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(54) ENVIRONMENTALLY-FRIENDLY COSMETICS CONTAINER STRUCTURE

UMWELTFREUNDLICHE KOSMETIKBEHÄLTERSTRUKTUR

STRUCTURE DE RÉCIPIENT POUR PRODUIT COSMÉTIQUE RESPECTUEUSE DE L'ENVIRONNEMENT

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Description**BACKGROUND OF THE INVENTION****1. Field of the Invention**

[0001] The invention relates to cosmetics container and more particularly to an environmentally friendly cosmetics container formed of food grade polyethylene terephthalate (PET).

2. Description of Related Art

[0002] A cosmetics container is used for housing makeup products and implements a mechanism of ascending or descending makeup products by rotation. A conventional cosmetics container mostly comprises six components, including a casing, a rotation body, a carrier, a core, a cap, and a lower exterior case. The components are made of polyoxymethylene (POM) and acrylonitrile butadiene styrene (ABS) resin. Multiple components of the conventional cosmetics container are difficult to assemble with lower productivity. In addition, POM is white and ABS resin is yellow, as a result, the color of the cosmetics container is limited to one. For changing color of the cosmetics container, it is required to add a great amount of other dyes to cover colors of both POM and ABS resin. It not only increases the manufacturing cost, but also makes it impossible of making the color of the cosmetics container to be a specific color.

[0003] Further, stability of the molecules of both POM and ABS resin is poor. Their chemical resistance is poor, i.e., being less resistant to both weak acid and strong acid. Furthermore, smell can be generated in the manufacturing process due to formaldehyde. In addition, its shaping speed is very slow and its materials are not environmentally friendly and non-recyclable.

[0004] In addition, all of the components of the conventional cosmetics container are made of POM and ABS resin. After manufacturing, the casing, the rotation body, the carrier, the core, the cap, and the lower exterior case of the conventional cosmetics container are assembled and secured by means of ultrasonic waves. Unfortunately, it is uneasy to disassemble the conventional cosmetics container after use and adds great difficulties to recycling, because more than two kinds of plastics are added. Thus, the need for improvement still exists.

[0005] EP 1 133 937 B1 discloses a device for storing and applying cosmetic care products. Plastic components of the device are made of non-polyolefinic plastics, e. g. polyethylene terephthalate. The case comprises an outer covering comprising a body or base, a removable cap and a drive mechanism intended to allow the axial displacement of a stick of product. The mechanism consists of the assembly of three elements, namely a sheath, a stick cup and a casing. The sheath and the cup are made of plastic material and the casing comprises a

sleeve of metal lined by an inner jacket of plastic material. The cup comprises two diametrically opposed lugs arranged to slide in two diametrically opposed guide slots of the sheath. The upper and lower ends of the guide slots are extended in radial, opposite directions. The ends of the lugs engage in helical grooves in the inner jacket, so that a rotational movement of the sheath relative to the casing is accompanied by an axial movement of the cup. The body comprises a chimney which engages in the sheath and which is prevented from rotating relative to the latter. To cause the stick of product to come out, the user turns the casing relative to the body after removing the closure cap.

15 SUMMARY OF THE INVENTION

[0006] It is the object of this invention to provide an environmentally friendly cosmetics container preventing a support tube from rotating with respect to a lower exterior casing.

[0007] This object is achieved by the subject matter of the independent claim.

[0008] Preferred embodiments of the invention are mirrored by the dependent claims.

[0009] The invention has the following advantages:

1. It is recyclable: The cosmetics container can be recycled after use and the recycled material can be used in manufacturing new products, because the whole cosmetics container is made of food grade PET. This can achieve environmental sustainability by recycling materials and reducing pollution.

2. It decreases the manufacturing cost: The cosmetics container is completely made of food grade PET and PET is transparent in nature. Thus, in the manufacturing process of the cosmetics container, coloring is started from colorless to any other colors. It greatly decreases the consumption dye materials in the manufacturing process. It is not required to cover the original color of the material by other colors. Therefore, it is possible of decreasing the manufacturing cost.

3. Shaping speed is very quick and odorless during the manufacturing process: The cosmetics container is completely and only made of food grade PET. Stability of the molecules of PET is high and its chemical resistance is high. Shaping speed is very quick and it is odorless during the manufacturing process. As a result, its manufacturing time decreases about 50% in comparison with the conventional art, thereby greatly increasing the manufacturing efficiency, decreasing the energy consumption, and lowering greenhouse emissions.

