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(54) Title: COSMETIC APPLICATOR HAVING ONE MOLDED AND ONE NON-MOLDED BRUSH

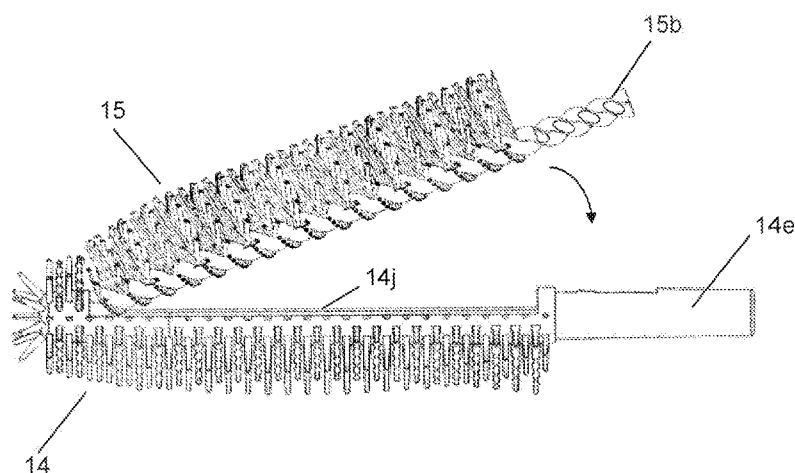


FIG. 7B

(57) Abstract: A mascara applicator that comprises a molded brush (adapted for grooming) to which is mounted a non-molded, fiber brush (adapted for loading product). The molded brush comprises relatively harder, relatively less flexible, injection molded bristles, while the non-molded brush comprises relatively softer, more flexible fiber bristles.



Cosmetic Applicator Having One Molded And One Non-Molded Brush

Field of the Invention

The invention is in the field of cosmetic applicators, specifically hair product
5 applicators that combine a non-molded fiber brush and a molded brush for making up
the eyelashes.

Background

Cosmetic applicators for the hair of the head, such as eyebrows or eyelashes,
10 must perform two broad functions, which we call loading and grooming. Loading
means that the applicator takes up a dose of product and deposits it onto an
application surface, such as eyelashes. Thereafter, it is typical for the same cosmetic
applicator to be used for grooming the eyelashes. The first step, loading, creates a
15 volumizing effect, while the second step, grooming, may include smoothing the
product evenly over the lashes, separating the individual lashes, curling the lashes,
and/or creating a lengthening effect. Because the function of loading product is
different from the function of grooming the hair, a single cosmetic applicator may not
perform both functions satisfactorily. For example, where relatively softer bristles are
20 known to be good at taking up mascara and depositing it on the eyelashes, these
bristles tend to be too weak to effectively smooth the product over the lashes, break
up clumps of mascara, separate or curl the lashes. This situation has sometimes
been addressed by using separate applicators for depositing product and grooming
the hair. The first tends to be a brush that has softer, more flexible bristles, while the
latter may be a brush or comb that has relatively stiff bristles or teeth.

25 To avoid the inconvenience of having to use separate tools to perform the
application and grooming steps, it is known to create an applicator that has an
applicator head that comprises at least two different types of bristles, one type being
relatively soft and flexible, the other type being less soft and less flexible. Sometimes
multiple types of bristles have been mixed together throughout the applicator head in
30 the hope of getting the best of both. Alternatively, it is also known to divide an
applicator head into zones, each zone having one type of bristle. For example, U.S.
patent 7,231,926 discloses a mascara applicator that comprises an application brush

part and an arrangement brush part. We will discuss U.S. 7,231,926, which we consider to be the closest prior art.

