspective view of an applicator according to a first embodiment of the present invention.

Fig. 2 illustrates a front upper perspective view of the applicator according to the first embodiment of the present invention.

Fig. 3 illustrates a rear upper perspective view of the applicator according to the first embodiment of the present invention.

Fig. 4 illustrates a side sectional view of the applicator according to the first embodiment of the present invention.

Fig. 5 illustrates a side sectional view (A) and an A-A sectional view (B) of an applicator according to a second embodiment of the present invention.

Fig. 6 illustrates a side sectional view (A) and a B-B sectional view (B) of an applicator according to a third embodiment of the present invention.

Fig. 7 illustrates a rear lower perspective view of an applicator according to a fourth embodiment of the present invention.

Fig. 8 illustrates a front upper perspective view of the applicator according to the fourth embodiment of the present invention.

Fig. 9 illustrates a rear upper perspective view of the applicator according to the fourth embodiment of the present invention.

Fig. 10 illustrates a side sectional view of the applicator according to the fourth embodiment of the present invention.

Fig. 11 illustrates a side sectional view (A) and a C-C sectional view (B) of an applicator according to a

fifth embodiment of the present invention.

Fig. 12 illustrates a side sectional view (A) and a D-D sectional view (B) of an applicator according to a sixth embodiment of the present invention.

Fig. 13 illustrates a front upper perspective view (A) and a bottom perspective view (B) of an application substance container according to a seventh embodiment of the present invention.

Fig. 14 illustrates a front upper partial sectional perspective view (A) and an attachment perspective view (B) of an applicator mounted on the application substance container according to the seventh embodiment of the present invention.

Fig. 15 illustrates a front upper perspective view (A) and a bottom perspective view (B) of an application substance container according to an eighth embodiment of the present invention.

Fig. 16 illustrates a rear upper perspective view of an applicator according to a ninth embodiment of the present invention.

Fig. 17 illustrates a rear upper perspective view of an applicator according to a tenth embodiment of the present invention.

Fig. 18 illustrates a lower perspective view of an applicator according to an eleventh embodiment of the present invention.

Fig. 19 illustrates a lower perspective view of an applicator according to a twelfth embodiment of the present invention.

Fig. 20 illustrates a lower perspective view of an applicator according to a thirteenth embodiment of the present invention.

Fig. 21 illustrates a lower perspective view of an applicator according to a fourteenth embodiment of the present invention.

Fig. 22 illustrates a rear upper perspective view of an applicator according to a fifteenth embodiment of the present invention.

Fig. 23 illustrates a lower perspective view of an applicator according to a sixteenth embodiment of the present invention.

Fig. 24 illustrates a side sectional view of the applicator according to the sixteenth embodiment of the present invention.

Best Mode for Carrying Out the Invention

[0015] Embodiments of the present invention will be described with reference to the drawings as follows.

(1) First Embodiment

[0016] An applicator 10 according to a first embodiment of the present invention will be described with reference to Figs. 1 to 4. Further, Fig. 1 illustrates a rear lower right perspective view of the applicator 10, Fig. 2 a front upper right perspective view, Fig. 3 a rear upper right perspective view, and Fig. 4 a side sectional view.

In the applicator 10 according to the present embodiment, the bottom surface side is a convex curved application surface 11 as shown in Fig. 1, and the top surface side is an open concave curved support surface 13 as shown in Fig. 2. That is, the application surface 11 and the support surface 13 are integrated front and back surfaces. Moreover, the back end side of the applicator 10 is formed into a short cylindrical shape with a hole being provided in the center as shown in Fig. 3. The center hole is a mounting port 14. A female screw is formed on the mounting port 14. Accordingly, a squeeze port with a male screw formed thereon of a container (in particular, having a tubular shape) of an application substance is inserted and fixed thereto.

[0017] Moreover, as shown in Fig. 1, a small hole is provided at substantially the center of the application surface 11. The small hole is a discharge port 12. As shown in Fig. 4, the discharge port 12 is connected to the mounting port 14 through a flow path 15.

The applicator 10 according to the present embodiment can be formed by injection molding of silicone resin.

The applicator 10 according to the present embodiment is used after inserting and mounting the squeeze port of an unillustrated application substance container on the mounting port 14. Then, when the side surface of the container is pushed, the application substance as the content is extruded from the squeeze port, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the container is held within a palm, so that the application substance can be applied and spread over a target application surface. At this time, the palmar side of the fingertip fits the concave curved surface of the support surface 13, and thus, application is smoothly performed.

(2) Second Embodiment

[0018] An applicator 10 according to a second embodiment of the present invention will be described with reference to Fig. 5. Fig. 5(A) illustrates a side sectional view of the applicator 10, and Fig. 5(B) an A-A sectional view in Fig. 5(A).

In the applicator 10 according to the present embodiment, the bottom surface side is a planar application surface 11, and the top surface side is also a planar support surface 13. That is, the application surface 11 and the support surface 13 are integrated front and back surfaces. Moreover, the peripheral portion of the application surface 11 has a structure with an edge. Moreover, the back end side of the applicator 10 is formed into a short cylindrical shape with a hole being provided in the center. The center hole is a mounting port 14. A female screw is formed on the mounting port 14. Accordingly, a squeeze port with a male screw formed thereon of a container (in particular, having a tubular shape) of an appli-

cation substance is inserted and fixed thereto.

[0019] Moreover, a small hole is provided at substantially the center of the application surface 11. The small hole is a discharge port 12. The discharge port 12 is connected to the mounting port 14 through a flow path 15.

The applicator 10 according to the present embodiment can be formed by injection molding of silicone resin.

The applicator 10 according to the present embodiment is used after inserting and mounting the squeeze port of an unillustrated application substance container on the mounting port 14. When the side surface of the container is pushed, the application substance as the content is extruded from the squeeze port, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the container is held within a palm, so that the application substance can be applied and spread over a target application surface. Furthermore, an excess application substance can be removed by being picked up with the edge along the peripheral portion of the application surface 11.

(3) Third Embodiment

[0020] An applicator 10 according to a third embodiment of the present invention will be described with reference to Fig. 6. Fig. 6(A) illustrates a side sectional view of the applicator 10, and Fig. 6(B) a B-B sectional view in Fig. 6(A).

In the applicator 10 according to the present embodiment, the bottom surface side is a planar application surface 11, and the top surface side is also a planar support surface 13. That is, the application surface 11 and the support surface 13 are integrated front and back surfaces. A wall portion 17 that encloses the periphery of the support surface 13 in a frame shape is also formed. Moreover, the peripheral portion of the application surface 11 has a structure with an edge. Moreover, the back end side of the applicator 10 is formed into a short cylindrical shape with a hole being provided in the center. The center hole is a mounting port 14. A female screw is formed on the mounting port 14. Accordingly, a squeeze port with a male screw formed thereon of a container (in particular, having a tubular shape) of an application substance is inserted and fixed thereto.