4. It can be easily assembled: Only the rotation tube, the ascending and descending tube, and the support

tube are assembled prior to assembling the lower exterior casing. Finally, the cap and the lower exterior casing are assembled. Moreover, the number of the components is much less than that of the conventional cosmetics container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

FIG. 1 is a perspective view of the invention;
 FIG. 2 is an exploded view of the invention;
 FIG. 3 is a longitudinal sectional view and exploded view of the invention;
 FIG. 4 is a longitudinal sectional of the invention; and
 FIG. 5 shows an ascending or descending movement of the ascending and descending tube by rotating the rotation tube.

DETAILED DESCRIPTION OF THE INVENTION

[0011] Referring to FIGS. 1 and 2, an environmentally friendly cosmetics container 10 in accordance with the invention is shown, which is formed of food grade PET and comprises a cap 11, a rotation tube 12, an ascending and descending tube 14, a support tube 16, and a lower exterior casing 18. FIG. 1 shows a perspective view of the cap 11 and the lower exterior casing 18 being combined.

[0012] Next, referring to FIGS. 2 to 4, an exploded view of the cosmetics container 10 is shown. The cap 11 includes an annular groove 111 on an open bottom of an inner surface. The rotation tube 12 is hollow and includes a plurality of spiral guide grooves 121 on an inner surface. The ascending and descending tube 14 includes two opposite and protruded guide pins 141 on an outer surface, and a plurality of parallel longitudinal ribs 142 are formed on an inner surface and spaced apart. The ascending and descending tube 14 houses a cosmetic product 20, and a bottom of the cosmetics product 20 is secured by the parallel longitudinal ribs 142. The support tube 16 is hollow and includes two opposite longitudinal tunnels 161 on a surface, each of the longitudinal tunnels 161 having an upper horizontal end 1621 and a lower horizontal end 1622 oriented in a direction opposite to that of the upper horizontal end 1621. The upper horizontal end is parallel to the lower horizontal end 1622. An annular toothed member 165 on a bottom of an inner surface of the support tube 16. The lower exterior casing 18 is a receptacle and includes an annular shoulder 181 being stepped on an outer surface. A plurality of projections 182 disposed on a stair riser proximate a top end of the annular shoulder 181. A protrusion 183 on a blind bottom of the lower exterior casing 18 is configured to dispose in the annular toothed member 165. The rotation tube 12 is put on the support tube 16. The ascending and descending tube 14 is disposed in the support tube 16 and the guide pins 141 are moveably disposed through the longitudinal tunnels 161

into the spiral guide grooves 121, so that the guide pins 141 are anchored in the upper horizontal ends 1621 or the lower horizontal ends 1622 at the end of the movement. The lower exterior casing 18 houses the rotation tube 12, the ascending and descending tube 14 and the support tube 16 when combined. The protrusion 183 is secured to the annular toothed member 165. The cap 11 is secured to the lower exterior casing 18 by resting upon the shoulder 181 and snapping the annular groove 111 onto the projections 182.

[0013] Referring to FIG. 2 again, the support tube 16 further comprises a longitudinal cut 163 through a top edge and communicating with one of the upper horizontal ends 1621. The longitudinal cut 163 has a width less than a diameter of the cylindrical guide pin 141. The provision of the longitudinal cut 163 are providing the support tube 16 space for thermal expansion and facilitating the guide pins 141 to be disposed through the longitudinal tunnels 161. In addition, the rotation tube 12 further comprises a curved top edge 123 to prevent an individual from being hurt when applying the cosmetics product 20.

[0014] Referring to FIGS. 3 and 4, longitudinal sectional views of the cosmetics container 10 are shown. The spiral guide grooves 121 are spirally formed on the inner surface of the rotation tube 12. An annular trough 122 is formed at a bottom edge of the spiral guide grooves 121. The support tube 16 comprises an annular ridge 164 configured to dispose in the annular troughs 122 when the rotation tube 12 is put on the support tube 16. As a result, a joining strength of the rotational tube 12 and the support tube 16 increases. In addition, in order to increase a joining strength of the lower exterior casing 18 and the support tube 16, the protrusion 183 is correspondently secured to the annular toothed member 165. Thus, it greatly decreases a possibility of loosening the support tube 16 and the lower exterior casing 18.

[0015] Referring to FIG. 5 in conjunction with FIG. 4, an individual may hold the lower exterior casing 18 with one hand and rotate the rotation tube 12 with the other hand. As a result, the ascending and descending tube 14 moves upward or downward along the spiral guide grooves 121 in the inner surface of the rotational tube 12, lifting or lowering the cosmetics product 20.

