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(54) **CARTRIDGE CORE**

(57) Disclosed is a mechanism. The mechanism includes an inner-body and a spiral; limiting steps for limiting an axial movement of the spiral are provided on an outer wall of the inner-body; the spiral is provided with an annular elastic telescopic portion; and the elastic telescopic portion is provided with a plurality of grooved holes arranged along a circumferential direction of the elastic telescopic portion, thereby forming an oblique elastic deformation strip between adjacent grooved holes. According to the mechanism, by providing holes on a sidewall of the spiral to form the elastic telescopic portion, the mould opening is relatively easy and the manufacturing cost is low; the elastic deformation strip is provided obliquely, so to achieve the same telescopic amount of the spiral, the elastic deformation strip is required to have a relatively small deformation compared with the existing structure. Therefore, an irreversible deformation is not easily occurred.

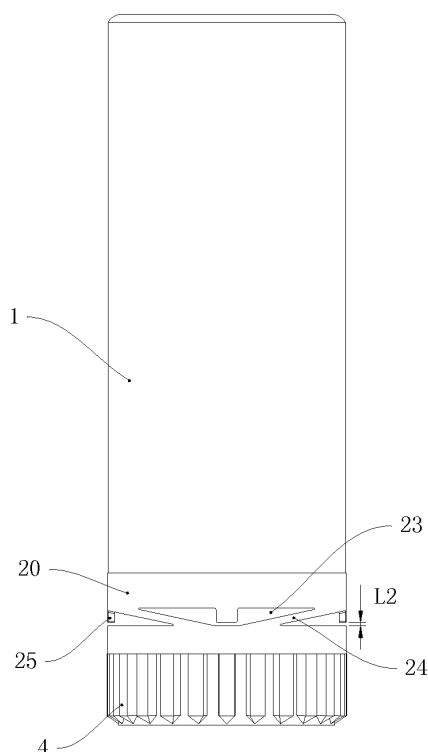


Fig. 4

Description

Technical Field

[0001] The disclosure relates to a technical field of rouge or lipstick packages, and more particularly, to a mechanism.

Background

[0002] A rouge or a lipstick is a frequently-used cosmetic for the female. Generally, it is of a paste shape or a fluid shape, and is placed in a packaging tube. The packaging tube is mainly composed of a cover body, a base and a mechanism, wherein the mechanism mostly consists of four parts, namely, a cup, an inner-body, a spiral and a shell. The cup is a container for containing the paste body; the inner-body and the spiral are cooperatively configured to drive a movement of the cup, thereby pushing the paste body out or hiding it in the packaging tube. The shell is fixed with the spiral to take a decorative effect.

[0003] For example, a mechanism of a lipstick tube disclosed in Patent Application No. CN201767295U comprises a shell, a spiral, an inner-body and a cup sleeving coaxially in sequence from outside to inside. The shell is fixedly connected with the spiral; a helical guiding groove is provided on an inner peripheral surface of the spiral; a notch provided along an axial direction of the inner-body is formed on a wall surface of the inner-body; a bulge penetrated through the notch and stretched to the guiding groove is provided on an outer peripheral surface of the cup; a plurality of convex points fixed on the inner peripheral surface of the spiral or on the outer peripheral surface of the inner-body are provided between a bottom end of the spiral and the inner-body. The spiral of the mechanism disclosed in the patent is axially fixed using limiting steps on the outer peripheral surface of the inner-body. However, due to a machining error, there is a space between the spiral and the limiting steps.

[0004] To solve the above problem, there is provided a lipstick tube mechanism in Patent Application No. CN204292453U. It comprises an inner-body and a spiral; an upper limiting ring for clamping an upper end surface of the spiral is provided on an outer wall, close to an upper end, of the inner-body. An elastic piece for abutting against a lower end surface of the spiral is provided on the outer wall, close to a lower end, of the inner-body. When the lipstick tube mechanism of the disclosure is assembled, the spiral sleeves outside the inner-body, and is clamped between the upper limiting ring at the upper end of the inner-body and the elastic piece at the lower end of the inner-body; and thus, the spiral is fixed relative to the inner-body on an axial direction and the product has no motion in an axial movement. Although the patent can solve the motion of the spiral, the structure of the inner-body is relatively complex, and the manufacturing cost is relatively high. In addition, the elastic piece

is easy to have an irreversible deformation and loses a capability of compensating the space.