[0021] Moreover, a small hole is provided at substantially the center of the application surface 11. The small hole is a discharge port 12. The discharge port 12 is connected to the mounting port 14 through a flow path 15.

The applicator 10 according to the present embodiment can be formed by injection molding of silicone resin.

The applicator 10 according to the present embodiment is used after inserting and mounting the squeeze port of an unillustrated application substance container on the mounting port 14. When the side surface of the container is pushed, the application substance as the content is

extruded from the squeeze port, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the container is held within a palm, so that the application substance can be applied and spread over a target application surface. At this time, the periphery of the fingertip is retained by the wall portion 17, so that stability can be increased. Furthermore, an excess application substance can be removed by being picked up with the edge along the peripheral portion of the application surface 11.

(4) Fourth Embodiment

[0022] An applicator 10 according to a fourth embodiment of the present invention will be described with reference to Figs. 7 to 10. Fig. 7 illustrates a rear lower right perspective view of the applicator 10, Fig. 8 a front upper right perspective view, Fig. 9 a rear upper right perspective view, and Fig. 10 a side sectional view.

In the applicator 10 according to the present embodiment, the bottom surface side is a convex curved application surface 11 as shown in Fig. 7, and the top surface side is a concave curved support surface 13 that is partially open as shown in Fig. 8. That is, the application surface 11 and the support surface 13 are integrated front and back surfaces. Moreover, the back end side of the applicator 10 is formed into a short cylindrical shape with a hole being provided in the center as shown in Fig. 9. The center hole is a mounting port 14. A female screw is formed on the mounting port 14. Accordingly, a squeeze port with a male screw formed thereon of a container (in particular, having a tubular shape) of an application substance is inserted and fixed thereto. Furthermore, in the present embodiment, the tip end side of the support surface 13 is formed as a covering portion 16 which covers the top surface portion in a slipper shape as shown in Fig. 8.

[0023] The applicator 10 according to the present embodiment can be formed by injection molding of silicone resin.

Moreover, as shown in Fig. 7, a small hole is provided at substantially the center of the application surface 11. The small hole is a discharge port 12. As shown in Fig. 10, the discharge port 12 is connected to the mounting port 14 through a flow path 15.

The applicator 10 according to the present embodiment is used after inserting and mounting the squeeze port of an unillustrated application substance container on the mounting port 14. When the side surface of the container is pushed, the application substance as the content is extruded from the squeeze port, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13

while the container is held within a palm, so that the application substance can be applied and spread over a target application surface. At this time, the back surface of the fingertip placed on the support surface 13 is covered by the covering portion 16. Stability of the fingertip can be thereby increased.

(5) Fifth Embodiment

[0024] An applicator 10 according to a fifth embodiment of the present invention will be described with reference to Fig. 11. Fig. 11(A) illustrates a side sectional view of the applicator 10, and Fig. 11(B) a C-C sectional view in Fig. 11(A).

In the applicator 10 according to the present embodiment, the bottom surface side is a planar application surface 11, and the top surface side is also a planar support surface 13. Moreover, the peripheral portion of the application surface 11 has a structure with an edge. That is, the application surface 11 and the support surface 13 are integrated front and back surfaces, and the peripheral portion of the application surface 11 has an angular section. Moreover, the back end side of the applicator 10 is formed into a short cylindrical shape with a hole being provided in the center. The center hole is a mounting port 14. A female screw is formed on the mounting port 14. Accordingly, a squeeze port with a male screw formed thereon of a container (in particular, having a tubular shape) of an application substance is inserted and fixed thereto. Furthermore, in the present embodiment, two arch-shaped covering portions 16 are formed on the back surface side of the support surface 13.

[0025] Moreover, a small hole is provided at substantially the center of the application surface 11. The small hole is a discharge port 12. The discharge port 12 is connected to the mounting port 14 through a flow path 15. The applicator 10 according to the present embodiment can be formed by injection molding of silicone resin.

The applicator 10 according to the present embodiment is used after inserting and mounting the squeeze port of an unillustrated application substance container on the mounting port 14. When the side surface of the container is pushed, the application substance as the content is extruded from the squeeze port, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the container is held within a palm, so that the application substance can be applied and spread over a target application surface. At this time, the covering portions 16 come into contact with the back surface of the fingertip placed on the support surface 13. Stability of the fingertip can be thereby increased. Furthermore, an excess application substance can be removed by being picked up with the edge along the peripheral portion of the application surface 11.

(6) Sixth Embodiment

[0026] An applicator 10 according to a sixth embodiment of the present invention will be described with reference to Fig. 12. Fig. 12(A) illustrates a side sectional view of the applicator 10, and Fig. 12(B) a D-D sectional view in Fig. 12(A).

In the applicator 10 according to the present embodiment, the bottom surface side is a planar application surface 11, and the top surface side is also a planar support surface 13. That is, the application surface 11 and the support surface 13 are integrated front and back surfaces. Moreover, the back end side of the applicator 10 is formed into a short cylindrical shape with a hole being provided in the center. The center hole is a mounting port 14. A female screw is formed on the mounting port 14. Accordingly, a squeeze port with a male screw formed thereon of a container (in particular, having a tubular shape) of an application substance is inserted and fixed thereto. Furthermore, in the present embodiment, two pairs of arch-shaped covering portions 16 with an uppermost portion being removed are formed on the back surface side of the support surface 13.

[0027] Moreover, a small hole is provided at substantially the center of the application surface 11. The small hole is a discharge port 12. The discharge port 12 is connected to the mounting port 14 through a flow path 15. The applicator 10 according to the present embodiment can be formed by injection molding of silicone resin.

The applicator 10 according to the present embodiment is used after inserting and mounting the squeeze port of an unillustrated application substance container on the mounting port 14. When the side surface of the container is pushed, the application substance as the content is extruded from the squeeze port, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the container is held within a palm, so that the application substance can be applied and spread over a target application surface. At this time, the covering portions 16 are contacted with the back surface of the fingertip placed on the support surface 13. Stability of the fingertip can be thereby increased.

