



(51) International Patent Classification:

B65D 55/02 (2006.01) *A45D 40/00* (2006.01)
A45D 33/00 (2006.01) *A45D 40/24* (2006.01)
A45D 33/22 (2006.01) *A45D 33/24* (2006.01)

(21) International Application Number:

PCT/EP2017/069149

(22) International Filing Date:

28 July 2017 (28.07.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1657833 19 August 2016 (19.08.2016) FR

(71) Applicant: L'OREAL [FR/FR]; 14, rue Royale, 75008 PARIS (FR).

(72) Inventors: DRUGEON, Lionel; 9 Rue Pierre Dreyfus, 92110 Clichy (FR). DELBOVE, William; 9 Rue Pierre Dreyfus, 92110 Clichy (FR). LEBRAND, Jean-Marc; 9 Rue Pierre Dreyfus, 92110 Clichy (FR). LE CUDONNEC, Eric.

(74) Agent: BOURDEAU, Françoise; L'OREAL-Service DIPI, 9, Rue Pierre Dreyfus, 92110 Clichy (FR).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(54) Title: CAP INTENDED TO EQUIP A COSMETIC PRODUCT REFILL

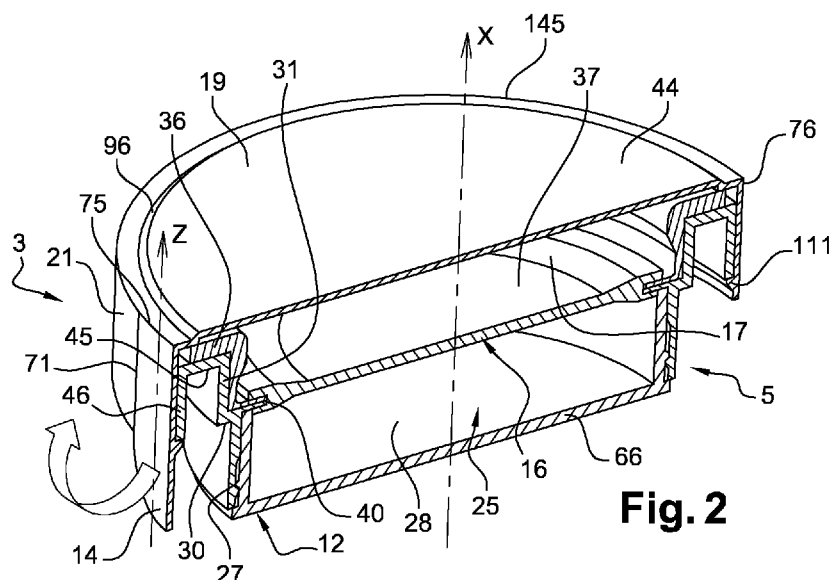


Fig. 2

(57) Abstract: The invention relates to a cap (3) of axis X that is intended to be fitted on a cosmetic product refill (5), the cap (3) comprising a hollow body (44) and at least one gripping tab (14) of axis Z that is connected to the hollow body (44) by at least one breakable region (96), the cap (3) being provided on the inside with at least one retaining relief (111, 80, 81, 82) that is able to engage in a complementary retaining relief (46) of the refill (5).



Published:

— *with international search report (Art. 21(3))*

Cap intended to equip a cosmetic product refill

The invention relates in general to refillable devices for packaging cosmetic product.

5 Such refillable devices can be makeup cases, for example for making up surfaces of the face such as the eyebrows, the cheekbones or the lips.

The makeup product is notably a foundation, blusher, eyeshadow, lipstick, lip gloss or lip balm.

10 Within the meaning of the present invention, a “*cosmetic product*” is understood to be a cosmetic product intended to be applied to a human being, for example a solid such as a powder, a liquid or a cream. A “*cosmetic product*” is more generally a product as defined in Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products.

15 According to the invention, the cosmetic product can be impregnated in a support, for example in a foam or a sponge.

Devices for packaging cosmetic products that have an outer casing and a cosmetic product refill configured to be received in the outer casing are known. The refill has means for fastening it to the outer casing.

Several types of refills have already been proposed.

20 The patent FR 2 755 837 describes a refill with a lid.

The patent FR 2 786 076 describes a refill having a first wall, radially on the inside, delimiting a chamber for receiving the cosmetic composition, and a second wall, radially on the outside, for applying means for hermetically sealing the contents of the refill.

The patent application EP2308339 describes a refill comprising:

- 25 - a hollow body intended to contain the cosmetic product,
 - means for fastening the hollow body to the outer casing,
 - a frangible region configured to allow at least partial disconnection of said fastening means from the hollow body under the effect of a pull exerted on said fastening means by a user, the frangible region extending discretely or continuously around the
30 perimeter of the hollow body, perpendicularly to the axis of the refill.

However, the known refills do not yet provide completely perfect sealing of the cosmetic product, notably when the refill has a bottom containing the product and a cover

connected to the bottom only by a hinge, like for example the refill described in WO2016/083607.

There is a need to improve cosmetic product refills, notably for makeup and care products, to make them more leaktight.

5 There is also a need to benefit from tamperproof refills, that is to say ones in which the first opening of the refill causes an irreversible change to its appearance such that it is subsequently immediately apparent that the refill has already been opened.

There is also a need to propose refills:

- that are easy for a user to open,
- 10 - that are inexpensive and easy to manufacture,
- that have a small space requirement.

Definition of the invention

15 The subject of the invention is a cap of axis X that is intended to be fitted on a cosmetic product refill, the cap comprising a hollow body and at least one gripping tab of axis Z that is connected to the hollow body by at least one breakable region, the cap being provided on the inside with at least one retaining relief that is able to engage in a complementary retaining relief of the refill, and the axis Z of the gripping tab extends at least partially over a height of a side wall of the cap, and the retaining relief of the cap is designed
20 to disengage at least partially from the complementary retaining relief of the refill under the effect of a pull exerted on the gripping tab upon first use.

A main advantage of the cap according to the invention is that it keeps the refill closed in order to make it leaktight outside a makeup case. This advantage is particularly advantageous for a refill with a hinge and an elastically deformable side wall as described in
25 WO2016/083607.

For such a refill with an elastically deformable wall, the cap according to the invention can be clip-fastened onto the refill and keep the side wall compressed in order to ensure leaktightness.

30 The cap according to the invention has the particular feature of keeping the plate “joined” in order to ensure leaktightness during storage and transport. The cap is disposable after opening.

The cap is easy to manufacture, with a thin breakable region for allowing separation from the refill.