Claims

1. An environmentally friendly cosmetics container (10), comprising:

a cosmetics container formed of food grade polyethylene terephthalate (PET), including a cap (11), a rotation tube (12), an ascending and descending tube (14), a support tube (16) and a lower exterior casing (18);
 the cap (11) including an annular groove (111) on an open bottom of an inner surface;
 the rotation tube (12) being hollow and including

a plurality of spiral guide grooves (121) on an inner surface;

the ascending and descending tube (14) including two opposite and protruded guide pins (141) on an outer surface;

the support tube (16) being hollow and including two opposite longitudinal tunnels (161) on a surface, each of the longitudinal tunnels (161) having an upper horizontal end (1621) and a lower horizontal end (1622) oriented in a direction opposite to that of the upper horizontal end (1621); and

the lower exterior casing (18) being a receptacle and including an annular shoulder (181) being stepped on an outer surface, a plurality of projections (182) disposed on a stair riser proximate a top end of the annular shoulder (181), and a protrusion (183) on a blind bottom;

wherein, the rotation tube (12) is put on the support tube (16), the ascending and descending tube (14) is disposed in the support tube (16), the guide pins (141) are moveably disposed through the longitudinal tunnels (161) into the spiral guide grooves (121) so that the guide pins (141) are configured to anchor in the upper horizontal ends (1621) or the lower horizontal ends (1622) at an end of the movement, the lower exterior casing (18) houses the rotation tube (12), and the cap (11) is secured to the lower exterior casing (18) by resting upon the annular shoulder (181) and snapping the annular groove (111) onto the projections (182);

characterized in that

the ascending and descending tube (14) further including a plurality of parallel longitudinal ribs (142) formed on an inner surface and spaced apart;

the support tube (16) further including an annular toothed member (165) on a bottom of an inner surface; and

the protrusion (183) configured for being disposed in and secured to the annular toothed member (165), when the ascending and descending tube (14) and the support tube (16) are combined.

2. The environmentally friendly cosmetics container (10) of claim 1, wherein an annular trough is formed at a bottom edge of the spiral guide grooves (121), and the support tube (16) comprises an annular ridge configured to dispose in the annular trough when the rotation tube (12) is put on the support tube (16).
3. The environmentally friendly cosmetics container of claim 1, wherein the support tube (16) further comprises a longitudinal cut (163) through a top edge and communicating with one of the upper horizontal ends (1621), the longitudinal cut (163) having a width less

than a diameter of the guide pin.

4. The environmentally friendly cosmetics container (10) of one of the preceding claims, further comprising a cosmetics product fastened by the parallel longitudinal ribs (142) of the ascending and descending tube (14).
5. The environmentally friendly cosmetics container (10) of one of the preceding claims, wherein the rotation tube (12) further comprises a curved top edge (123).

15 Patentansprüche

1. Umweltfreundlicher Kosmetikbehälter (10), umfassend:

einen Kosmetikbehälter aus lebensmittelechtem Polyethylenterephthalat (PET), der eine Kappe (11), ein Drehrohr (12), ein auf- und absteigendes Rohr (14), ein Stützrohr (16) und ein unteres Außengehäuse (18) umfasst;

wobei die Kappe (11) eine ringförmige Nut (111) an einem offenen Boden einer Innenfläche aufweist;

wobei das Drehrohr (12) hohl ist und eine Vielzahl von spiralförmigen Führungsnuten (121) auf einer Innenfläche enthält;

wobei das auf- und absteigende Rohr (14) zwei gegenüberliegende und vorstehende Führungsstifte (141) auf einer Außenfläche aufweist;

wobei das Stützrohr (16) hohl ist und zwei gegenüberliegende Längsröhren (161) auf einer Oberfläche aufweist, wobei jede der Längsröhren (161) ein oberes horizontales Ende (1621) und ein unteres horizontales Ende (1622) aufweist, das in einer Richtung entgegengesetzt zu der des oberen horizontalen Endes (1621) ausgerichtet ist; und

wobei das untere Außengehäuse (18) ein Behälter ist und eine ringförmige Schulter (181), die auf einer Außenfläche abgestuft ist, eine Vielzahl von Vorsprüngen (182), die auf einer Setzstufe in der Nähe eines oberen Endes der ringförmigen Schulter (181) angeordnet sind, und einen Vorsprung (183) auf einem Blendenboden aufweist;