Summary

[0005] The disclosure provides a mechanism with a spiral and an inner-body assembled tightly, and solves the problems that an elastic piece on an inner-body of the existing mechanism is structured complexly and is easy to have an irreversible deformation.

[0006] The mechanism comprises an inner-body and a spiral; limiting steps for limiting an axial movement of the spiral are provided on an outer wall of the inner-body; the spiral is provided with an annular elastic telescopic portion; the elastic telescopic portion is provided with a plurality of grooved holes provided along a circumferential direction of the elastic telescopic portion, thereby forming an oblique elastic deformation strip between adjacent grooved holes.

[0007] Since the spiral is of a thin tube structure made of a plastic material, and a hole is formed on a certain annular area thereof, a plurality of elastic deformation strips obliquely arranged are formed. The elastic deformation strips take an action of connecting upper and lower portions, and when the oblique angle changes under an action of an external force and an external force is eliminated, can recover the original oblique angle. Therefore, the area has a certain telescopic property on an axial direction.

[0008] For the mechanism of the prior art, the fit clearance between the spiral and a convex ring on the inner-body generally is about 0.1mm. Correspondingly, after the assembly is finished, a telescopic length of the elastic telescopic portion is 0.1-0.2mm.

[0009] The oblique angle of each of the elastic deformation strips has an impact on the telescopic amount of the elastic telescopic portion. The deformation amount will be undersized if the angle is overlarge. In case of 90°, there is no deformation amount completely.

[0010] Preferably, an oblique angle of the elastic deformation strip is 10-15°.

[0011] In a preferred embodiment, there are four grooved holes and correspondingly four elastic deformation strips.

[0012] The grooved holes can be any form theoretically as long as the elastic deformation strip is formed. In order to guarantee an overall strength uniform, each of the plurality of grooved holes is of an isosceles trapezoid, an isosceles triangle or a prism.

[0013] More preferably, each of the grooved holes is of the isosceles trapezoid; two bottom edges of the isosceles trapezoid are perpendicular to an axial line of the spiral. Adjacent two elastic deformation strips are symmetrically provided, which means the directions of the adjacent grooved holes are opposite.

[0014] In order to prevent the spiral from being compressed excessively to incline such that the elastic deformation strips are torn, an upper bottom edge of each

of the grooved holes is provided with a bulge extended to a lower bottom edge; the upper bottom edge refers to an upper bottom of the isosceles trapezoid, and the lower bottom edge refers to a lower bottom of the isosceles trapezoid. The bulge can abut against the lower bottom edge, thereby preventing the elastic telescopic portion from being compressed excessively.

[0015] A distance between the bulge and the lower bottom edge of the grooved hole corresponding to the bulge is 0.3-0.5mm.

[0016] An annular groove is provided inside a bottom end of the spiral; an elastic piece abutting against a bottom surface of the annular groove is provided on the outer wall of the inner-body. The elastic piece abuts against the bottom surface of the annular groove, so when the spiral is rotated, a friction is provided between the elastic piece and the spiral, thereby generating a certain torsion to improve the hand feeling in use.

[0017] The elastic telescopic portion is provided at a position where the annular groove locates. The annular groove is equivalent to a clearance between the inner-body and the spiral, thus providing a space for the deformation of an elastic deformation piece.

[0018] According to the mechanism of the invention, by forming the grooved holes in the certain annular area of the spiral and forming the plurality of the elastic deformation strips arranged along a circumferential direction thereof, the spiral has a certain telescopic capability. The spiral is provided at an outer peripheral surface of the inner-body in a sleeving manner, so if the original length of the spiral is greater than the space between the two limiting steps of the inner-body, the two end portions of the spiral can implement tight assembly with the limiting steps and the motion is avoided.

[0019] In the invention, by opening holes on a sidewall of the spiral to form the elastic telescopic portion, the mould opening is relatively easy and the manufacturing cost is low. The elastic deformation strips are provided obliquely, so to achieve the same telescopic amount of the spiral, the elastic deformation strips are required to have a relatively small deformation compared with the existing structure. Therefore, the irreversible deformation is not easily occurred.

Brief Description of the Drawings

[0020]

Fig. 1 is a cross-section diagram of a mechanism of the prior art.

