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(54) **ENVIRONMENTALLY-FRIENDLY COSMETICS CONTAINER STRUCTURE**

(57) An environmentally friendly cosmetics container, the overall structure of the cosmetics container is form of food grade polyethylene terephthalate. The overall cosmetics container is formed by five members: a cap, a rotational tube, an ascending and descending tube, a support tube and a lower exterior casing. The rotation tube is put on the support tube. The ascending and descending tube is disposed in the support tube. The lower exterior casing houses the rotation tube, the ascending and descending tube and the support tube when combined, and then the cosmetics container is closed by securing the cap and the lower exterior.

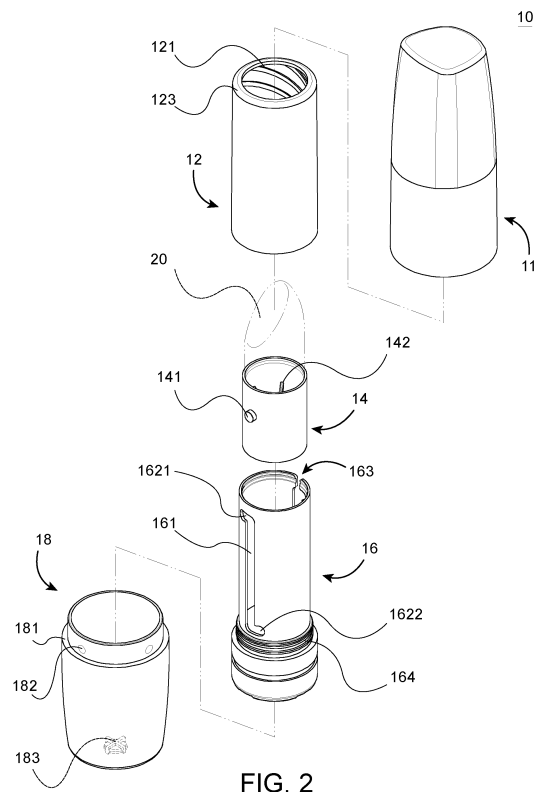


FIG. 2

EP 4 026 786 A1

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.

SUMMARY OF THE INVENTION

[0005] It is therefore one object of the invention to provide an environmentally friendly cosmetics container, which is environmentally friendly, easy to use and can be widely-used.

[0006] In order to achieve the aforementioned purpose, the invention discloses the environmentally friendly cosmetics container, comprising a cosmetics container formed of food grade PET, wherein the cosmetics con-

tainer comprises a cap, a rotation tube, an ascending and descending tube, a support tube and a lower exterior casing; the cap including an annular groove on an open bottom of an inner surface; the rotation tube being hollow and including a plurality of spiral guide grooves formed on an inner surface; the ascending and descending tube including two opposite and protruded guide pins formed on an outer surface, and a plurality of parallel longitudinal ribs formed on an inner surface and spaced apart; the support tube being hollow and including two opposite longitudinal tunnels on a surface, each of the longitudinal tunnels having an upper horizontal end and a lower horizontal end oriented in a direction opposite to that of the upper horizontal end, and an annular toothed member on a bottom of an inner surface; and the lower exterior casing being a receptacle and including an annular shoulder being stepped on an outer surface, a plurality of projections disposed on a stair riser proximate a top end of the annular shoulder, and a protrusion on a blind bottom configured to dispose in the annular toothed member; wherein the rotation tube is put on the support tube, the ascending and descending tube is disposed in the support tube, the guide pins are moveably disposed through the longitudinal tunnels into the spiral guide grooves so that the guide pins are configured to anchor in the upper horizontal ends or the lower horizontal ends at an end of the movement, the lower exterior casing houses the rotation tube, the ascending and descending tube and the support tube when combined, the protrusion is secured to the annular toothed member, and the cap is secured to the lower exterior casing by resting upon the annular shoulder and snapping the annular groove onto the projections.

