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(54) **Applicator head for applying a fluid cosmetic product on skin**

(57) The invention relates to an applicator head (12) for applying a fluid cosmetic product on skin, the applicator head comprising:

- a longitudinal body (22, 122) extending along a first axis (24);
- at least two application elements (26), attached to the longitudinal body.

Each application element comprises:

- a first part (32) extending inside the longitudinal body, parallel to the first axis,

- a second part (36) extending parallel to a second axis (38), said second axis being inclined relative to the first axis,

a first end (40) of the second part of each application element emerging from the longitudinal body.

Each application element also comprises an inner leading path for the fluid cosmetic product, extending from a second end (34) to the first end (40) of the application element.

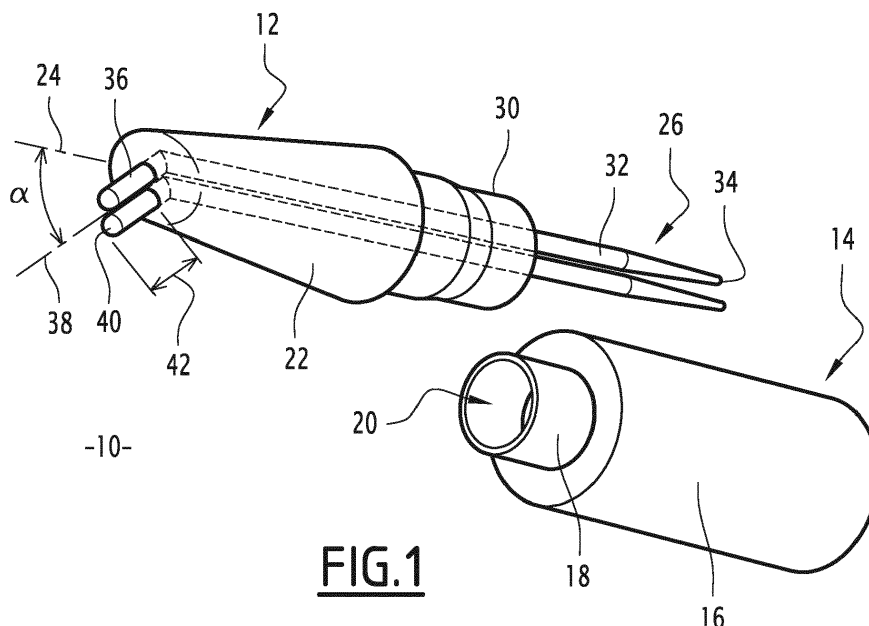


FIG.1

Description

[0001] The present invention relates to an applicator head for applying a fluid substance on a body part, said applicator comprising a longitudinal body, extending along a first axis, and at least two application elements attached to the longitudinal body.

[0002] More specifically, the present invention relates to an applicator head for applying a cosmetic product, preferably a make-up composition, on a skin surface, preferably the skin of eyebrows.

[0003] A "cosmetic product" is in particular, in the meaning of the present invention, a product such as defined in EC Regulation N°1223/2009 of the European Parliament and of the Council, dated November 30th, 2009, in relation with cosmetic products.

[0004] Examples of applicator heads for applying make-up on skin, comprising at least two tips, are known from EP1336353 and FR3007256.

[0005] Such applicator heads allow the drawing on skin of small lines, in order to mimic eyebrow hairs and to give a visual effect of thickened eyebrows, without unwantedly staining the skin.

[0006] However, such applicator heads imply dipping the application elements in a fluid cosmetic product before applying said elements on the skin. The dipping step, covering the whole head with product, may lead to imprecise application, unwanted stains or too thick lines.

[0007] The present invention provides a solution avoiding the dipping step, for a more precise result with thinner lines.

[0008] Accordingly, the present invention relates to an applicator head such as mentioned above, wherein each application element comprises : a first part extending inside the longitudinal body, parallel to the first axis ; a second part adjacent to the first part, said second part extending parallel to a second axis, said second axis being inclined relative to the first axis ; a first end of the second part of each application element emerging from the longitudinal body ; each application element also comprising an inner leading path for the fluid substance, said leading path extending from a second end to the first end of the application element.