On account of the particular position of the axis Z of the tab, the latter is easy for the user to remove while ensuring proper leaktightness.

5 The invention also relates to a leaktight cosmetic refill comprising a cap as described above that is fitted on a cosmetic product refill.

 If the tab has not been removed, the user can be sure that the refill has not been used and that it still contains all of the product as packaged by the manufacturer. By contrast, the breaking or tearing of the tab means that the cap may have been separated from the refill
10 and that it may have been used before.

 The leaktight refill according to the invention is tamperproof.

 The invention also relates to a cosmetic method comprising the steps of:

- providing a leaktight cosmetic refill as defined above,
- taking hold of the gripping tab between two fingers,
- 15 - exerting a pull on the gripping tab,
- optionally taking hold of the cap with one hand and the refill with the other hand in order to move them apart from one another in order to separate them and to gain access to the cosmetic product.

20 Main definitions

 The “axis A” means the longitudinal axis A.

 A “cross section of a part of axis A” is a section perpendicular to the axis A of the part.

 The expression “longitudinal axis of the gripping tab” denotes the line
25 connecting all of the centres of mass of the cross sections of the tab.

 “The axis Z of the gripping tab extends at least partially over a height of a side wall of the cap” means that the axis Z of the tab extends over at least a portion of the side wall in a manner parallel or at an angle to the axis X of the cap.

 The term “tab” should be understood broadly and includes lugs, strips, tongues
30 or lamellae.

 “The retaining relief of the cap disengages at least partially from the complementary retaining relief of the refill” means that the retaining reliefs of the cap and

of the refill can be moved apart, disconnected, deformed, folded or bent at least partially. Thus, the user can completely disconnect the cap and the refill and gain access to the product.

Preferred embodiments

- 5 Preferably, the device according to the invention has one or more of the following features, on their own or in combination:
- The axis Z of the gripping tab extends over the entire height of the side wall of the cap. The tab is also easier to take hold of.
 - The axis Z of the gripping tab extends at least partially over a top wall of the cap.
 - 10 The opening of the cap opens up the refill better.
 - The breakable region is a region of reduced thickness comprising a line of reduced thickness and/or a plurality of bridges of material that are separated from one another by through-openings or by regions of reduced thickness. It is easy to manufacture.
 - The gripping tab is separated from the body of the cap by at least one slot. This design
 - 15 limits the force that the user needs to apply.
 - The hollow body, the gripping tab and the breakable region are produced in one piece with one another. The production costs are lowered.
 - The axis Z of the gripping tab is situated in a median plane of the cap. The cap opens in two symmetrical portions that are visually appealing.
 - 20 - The refill comprises a base that defines a storage compartment on the inside and a plate that is mounted in a rotatable manner on the base about an axis Y of a hinge, said plate being movable between a closed configuration, in which it closes off the storage compartment, and an open configuration in which the storage compartment is accessible. The product is protected by the plate and by the cap which keeps the refill in the closed
 - 25 position.
 - A housing is made in the plate and is intended to receive a second cosmetic article, said housing comprising a bottom and a side wall, said side wall being able to deform elastically. Leaktightness is improved by the elastic wall serving as a seal.

30 Description of the figures

Further features and advantages of the invention will become apparent from the detailed description thereof that is given below, by way of non-limiting indication, with reference to the appended schematic and partial figures, in which:

- 5 - Figure 1 is an exploded perspective view of the packaging device of the invention, comprising a first refill and a first cap,
- Figure 2 is an axial section through the device in Figure 1, shown in perspective,
- Figure 3 is a perspective view of a second refill without a cap,
- Figure 4 is a perspective view of a second cap,
- 10 - Figure 5 is a bottom view of the cap in Figure 4,
- Figure 6 shows a detail of a breakable region in Figure 5,
- Figure 7 is a top view of the cap in Figure 4,
- Figure 8 is a side view of the outside of the cap in Figure 4,
- Figure 9 is a cross section on AA in Figure 8,
- 15 - Figure 10 is a side view of the inside of the cap in Figure 4,
- Figure 11 is a cross section on BB in Figure 10,
- Figure 12 is a bottom view of the cap in Figure 4,
- Figure 13 is a perspective view of a third cap,
- Figure 14 is a top view of the cap in Figure 13,
- 20 - Figure 15 is a front view of the cap in Figure 13,
- Figure 16 is a cross-sectional view on AA in Figure 14,
- Figure 17 is a cross-sectional view on BB in Figure 14,
- Figure 18 is a cross-sectional view on CC in Figure 14.

The device shown in Figures 1 and 2 has a cap 3 fitted on a refill 5.

25 The cap can be made of plastics material, for example HDPE or ABS.

The cap 3 shown in Figures 1 and 2 comprises a hollow body 44 and a gripping tab 14 of axis Z. It defines an internal volume 17 delimited by a flat top wall 19 and by a cylindrical side wall 21 of axis X.

30 The axis Z of the gripping tab 14 extends parallel to the axis X of the cap over the entire height of the side wall 19.

The gripping tab 14 is delimited axially by two longitudinal slots 71 and 72. It is connected to the hollow body 44 by a region of reduced thickness 96 situated at the peripheral edge 145 of the top wall 19.

5 The gripping tab 14 and the region of reduced thickness 96 are produced in one piece with the body 44 of the cap 3.

On the inside, the side wall 21 has a snap-fitting bead 111 that extends in a plane perpendicular to the axis X and is able to come into engagement with a complementary relief of the refill 5.

10 The external face of the top wall 19 has a peripheral shoulder 75 that connects the top wall 19 to the side wall 21 and forms a peripheral stop on the internal face of the top wall 19. This stop is designed to bear against the complementary relief of the refill 5 in order to limit its axial movement.

The refill 5 is made up of a base 12 and a plate 16 that is rotatable with respect to the base 12 about the axis Y of a hinge.

15 The base 12 delimits a central cavity 25 defined by a flat bottom 26 and by a cylindrical lower side wall 27 and a cylindrical upper side wall 31 that are connected together by a shoulder 30. The central cavity 25 defines a compartment 28 that is intended to receive a first cosmetic product. The upper cylindrical wall 31 is extended radially outwards from its upper end by a collar 45 that is extended downwards by an annular rim 46 of axis X.

20 The plate 16 has a central housing 37 that opens onto a flat part 36 and is intended to receive a second cosmetic article. The central housing 37 has a flat bottom 38 connected to the flat part 36 by an elastically deformable side wall 40.

