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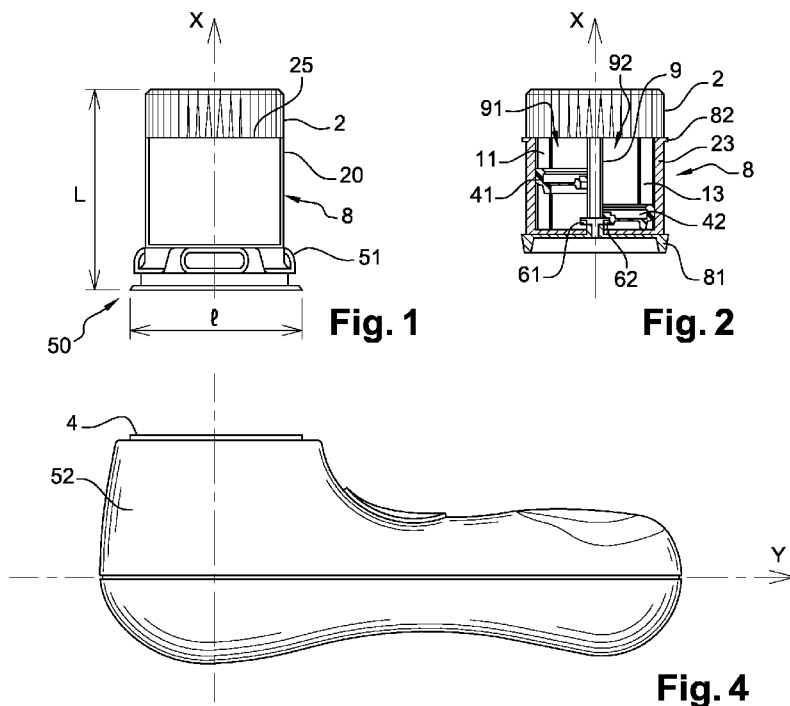
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[Continued on next page]

(54) Title: PISTON END PIECE FOR COSMETIC DEVICE



(57) Abstract: The present invention relates to an end piece for a device for dispensing and applying a cosmetic composition, having: - a reservoir (1) containing the cosmetic composition, - an applicator (2), - a means (3) for the composition to pass between the reservoir (1) and the applicator (2), - a lifting member (4) able to move in the reservoir (1) in response to the applicator (2) being set in motion by the device.

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## Piston end piece for cosmetic device

The subject of the present invention is an end piece for a device for dispensing and applying a cosmetic composition.

5 The application of a cosmetic composition with the aid of an assembly comprising an aerosol container and a device to be mounted on the aerosol container, comprising a rotating massaging member driven by an electric motor, is known from EP 1 728 494.

10 Document FR 2 918 545 also discloses an assembly for dispensing and applying a cosmetic composition, comprising:

- a container containing the composition, the latter comprising at least one cosmetic active agent selected from: a cleansing or makeup removal agent, an anti-aging active agent, an antiwrinkle active agent, an antioxidant, a lipo-restructuring agent, an agent for promoting cutaneous microcirculation, an active agent for combating oily skin, a self-tanner, a desquamation agent, a humectant or moisturizing agent, a surfactant, an active agent for the contour of the eyes, a slimming agent,

- an applicator,

- an application device comprising:

20 - a body configured to receive the container and the applicator,  
- a means for rotating the applicator relative to the body, and  
- a duct for conveying the composition from the container towards an application surface of the applicator.

The rotation can make it possible to carry out at least one of a massaging action, a skin exfoliation action, and a composition spreading action, which can generate new sensations on application and can improve the effect of one or more active agents.

25 However, according to said document, no provision is made to easily change the container containing the composition and to replace it, for example with a container containing a different composition. In addition, said document does not provide the possibility of delivering a quantity of product determined by the user himself.

30 Documents FR2779923, US5186563, US6805512, US D498021 and DE 19963138 describe reservoirs having an end piece which are used manually without being coupled to an electrical appliance for setting this end piece in motion.