[0009] According to preferred embodiments, the applicator head comprises one or more of the following features, taken in isolation or according to any technical possible combination :

- the longitudinal body comprises at least two inner housings, each housing having an inner shape substantially complementary to an outer shape of an application element, each housing comprising a first part extending parallel to the first axis and a second part extending parallel to the second axis, an application element being received in each housing ;
- each housing comprises an elbow joining the first and second parts, an application element being received in the elbow ;

- an angle between the first and second axes is comprised between 5° and 85°, preferably between 20° and 50° ;
- a first end of the second part of each application element emerges from an external flat surface of the longitudinal body, said flat surface being substantially perpendicular to the second axis ;
- at least one of the application elements comprises : an outer shell part ; projections extending inwards from the outer shell part ; a space inside the outer shell part and between the projections defining the inner leading path for the fluid substance.

[0010] The present invention also relates to an applicator for applying a fluid substance on a body part, the applicator comprising an applicator head as described above and a container for the fluid substance, said container being assembled to the applicator head, the second ends of the application elements being thereby received in an inner volume of the container.

[0011] According to a preferred embodiment, the applicator comprises a cosmetic composition received in the inner volume of the container, said cosmetic composition being preferably a make-up composition.

[0012] The present invention also relates to a process for making an applicator head as described above, said process including the following steps : forming at least two application elements, each of said element being flexible, each of said element being substantially straight-shaped without external strain ; then bending the application elements in order to form the first part and the second part inclined relative to each other ; then encasing the bent application elements in a longitudinal body, said body maintaining the bent shape of the application elements.

[0013] The invention will be better understood, upon reading of the following description, taken solely as an example, in view of the appended drawings, in which :

- Figure 1 is a perspective, partially exploded view of an applicator according to an embodiment of the invention, including an applicator head and a container ;
- Figure 2 is a side, exploded, partial section view of the applicator head of figure 1, including a body and application elements ;
- Figures 3, 4 and 5 are cross-section views of the application elements of figures 1 and 2, according to three alternative embodiments ; and
- Figure 6 is a perspective view of an applicator head according to another embodiment of the invention.

[0014] Figure 1 shows an applicator 10 according to a first embodiment of the invention. The applicator 10 is designed for the application of a fluid substance, preferably a cosmetic composition, on a body part, preferably on a skin surface. In particular, the applicator 10 is designed to apply a cosmetic composition, preferably

make-up, on the skin of eyebrows.

[0015] The applicator 10 comprises an applicator head 12 and a container 14. The container 14 extends longitudinally and includes a lateral, cylindrical wall 16. Optionally, the cylindrical wall 16 is deformable by squeezing.

[0016] A longitudinal end of the container 12 comprises a neck 18. Preferably, the neck 18 is provided with means of attachment to the applicator head 12, such as threads. The container 14 defines an inner volume 20 for receiving the fluid substance, preferably the cosmetic composition.

[0017] The fluid cosmetic composition is preferably a make-up composition, comprising coloured or dark pigments. As an example, a suitable composition would be a liquid formula for eye-liners.

[0018] The applicator head 12 comprises an outer body 22, extending along a first axis 24. The applicator head 12 also comprises at least two application elements 26, partially received inside the outer body 22.

[0019] A first end of the outer body 22, relative to the first axis 24, is formed by an external flat surface 28. Preferably, as specified below, the flat surface 28 and the first axis 24 form an angle different from 90°.

[0020] A second end 30 of the outer body 22 is preferably provided with means of attachment to the neck 18 of the container 14, such as threads.

[0021] Each application element 26 is substantially spaghetti-shaped and comprises a first part 32, extending parallel to the first axis 24. The first part 32 comprises a first end 34 of the application element 26. The first end 34 emerges from the second end 30 of the outer body 22.

[0022] Adjacent to the first part 32, the application element 26 comprises a second part 36. The second part extends parallel to a second axis 38, coplanar to the first axis 24. Preferably, the second axis is perpendicular to the external flat surface 28.

[0023] The second axis 38 is inclined of an angle α relative to the first axis 24. Preferably, the angle α is comprised between 5° and 85°, more preferably between 20° and 50°.

[0024] The second part 36 is partially received in the outer body 22. A second end 40 of the second part 36 emerges from the first end of the outer body 22, through an opening in the external flat surface 28. Preferably a distance 42 between the second end 40 and the flat surface 28 is comprised between 0,5 mm and 10 mm, more preferably between 1 mm and 5 mm. Preferably, the distance 42 is substantially the same for the two or more application elements 26.