Referring to figures 1-3, the applicator of U.S. 7,231,926 comprises a grip (6), a rod (2) extending from the grip, and a "fixing stand" (40) that depends from the rod (2). The arrangement brush part (or comb, 4) is implemented as one or more columns of injection molded teeth that radiate from the fixing stand (40). The application brush part (3) may comprise an application portion (7) of bristles that radiate from a twisted wire rod (21), and occupy the space between the "fitting hole" (42) and the "fitting recess" (43). In order for the application brush part to fit into the space between the "fitting hole" and the "fitting recess", the application brush part is provided with an angular section (31) of 30° - 120° that is devoid of bristles (see figure 3).

It is clear from figure 2 of U.S. patent 7,231,926, and from the description, that the distal end of the twisted wire rod (with bristles) is inserted through the fitting hole (42) until it comes to rest in the fitting recess (43). This manner of assembly gives rise to certain deficiencies. For example, the fiber bristles of the application portion (7) are not able to extend the full length of the space between the "fitting hole" (42) and the "fitting recess" (43). Rather, there is a gap (see figure 1). The gap is required in order to ensure that none of the bristles remains stuck in the fitting hole (42). In fact, in order to avoid bristles being stuck in the fitting hole (42), the size of this gap should be at least as large as the radius of the fiber brush. For example, for a brush with an overall diameter of 8mm, the gap should be a minimum 4mm, and for a brush with an overall diameter of 10mm, the gap should be a minimum of 5mm. (We note that figure 1 of U.S. 7,231,926 does not really reflect how big the gap would have to be to avoid this problem.) Such a big gap, however, creates a different problem, which is that there will be some amount of unwanted movement, where the application brush part (3) can slide back and forth in the arrangement brush part, which may be a distraction to the user or interfere with application process. The design of the applicator of U.S. 7,231,926 has other shortcomings as well, which we now discuss.

The manner in which the application brush part (3) is assembled to the fixing stand (40), means that the bristles of the application portion (7) cannot extend to the

distal tip of the applicator. This is a real disadvantage when trying to apply mascara to the eyelashes that are toward the inner canthus of the eye.

Furthermore, in order to pass through the fitting hole (42), the bristles of the application portion (7) must be relatively flexible. Fiber bristles may be sufficiently flexible, but even that is no guarantee that the bristles will not be damaged when they are crushed together to pass through the fitting hole.

In another matter, the need to pass the application brush part (3) through the fitting hole (42) places limitations on the application portion (7). Application portions that have thick bristles and/or a high number of bristles per turn would be more likely to be damaged, so they would be avoided. Figure 2 of U.S. 7,231,926 gives the distinct impression that the diameter of the fitting hole (42) is very nearly equal to the diameter of the twisted wire rod (21), so the bristle portion (7) is really squeezed.

Also, as we noted above, the application brush part (3) is provided with an angular section (31) of 30° - 120° that is devoid of bristles (see figure 3). Consequently, the angular size of the arrangement brush part (4) is limited to 30° - 120°.

There is therefore a continuing need for improved cosmetic applicators of dual functions, i.e., which can be used for performing both the cosmetic application function (i.e. loading) and the hair arrangement function (i.e. grooming), but without the above-described drawbacks of the prior art applicators.

Summary of the Invention

According to the invention, an applicator head for a cosmetic applicator comprises a molded brush portion (adapted for grooming) to which is mounted a non-molded, fiber brush (adapted for loading). The molded brush portion comprises relatively harder, relatively less flexible, injection molded bristles, while the non-molded brush portion comprises relatively softer, more flexible fiber bristles. The assembled applicator head has a distal end that is covered with the relatively harder bristles to facilitate grooming those eyelashes that are near the inner canthus of the eye. Together, the molded and non-molded brush portions fill an angular sector of 360°. The molded brush portion fills an angular sector of 180° - 200°, which is significantly greater than the 30° - 120° of the arrangement brush part (4) of US patent 7,231,926. The non-molded brush portion fills an angular sector of 160° -

180°. The snap fit assembly method of the non-molded brush portion into the molded brush portion eliminates the need for a gap between the two brushes, along with any unwanted play, so that the non-molded brush portion cannot slide back and forth with respect to the molded brush portion.