wobei das Drehrohr (12) auf das Stützrohr (16) aufgesetzt wird, das auf- und absteigende Rohr (14) im Stützrohr (16) angeordnet ist und die Führungsstifte (141) durch die Längsröhren (161) in den spiralförmigen Führungsnuten (121) beweglich angeordnet sind, so dass die Führungsstifte (141) so konfiguriert sind, dass sie an einem Ende der Bewegung in den oberen

horizontalen Enden (1621) oder den unteren horizontalen Enden (1622) für Stabilität sorgen, wobei das untere Außengehäuse (18) das Drehrohr (12) aufnimmt und die Kappe (11) an dem unteren Außengehäuse (18) befestigt ist, indem sie auf der ringförmigen Schulter (181) aufliegt und die ringförmige Nut (111) auf die Vorsprünge (182) aufschnappt;

dadurch gekennzeichnet, dass

das auf- und absteigende Rohr (14) ferner eine Vielzahl von parallelen Längsrippen (142) aufweist, die auf einer Innenfläche ausgebildet und voneinander beabstandet sind;

das Stützrohr (16) ferner ein ringförmiges gezahntes Element (165) an einem Boden einer Innenfläche aufweist; und

wobei der Vorsprung (183) so konfiguriert ist, dass er in dem ringförmigen gezahnten Element (165) angeordnet und daran befestigt ist, wenn das auf- und absteigende Rohr (14) und das Stützrohr (16) kombiniert sind.

2. Umweltfreundlicher Kosmetikbehälter (10) nach Anspruch 1, wobei eine ringförmige Rinne an einem unteren Rand der spiralförmigen Führungsnuten (121) ausgebildet ist und das Stützrohr (16) eine ringförmige Rippe aufweist, die so konfiguriert ist, dass sie in der ringförmigen Rinne angeordnet ist, wenn das Drehrohr (12) auf das Stützrohr (16) aufgesetzt wird.
3. Umweltfreundlicher Kosmetikbehälter nach Anspruch 1, wobei das Stützrohr (16) ferner einen Längsschnitt (163) durch eine Oberkante aufweist, der mit einem der oberen horizontalen Enden (1621) in Verbindung steht, wobei der Längsschnitt (163) eine Breite aufweist, die geringer ist als der Durchmesser des Führungsstifts.
4. Umweltfreundlicher Kosmetikbehälter (10) nach einem der vorhergehenden Ansprüche, der ferner ein Kosmetikprodukt umfasst, das durch die parallelen Längsrippen (142) des auf- und absteigenden Rohrs (14) befestigt ist.
5. Umweltfreundlicher Kosmetikbehälter (10) nach einem der vorhergehenden Ansprüche, wobei das Drehrohr (12) weiterhin eine gekrümmte Oberkante (123) aufweist.

Revendications

1. Récipient pour produit cosmétique respectueux de l'environnement (10), comprenant :

un récipient pour produit cosmétique moulé à partir de polyéthylène téréphtalate (PET) de

qualité alimentaire, comprenant un bouchon (11), un tube tournant (12), un tube montant et descendant (14), un tube de support (16) et un carter extérieur inférieur (18) ;

le bouchon (11) comprenant une rainure annulaire (111) sur un fond ouvert d'une surface intérieure ;

le tube tournant (12) étant creux et comprenant une pluralité de rainures de guidage spiralées (121) sur une surface intérieure ;

le tube montant et descendant (14) comprenant deux broches de guidage (141) sur une surface extérieure opposées et en saillie ;

le tube de support (16) étant creux et comprenant deux tunnels longitudinaux opposés (161) sur une surface, chacun des tunnels longitudinaux (161) ayant une extrémité horizontale supérieure (1621) et une extrémité horizontale inférieure (1622) orientée dans une direction opposée à celle de l'extrémité horizontale supérieure (1621) ; et

le carter extérieur inférieur (18) étant un réceptacle et comprenant un épaulement annulaire (181) étagé sur une surface extérieure, une pluralité de saillies (182) disposées sur une contremarche à proximité d'une extrémité supérieure de l'épaulement annulaire (181) et une saillie (183) sur un fond plein ;