[0025] Preferably, a distance 43 between the ends 40 of two adjacent application elements 26 is comprised between 0,5 mm and 4 mm, the distance being measured perpendicularly to the second axis 38.

[0026] Figure 2 shows an exploded view of the applicator head 12, the outer body 22 being represented in longitudinal cross-section.

[0027] Between the first and second ends 28, 30, the outer body 22 defines an inner space 44, in which the

application elements 26 are partially received, except from the emerging parts near the first and second ends 34, 40.

[0028] The outer body 22 comprises two inner housings in the shape of longitudinal tubes 46, received in the inner space 44. Each tube 46 comprises a first rectilinear part 48, extending parallel to the first axis 24, and a second rectilinear part 50, extending parallel to the second axis 38. Preferably, the inner shape of the first and second parts 48, 50 is complementary to the external shape of the application elements 26. The first part 32 and the second part 36 of each application element 26 are at least partially received, respectively in the first part 48 and second part 50, of a tube 46.

[0029] In the embodiment of figure 2, the tubes 46 are substantially included in a plane of symmetry of the outer body 22, corresponding to the cross-section plane of figure 2. The plane of symmetry is defined by the first 24 and second 38 axes.

[0030] In the embodiment of figure 2, a first extremity of a wall 52 of the tubes 46 is attached to a transversal, intermediate wall 54 of the outer body 22, said intermediate wall 54 being at a distance 56 from the second end 30 of the outer body 22. A second extremity of the wall 52 is attached to the flat surface 28. As an example, the distance 56 is comprised between 10% and 50% of a maximum length of the outer body 22 along the first axis 24.

[0031] In another, unrepresented embodiment, the wall 52 of the tubes 46 extends from the first to the second ends of the outer body 22.

[0032] In the embodiment of figure 2, the first 48 and second 50 rectilinear parts are situated on each side of an elbow part 58 of each tube 46. The inner shape of the elbow part 58 is substantially complementary to the external shape of an application element 26.

[0033] In another, unrepresented embodiment, the elbow part 58 is replaced by an empty space between the first 48 and second 50 rectilinear parts of a tube 46. In such a case, the tube 46 is therefore discontinuous.

[0034] Preferably, the outer body 22, including the walls 52 of the tubes 46, is made of a thermoplastic polymer, such as acrylonitrile butadiene styrene (ABS) or a polyolefin.

[0035] Each of the application elements 26 comprises a flexible outer shell part 60. Without external strain, as represented on figure 2, the outer shell part 60 is rectilinear-shaped. As an example, a length of the application elements 26 between the first 34 and second 40 ends is comprised between 30 mm and 150 mm.

[0036] Near the first end 34, the outer shell 60 is preferably tapered. Near the second end 40, the outer shell 60 has a shape configured to allow the application of a cosmetic composition on a skin surface. For example, near the second end 40, the outer shell 60 is tip-shaped or rounded.

[0037] Each application element 26 also comprises an inner leading path 62 for the cosmetic composition. The

leading path 62 extends between openings in the outer shell 60, said openings being situated at each end 34, 40 of the application element.

[0038] Figures 3, 4 and 5 show cross-sectional views of application elements 26, according to alternative embodiments of the invention.

[0039] The outer shell part 60 has a substantially circular cross-section. As an example, a diameter of the circular cross-section is comprised between 0,2 mm and 2 mm, preferably between 0,5 mm and 1 mm.

[0040] The application element 26 comprises projections 64 extending inwards from the outer shell part 60. A space 62 inside the outer shell part 60 and between the projections 64 defines the inner leading path 62.

[0041] The dimension and shape of the projections 64 are adapted to allow a flow of fluid cosmetic composition, by capillary force, from the first end 34 to the second end 40 of the application element 26.

[0042] Preferably, the outer shell part 60 and projections 64 are made of a polymer, such as a polyacetal or a polyester. For example, the polymer is polyoxymethylene (POM).

[0043] As an example, the application elements 26 are similar to the application elements described in document JP2005022113, in the name of Teibow Co. Ltd..

[0044] Figure 6 represents an applicator head 112 according to an alternative embodiment of the invention. The applicator head 112 is able to replace the applicator head 12 of the applicator 10 described above.