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Description of the Figures

Figures 1-3 depict a prior art applicator disclosed in US patent 7,231,926.

Figures 4A and 4B depict a mascara applicator according to the present invention.

Figures 5A and 5B depict one embodiment of a molded brush portion of an applicator head according to the present invention.

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Figures 6A and 6B depict one embodiment of a non-molded brush portion of an applicator head according to the present invention.

Figures 7A and 7B show the a non-molded brush portion being assembled to a molded brush portion.

Figure 8A shows an assembled applicator head according to the present invention.

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Figure 8B is a cross sectional view of the applicator head of figure 8A.

Detailed Description

Referring to figures 4A and 4B, a mascara applicator according to the present invention comprises a handle (11), an extended rod (12), and an applicator head (13) in the usual relationship of these elements. That is, the handle serves as a closure for a container of mascara product. Typically, the closure has screw threads (11a) on its inner surface for mating to a threaded container. The extended rod is connected to and depends from an inner surface of the handle, and the applicator head depends from the distal end (12a) of the rod. For example, the rod may be hollow, and able to receive the stem (14a) of the applicator head into itself. The stem may be retained in the rod by adhesive, welding, a friction fit, snap engagement, threaded engagement or any other suitable retaining means. An applicator head according to the present invention has two main parts: a molded brush portion (14) and the non-molded portion (15).

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The Molded Brush Portion

Referring to figures 5A and 5B, the molded brush portion (14) comprises a stem (14a) and a main body (14f). The stem may be formed as a generally cylindrical member having proximal (14b) and distal (14c) ends, and a hollow space (14d) that opens onto the distal end of the stem, and onto the side wall (14e) of the stem. The side wall of the stem is devoid of bristles or other grooming features, and is generally smooth, so that the stem is able to join to the distal end (12a) of the rod (12), as described above.

The main body (14f) comprises an approximately semi-cylindrical member (14g), an opened proximal end (14h), and a closed distal end (14i). The semi-cylindrical member (14g) defines a hollow space (14j) that connects to the opened proximal end (14h) and to a groove (14k) located in the closed distal end (14i) of the main body (see figure 8B). The opened proximal end (14h) is integrally molded to the opened distal end (14c) of the stem (14a), such that the hollow space (14j) of the semi-cylindrical member and the hollow space (14d) of the stem are contiguous, as shown. When we say that the semi-cylindrical member (14g) is approximately semi-cylindrical, we mean that the semi-cylindrical member occupies an angular space of approximately 180° - 200°. The distal end (14i) of the main body (14f) occupies a complete 360° around longitudinal axis A-A, while the proximal end (14h) may occupy between about 200° and 270°. Also, the semi-cylindrical member (14g) may taper toward the closed distal end (14i). The outside surface of the semi-cylindrical member features a multitude of molded bristles (14l), as does the closed distal end (14i) of the main body. The proximal end (14h) of the main body may or may not comprise bristles.

Preferably, the bristles (14l) of the semi-cylindrical member (14g) are regularly arranged in columns (14p) that extend down the semi-cylindrical member, parallel to the longitudinal axis (A-A) of the main body (14f). Each column of bristles may typically comprise from 5 to 50 bristles, preferably from 10 to 40, more preferably from 20 to 35 bristles. For example, the semi-cylindrical member of figure 5A has 23 bristles in a longitudinal column. The semi-cylindrical member may preferably comprise from 4 to 10 columns of bristles. More preferred are 7, 8 or 9 columns of bristles. For example, in figure 5B, the semi-cylindrical member of the main body (14f) has 9 columns of bristles extending longitudinally along the semi-cylindrical member. Furthermore, in preferred embodiments, bristles (14l) of the semi-cylindrical

member are regularly arranged in rows, each row lying on a circumference of the semi-cylindrical member, in a plane that is perpendicular to the longitudinal axis of the main body.