Fig. 2 is an enlarged view of a local A portion in Fig. 1. FIG. 3 is a systematic diagram of an explosion structure of a mechanism of the invention.

Fig. 4 is a systematic diagram of an assembly structure of a mechanism of the invention.

Fig. 5 is a longitudinal cross-section diagram of a mechanism of the invention.

Fig. 6 is an enlarged view of a local B portion in Fig. 5.

Fig. 7 is an enlarged view of a local C portion in Fig. 5.

Fig. 8 is a structure diagram of a shell and a spiral in a separation state of the invention.

Fig. 9 is a transverse cross-section diagram of a mechanism of the invention.

Fig. 10 is an enlarged view of a local D portion in Fig. 9.

Fig. 11 is a comparison diagram in a structural change before and after a spiral is assembled, in which (a) is an inner-body, (b) is a spiral before assembly and (c) is a spiral after assembly.

Detailed Description of the Embodiments

[0021] As shown in Fig. 1, a mechanism of the prior art comprises a shell 1, a spiral 2, an inner-body 4 and a cup 3, all of which sleeve together coaxially in sequence from outside to inside; two convex rings are provided on an outer wall of the inner-body to form two limiting steps; the two limiting steps are matched with two end portions of the spiral 2, so as to limit an axial movement of the spiral. As shown in Fig. 2, due to a machining error, a space about 0.1 mm is provided between a top of the spiral 2 and each of the limiting steps 42.

[0022] As shown in Fig. 3 and Fig. 5, a mechanism of the invention also comprises a shell 1, a spiral 2, an inner-body 4 and a cup 3; an inner wall of the spiral 2 is provided with a helical groove 21; guiding grooves 41 arranged along an axial direction of the inner-body 4 are provided on the inner-body 4; two bulges 31 penetrated through the guiding grooves 41 respectively and stretched to the groove 21 are provided on an outer wall of the cup 3; the shell 1 is fixedly provided on an outer peripheral surface of the spiral 2 in a sleeving manner.

[0023] As shown in Fig. 8 to Fig. 10, a top portion of the shell is provided with an internal turnup 11, and a bottom inner wall of the shell after being thinned is folded to form a double-layer structure 13. Atop end of the spiral 2 is matched with the internal turnup 11, and a side surface is further provided with a snap ring 27 matched with the double-layer structure 13, such that the shell 1 is axially fixed relative to the spiral 2. An inner wall of the shell 1 is provided with splines 12 arranged along an axial direction of the shell 1. Correspondingly, the outer wall of the spiral 2 is provided with spline grooves 26 matched with the splines 12. After the spline grooves 26 and the splines 12 are matched, the shell 1 and the spiral 2 are circumferentially fixed. In such a design, the shell 1 and the spiral 2 are fixedly connected and the usage of glue is avoided, being more environment-friendly.

[0024] In order to solve the problems of the mechanism in the prior art, as shown in Fig. 4, the spiral 2 of the mechanism of the invention is provided with an annular elastic telescopic portion 20; the elastic telescopic portion 20 is provided with four grooved holes 23 arranged along a circumferential direction of the elastic telescopic portion 20; the grooved holes 23 are of an isosceles trapezoid and the directions of adjacent grooved holes are oppo-

site, such that two edges next to one another are mutually parallel and oblique elastic deformation strips 24 are formed therebetween. The elastic deformation strips 24 take a connecting effect. More importantly, it may be deformed such that the spiral 2 has a certain telescopic property.

[0025] The maximum telescopic amount and the resilience force of the spiral are associated with materials thereof and oblique length, length, width and the like of the oblique elastic deformation strips 24. To obtain appropriate resilience, it is necessary to take above factors into account comprehensively. The oblique angle of each of the elastic deformation strips 24 generally is 10-15°, the spiral generally is made of lubricant-containing high molecular materials such as Polyvinyl Chloride (PVC) and Polycarbonate (PC), and the length and the width both are adjusted as required.

[0026] If the elastic telescopic portion 20 is shrunk excessively and is beyond a yield strength of the material, the elastic deformation strips 24 may be torn. To solve the problem, an upper bottom edge of each of the grooved holes 23 is provided with a bulge 25 extended to a lower bottom edge; the distances L1 from the bulges 25 to the lower bottom edges of the grooved holes 23 are 0.45mm and may be adjusted to 0.3-0.5mm as required. That is, the maximum shrinkage length of the spiral 2 may be controlled within 0.3-0.5mm.