[0007] Further, an annular trough is formed at a bottom edge of the spiral guide grooves, and the support tube comprises an annular ridge configured to dispose in the annular trough when the rotation tube is put on the support tube.

[0008] Further, the support tube further comprises a longitudinal cut through a top edge and communicating with one of the upper horizontal ends, the longitudinal cut having a width less than a diameter of the guide pin.

[0009] Further, a cosmetics product is fastened by the parallel longitudinal ribs of the ascending and descending tube.

[0010] Further, the rotation tube further comprises a curved top edge.

[0011] With the above structures, 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 cosmet-

ics 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

[0012]

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

[0013] 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.

[0014] 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.

5 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.

[0015] 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.

[0016] 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.

[0017] 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, comprising:

a cosmetics container formed of food grade polyethylene terephthalate (PET), including a cap, a rotational tube, an ascending and descending tube, a support tube and a lower exterior casing; the cap including an annular groove on an open bottom of an inner surface;

the rotation tube being hollow and including a plurality of spiral guide grooves on an inner surface;

the ascending and descending tube including two opposite and protruded guide pins on an outer surface, and a plurality of parallel longitudinal ribs formed on an inner surface and spaced apart;

the support tube being hollow and including two opposite longitudinal tunnels on a surface, each of the longitudinal tunnels having an upper horizontal end and a lower horizontal end oriented in a direction opposite to that of the upper horizontal end, and an annular toothed member on a bottom of an inner surface; and

the lower exterior casing being a receptacle and including an annular shoulder being stepped on an outer surface, a plurality of projections disposed on a stair riser proximate a top end of the annular shoulder, and a protrusion on a blind bottom configured to dispose in the annular toothed member;

wherein, the rotation tube is put on the support tube, the ascending and descending tube is disposed in the support tube, the guide pins are moveably disposed through the longitudinal tunnels into the spiral guide grooves so that the guide pins are configured to anchor in the upper horizontal ends or the lower horizontal ends at an end of the movement, the lower exterior casing houses the rotation tube, the ascending and descending tube and the support tube when

combined, the protrusion is secured to the annular toothed member, and the cap is secured to the lower exterior casing by resting upon the annular shoulder and snapping the annular groove onto the projections.

2. The environmentally friendly cosmetics container of claim 1, wherein an annular trough is formed at a bottom edge of the spiral guide grooves, and the support tube comprises an annular ridge configured to dispose in the annular trough when the rotation tube is put on the support tube.
3. The environmentally friendly cosmetics container of claim 1, wherein the support tube further comprises a longitudinal cut through a top edge and communicating with one of the upper horizontal ends, the longitudinal cut having a width less than a diameter of the guide pin.
4. The environmentally friendly cosmetics container of claim 1, further comprising a cosmetics product fastened by the parallel longitudinal ribs of the ascending and descending tube.
5. The environmentally friendly cosmetics container of claim 1, wherein the rotation tube further comprises a curved top edge.