Documents US6009886 and FR2659941 describe toothbrushes having a reservoir in the handle and piston-dispensing of the toothpaste. The piston is actuated manually. However, it is difficult to precisely dose the dose of toothpaste.

There exists a needs to provide an end piece for devices for dispensing and  
5 applying cosmetic products, which is:

- practical to use,
- of simple construction,
- without the need to empty the ducts in order to be changed,
- precise in terms of dosing as per the desires of the user,

10 - capable of providing the consumer with the possibility of changing the cosmetic product while retaining the same device, under appropriate hygienic conditions.

To this end, the subject of the invention is an end piece for a device for dispensing and applying a cosmetic composition, having:

- a reservoir containing the cosmetic composition,
- 15 - an applicator,
- a means for the composition to pass between the reservoir and the applicator,
- a lifting member able to move in the reservoir in response to the applicator being set in motion by the device.

20 The end piece may also be known as a "*refilling*" or "*replacement end piece*".

With the end piece of the invention, the user does not have to carry out excessive manipulations. She simply fits the end piece onto the device. When the device is in operation, the product is delivered progressively onto her skin. As soon as it is switched off, product stops arriving on the skin. Of course, the user may choose to apply the product  
25 several times, in particular depending on the degree of absorption of her skin for example or depending on the evaporation of the product.

The end piece has a simple construction, giving it an affordable cost.

A significant advantage of the end piece of the invention lies in the fact that the product is delivered only when the applicator is set in motion. Thus, the delivery of the  
30 product is precise both in terms of quantity and in terms of position. Since the dispensing of the product does not require the pressure of a finger, the end piece may be used even by less dexterous, shaking or elderly people.

### Lifting member

When the end piece is fitted on a device, the setting of the latter into operation causes the lifting member to move in relation to the reservoir. The lifting member is configured to move towards the applicator under the effect of a force exerted by the device. The cosmetic product is thus pushed progressively towards the applicator, for example until the reservoir has been completely emptied.

Advantageously, the lifting member is designed to move unidirectionally towards the applicator.

As a variant, the lifting member may also comprise a non-return mechanism that interacts with the walls of the reservoir in order to prevent the lifting member from descending again.

Advantageously, the lifting member is able to move axially and/or in rotation inside the reservoir.

The side walls of the reservoir may be provided with slots in which pegs of the lifting member can slide.

The reservoir may have a central screw, around which the piston rises.

Advantageously, the lifting member has a sealing lip designed to be in contact with the internal lateral surface of the reservoir. Thus, the dispensing of the cosmetic product is secure.

By virtue of the invention, the user can easily obtain a dose of product in a simple manner. The user can decide to leave the device in operation for a longer or shorter amount of time. In this way, he adjusts the dose of product deposited on his skin.

The user can also easily use the device with one hand.

### Reservoir

The reservoir is preferably molded in one piece, in particular from the same thermoplastic material, for example PET, LDPE, HDPE, a mixture of LDPE and HDPE, PP or a mixture of PE and PP in any desired proportion. The thickness of the wall of the reservoir is for example between 0.1 and 1 mm.

Advantageously, the cosmetic product initially takes up from 70 to 100% of the internal volume of the reservoir.

The term "*initially*" is understood to mean prior to the first use of the end piece.

The body of the reservoir may be surmounted by a neck for fastening a cap, in order to store the end piece.

5 If need be, the reservoir is closed by a cap so as to seal it. It is proposed for the user to fit the reservoir on an application device, after removing the cap, on first use.

Advantageously, the applicator is fitted on the neck of the reservoir and the cap is fitted on the applicator so as to close off the means for the composition to pass between the reservoir and the applicator, for example the dispensing orifices.

10 Advantageously, the overall internal volume of the reservoir is initially between 1 and 100 cm<sup>3</sup>, preferably between 20 and 50 cm<sup>3</sup>. This volume is optimal for several uses or repeated treatment extending over several weeks.