[0027] Each of the grooved holes 23 in the embodiment is of the isosceles trapezoid, and also may be an isosceles triangle, a prism and the like. When it is the isosceles triangle, the grooved hole is overhigh, so the isosceles trapezoid is adopted. If the prism is adopted, all elastic deformation strips 24 are inclined toward a same direction.

[0028] As shown in Fig. 6 and Fig. 7, two limiting steps 42, 44 are provided on the outer wall of the inner-body 4, and are respectively matched with upper and lower end surfaces of the spiral 2. An annular groove 22, which is equivalent to a space between the spiral 2 and the inner-body 4, is further provided inside a bottom portion of the spiral 2. In the space, elastic pieces 43 abutting against the spiral 2 are provided on the outer wall of the inner-body 4. In use, the spiral 2 is rotated relative to the inner-body 2, the elastic pieces 43 rub an inner wall of the spiral and a friction force is a resistance force for rotation of a lipstick tube, such that a "dignified" hand feeling is provided. It may be possible to adjust the corresponding hand feeling by adjusting the number and the area of the elastic pieces 4 till an expected effect is achieved. The elastic telescopic portion 20 is provided at a position where the annular groove 22 locates, and the space herein provides a space for the deformation of the elastic deformation strips.

[0029] As shown in Fig. 11, before assembly, a distance L1 between each of the bulges 25 and the lower bottom edge of the grooved hole 23 corresponding to the bulge is 0.45mm, and a height of the spiral 2 is greater than a space between the limiting step 42 and the limiting

step 44 on the inner-body 4. After assembly, a distance L2 between the bulge 25 and the lower bottom edge of the grooved hole 23 is 0.3mm; that is, the elastic telescopic portion 20 is shrunk axially with 0.15mm. Due to the resilience force of the elastic deformation strips 24, the two end surfaces of the spiral 2 abut against the limiting step 42 and the limiting step 44. Because there is no any small space therebetween, the spiral 2 is not moved during use.

[0030] The elastic deformation strips 24 of the invention are obliquely provided. Mechanism shrapnels disclosed in CN204292453U are horizontally provided. On a premise of a same shrinkage length, the deformation amount of the elastic pieces obliquely provided is smaller than that of the elastic pieces horizontally provided, and therefore relatively speaking, the irreversible deformation is not easily occurred. In addition, the elastic pieces are provided on the spiral, so the mould opening and the manufacturing are relatively easy and the cost is low.

Claims

1. A mechanism, comprising an inner-body and a spiral, limiting steps for limiting an axial movement of the spiral are provided on an outer wall of the inner-body, wherein the spiral is provided with an annular elastic telescopic portion; the elastic telescopic portion is provided with a plurality of grooved holes provided along a circumferential direction of the elastic telescopic portion, thereby forming an oblique elastic deformation strip between adjacent grooved holes.
2. The mechanism as claimed in claim 1, wherein after an assembly is finished, a telescopic length of the elastic telescopic portion is 0.1-0.2mm.
3. The mechanism as claimed in claim 1, wherein an oblique angle of the elastic deformation strip is 10-15°.
4. The mechanism as claimed in claim 1, wherein there are four grooved holes and correspondingly four elastic deformation strips.
5. The mechanism as claimed in claim 1, wherein each of the plurality of grooved holes is of an isosceles trapezoid, an isosceles triangle or a prism.
6. The mechanism as claimed in claim 5, wherein each of the grooved holes is of the isosceles trapezoid; two bottom edges of the isosceles trapezoid are perpendicular to an axial line of the spiral; adjacent two elastic deformation strips are symmetrically provided.
7. The mechanism as claimed in claim 6, wherein an upper bottom edge of each of the grooved holes is

provided with a bulge extended to a lower bottom edge

8. The mechanism as claimed in claim 7, wherein a distance between the bulge and the lower bottom edge of the grooved hole corresponding to the bulge is 0.3-0.5mm. 5
9. The mechanism as claimed in claim 1, wherein an annular groove is provided inside a bottom end of the spiral; an elastic piece abutting against a bottom surface of the annular groove is provided on the outer wall of the inner-body. 10
10. The mechanism as claimed in claim 9, wherein the elastic telescopic portion is provided at a position where the annular groove locates. 15