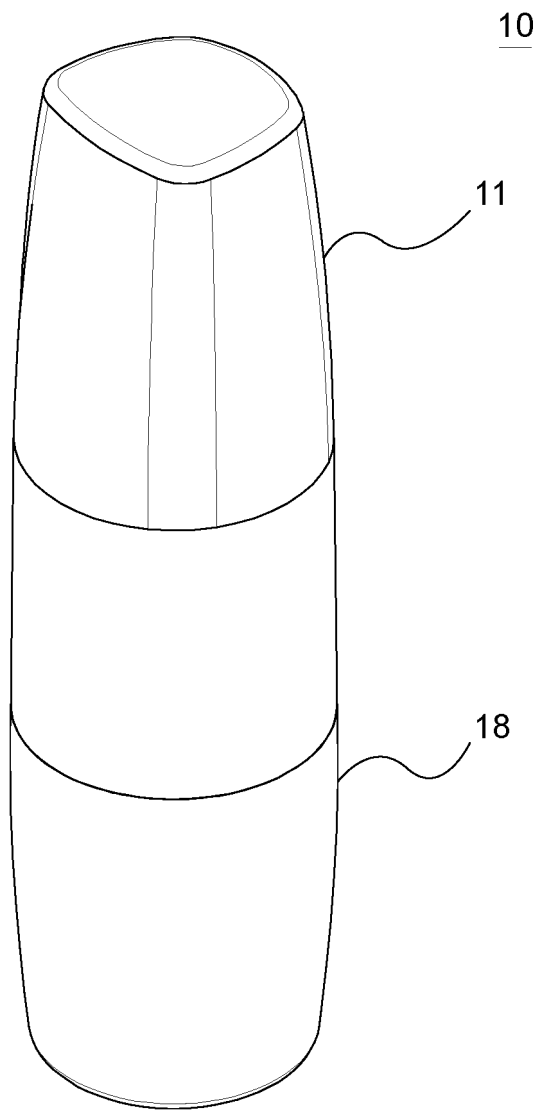
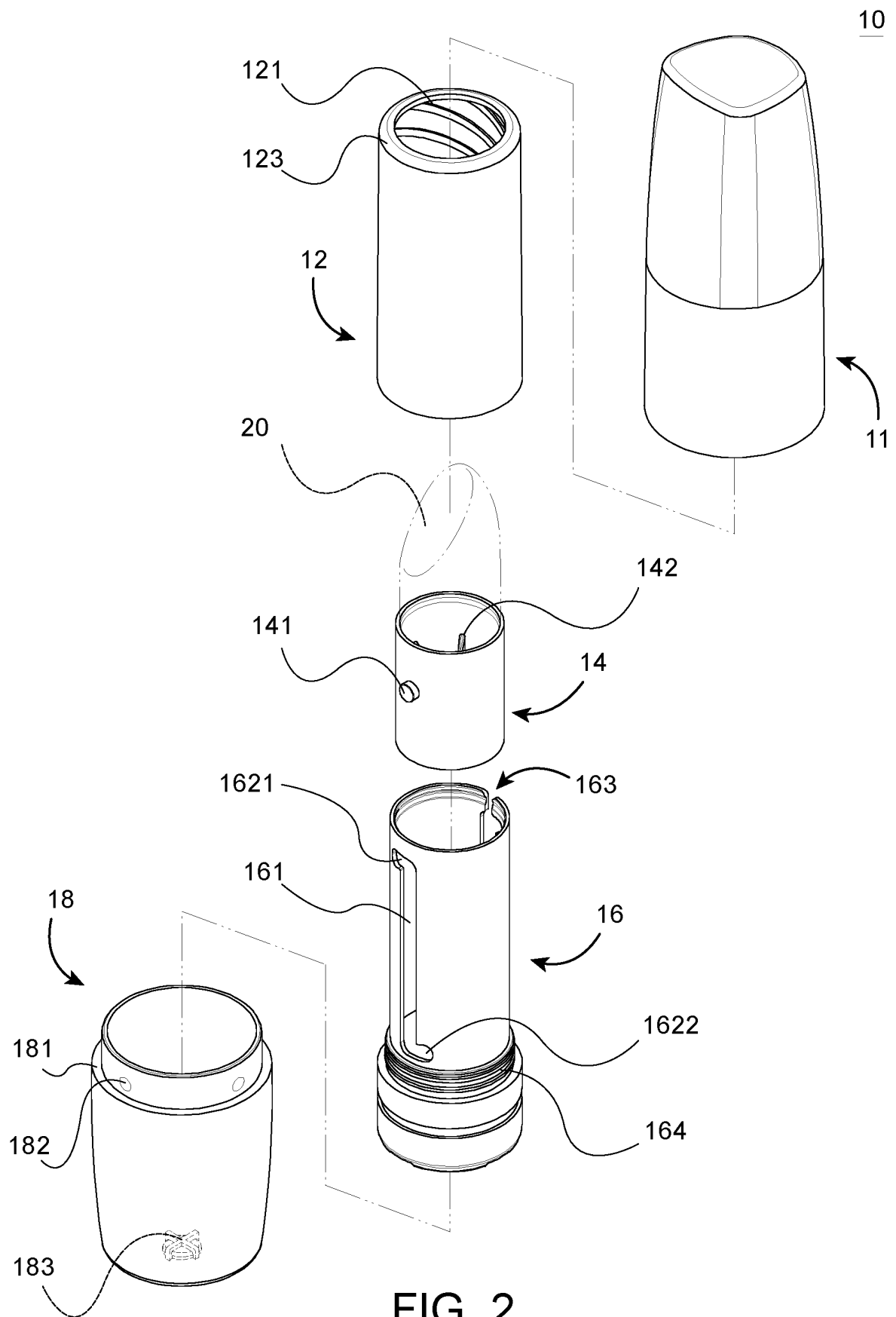