(7) Seventh Embodiment

[0028] In the present invention, an applicator 10 can be integrally formed with an application substance container 20 as in a seventh embodiment shown in Fig. 13. In this embodiment, the top surface side of the applicator 10 is also a concave curved support surface 13 (see Fig. 13(A)), and the bottom surface side is also a convex curved application surface 11 having a discharge port 12 (see Fig. 13(B)). A mounting port 14 is provided in the back end surface of the applicator 10 as shown in the sectional view of Fig. 14(A), and an application substance

enters the mounting port 14. The mounting port 14 and the discharge port 12 are coupled to each other by a flow path 15. As shown in Fig. 14(B), the applicator 10 is so bonded that the mounting port 14 corresponds to an opening 21 of the tip end portion of the application substance container 20.

[0029] When the side surface of a reservoir portion 22 of the application substance container 20 is pushed, the application substance as the content is extruded, and is further squeezed out of the discharge port 12 through the flow path 15 from the mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the application substance container 20 is held within a palm, so that the application substance can be applied and spread over a target application surface.

(8) Eighth Embodiment

[0030] In the present invention, an applicator 10 can be also formed into a flat plate shape as in an eighth embodiment shown in Fig. 15. That is, the top surface side of the applicator 10 is formed as a slightly depressed support surface 13 (see Fig. 15(A)), and the bottom surface side is formed as a slightly projecting application surface 11 (see Fig. 15(B)). Moreover, a flow path 15 projects in a nozzle shape integrated with the bottom surface side of the applicator 10 from the tip end portion of an application substance container 20, and its tip end is a discharge port 12 that is opened toward the application surface 11.

[0031] When the side surface of a reservoir portion 22 of the application substance container 20 is pushed, the application substance as the content is extruded, and is further squeezed out of the discharge port 12 through the flow path 15 from a mounting port 14. When an appropriate amount of application substance is squeezed out, a fingertip (normally of a forefinger) is placed on the support surface 13 while the application substance container 20 is held within a palm, so that the application substance can be applied and spread over a target application surface.

(9) Ninth embodiment

[0032] An applicator 10 according to a ninth embodiment of the present invention shown in Fig. 16 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that a plurality of small projections 30 are provided on the support surface 13. The small projections 30 are slip-resistance for a finger at the time of application, and application is thereby easily performed.

(10) Tenth Embodiment

[0033] An applicator 10 according to a tenth embodi-

ment of the present invention shown in Fig. 17 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that a plurality of small projections 31 laid in the longitudinal direction are provided on the support surface 13. The small projections 31 are slip-resistance for a finger at the time of application, and application is thereby easily performed.

(11) Eleventh Embodiment

[0034] An applicator 10 according to an eleventh embodiment of the present invention shown in Fig. 18 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that the discharge port 12 is opened in a tip end surface 18 that is located on the tip end side from the application surface 11. That is, the discharge port 12 is located in the tip end surface 18 that is located on the tip end side from a position where a finger is located on the support surface 13, and that is not contacted with a target application surface at the time of application. Because of the structure, the application substance squeezed out of the discharge port 12 can be attached to the target application surface, and then, can be applied and spread by the application surface 11, for example.

(12) Twelfth Embodiment

[0035] An applicator 10 according to a twelfth embodiment of the present invention shown in Fig. 19 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that the discharge port 12 is formed into a valve shape. That is, the discharge port 12 is formed as a V-shaped slit. Because of the structure, the valve-shaped portion can be kept closed when not used while the valve-shaped portion is pressed from inside and opened at the time of extruding the application substance.

(13) Thirteenth Embodiment

[0036] An applicator 10 according to a thirteenth embodiment of the present invention shown in Fig. 20 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that the discharge port 12 is covered by a seal member 32 that can be peeled off in use. That is, the discharge port 12 is covered and closed by the seal member 32 before use. Therefore, it is possible to prevent air from entering through the discharge port 12, and the application substance from changing in properties such as drying resulting therefrom before use. Then, by peeling off the seal member 32 in use, the applicator 10 can be used in a similar manner to the above second embodiment.

(14) Fourteenth Embodiment

[0037] An applicator 10 according to a fourteenth embodiment of the present invention shown in Fig. 21 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that the discharge port 12 and its vicinity are covered by a reticulated member 33. Accordingly, it becomes easier to apply the application substance such as powder, for example, to a target application surface while holding the application substance by the reticulated member. Furthermore, even when the application substance is in a liquid form, the liquid is held in the reticulation of the reticulated member, so that application is also easily performed.

(15) Fifteenth Embodiment

[0038] An applicator 10 according to a fifteenth embodiment of the present invention shown in Fig. 22 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that an adhesive tape 34 is attached to the support surface 13. A finger is attached and fixed to the support surface 13 by the adhesive tape 34 at the time of application, so that application is easily performed.

(16) Sixteenth Embodiment

[0039] An applicator 10 according to a sixteenth embodiment of the present invention shown in Figs. 23 and 24 is the same as the applicator 10 according to the second embodiment described above (see Fig. 5) except that a sphere 35 is fitted by insertion into the discharge port 12. That is, as shown in the sectional view of Fig. 24, the sphere 35 has a larger diameter than the diameter of the discharge port 12, and thus, the sphere 35 is held so as not to fall off from the discharge port 12. In a case where the applicator 10 is formed of a material rich in elasticity such as silicone resin, for example, the sphere 35 can be easily inserted from the discharge port 12 due to elastic deformation. By pushing an unillustrated reservoir portion 22 or the like, the application substance is squeezed out so as to ooze out from a gap between the sphere 35 and the discharge port 12. Then, the squeezed application substance can be easily and comfortably applied and spread by rolling the sphere 35 on a target application surface.

Industrial Applicability

[0040] The present invention is achieved as an applicator used for applying an application substance such as cosmetics, ointments, creams, gels, adhesives, paints or the like, which is housed in a squeeze container such as a laminated tube, a metal tube or the like. Moreover, the present invention can be used as a container including such an applicator.

Claims**1.** An applicator comprising:

an application surface to be in contact with a target application surface;
 a support surface to be in contact with a finger;
 a mounting port matching an opening of an application substance container for housing an application substance;
 a discharge port being opened at a position in a surface including the application surface other than the support surface; and
 a flow path guiding the application substance from the mounting port to the discharge port, penetrating between the application surface and the support surface.

2. The applicator according to claim 1, wherein at least one of the application surface and the support surface is formed as a flat surface.**3.** The applicator according to claim 1, wherein the support surface is formed as a curved surface where a palmar surface of the finger can be housed.**4.** The applicator according to claim 1, wherein the application surface is formed as a convex curved surface toward the target application surface.**5.** The applicator according to claims 2, 3 or 4, wherein a back surface side of the support surface is opened.**6.** The applicator according to claims 2, 3 or 4, wherein a covering portion for covering at least a part of a back surface of the finger in contact with the support surface is formed on the support surface.**7.** The applicator according to claim 1, wherein a wall portion is provided at least in a part of an outer periphery of the support surface.**8.** The applicator according to claim 1, wherein the discharge port is opened in the vicinity of a tip end of a position including the application surface other than the support surface.**9.** The applicator according to claim 1, wherein the discharge port is formed into a valve shape.**10.** The applicator according to claim 1, wherein the discharge port is covered by a seal member that can be peeled off in use.**11.** The applicator according to claim 1, wherein a sphere is fitted by insertion into the discharge port.**12.** The applicator according to claim 1, wherein the dis-

charge port is covered by a reticulated member.