The side wall 40 is preferably formed from an elastically deformable material, for example a thermoplastic elastomer such as SEBS, or a nitrile rubber (NBR), or a silicone.
25 It is overmoulded, for example, on the bottom 38 and then joined to the flat part 36.

Outside the side wall 40, the base and the refill can be made of thermoplastic materials, notably produced from ABS or PET/PETG.

The side wall 40 is able to deform elastically, increasing its diameter under the effect of the flat part 36 and the collar 45 being moved together, so as to come into contact
30 with the side wall 31 of the base 12. Therefore, it acts as a seal in the closed position of the plate 16 on the base 12.

However, because the refill 5 does not have a clasp, the plate 16 tends to lift with respect to the base 12 on the opposite side from the hinge. This is because the elastically deformable side wall 40 relaxes axially and exerts a pressure on the flat part 36, which moves the plate 16 at least locally away from the base 12.

5 A major advantage of the cap 3 is that it keeps the refill 5 in the closed position by realizing contact between the flat part 36 and the collar 45 around the entire perimeter of the refill 5.

 In order to fit the cap 3 on the refill 5, the cap 3 is snap-fitted along the axis X in the direction of the refill, as indicated in Figure 1. While the cap 3 is being fitted, the snap-
10 fitting bead 111 is compressed against the annular rim 46. Once the rim 46 has been passed, the snap-fitting bead 111, by virtue of its elasticity, returns to its initial configuration as shown in Figure 2, and locks the cap irreversibly on the refill.

 In order to remove the cap 3, the user pulls on the free end of the gripping tab 14, as indicated in Figure 2. When the pulling force exerted by the user exceeds the tear
15 strength of the region of reduced thickness 96, the tab 14 breaks. The user can then exert a manual pulling force along the axis X on the side wall 21 of the cap 3 in a direction away from the refill 5 in order to completely disengage the annular rim 46 from the snap-fitting bead 111.

 By way of illustration, a second example of a refill is shown in Figure 13. Said
20 figure shows the hinge 122 connecting the plate 16 to the base 12.

 Figures 4 to 12 show a second example of a cap according to the invention.

 The cap 3 comprises a top wall 19 connected to a cylindrical side wall 21. Three gripping tabs 14, 141, 142 of axes Z, Z' and Z'' parallel to the axis X of the cap 3 are distributed regularly around the axis X.

25 The diameter of the cap 3 is advantageously between 2 cm and 5 cm, and more advantageously between 3 cm and 4 cm.

 The height of the side wall 21 is advantageously between 1 cm and 3.5 cm, and more advantageously between 1.5 cm and 2 cm.

 Each gripping tab 14, 141, 142 is preferably contained in a sector of angular
30 extent of between 30° and 60°, and more preferably around 45° about the axis X.

 Each gripping tab 14, 141, 142 comprises, for example half-way up its internal face, a clip-fastening tooth 80, 81 and 82 perpendicular to the axis Z, Z' and Z'', respectively.

Each tooth is engaged in a complementary relief of a refill 5 before the latter is used for the first time.

Each gripping tab 14, 141, 142 is respectively delimited by:

- two lateral slots 90, 91, 92, 93, 94, 95 parallel to the axis of the gripping tab and preferably contained in a sector of angular extent of between 2° and 5° , and more preferably around 3° about the axis X.
- a region of reduced thickness 96, 97, 98 situated at the junction between each gripping tab and the top wall 19.

Each region of reduced thickness may comprise two thin regions 961, 962 and a thicker region 963, as shown in Figure 6.

In order to remove the cap 3 from a refill 5, the user lifts the gripping tabs 14, 141, 142 in the direction of the arrow in order to start to disengage the clip-fastening teeth from the complementary reliefs of the refill 5. He then moves the refill 5 away from the cap 3 in order to completely release the clip-fastening teeth and gain access to the refill 5.

Figures 13 to 18 show a third example of a cap 3 according to the invention. In this example, the cross section of the cap 3 is a square with a width of 7 cm. The cap 3 has a single gripping tab 14, the axis Z of which is situated in a median plane of the cap 3. The axis Z extends over the entire height of the side wall 21 and continues over the entire width of the top wall 19.

The gripping tab 14 is delimited axially by two lines of reduced thickness 960 and 961 that are parallel to the axis Z, and is provided on the inside with a snap-fitting tooth 85 situated at the front of the tab.

Advantageously, the width of the gripping tab 14 is between 0.5 cm and 2.5 cm, and preferably between 1 cm and 1.5 cm.

The side wall 21 is provided on the inside with:

- two snap-fitting teeth 81 and 82 formed half-way up the side face 210,
- two snap-fitting teeth 83 and 84 formed half-way up the side face 212, on the opposite side from the side face 210,
- one snap-fitting tooth 80 formed half-way up the bottom side face 211, said snap-fitting tooth 80 being thicker than the snap-fitting teeth 81, 82, 83 and 84.

The position, the structure and the thickness of the snap-fitting teeth are adapted to the configuration of the refill 5 on which the cap 3 is snap-fitted.

In order to remove the cap 3 from a refill 5, the user lifts the gripping tab 14 in the direction of the arrow indicated in Figure 13. He tears the two lines of reduced thickness 960 and 961, preferably along their entire extent. He releases the snap-fitting tooth 85 first. The cap 3 remains on the refill 5, kept partially in axial position by the engagement of the
5 other snap-fitting teeth and their complementary reliefs. In order to gain access to the refill 5, the user can pull the cap 3 and the refill 5 in opposite directions and then make the snap-fitting teeth of the cap 3 cross the reliefs of the refill 5, before being able to completely remove the cap 3 from the refill 5.

CLAIMS

1. Cap (3) of axis X that is intended to be fitted on a cosmetic product refill (5), the cap (3) comprising a hollow body (44) and at least one gripping tab (14) of axis Z that is
5 connected to the hollow body (44) by at least one breakable region (96), the cap (3) being provided on the inside with at least one retaining relief (111, 80, 81, 82) that is able to engage in a complementary retaining relief (46) of the refill (5), characterized in that the axis Z of the gripping tab (14) extends at least partially over a height of a side wall (21) of the cap (3) and the retaining relief (111, 80, 81, 82) of the cap (3) is designed to disengage at least
10 partially from the complementary retaining relief (46) of the refill (5) under the effect of a pull exerted on the gripping tab (14) upon first use.

2. Cap (3) according to Claim 1, characterized in that the axis Z of the gripping tab (14) extends over the entire height of the side wall (21) of the cap (3).