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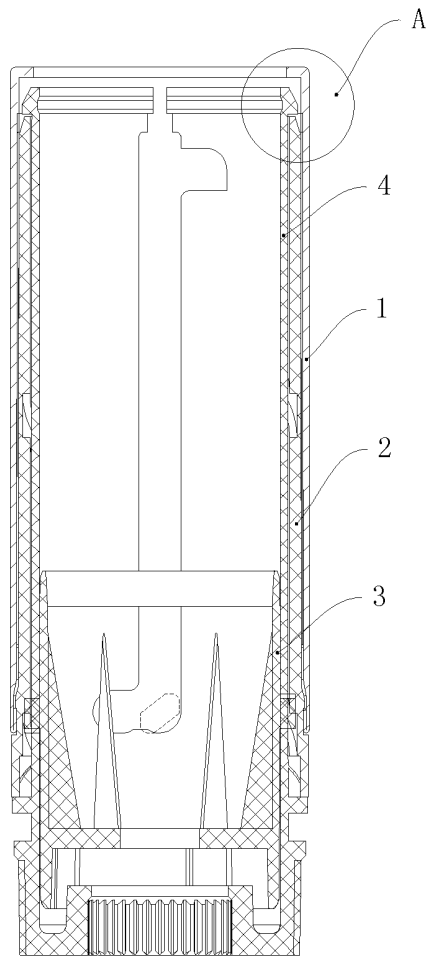