13. The applicator according to claim 1, wherein the application surface and the support surface are formed as integrated front and back surfaces.**14.** An application substance container comprising:

a reservoir portion housing an application substance and having an opening; and
 an applicator having an application surface to be in contact with a target application surface and a support surface to be in contact with a finger,
 the applicator comprising:
 a mounting port matching the opening;
 a discharge port being opened in the application surface; and
 a flow path guiding the application substance from the mounting port to the discharge port, penetrating between the application surface and the support surface.

15. The application substance container according to claim 14, wherein the opening and the mounting port matching the opening are formed into shapes closely fitted into each other.**16.** The application substance container according to claim 14, wherein the application surface and the support surface are formed as integrated front and back surfaces.**17.** An application substance container comprising:

a reservoir portion housing an application substance; and
 an applicator being provided on a tip end side of the reservoir portion and having an application surface to be in contact with a target application surface and a support surface to be in contact with a finger;
 the reservoir portion and the applicator being integrally formed with each other;
 further comprising:
 a discharge port being opened at a position in a surface including the application surface other than the support surface; and
 a flow path guiding the application substance from the reservoir portion to the discharge port, penetrating between the application surface and the support surface.

18. The application substance container according to claim 17, wherein the application surface and the support surface are formed as integrated front and back surfaces.