The reservoir may be manufactured by injection blow molding or extrusion blow molding.

15

#### Applicator

The applicator may comprise a cellular material which may be elastically deformable and/or compressible. This material may be a foam. The foam may be produced from a material selected from the following list: polyurethane, polyether, polyester, 20 polyvinyl chloride, polyethylene, EVA, latex, silicone, SIS, SEBS, silicone elastomer, latex elastomer, nitrile elastomer, butyl elastomer, Neoprene<sup>®</sup>, NBR, SBR, this list not being limiting.

The applicator may have a composite structure having a plurality of layers having different natures, for example a number of types of foam. The applicator may 25 comprise a slot or a hole opening onto the application surface.

The applicator may have any shape. It may have a circular, oval or polygonal cross section, for example a triangular, square, hexagonal, etc. cross section.

The applicator may have abrasive properties. "Abrasive property" should be understood as meaning a surface which, when moved over the skin, removes at least some 30 of the dead cells from the surface.

Such surfaces can be characterized by an abrasive power of between 0.01 and 0.03 g/cm<sup>2</sup>/min. The abrasive power corresponds to the quantity of plaster removed per

minute, per square centimeter of an abrasive surface applied to a square of plaster having a thickness of 50 mm using a 135 W Black and Decker CD 400 sander, the pressure exerted on the square of plaster resulting from the weight of the sander, only the movement of which in the plane of the abrasive surface is constrained.

5           Such applicators are obtained either by taking a substantially rigid cellular material, or by incorporating hard grains into a flexible cellular material.

          An example of an abrasive surface is a nonwoven exfoliating pad sold by 3M.

          The foam may be a soft and flexible foam particularly suitable for spreading the product, sometimes also known as a sponge.

10           The applicator may be for example a hydrophilic crosslinked polyester foam, for example having a density equal to  $32 \text{ kg/m}^3$ .

          A sponge traditionally used for applying foundation, such as NBR, for example Yukilon<sup>®</sup> from Penthouse Group is also conceivable.

15           The applicator may be made of flexible injection-molded plastics material, for example of elastomer, and have massaging reliefs, for example spikes or balls.

          The applicator is for example made of an elastomer such as SEBS or silicone.

20           The applicator may be a thermocompressed foam. Thermocompression makes it possible to create reliefs on the surface of the foam and/or to complex it with an elastic fabric, thereby making it possible to have the flexibility of the foam but the feel of a textile more pleasant than that of plastic.

          An example of a thermocompressed foam is a closed-cell foam made of polyolefin, for example thermocompressed polyethylene having a specific weight of  $33 \text{ kg/m}^3$ , which is for example complexed with an elastic fabric such as for example Lycra<sup>®</sup>.

25           The applicator may be a file made of plastics material, metal or glass.

          The applicator may be a brush made of synthetic or natural bristles, for example a bristled brush having tufts of strands of Nylon<sup>®</sup> 6.12 having a diameter of 0.075 mm, which have been milled and ground in order to make them very soft in contact with the skin of the face.

30           The applicator may have elements that are able to rotate, such as balls or rollers, which are smooth or have reliefs in order to massage the skin.

The invention also relates to a device for dispensing and applying a cosmetic composition contained in an above end piece, said device having a housing for receiving the end piece.

Advantageously, the device has a means for setting the end piece in motion.

5 Generally, the applicator is set in motion by the entire end piece being set in motion.

Advantageously, the device comprises electrical supply means.

#### Dispensing and application devices

10 A number of types of device can be used depending on the way in which they move. These are known to a person skilled in the art. Examples are:

a) Simple movement:

- Rotary movement
- Oscillating movement
- 15 • Rotary movement that can be reversed by the user in order to provide a massage or upward traction of the skin
- Percussive movement
- Vibratory movement

b) Composite movement:

- 20 • Rotary movement associated with percussion
- Rotary movement associated with vibration

#### Fixing the end piece onto the device

25 It is easier to fit the end piece since the latter may, for example, simply be inserted into a corresponding housing in the device.