dans lequel le tube tournant (12) est placé sur le tube de support (16), le tube montant et descendant (14) est disposé dans le tube de support (16), les broches de guidage (141) sont disposées de façon mobile à travers les tunnels longitudinaux (161) à l'intérieur des rainures de guidage spiralées (121) de sorte que les broches de guidage (141) soient configurées pour s'ancrer dans les extrémités horizontales supérieures (1621) ou les extrémités horizontales inférieures (1622) à une extrémité du mouvement, le carter extérieur inférieur (18) logeant le tube tournant (12) et le bouchon (11) étant fixé de façon sécurisée au carter extérieur inférieur (18) en reposant sur l'épaulement annulaire (181) et en embrochant la rainure annulaire (111) sur les saillies (182) ;

caractérisé en ce que :

le tube montant et descendant (14) comprend en outre une pluralité de nervures longitudinales parallèles (142) formées sur une surface intérieure et séparée ;

le tube de support (16) comprenant en outre un élément denté annulaire (165) sur un fond d'une surface intérieure ; et

la saillie (183) étant configurée pour être disposée dans et fixée de façon sécurisée à l'élément denté annulaire (165), lorsque le tube montant et descendant (14) et le tube

de support (16) sont combinés.

2. Récipient pour produit cosmétique respectueux de l'environnement (10) selon la revendication 1, dans lequel une dépression annulaire est formée au niveau d'un bord inférieur des rainures de guidage spiralées (121) et dans lequel le tube de support (16) comprend un bombement annulaire configuré pour s'adapter à la dépression annulaire lorsque le tube tournant (12) est placé sur le tube de support (16). 5 10
3. Récipient pour produit cosmétique respectueux de l'environnement selon la revendication 1, dans lequel le tube de support (16) comprend en outre une coupe longitudinale (163) pratiquée à travers un bord supérieur et communiquant avec une des extrémités horizontales supérieures (1621), la coupe longitudinale (163) ayant une largeur inférieure à un diamètre de la broche de guidage. 15 20
4. Récipient pour produit cosmétique respectueux de l'environnement (10) selon l'une quelconque des revendications précédentes, comprenant en outre un produit cosmétique rattaché par le biais des nervures longitudinales parallèles (142) du tube montant et descendant (14). 25
5. Récipient pour produit cosmétique respectueux de l'environnement (10) selon l'une quelconque des revendications précédentes, dans lequel le tube tournant (12) comprend en outre un bord supérieur incurvé (123). 30

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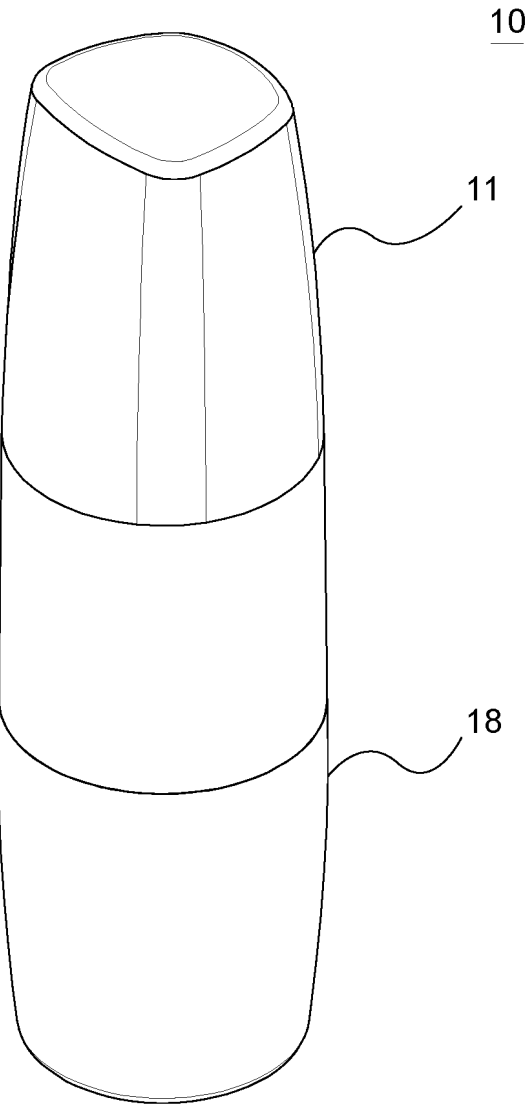