Fig. 1

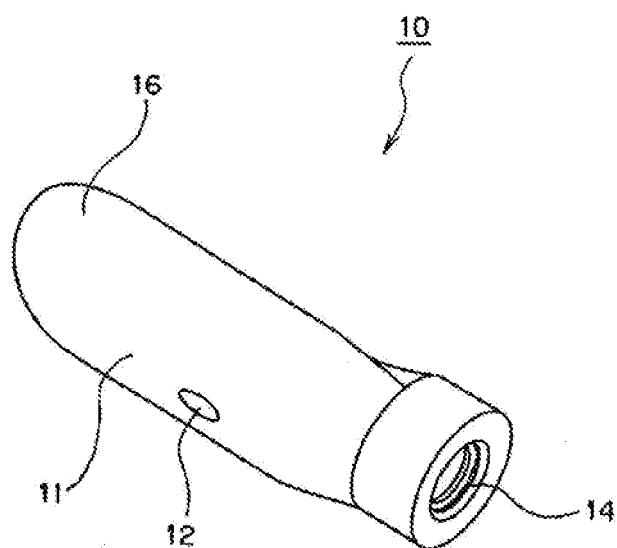


Fig. 2

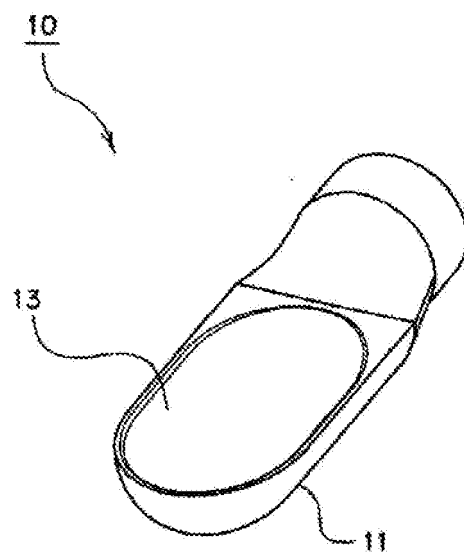


Fig. 3

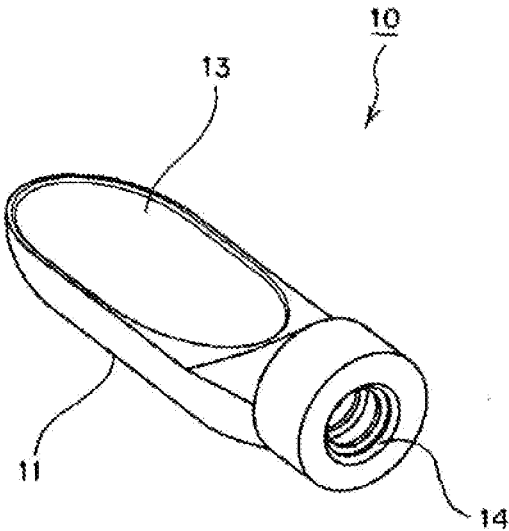


Fig. 4

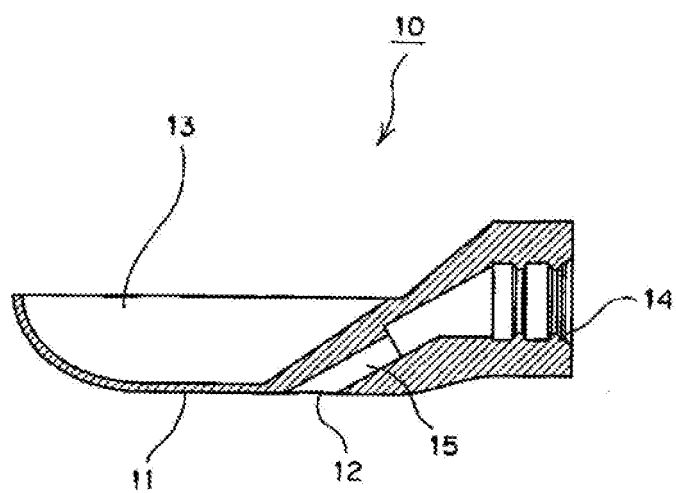


Fig. 5

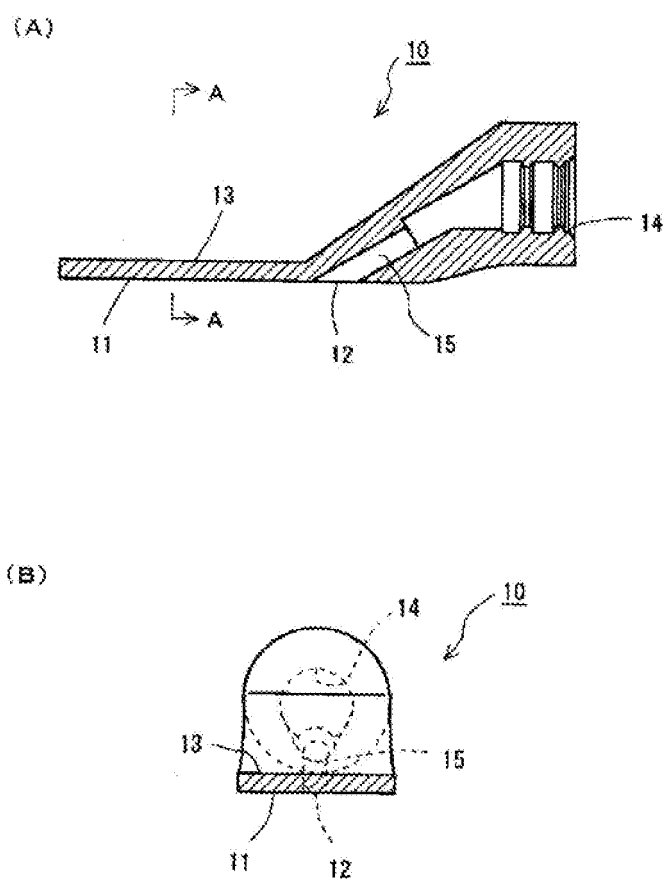


Fig. 6

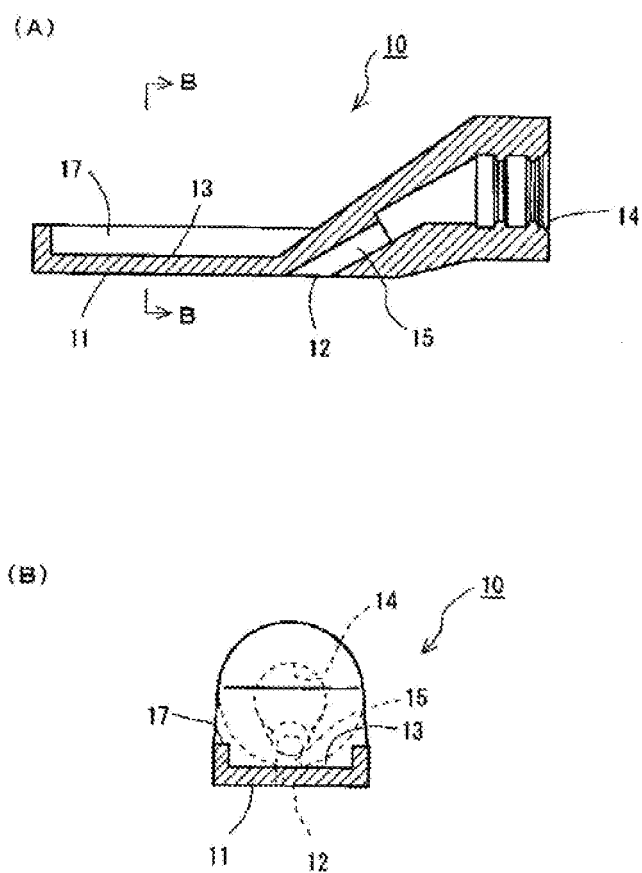


Fig. 7

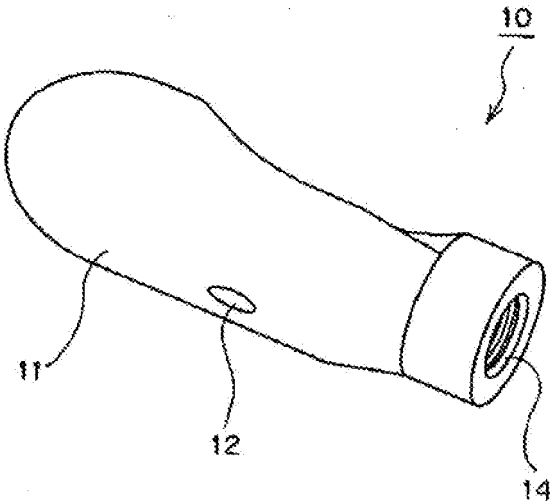


Fig. 8

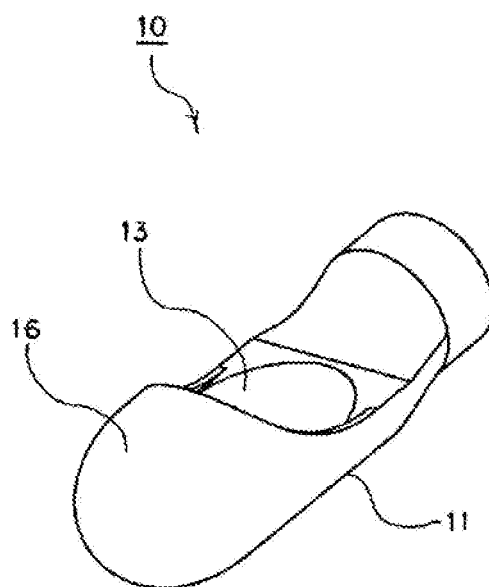


Fig. 9

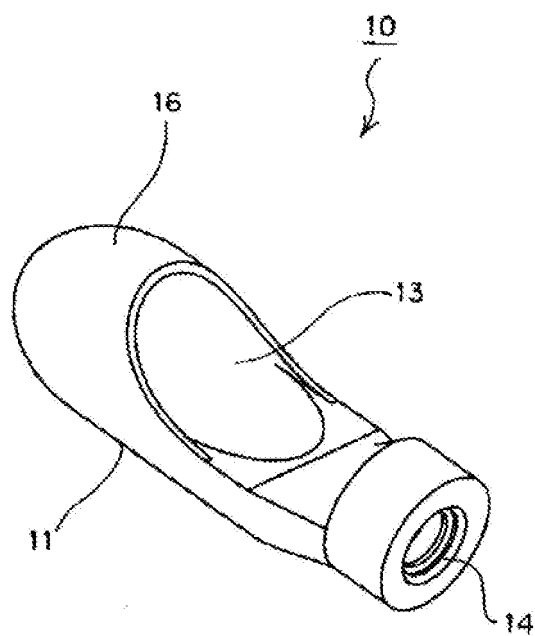


Fig. 10

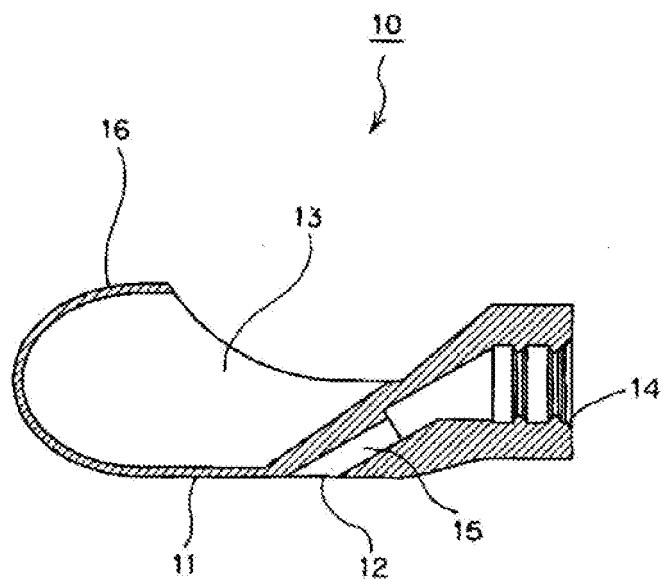


Fig. 11

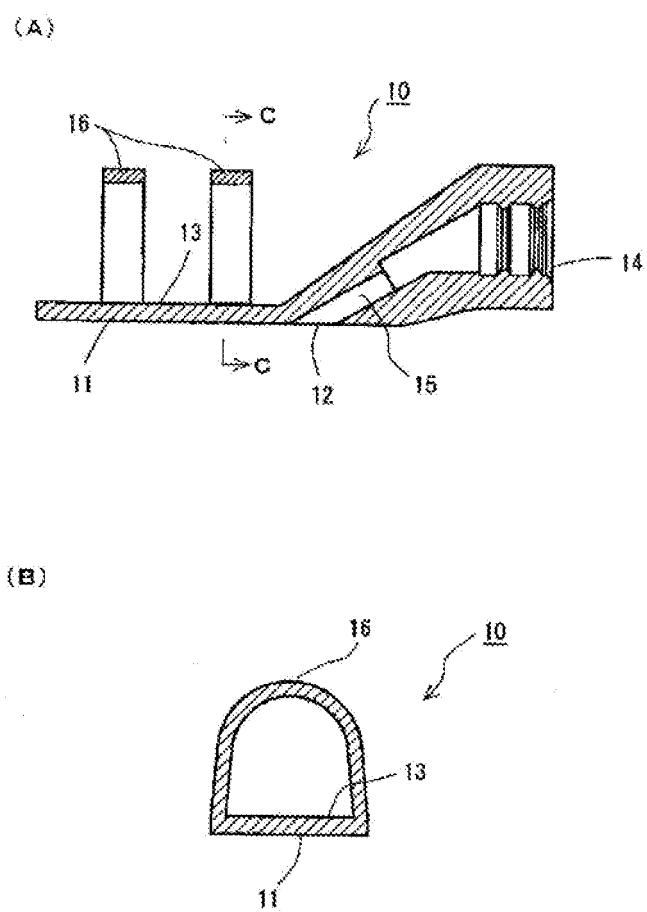


Fig. 12

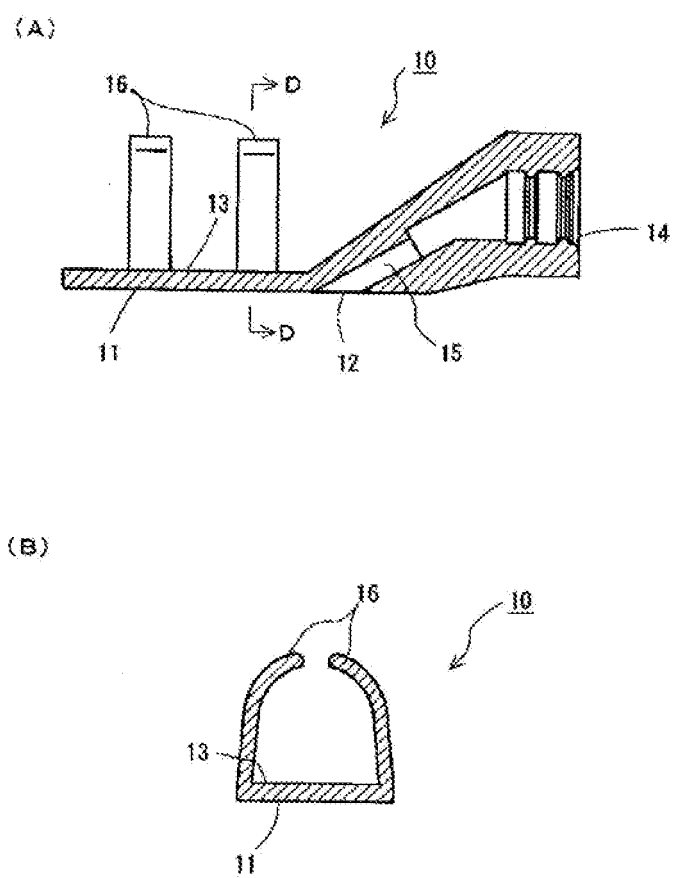


Fig. 13

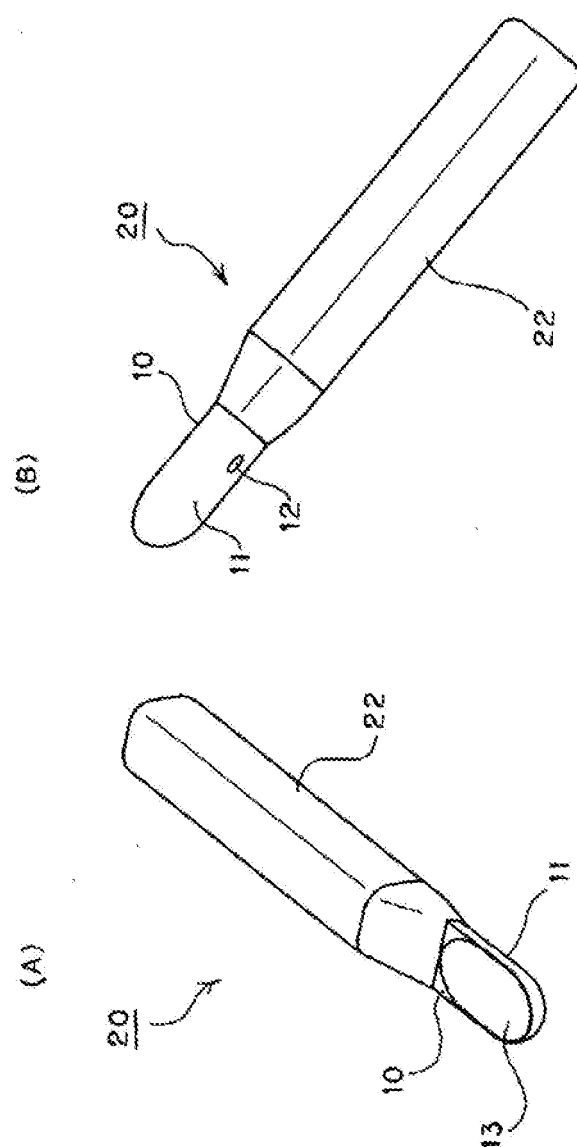


Fig. 14

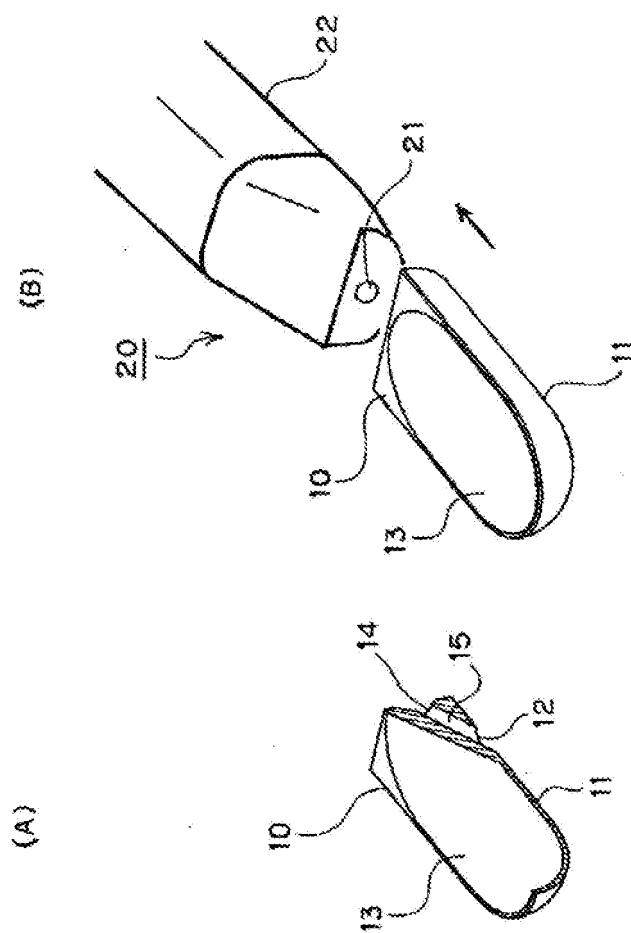


Fig. 15

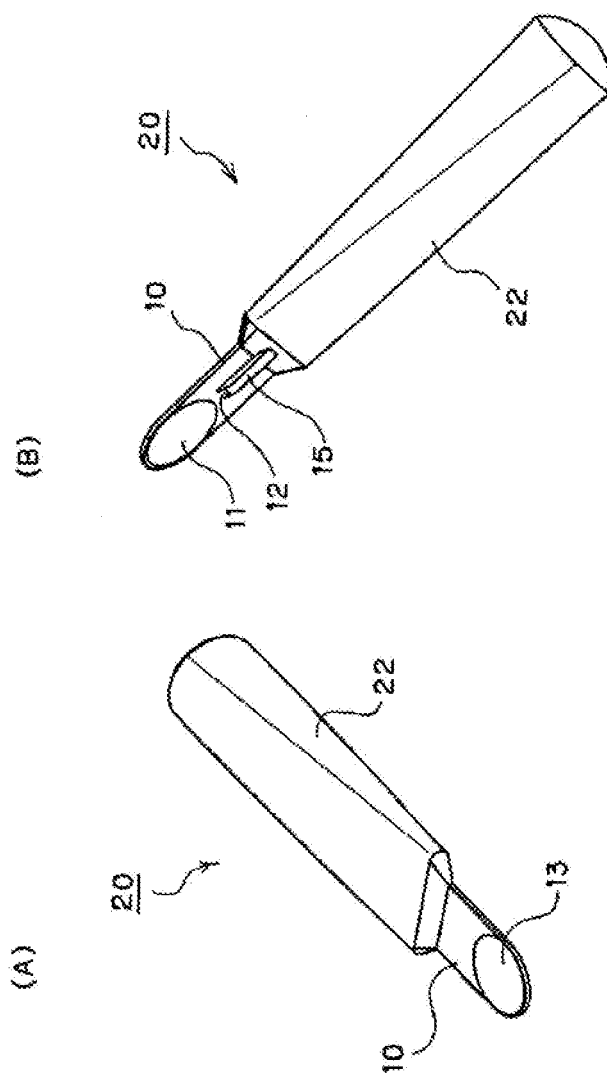


Fig. 16

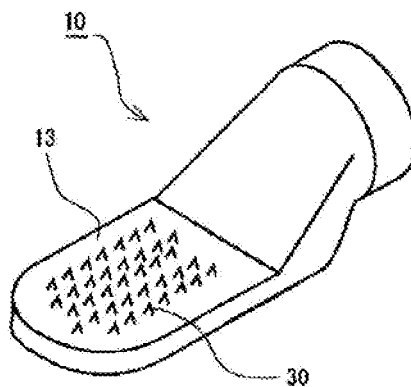


Fig. 17

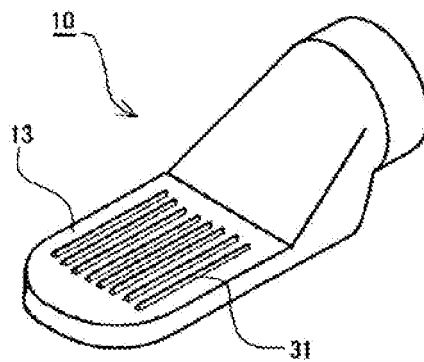


Fig. 18