The device may have a casing having an elongate shape, provided at one end with at least one control member for setting the end piece in motion.

The device may have at least two housings for receiving at least two end pieces.

30 The device may have a separate control member for each end piece or a selection means for selecting an end piece prior to actuating the control member.

Advantageously, the end piece is secured to the housing of the device by pinching, snap-fastening, clip-fastening, screwing, clamping, force-fitting or magnetization.

The end piece may also have coupling tabs intended to be snap-fastened to the application device in order to retain the reservoir and the applicator.

The tabs are generally sufficiently flexible to allow the user to disconnect the applicator 5 by pulling thereon.

#### Passage of the composition between the reservoir and the applicator

The reservoir and the applicator may be separated by at least one wall having one or more through-orifices. The through-orifice or through-orifices form(s) one or more duct(s) for the composition to pass through.

In general, the passage means is a duct.

Advantageously, the passage means has a valve which opens one way. Hygiene is improved.

The passage duct makes it possible to convey the composition leaving the reservoir towards the applicator and then towards the body surface to be treated.

The passage duct may also be formed by a separate component, for example by a flexible duct connecting the reservoir and the applicator. In this case, the cosmetic product may emerge onto the outer surface of the applicator.

Advantageously, the cosmetic composition is chosen from a care composition, a cleansing composition, a hygiene composition, an exfoliating composition, a desquamation composition, a thinning composition, a coloring composition, a makeup composition, a makeup removal composition, a whitening composition or a mixture thereof.

When the device has a plurality of end pieces, these may contain different cosmetic compositions.

#### Cosmetic treatment processes

According to one embodiment of the invention, the composition is applied to the region to be treated as soon as the device is set into operation. When the device is stopped, the movement of the applicator stops, as does the dispensing of the composition.

The device may be provided with a retarder for the dispensing of the product.

In this case, the applicator is driven in motion in order to massage the region to be treated, without the composition being dispensed for a first time.

5 The massaging action may result in local heating on account of the friction of the applicator on the skin for example, and the absence of the composition on the applicator initially may increase the friction and the sensation of heat that results therefrom.

10 Next, the applicator is driven in motion or, as a variant, while the applicator is at a standstill, the composition may be dispensed and spread over the region previously massaged.

### Assemblies

A plurality of end pieces may be provided to the user, for example in one and the same packaging, said end pieces comprising:

- 15
- reservoirs containing different compositions, and/or
  - applicators having different application characteristics.

The invention also relates to an assembly comprising at least one end piece and a device, as defined above.

20 The invention may be better understood from reading the following detailed description of nonlimiting implementation examples thereof and from examining the appended drawing, in which:

- Figure 1 schematically shows a profile view of an example of an end piece according to the invention,
- Figure 2 is a schematic and partial longitudinal section through the end piece in Figure 1 after partial use: during use on the left and before use on the right,
- Figure 3 is a schematic and partial longitudinal section through the end piece from Figure 2 during use,
- Figure 4 shows a profile view of an example of a device according to the invention,
- 30 - Figure 5 shows a top view of an assembly (kit) according to the invention.

The end piece shown in Figures 1 to 3 has:

- a container 8 having two reservoirs 11 and 13,

- an applicator 2,
  - two ducts 31 and 32 for the composition P to pass between the reservoirs 11 and 12 and the applicator 2,
  - two lifting members 41 and 42. On the right-hand side of Figure 2, the lifting member is
- 5 at the bottom of the reservoir and on the left-hand side it is halfway up the reservoir.

When the device only has a single reservoir, a central screw will replace the wall 9, as in the majority of sticks. Driving means are connected to the screw 9, which turns with the applicator. Since the piston cannot turn, it advances along the screw each time the latter is set in rotation.