[0045] In the description below, the elements in common with the embodiment of figures 1 and 2 are described with the same reference numbers.

[0046] The applicator head 112 comprises an outer body 122, extending along a first axis 24. An external shape of the outer body 122 is similar to the external shape of the outer body 22 of figures 1 and 2, including the external flat surface 28 inclined relative to the first axis 24. The flat surface 28 is perpendicular to a second axis 38, coplanar to the first axis 24 and forming an angle α , defined as above, with said first axis 24.

[0047] The applicator head 112 comprises three application elements 126, 127 and 128, similar to the application elements 26 of figures 1 and 2. According to a transversal cross-section of the applicator head 112, the three application elements 126 are triangularly disposed. One 126 of the application elements is substantially included in a plane of symmetry of the outer body 22. The other application elements 127, 128, are situated on each side of said plane of symmetry.

[0048] In the same manner as the application elements 26 of figures 1 and 2, each of the application elements 126, 127 and 128 has a first part extending parallel to the first axis 24 and a second part, extending parallel to the second axis 38. Tip-shaped ends 40 of the second parts emerge from the flat surface 28. The tip-shaped ends 40 are substantially situated at the summits of an equilateral triangle, parallel to the flat surface 28.

[0049] The outer body 122 comprises inner housings

146 receiving the three application elements 126, 127, 128. The housings 146 are bent, with a first rectilinear part parallel to the first axis 24, and a second rectilinear part, parallel to the second axis 38.

5 **[0050]** In other embodiments, the number of application elements may be 4, 5 or more, in different configurations, such as the summits of regular polygons.

[0051] A realization process of the applicator heads 12, 112 will now be described. The application elements 26, 126, 127, 128, in particular the outer shell 60 and the projections 64, are formed by extrusion of a melt polymer. As an example, such a process is described in document JPH04339696, in the name of Teibow Co. Ltd.. The application elements are then cut to an appropriate length and the first 34 and second 40 ends are ground to an appropriate shape. Rectilinear application elements are obtained.

[0052] According to a first embodiment, such as the embodiment of figures 1 and 2, two symmetrical halves of the outer body 22 are formed separately, for example by injection molding. The application elements 26, formed as described above, are then inserted in the half-tubes 46 of a first of the halves. The application elements 26 thus assume a bent shape with the first part 32 and the second part 36, as described above. The second half of the outer body 22 is then attached to the first half, by welding or gluing. The applicator head 12 of figure 1 is thus obtained.

[0053] According to a second embodiment, such as the embodiment of figure 6, the application elements 126, 127 and 128 are placed in a mold, in a bent configuration, and the outer body 122, including the inner housings 146, is over-molded on said application elements 126, 127 and 128. The molding may be carried out through a bi-injection process, with a first step for the formation of the inner housings 146, wrapping the application elements 126, 127, 128, and a second step for the external part of the outer body 122. The applicator head 112 of figure 6 is thus obtained.

40 **[0054]** The applicator head 12, 112 is then attached to a container 14 in order to form the applicator 10. A quantity of cosmetic composition, received in the container 14, is preferably chosen so that the first ends 34 of the application elements 26, 126, 127, 128 are immersed in the cosmetic composition. Preferably, the respective dimensions of the application elements and of the container 14 are so chosen that the first ends 34 are situated near a bottom end of the container 14.

45 **[0055]** A process for the use of the applicator 10 will now be described. A user seizes the applicator head 12, 112, or the container 14, in order to place the tip-shaped, second ends 40 of the application elements in contact with his/her skin, preferably on one of his/her eyebrow. As the first ends 34 of the application elements are immersed in the cosmetic composition contained in the container 14, the inner path 62 of the application elements is filled with said composition by capillarity. Therefore, as the user moves the tip-shaped ends 40 along his/her

eyebrow, a trace of cosmetic composition is left by the tip of each application element 26, 126, 127, 128.

[0056] If necessary, the user may squeeze the container 14 in order to force fluid composition through the inner path 62, up to the second ends 40 of the application elements.