3. Cap (3) according to either one of the preceding claims, characterized in that the axis Z of the gripping tab (14) extends at least partially over a top wall (19) of the cap (3).

4. Cap (3) according to any one of the preceding claims, characterized in that the breakable region (96) is a region of reduced thickness comprising a line of reduced thickness and/or a plurality of bridges of material that are separated from one another by through-openings or by regions of reduced thickness.

5. Cap (3) according to any one of the preceding claims, characterized in that the gripping tab (14) is separated from the body of the cap (3) by at least one slot (71, 72).

6. Cap (3) according to any one of the preceding claims, characterized in that the hollow body (44), the gripping tab (14) and the breakable region (96) are produced in
30 one piece with one another.

7. Cap (3) according to any one of the preceding claims, characterized in that the axis Z of the gripping tab (14) is situated in a median plane of the cap (3).

8. Cap (3) according to any one of the preceding claims, characterized in that the refill (5) comprises a base (12) that defines a storage compartment (28) on the inside and a plate (16) that is mounted in a rotatable manner on the base about an axis Y of a hinge (122), said plate (16) being movable between a closed configuration, in which it closes off the storage compartment (28), and an open configuration in which the storage compartment (28) is accessible.

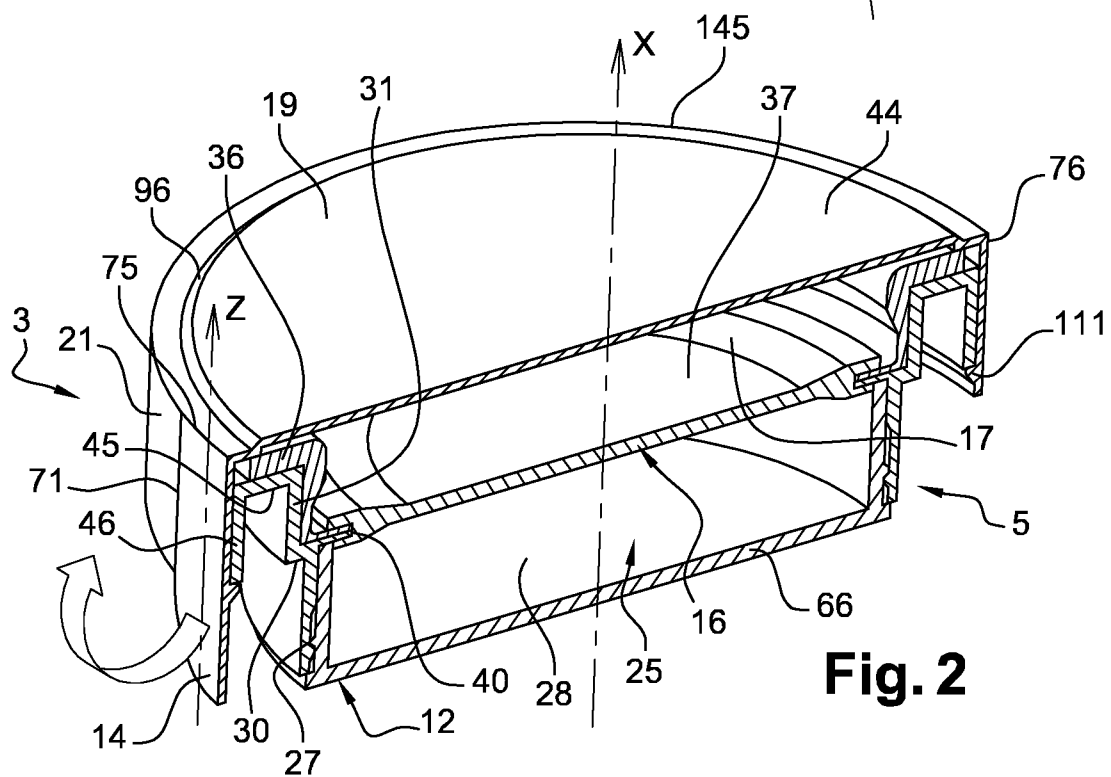
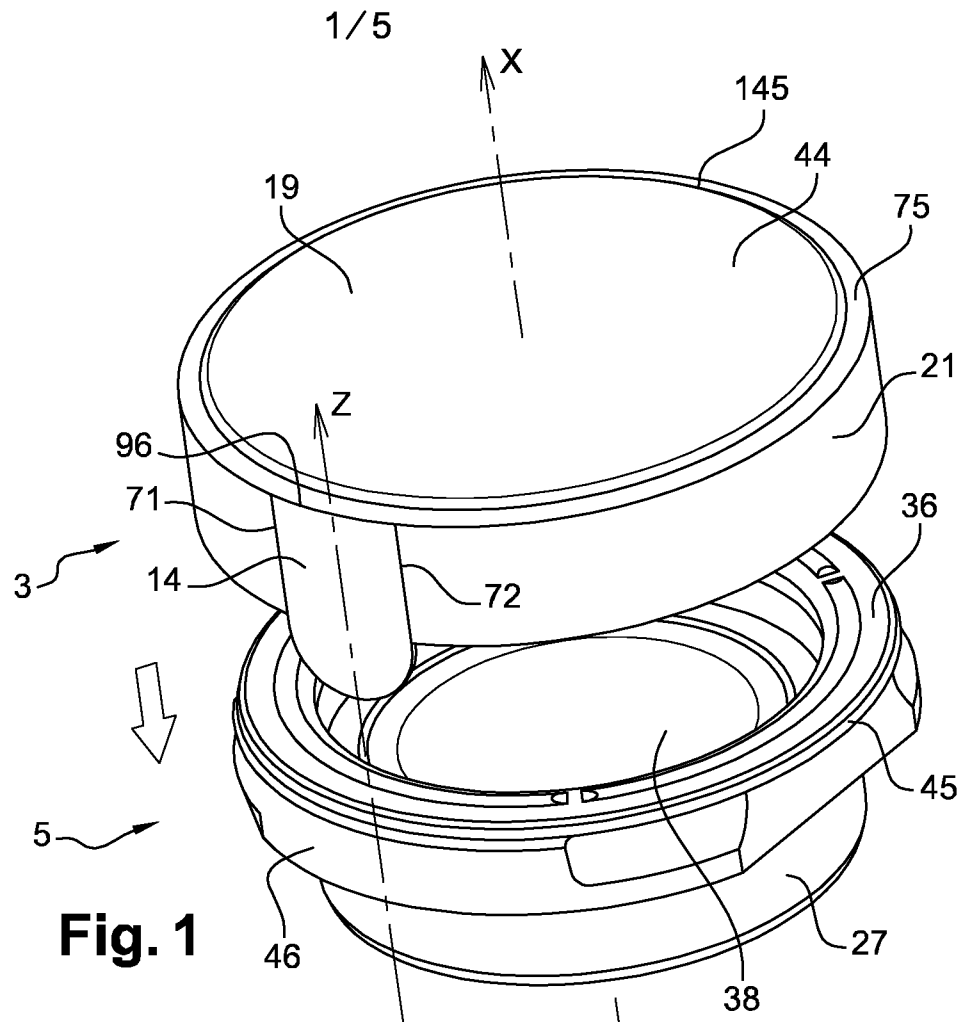
9. Cap (3) according to Claim 8, characterized in that a housing (37) is made in the plate (16) and is intended to receive a second cosmetic article (42), said housing comprising a bottom (38) and a side wall (40), said side wall (40) being able to deform elastically.