FIG. 1



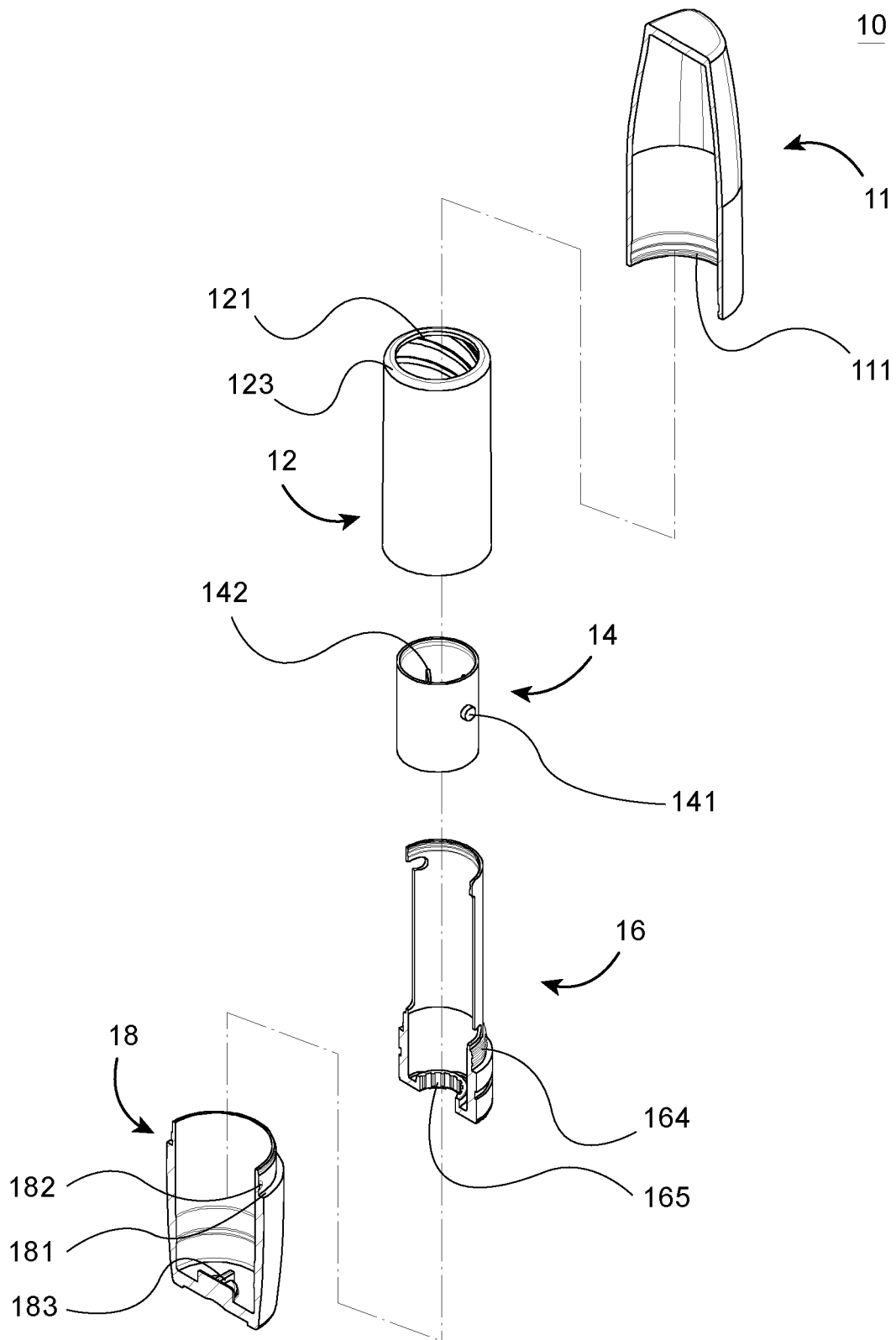


FIG. 3

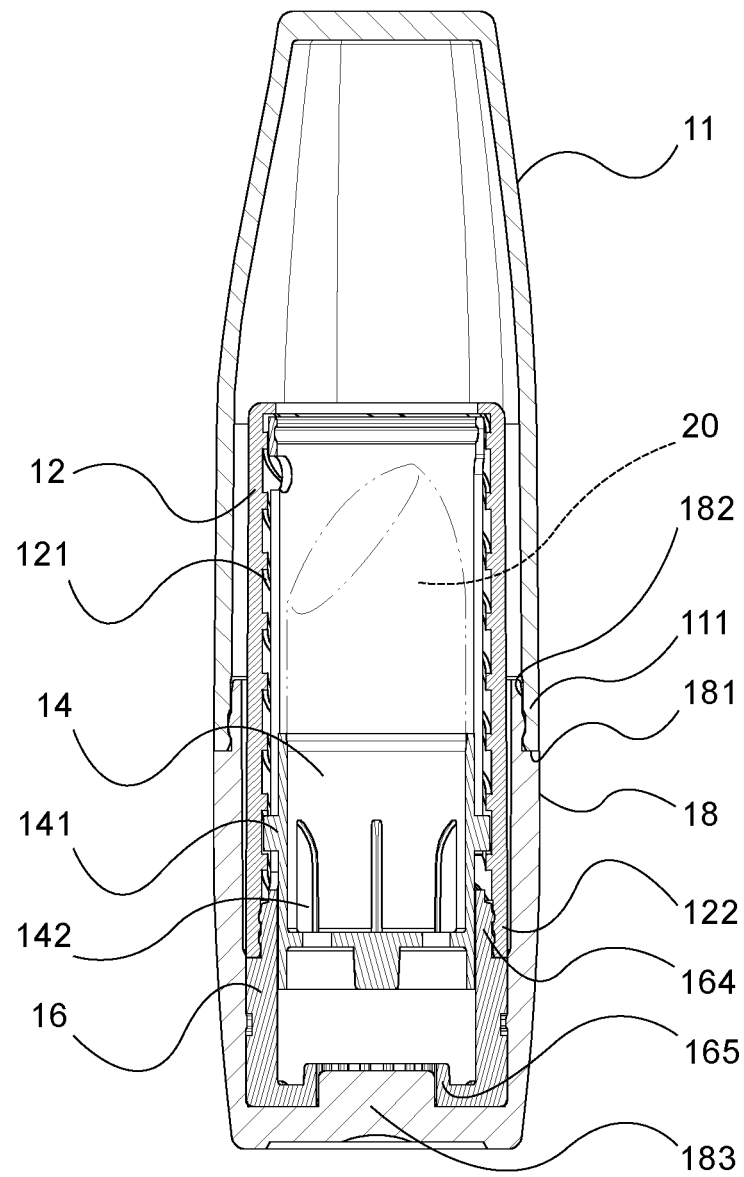


FIG. 4

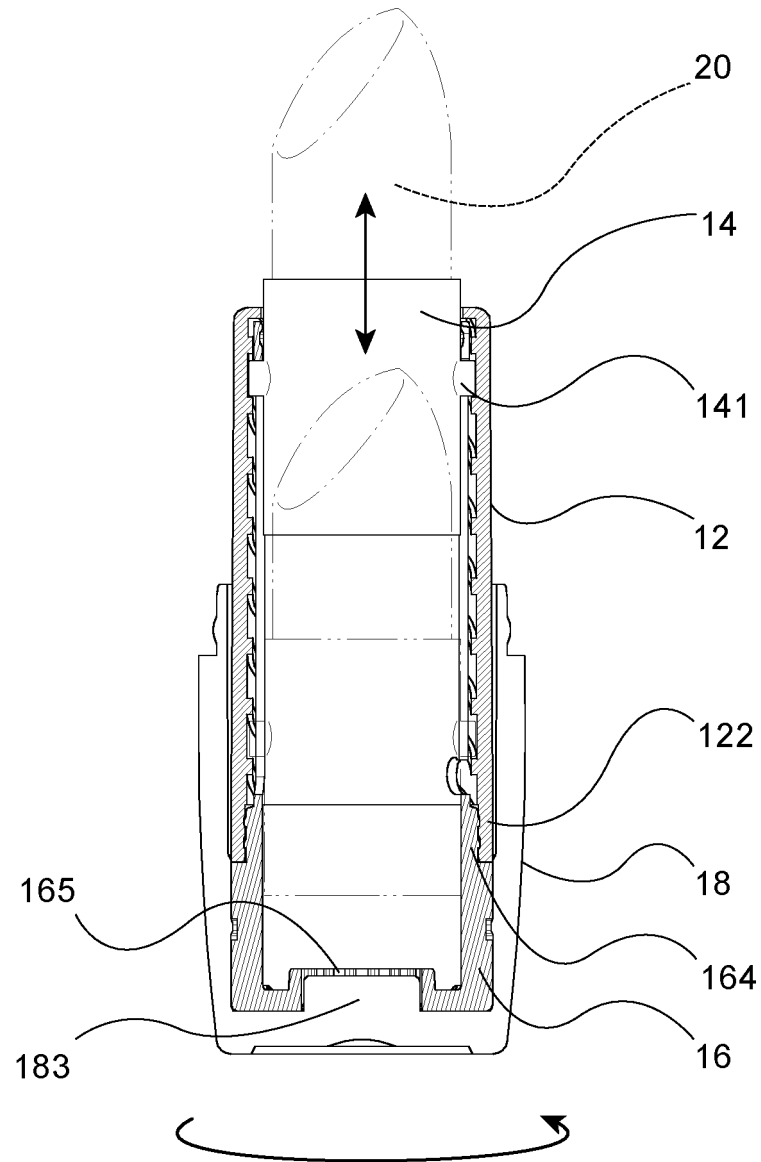


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/104478

A. CLASSIFICATION OF SUBJECT MATTER

B65D 65/38(2006.01)i; A45D 40/04(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)

B65D65/-; A45D40/-

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

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

CNABS, CNTXT, WPI, EPODOC, CNKI: 珠海市鼎荣塑胶制品有限公司, 刘庭男, 聚对苯二甲酸乙二醇酯, PET, 口红, 化妆, 容器, 食品级, packaging, cosmetic products, polyethylene terephthalate

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	CN 1314293 A (L'OREAL) 26 September 2001 (2001-09-26) description pages 2-4, figures 1, 2	1-5
X	CN 2386689 Y (GUO, Zhenhui) 12 July 2000 (2000-07-12) entire document	1-5
A	US 5605408 A (Cheng-Yuan Su) 25 February 1997 (1997-02-25) entire document	1-5
A	CN 1419870 A (L'OREAL SA) 28 May 2003 (2003-05-28) entire document	1-5
A	US 2014219704 A1 (SHIN CHIA CHANG PLASTICS CO., LTD.) 07 August 2014 (2014-08-07) entire document	1-5

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

* Special categories of cited documents:

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"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

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Date of the actual completion of the international search

14 May 2020

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Form PCT/ISA/210 (second sheet) (January 2015)

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Information on patent family members

International application No.

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