Claims

1. An applicator head (12, 112) for applying a fluid substance on a body part, the applicator head comprising :

- a longitudinal body (22, 122) extending along a first axis (24) ;
- at least two application elements (26, 126, 127, 128), attached to the longitudinal body ;

characterized in that each application element comprises :

- a first part (32) extending inside the longitudinal body, parallel to the first axis,
- a second part (36) adjacent to the first part, said second part extending parallel to a second axis (38), said second axis being inclined relative to the first axis,
- a first end (40) of the second part of each application element emerging from the longitudinal body,
- each application element also comprising an inner leading path (62) for the fluid substance, said leading path extending from a second end (34) to the first end (40) of the application element.

2. An applicator head according to claim 1, wherein the longitudinal body (22, 122) comprises at least two inner housings (46, 146), each housing having an inner shape substantially complementary to an outer shape of an application element (26, 126, 127, 128), each housing comprising a first part (48) extending parallel to the first axis and a second part (50) extending parallel to the second axis, an application element being received in each housing.

3. An applicator head according to claim 2, wherein each housing (46) comprises an elbow (58) joining the first and second parts, an application element being received in the elbow.

4. An applicator head according to any one of the preceding claims, wherein an angle (α) between the first and second axes is comprised between 5° and 85°, preferably between 20° and 50°.

5. An applicator head according to any one of the preceding claims, wherein a first end (40) of the second

part of each application element emerges from an external flat surface (28) of the longitudinal body (22, 122), said flat surface being substantially perpendicular to the second axis (38).

6. An applicator head according to any one of the preceding claims, wherein at least one of the application elements comprises :

- an outer shell part (60) ;
- projections (64) extending inwards from the outer shell part;
- a space (62) inside the outer shell part and between the projections defining the inner leading path for the fluid substance.