10. Leaktight cosmetic refill (5) comprising a cap (3) according to any one of the preceding claims that is fitted on a cosmetic product refill (5).

11. Cosmetic method comprising the steps of:

- (i) providing a leaktight cosmetic refill (5) according to Claim 10,
- (ii) taking hold of the gripping tab (14) between two fingers,
- (iii) exerting a pull on the gripping tab (14),

(iv) optionally taking hold of the cap (3) with one hand and the refill (5) with the other hand in order to move them apart from one another in order to separate them and to gain access to the cosmetic product.



2 / 5

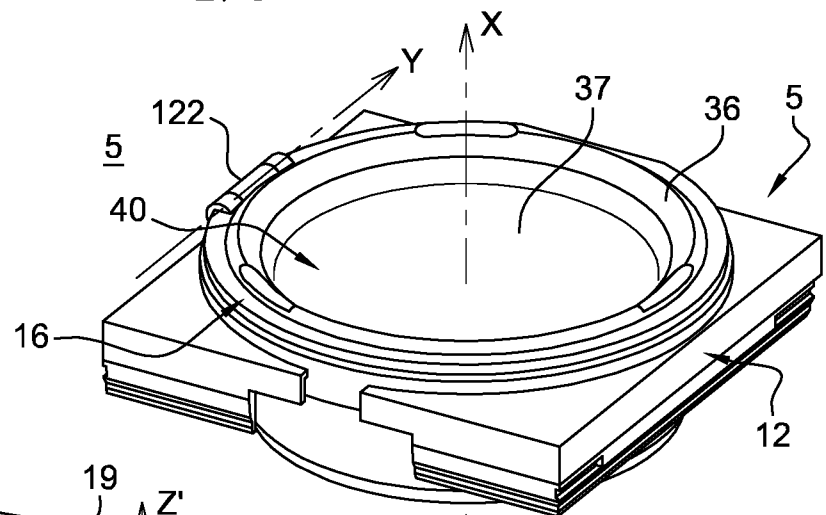


Fig. 3

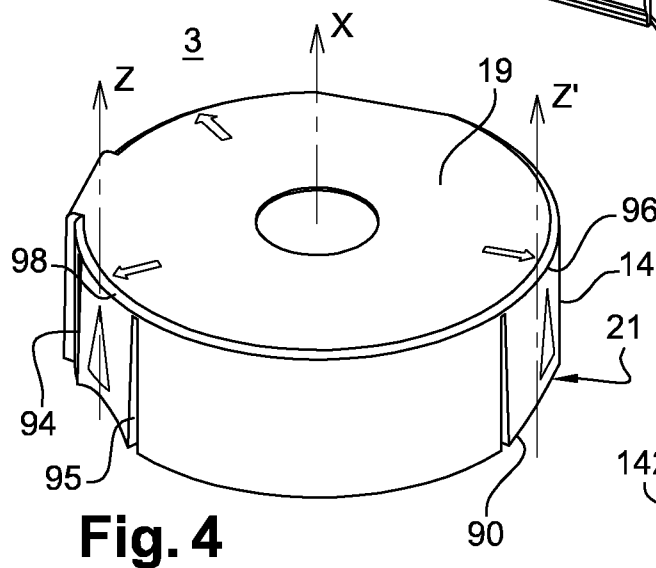


Fig. 4

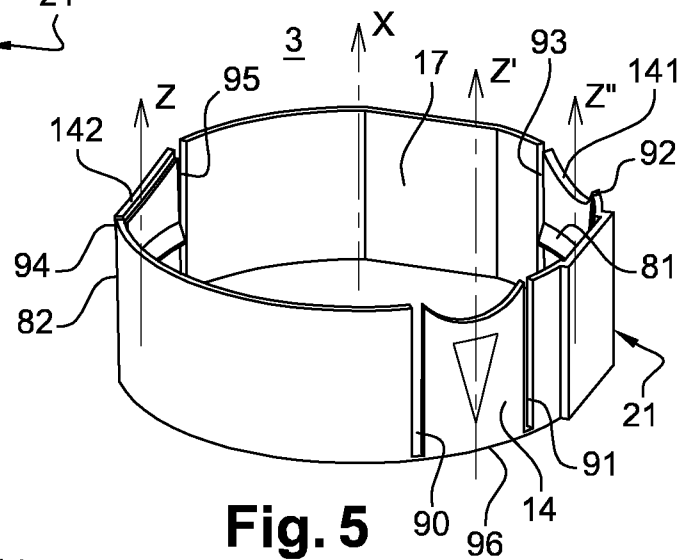


Fig. 5