FIG. 1

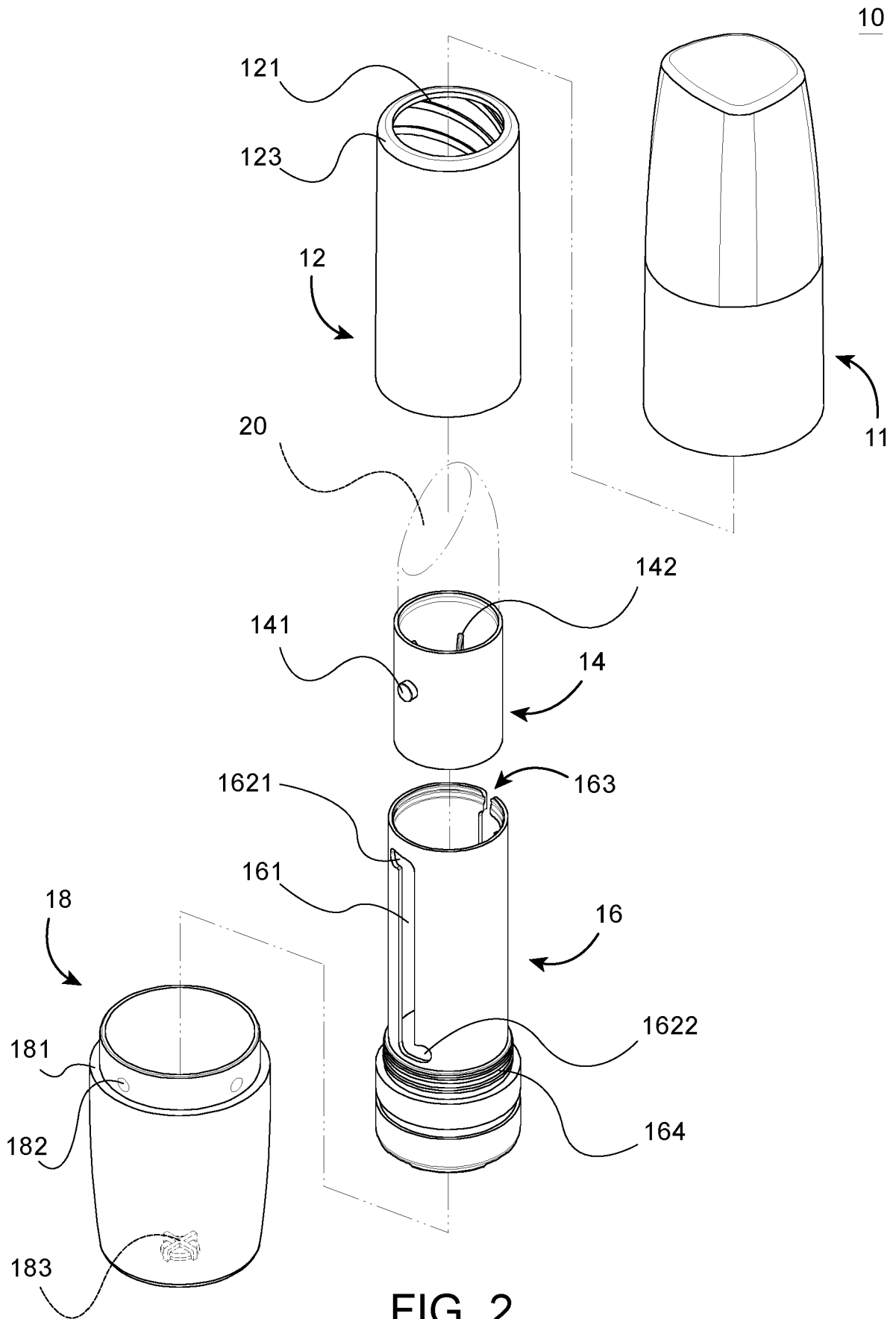


FIG. 2

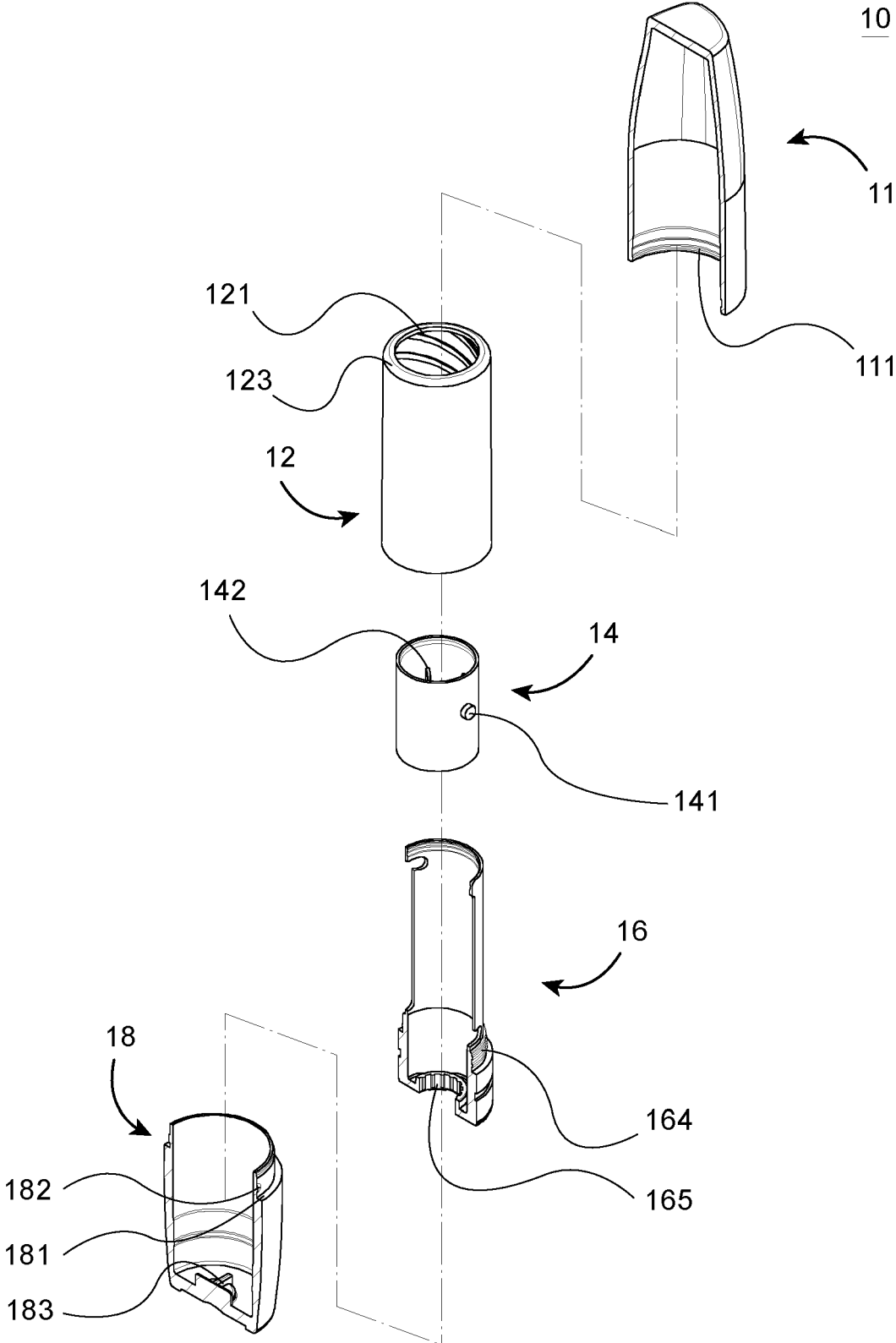