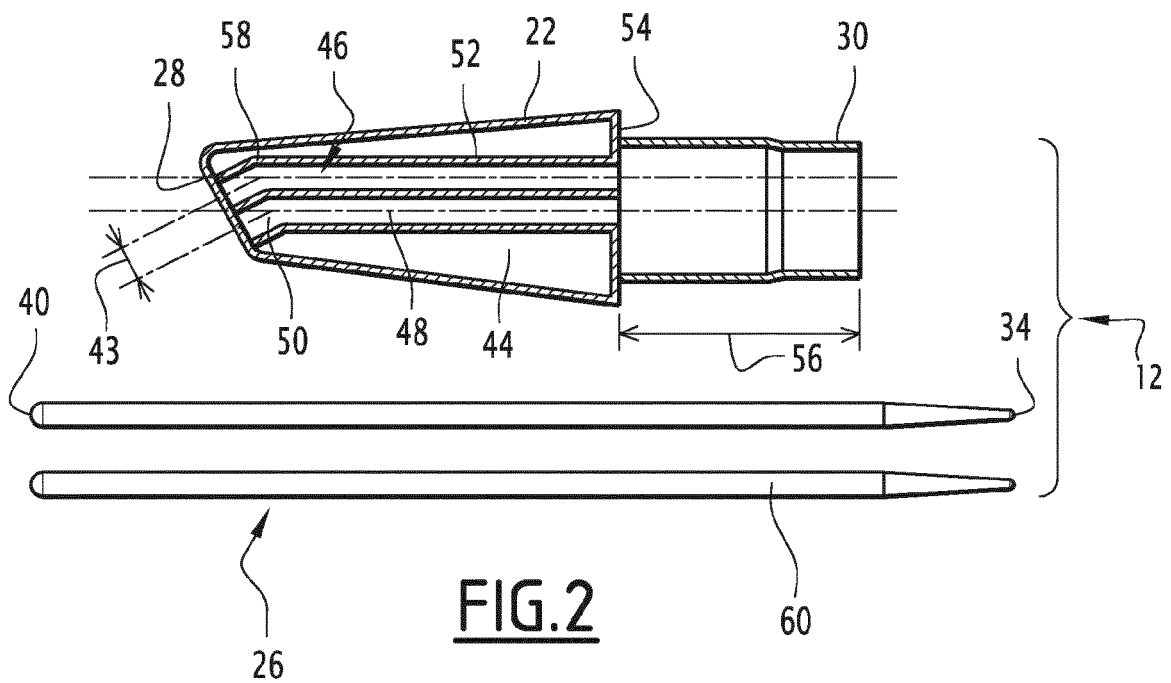
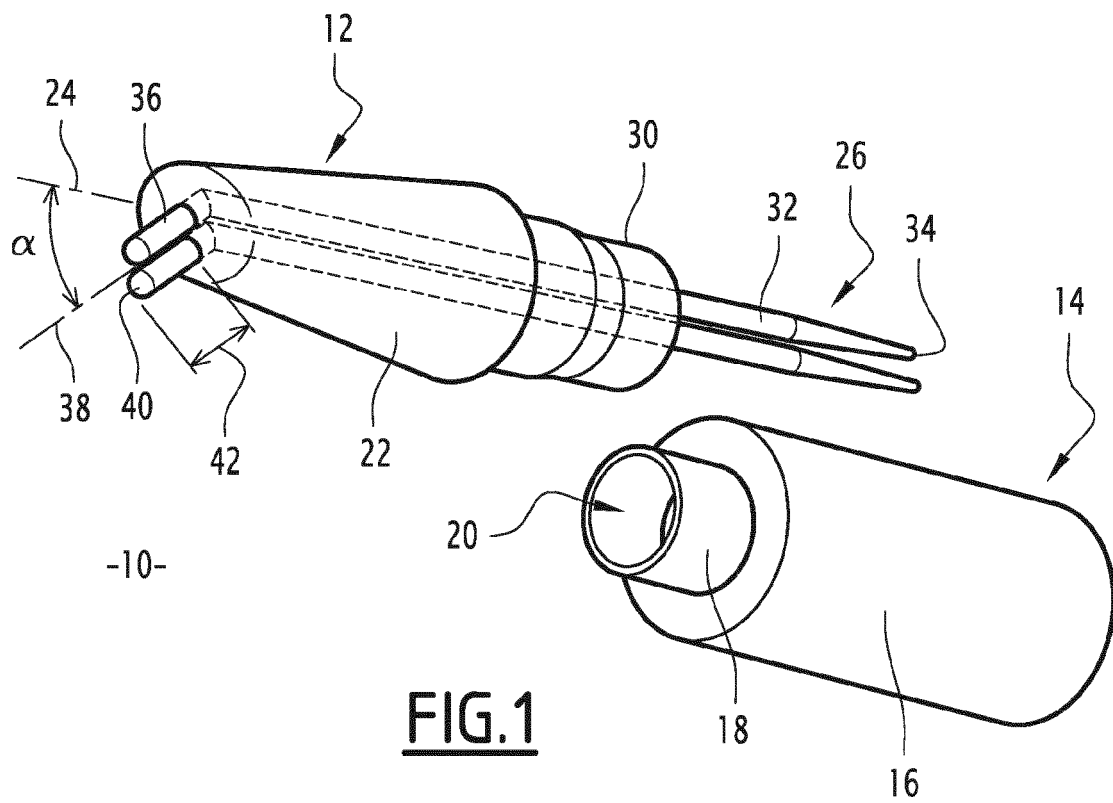
7. An applicator (10) for applying a fluid substance on a body part, the applicator comprising :

- an applicator head (12, 112) according to any one of the preceding claims,
- a container (14) for the fluid substance, said container being assembled to the applicator head, the second ends (34) of the application elements being thereby received in an inner volume (20) of the container (14).

8. An applicator according to claim 7, comprising a cosmetic composition received in the inner volume (20) of the container, said cosmetic composition being preferably a make-up composition.

9. A process for making an applicator head (12, 112) according to one of the claims 1 to 5, said process including the following steps :

- forming at least two application elements (26, 126, 127, 128), each of said element being flexible, each of said element being substantially straight-shaped without external strain ; then
- bending the application elements in order to form the first part (32) and the second part (36) inclined relative to each other; then
- encasing the bent application elements in a longitudinal body (22, 122), said body maintaining the bent shape of the application elements.