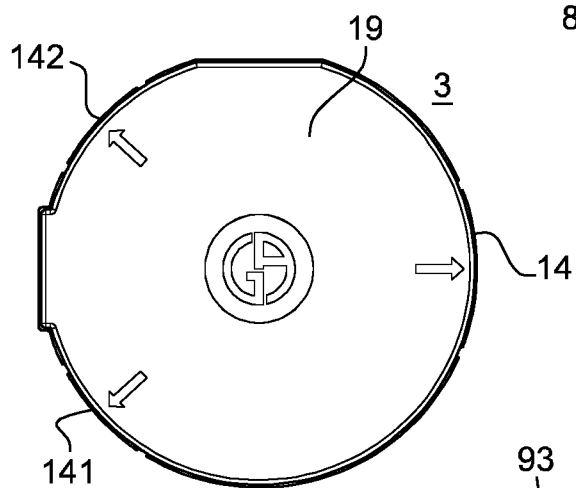


Fig. 7

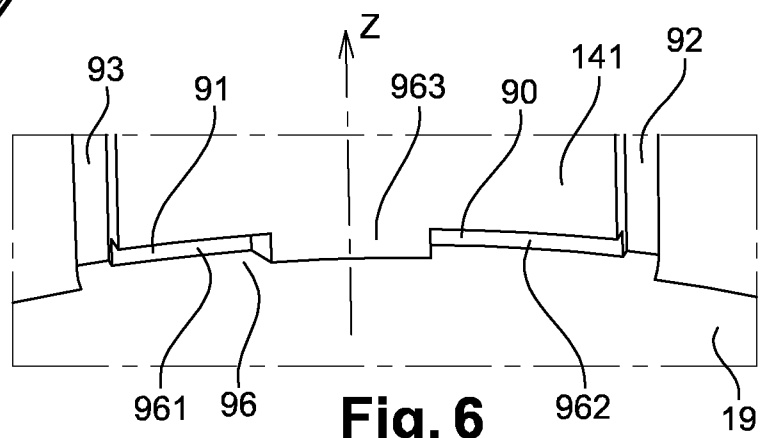


Fig. 6

3 / 5

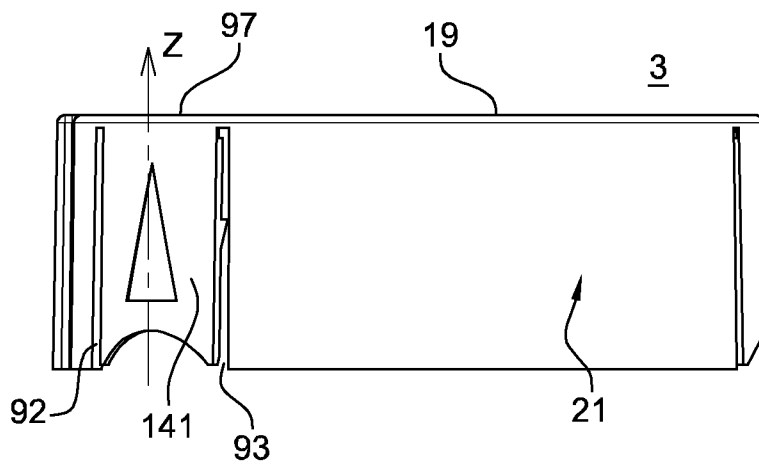


Fig. 8

Fig. 9

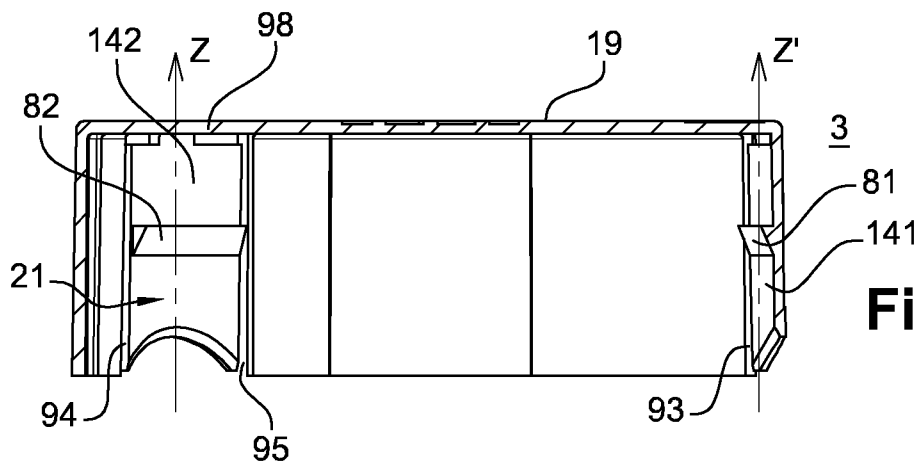
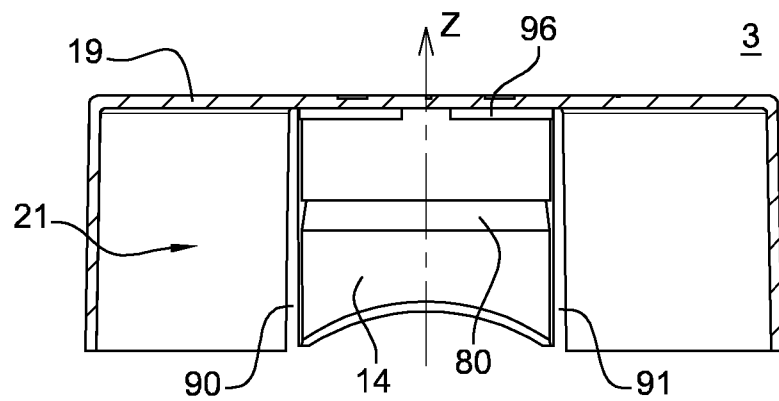
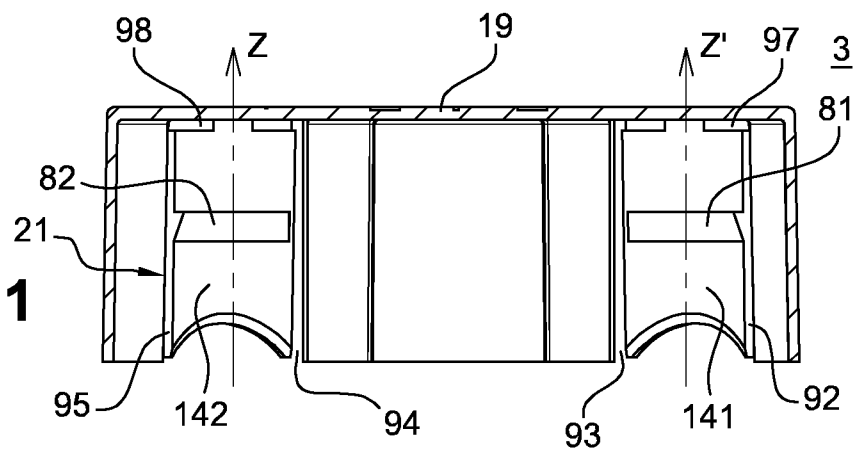
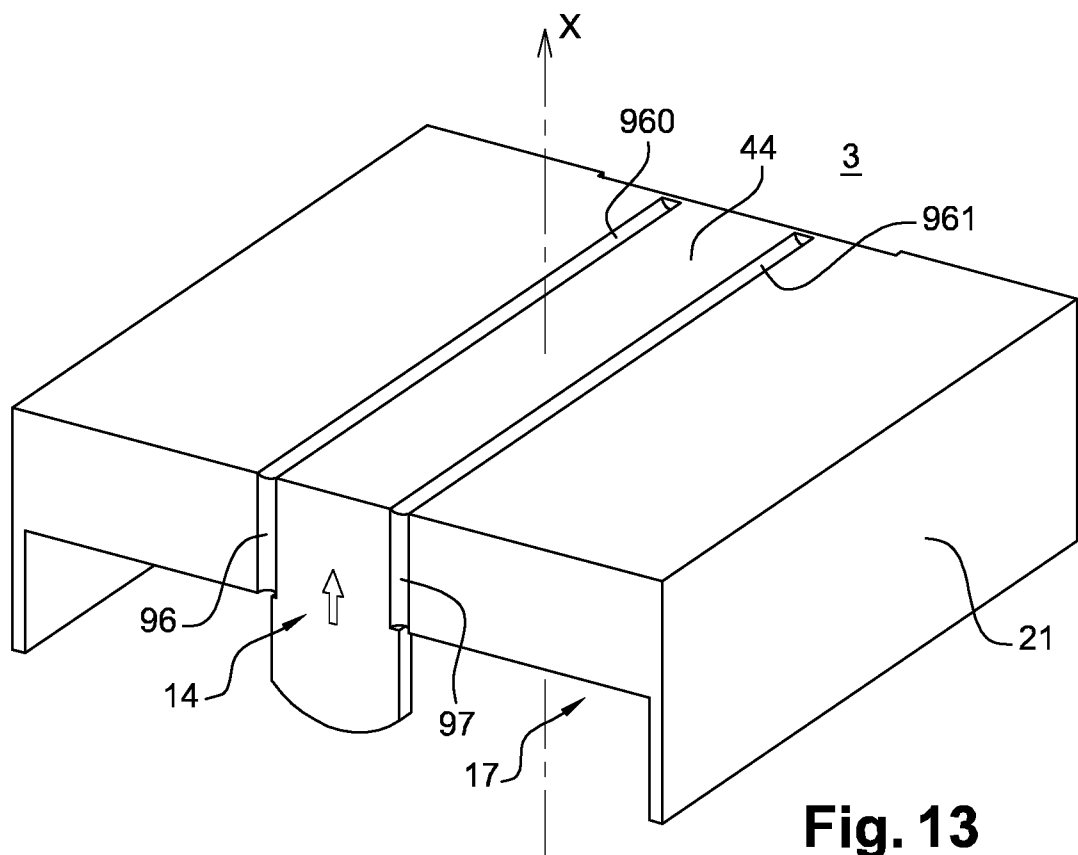
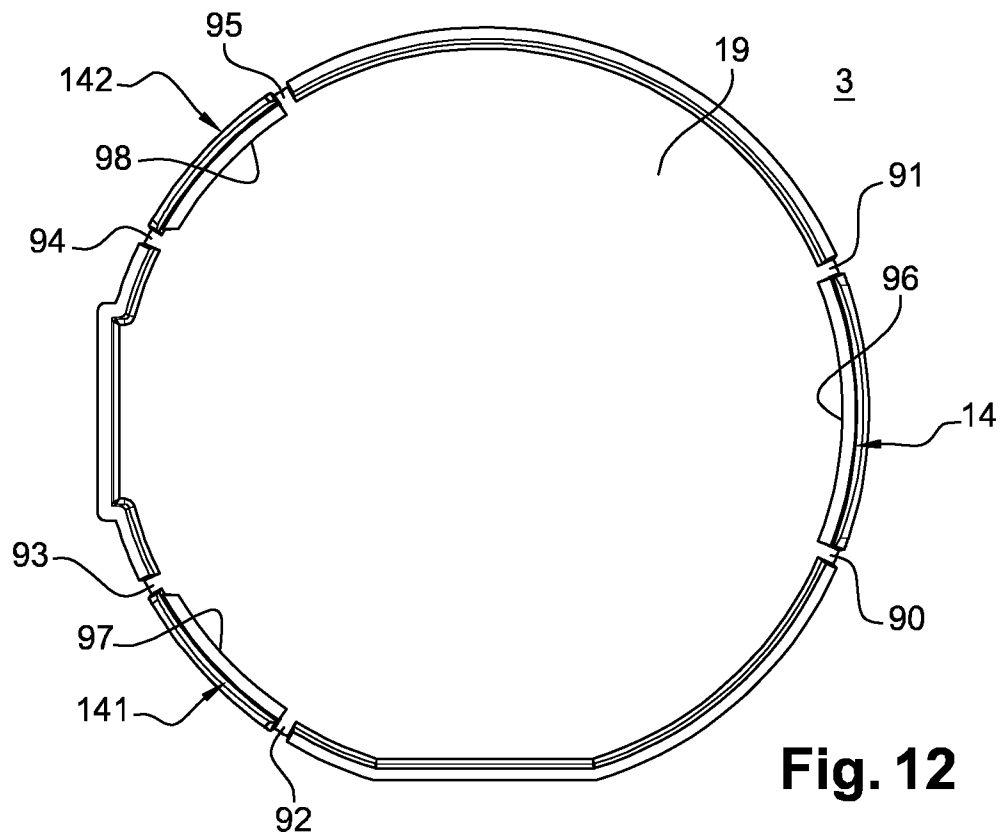