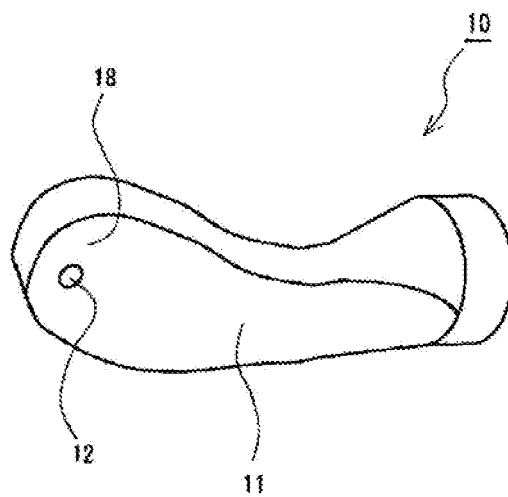


Fig. 19

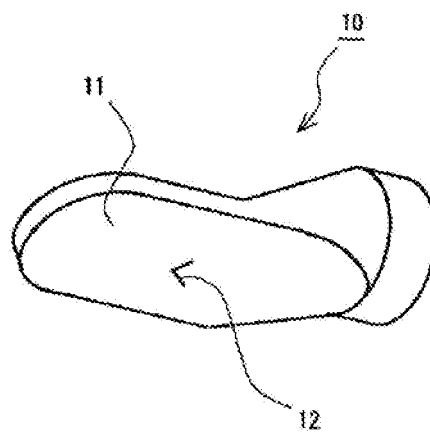


Fig. 20

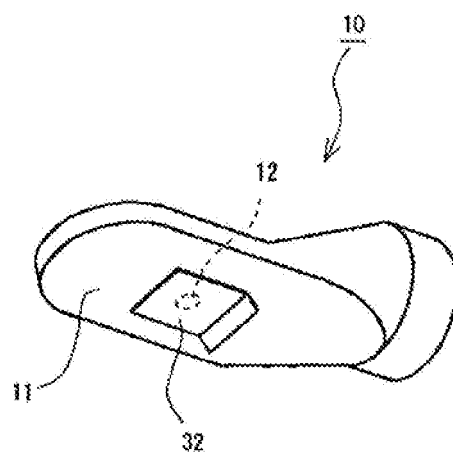


Fig. 21

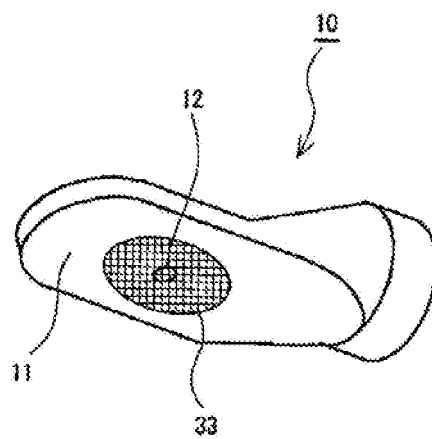


Fig. 22

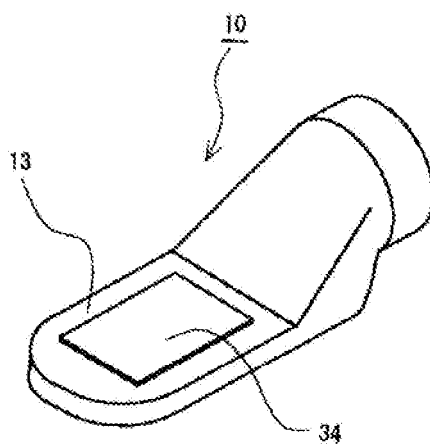


Fig. 23

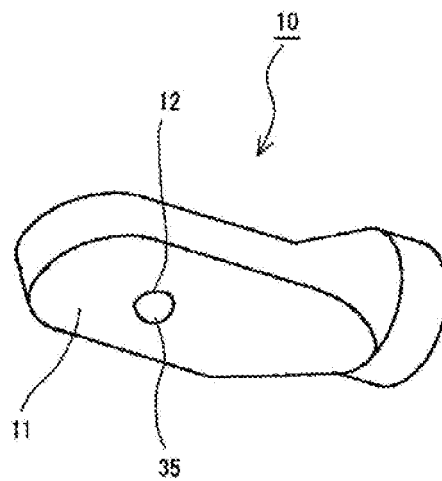
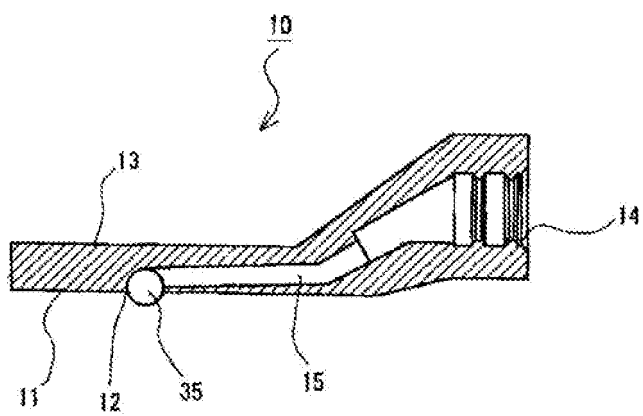


Fig. 24



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2007/060856

A. CLASSIFICATION OF SUBJECT MATTER

A45D40/26(2006.01) i, A45D34/04(2006.01) i, B05C17/00(2006.01) i, B65D83/00(2006.01) i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A45D40/26, A45D34/04, B05C17/00, B05C17/005, B65D83/00

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

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2007
Kokai Jitsuyo Shinan Koho	1971-2007	Toroku Jitsuyo Shinan Koho	1994-2007

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.