10 Figure 1 also illustrates the definition of the length L and the largest transverse dimension of the end piece. The length L is the overall length of the end piece. It includes in particular the maximum length of the applicator 2, of the fixing base 50 and of the reservoirs 11 and 13. The maximum width of the end piece is, in the example in question, the maximum width of the fixing base 50.

15 The container 8 has a side wall 20 which, as illustrated, may have a circular cross section about a longitudinal axis X.

The side wall 20 has for example an internal surface 23 which is substantially in the form of a cylinder of revolution about the axis X. The inside diameter of the side wall 20 is for example approximately constant between the bottom 81 of the container 8

20 and the shoulder 82.

The container 8 has a separating wall 9 defining two spaces 91 and 92. The space 91 encloses the reservoir 11 and the lifting member 41. The space 92 encloses the reservoir 13 and the lifting member 42.

25 The cosmetic products contained in the reservoirs 11 and 13 may be identical or different.

In the example in question, the reservoirs 11 and 13 are provided to be emptied one after the other. The reservoir 11 is emptied first, the reservoir 13 is emptied second.

In Figure 2, half of the product in the reservoir 11 has been used up. The lifting member 41 has been moved from the bottom 81 in the direction of the applicator 2.

30 The lifting member 41 is positioned halfway up the reservoir 11. The product in the reservoir 2 has not yet been used up. The lifting member 42 is positioned at the bottom of the reservoir 13.

The travel of each lifting member 41, 42 is limited by:

- a stop 61, 62 provided at the bottom of each reservoir, and
- the wall 12 which separates the applicator 2 and the container 8.

5 The passage duct 3 is formed by two through-orifices 31 and 32. These orifices perforate the wall 12. The orifice 32 is connected to the reservoir 11. The orifice 33 is connected to the reservoir 12.

10 In Figure 3, the product passes through the orifice 32 so as to arrive at the applicator 2. The orifice 31 is closed for example by a valve as long as the reservoir 11 still contains product. As soon as the reservoir 11 is empty, this valve opens. The product in the reservoir 13 can be pushed towards the applicator 2.

The device shown in Figure 4 has a housing 4 for accommodating an end piece such as for example the one illustrated in Figure 1.

15 An annular bulge 51 is disposed on the fixing base 50. This bulge 51 may allow the end of the reservoir 1 to be fixed to the body 52 of the device. The fixing base 50 may be fixed to the body 52, in the example in question, by screwing, a magnet, clip-fastening or clamping.

The body 52 houses means for setting the end piece in motion.

20 This movement is for example a rotational movement about a rotation axis X which is fixed relative to the body 52. It forms for example a non-zero angle with the longitudinal axis Y of the body 52.

The driving means may comprise an electric motor which is housed in the body 52, is supplied by one or more cells or batteries, and rotates the applicator 2 about the axis X by way of gears.

25 In order to dispense a cosmetic composition onto a body surface, the applicator 2 is placed on this surface. The "on" button of the device is pressed. The cosmetic composition P is directed towards the orifice 32. It reaches the surface of the applicator 2 and then the body surface to be treated. If the device is in operation for a fairly long time, the reservoir 11 may be completely emptied and then the reservoir 13 may be completely or partially emptied.

30 Some devices may have a selective actuation means for one or the other of the lifting means 41 or 42, depending on the composition which the person wishes to apply for example. Provision may also be made to simultaneously actuate the two lifting means.

This is advantageous for certain cosmetic compositions to be applied together, in a mixture which would not be stable if the constituents were stored together.

The assembly (kit) shown in Figure 5 has a device 100 and four end pieces 101, 102, 103 and 104. These end pieces are respectively provided with applicators 210, 220, 230 and 240. These applicators each act specifically on the skin. For example:

- the applicator 210 exerts a cleansing action,
- the applicator 220 exerts an exfoliating action,
- the applicator 230 exerts a massaging action,
- the applicator 240 exerts a smoothing action.

The compositions contained in the end pieces 101, 102 and 103 may be hygiene compositions. The composition contained in the end piece 104 may be a care composition.