Fig. 10

Fig. 11



4 / 5



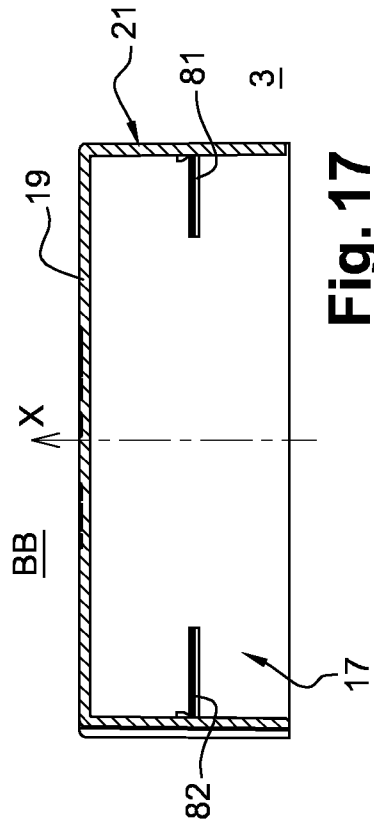


Fig. 17

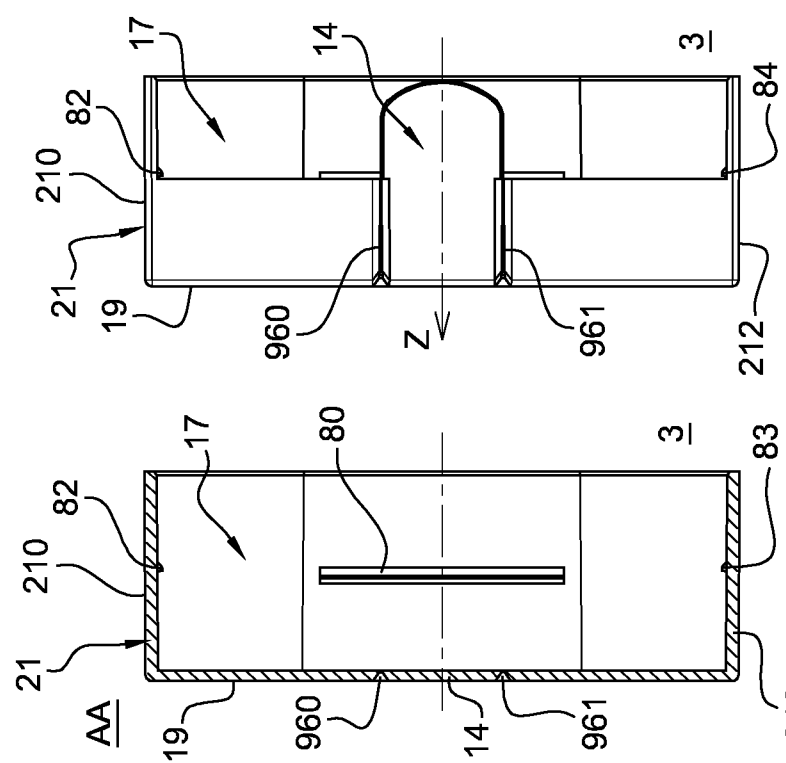


Fig. 16

Fig. 15

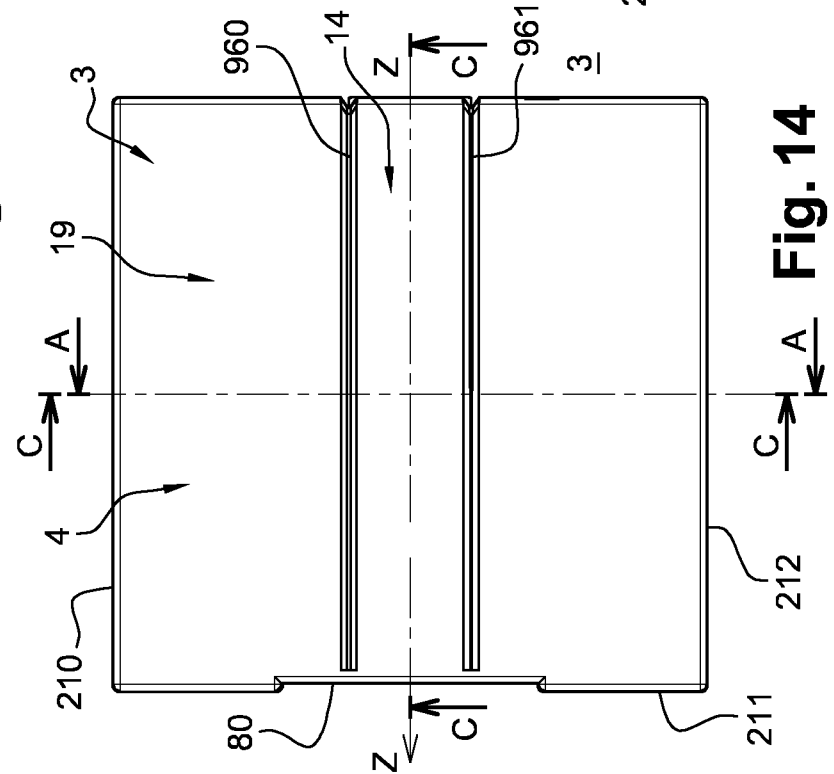


Fig. 14

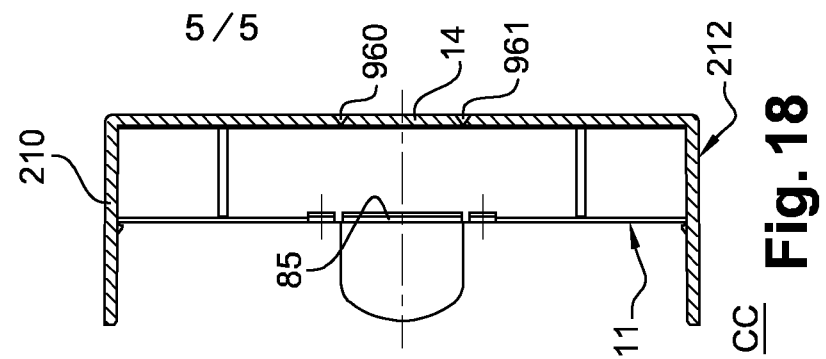


Fig. 18

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/069149

A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D55/02 A45D33/00 A45D33/22 A45D40/00 A45D40/24
A45D33/24

ADD.

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)

B65D A45D

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2012 035901 A (KEY TRANDING CO LTD) 23 February 2012 (2012-02-23)	1-7,10, 11
Y	figures 1,2	8,9

X	WO 2013/191156 A1 (KOSE CORP [JP]) 27 December 2013 (2013-12-27)	1-7,10, 11
	figures 1,8,9	

Y	WO 2015/026092 A1 (AMOREPACIFIC CORP [KR]) 26 February 2015 (2015-02-26)	8,9
	abstract; figure 1	



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

24 October 2017

Date of mailing of the international search report

02/11/2017

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Longo dit Operti, T

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/069149

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2012035901 A	23-02-2012	JP 5616161 B2 JP 2012035901 A	29-10-2014 23-02-2012
WO 2013191156 A1	27-12-2013	CN 104379022 A HK 1207267 A1 JP 6110378 B2 JP WO2013191156 A1 KR 20150032833 A TW 201416023 A WO 2013191156 A1	25-02-2015 29-01-2016 05-04-2017 26-05-2016 30-03-2015 01-05-2014 27-12-2013
WO 2015026092 A1	26-02-2015	CN 205649117 U HK 1218038 A2 KR 200473573 Y1 WO 2015026092 A1	19-10-2016 27-01-2017 11-07-2014 26-02-2015