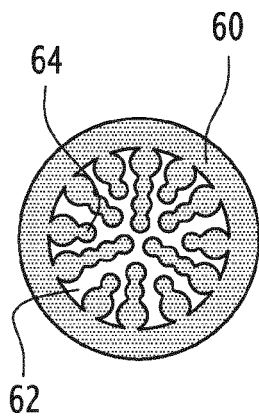


FIG. 3

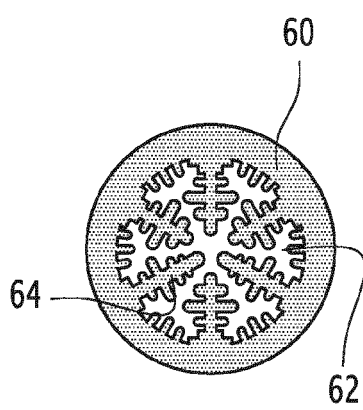


FIG. 4

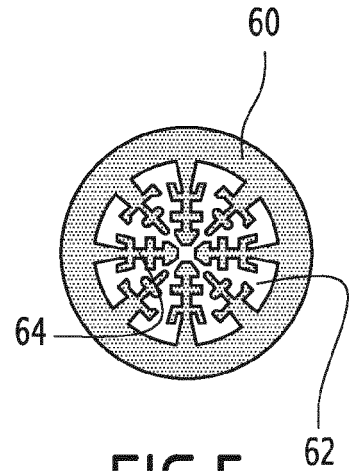


FIG. 5

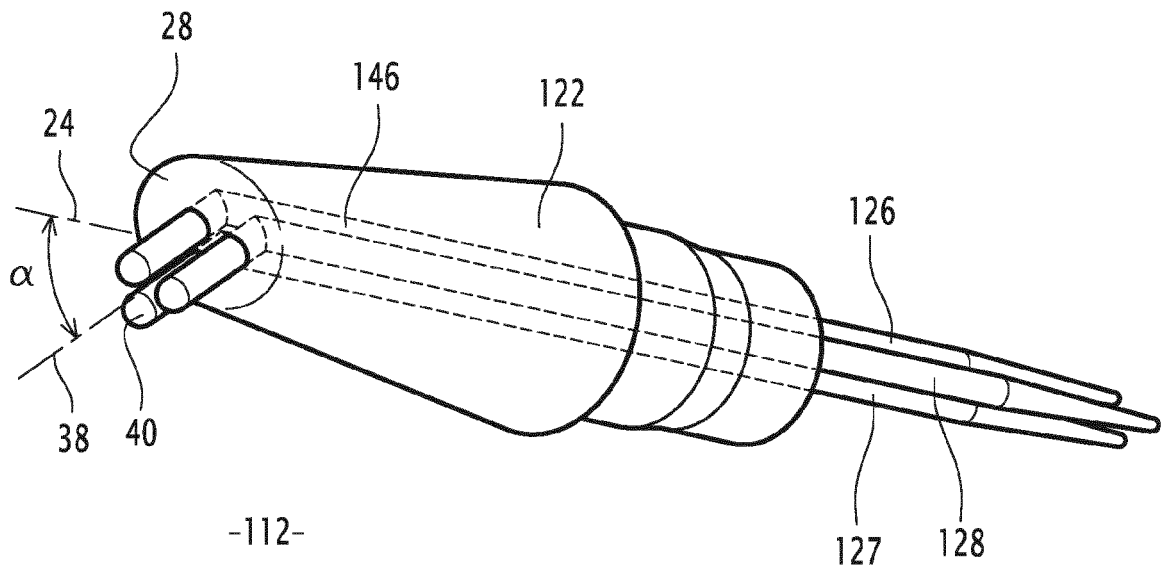


FIG. 6



EUROPEAN SEARCH REPORT

Application Number
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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 555 899 A (FOREMAN KAREN A [US]) 17 September 1996 (1996-09-17) * abstract; claims 1-2; figures 1-4 *	1-5,7,8	INV. A45D34/04
X	GB 363 993 A (ERNST RYCHNER) 16 December 1931 (1931-12-16) * abstract; figures 1-7 *	1-5,7,8	
X	US 2011/315698 A1 (DONALDSON JOSEPH MARK [US] ET AL) 29 December 2011 (2011-12-29) * abstract; claims 1-20; figures 1-2 *	1-5,7,9	
			TECHNICAL FIELDS SEARCHED (IPC)
			A45D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		14 August 2015	Oliveras, Mariana
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 15 30 5296

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US 5555899	A	17-09-1996	NONE	

GB 363993	A	16-12-1931	NONE	

US 2011315698	A1	29-12-2011	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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- JP H04339696 B, Teibow Co. Ltd. [0051]

Non-patent literature cited in the description

- EC Regulation N°1223/2009 of the European Parliament and of the Council, 30 November 2009 [0003]