The consumer selects one of the end pieces 101, 102, 103 and 104. He fixes the selected end piece to the device for use.

Needless to say, the invention is not limited to the examples that have just been described. In particular, it is possible to combine together constructional details of the examples which have just been described within variants that are not illustrated. The number of reservoirs may be different.

In particular, the applicator may have any constitution or form. The dimensions of the end piece may be modified, for example. The movement may also be different.

The expression "comprising a" should be understood as being synonymous with "comprising at least one", unless specified to the contrary.

## CLAIMS

1. End piece for a device for dispensing and applying a cosmetic composition, having:

- 5    - a reservoir (1) containing the cosmetic composition,  
      - an applicator (2),  
      - a means (3) for the composition to pass between the reservoir (1) and the applicator (2),  
      - a lifting member (4) able to move in the reservoir (1) in response to the applicator (2)  
      being set in motion by the device.

10

2. End piece according to Claim 1, the lifting member (4) being able to move axially and/or in rotation inside the reservoir (1).

3. End piece according to either of the preceding claims, the lifting member  
15 (4) having a sealing lip designed to be in contact with an internal lateral surface of the reservoir (1).

4. End piece according to any one of the preceding claims, the passage means  
20 (3) having a valve which opens one way.

20

5. End piece according to any one of the preceding claims, having 2 or 3 reservoirs (1).

6. End piece according to any one of the preceding claims, the product  
25 initially taking up from 70 to 100% of the internal volume of the reservoir (1).

7. End piece according to any one of the preceding claims, the overall internal volume of the reservoir (1) initially being between 1 and 100 cm<sup>3</sup>.