Fig. 1

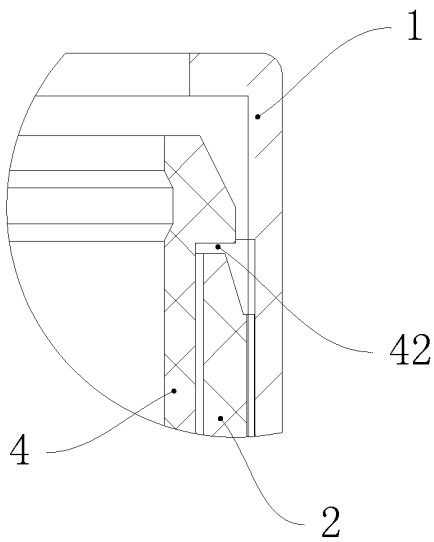


Fig. 2

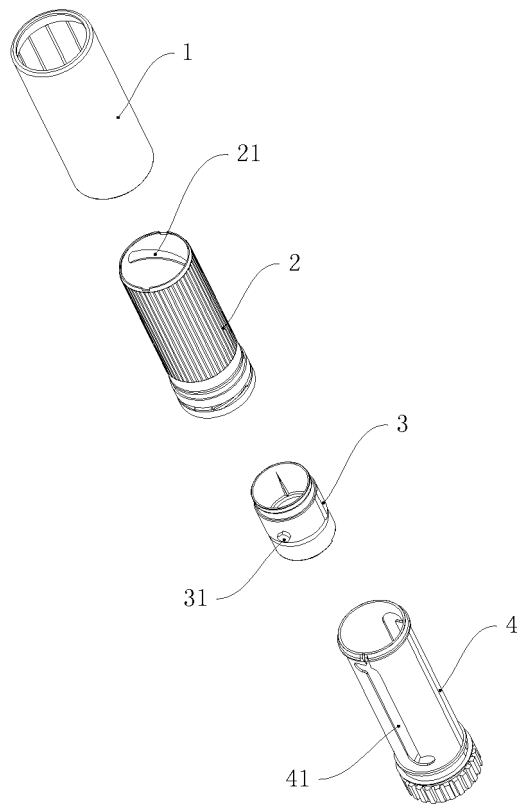


Fig. 3

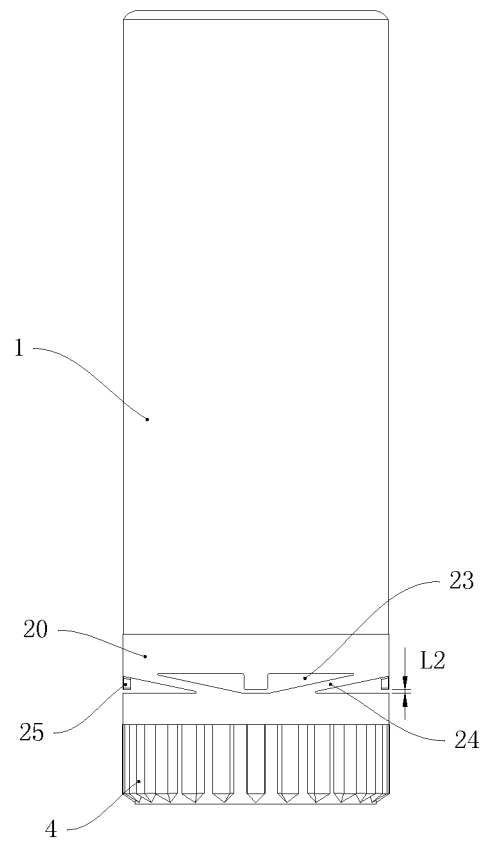


Fig. 4

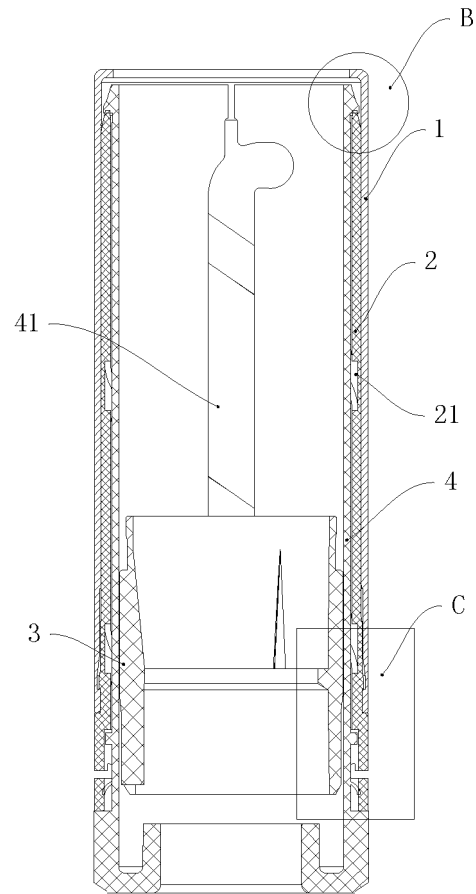


Fig. 5

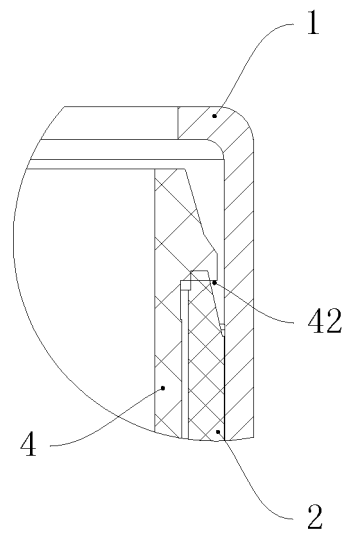


Fig. 6

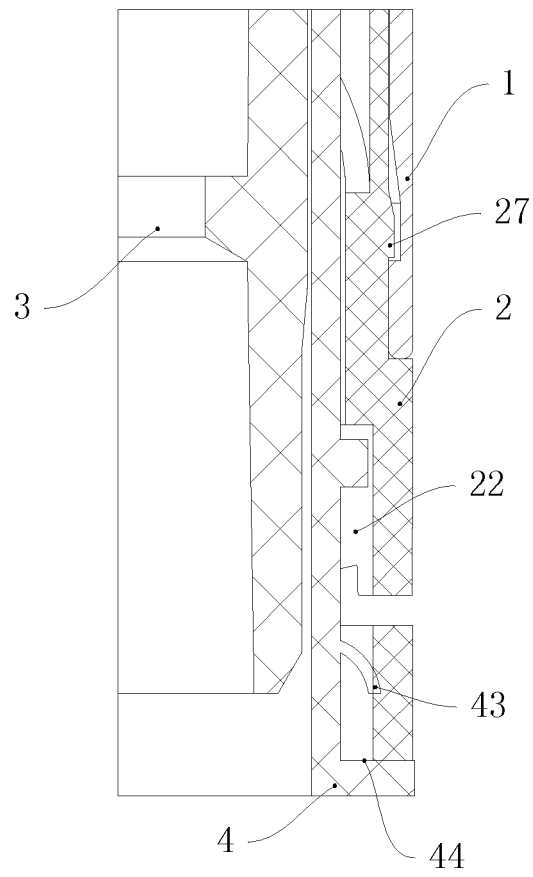


Fig. 7

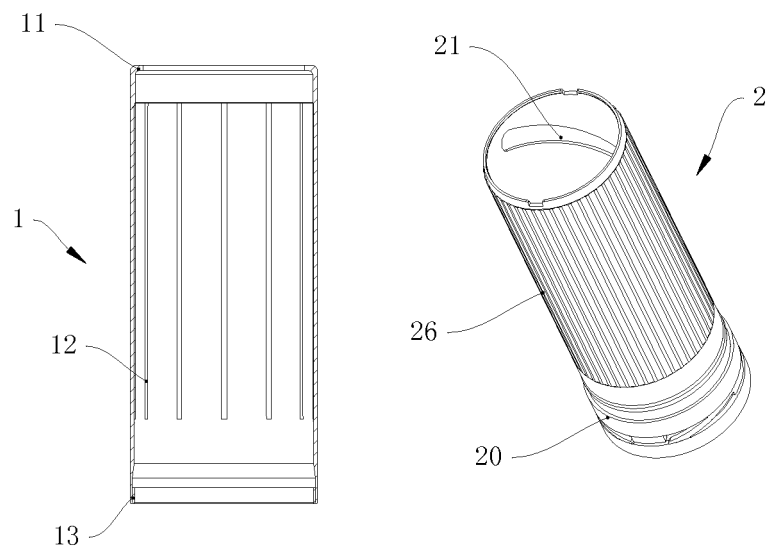


Fig. 8

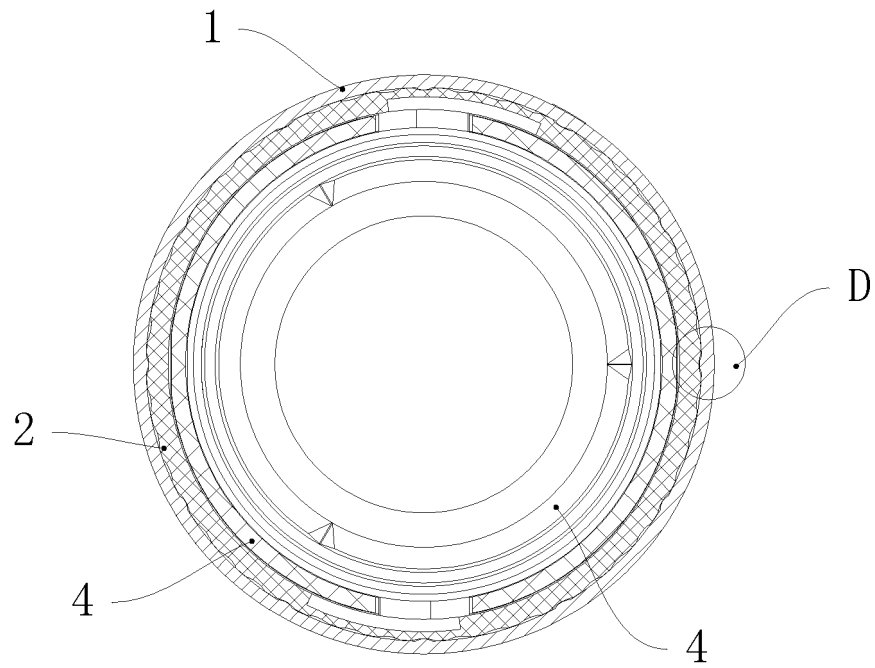


Fig. 9

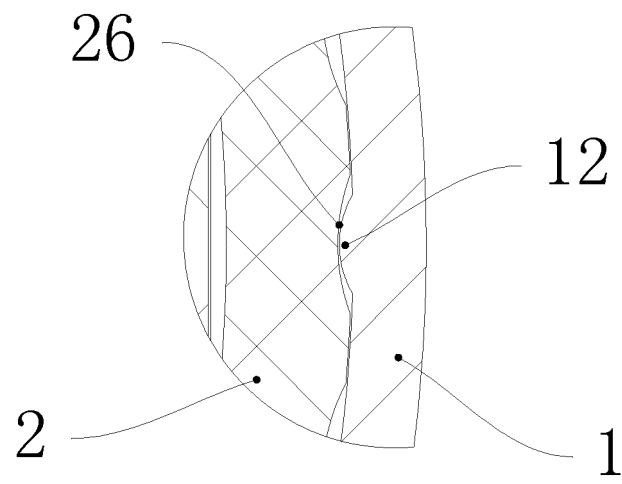


Fig. 10

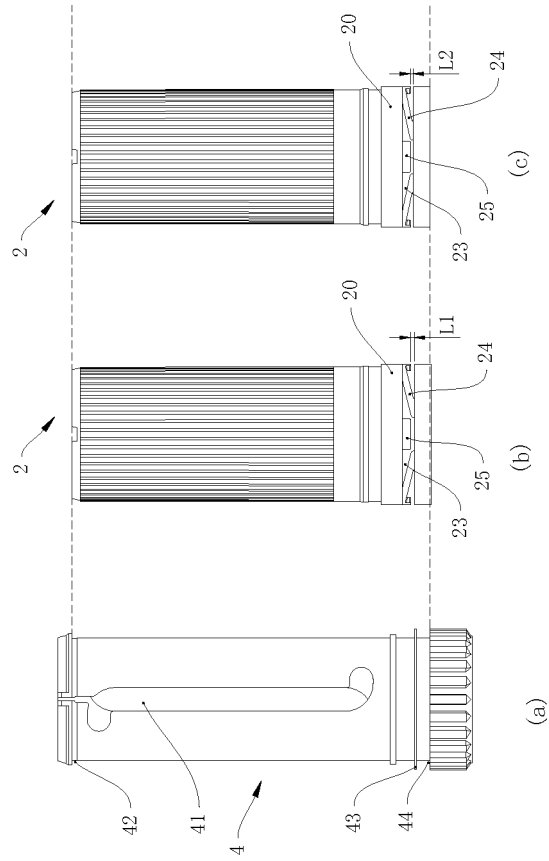


Fig. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2017/113353

A. CLASSIFICATION OF SUBJECT MATTER

A45D 40/00 (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)

A45D 40/-

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)

DWPI, SIPOABS, CNABS, CNTXT, CNKI, ISI: 口红, 唇膏, 化妆品, 中束芯, 螺旋, 斜, 弹性, 