X	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 153467/1984 (Laid-open No. 67621/1986) (Kabushiki Kaisha Kobayashi Kose), 09 May, 1986 (09.05.86), Full text; all drawings (Family: none)	1, 2, 5, 8, 13-18
Y		4, 9-12
A		3, 6, 7
Y	JP 1-249006 A (Blistex Inc.), 04 October, 1989 (04.10.89), Page 4, lower left column, line 7 to lower right column, line 2 & US 4887924 A	4

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

* Special categories of cited documents:

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search
15 June, 2007 (15.06.07)Date of mailing of the international search report
26 June, 2007 (26.06.07)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2007/060856

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 3044252 U (Masaki GOTO), 16 December, 1997 (16.12.97), Full text; all drawings (Family: none)	9
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 162275/1988 (Laid-open No. 83069/1990) (Suehiro Sangyo Kabushiki Kaisha), 27 June, 1990 (27.06.90), Page 6, line 19 to page 7, line 17 (Family: none)	10
Y	JP 11-314064 A (Karisu Intanashonaru Yugen Kaisha), 16 November, 1999 (16.11.99), Full text; all drawings (Family: none)	11
Y	JP 10-248636 A (Shiseido Co., Ltd.), 22 September, 1998 (22.09.98), Par. No. [0038] (Family: none)	12
A	JP 2003-252387 A (Mikio NAGAHISA), 10 September, 2003 (10.09.03), Full text; all drawings (Family: none)	1-18
A	JP 58-88072 A (Duane L. Storandt), 26 May, 1983 (26.05.83), Full text; all drawings & WO 92/21401 A1 & US 5019058 A & US 5301490 A & US 5356397 A & US 5454207 A & US 5502946 A & US 5584163 A & US 5833061 A & GB 2108921 A & GB 2262044 A & DE 3240214 A1 & FR 2515520 A1 & AU 8948582 A	1-18

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- JP 7284508 A [0003]
- JP 54041806 Y [0003]