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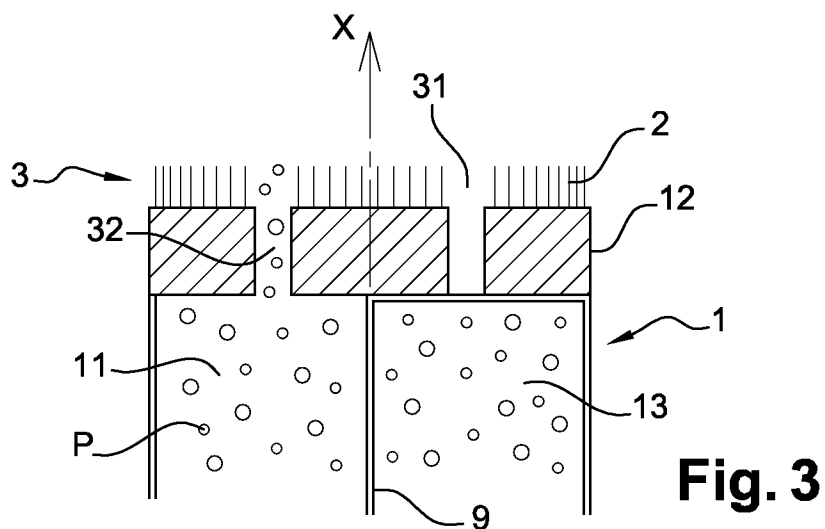
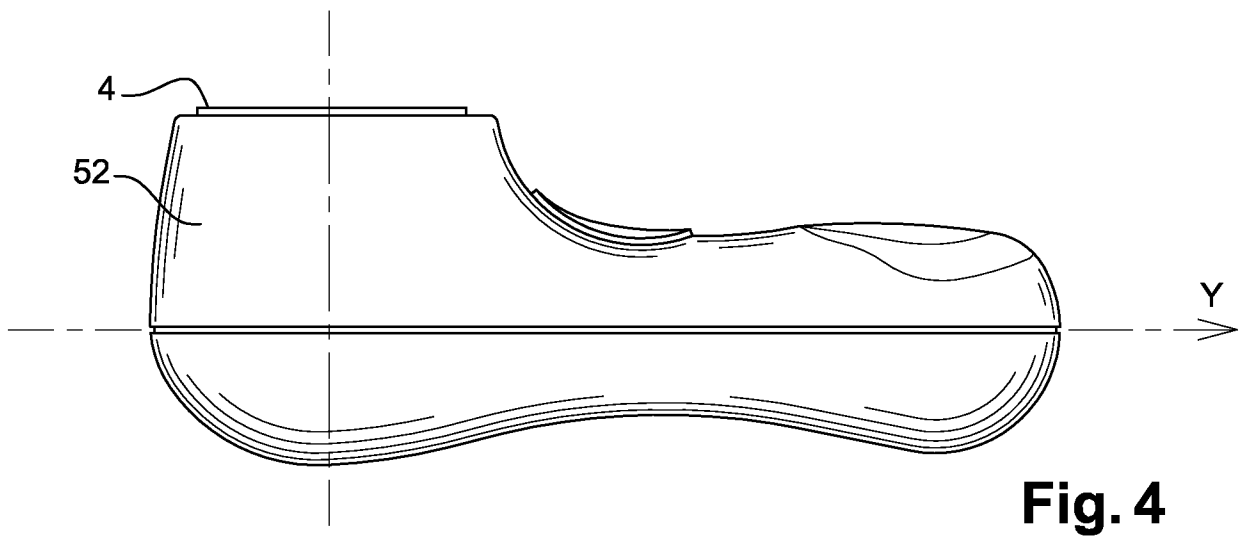
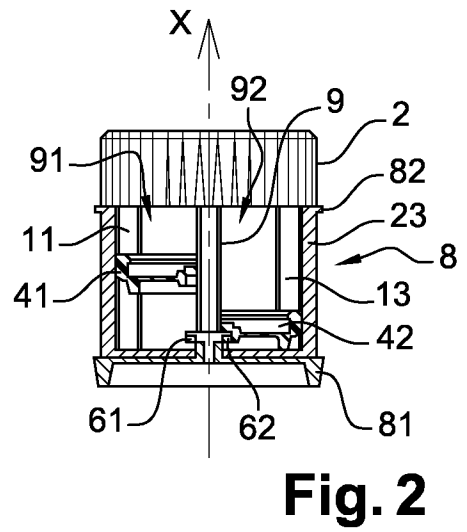
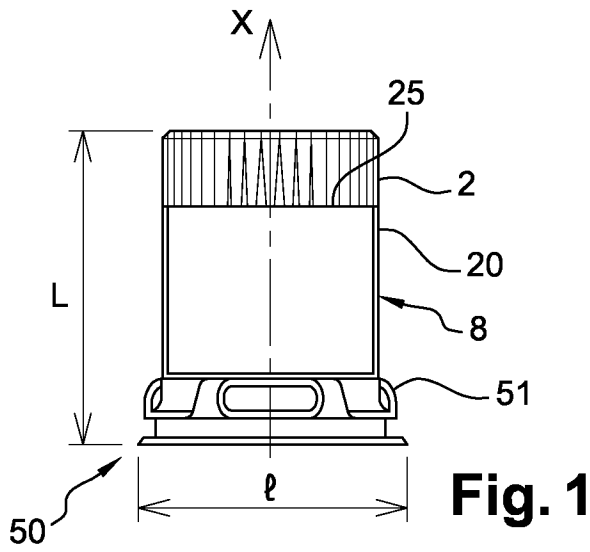
8. End piece according to any one of the preceding claims, the product being chosen from a care product, a cleansing product, a hygiene product, an exfoliating product, a desquamation product, a thinning product, a coloring product, a makeup product, a makeup removal product, a whitening product or a mixture thereof.