FIG. 3

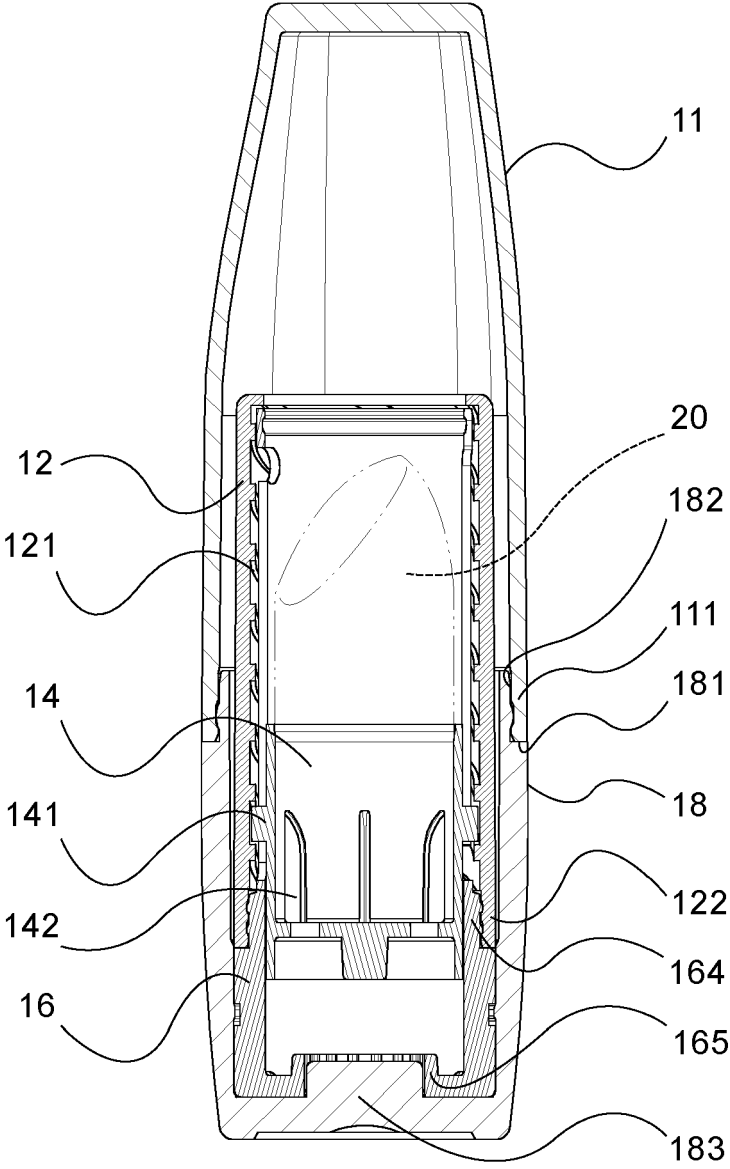


FIG. 4

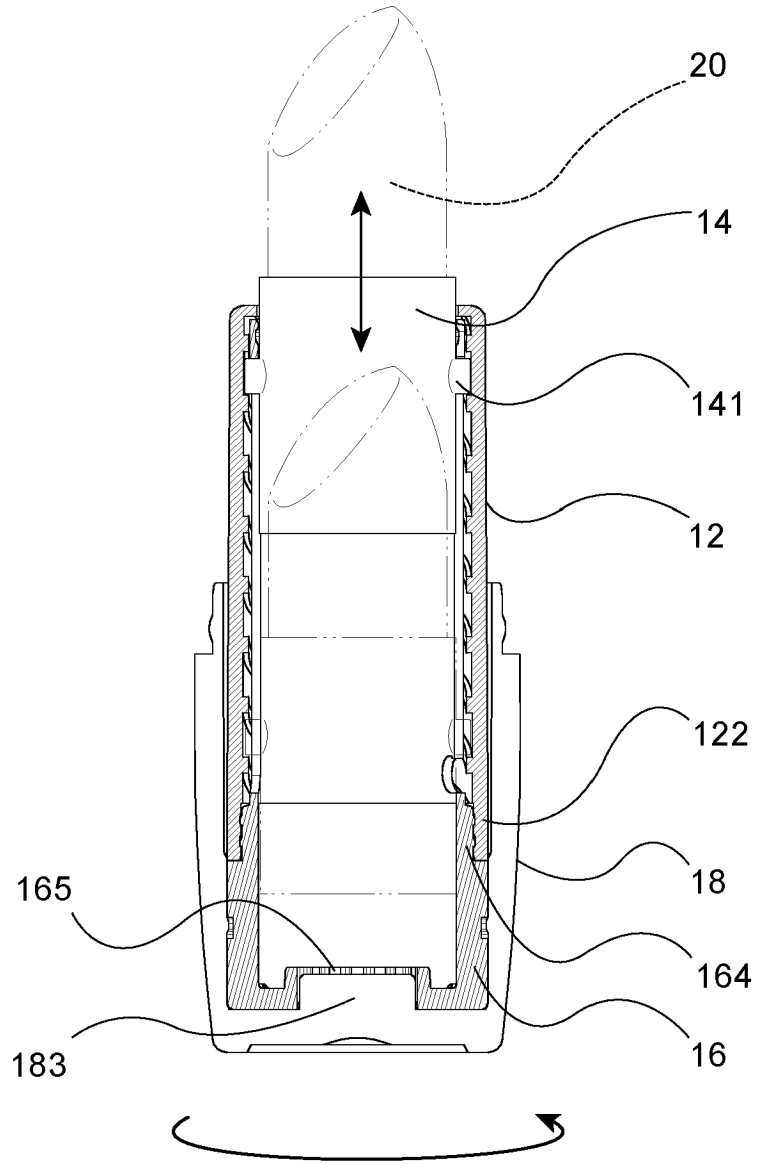


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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