伸缩, helix, spiral, crew, annular, ring, spring, elastic, groove, hole, slot, pore, incline, lean, deformation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 107232735 A (ZHEJIANG AXILONE SHUNHUA ALUMINUM & PLASTIC CO., LTD.), 10 October 2017 (10.10.2017), claims 1-10, and figures 1-11	1-10
E	CN 206880329 U (ZHEJIANG AXILONE SHUNHUA ALUMINUM & PLASTIC CO., LTD.), 16 January 2018 (16.01.2018), claims 1-10, and figures 1-11	1-10
A	CN 204292453 U (ZHEJIANG AXILONE SHUNHUA ALUMINUM & PLASTIC CO., LTD.), 29 April 2015 (29.04.2015), claims 1 and 7, and figures 1-4	1-10
A	CN 202653454 U (SHANGHAI YINGJIANG PLASTIC MOULD CO., LTD.), 09 January 2013 (09.01.2013), entire document	1-10
A	CN 103211378 (SHYAH SIN PACKAGING (CHINA) CO., LTD.), 24 July 2013 (24.07.2013), entire document	1-10
A	JP H1189633 A (KEY TRADING LTD.), 06 April 1999 (06.04.1999), entire document	1-10

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

* Special categories of cited documents:	"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
"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	"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
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 13 February 2018	Date of mailing of the international search report 27 February 2018
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer PENG, Meixiang Telephone No. (86-10) 010-53962933

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2017/113353

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 107232735 A	10 October 2017	None	
CN 206880329 U	16 January 2018	None	
CN 204292453 U	29 April 2015	None	
CN 202653454 U	09 January 2013	None	
CN 103211378	24 July 2013	None	
JP H1189633 A	06 April 1999	JP 3911329 B2	09 May 2007

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201767295 U [0003]
- CN 204292453 U [0004] [0030]