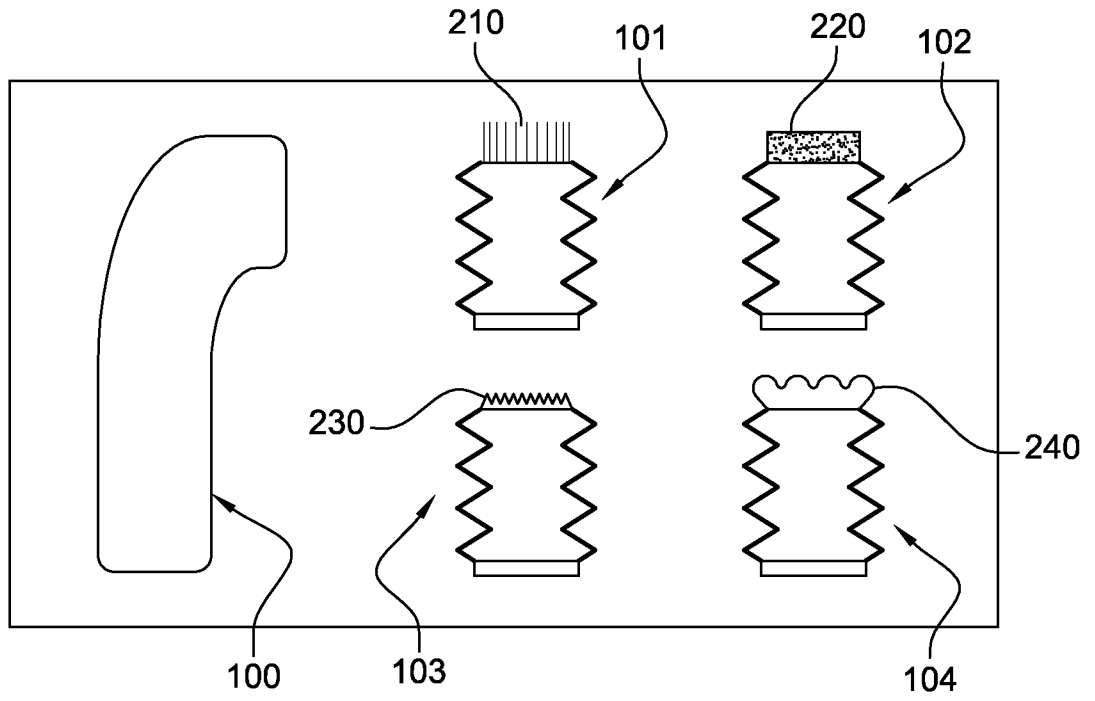
9. Device for dispensing and applying a cosmetic composition contained in an end piece as defined in any one of the preceding claims, said device having a housing (7) for receiving the end piece.

5           10. Device according to Claim 9, wherein the end piece is secured to the housing (7) by pinching, snap-fastening, clip-fastening, screwing, clamping, force-fitting or magnetization.

10           11. Device according to either of Claims 9 and 10, comprising electrical supply means (6).

12. Assembly comprising at least one end piece according to any one of Claims 1 to 9 and a device according to any one of Claims 10 to 12.





**Fig. 5**

INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2013/077592

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A45D34/04 A46B11/00 A46B13/02 A61H7/00 A61H15/00  
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)  
A45D A46B A61H

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 443 958 A1 (TSUIN BADO KOGYO KK [JP]) 25 April 2012 (2012-04-25) paragraph [0033] - paragraph [0035]; figures 1-9	1-12
X	US 3 994 290 A (SPRINGER WILLIAM E ET AL) 30 November 1976 (1976-11-30) column 2 - column 4; figures 1-8	1-3, 6-10,12
A	US 3 261 367 A (PICKERING JOHN J) 19 July 1966 (1966-07-19) abstract claim 7	4
A	EP 1 656 853 A1 (OREAL [FR]) 17 May 2006 (2006-05-17) abstract claim 1; figures 1-4 paragraph [0001] - paragraph [0008]	5

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	"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
"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
"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)	"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
"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 <b>17 April 2014</b>	Date of mailing of the international search report <b>28/04/2014</b>
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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 <b>Oliveras, Mariana</b>
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2013/077592
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