The bristles (14l) of the semi-cylindrical member (14g) of the main body (14f) typically extend radially from the longitudinal axis of the main body, and all of the bristles in a single column are parallel to each other. The bristles of the distal end (14i) of the main body extend in various directions. The bristles may comprise flat and/or rounded portions, and the horizontal cross section of the bristles may be any conceivable shape, only limited by the ability to mold the main body. Preferred, however, are bristles that have a horizontal cross section that is shaped as a circular segment that has an arc that ranges from about 160° to no more than 180°, and whose radius decreases as you move from base to tip. Such bristles have a semi-conical profile comprised of a flat face and a curved face. Preferably, the bristles would have a rounded tip. The remainder of each bristle may be shaped to have one or more depressions, one or more protrusions, or both on the curved face of the semi-conical bristle, while the flat face has no such features. Preferably, each semi-conical bristle has at least two depressions and/or protrusions located on its curved surface. The manufacture of such bristles was described in US 9,326,590 which is hereby incorporated by reference in its entirety. Also, a bristle may have one or more perforations that pass through the bristle from the flat face to the curved face. The manufacture of such bristles was described in US 9,326,584 which is hereby incorporated by reference in its entirety. As can be seen in figure 5B, the molded bristles of the molded brush portion (14) do not have to be all the same height.

Exemplary materials that can be used in the present invention to create the molded brush portion (14) include, but are not limited to: silicone elastomers, thermoplastic elastomers (such as, for example, styrene-ethylene-butylene-styrene block copolymer - SEBS), vinyl elastomers (EVA), thermoplastic polyester elastomers (Hytrel® from Dupont de Nemours), thermoplastic polyurethane elastomers (Pellethane® from Dow Plastic), Nitrile, and EPDM. Hardness of the chosen material preferably ranges from about 35 MPa (35 shore D Hytrel® from Dupont de Nemours) to about 1180 MPa (82 shore D Hytrel®). In general, harder, less flexible materials will be more suitable for the molded brush portion (14), which is intended to spread and declump a thick mascara product, and separate and lengthen the eyelashes.

The Non-Molded Brush Portion

Referring to figures 6A and 6B, the non-molded brush portion (15) comprises a twisted wire core (15a) that supports a multitude of fiber bristles (15e) in a predetermined arrangement, such as helical. However, the proximal (15b) and a distal (15c) ends of the twisted wire core are devoid of bristles. The length of the distal end that is devoid of bristles is, preferably, about 2 - 5 mm. The length of the proximal end of the twisted wire core that is devoid of bristles is, preferably, about 3 - 6 mm. As shown, the multitude of bristles define an approximately semi-cylindrical bristle envelope that occupies an angular space of approximately 160° - 180°. In order to achieve this arrangement, the non-molded brush portion may be fashioned in the usual manner of twisted wire core brushes, but thereafter, all of the bristles filling an angle of 180° - 200° are cropped close to the wire core. Typically, the wire core (15a) may be fashioned from stainless steel having a diameter from 0.5 to 1mm. The bristles (15e) of the non-molded brush portion (15) may be nylon, hollow or solid, and typically from 0.1 to 0.5 mm. The number of fiber bristles may vary, but will typically be between 250 and 500. The bristles of the non-molded brush portion do not have to be all the same height.

The Assembled Applicator

The molded (14) and non-molded (15) brush portions are fashioned separately, and subsequently assembled. As noted above, the proximal end (15b) and distal end (15c) of the wire core (15a) are devoid of bristles (15e). Referring to figure 7A, the first step in assembling the non-molded brush portion (15) to the molded brush portion (14) is to insert the distal end (15c) of the non-molded brush portion into the groove (14k) of the molded brush portion, the length of the groove being at least as long as the distal end (15c) of the wire core (i.e. 2 - 5 mm). Then, as shown in figure 7B, the wire core (15a) is brought into the hollow space (14j) of the semi-cylindrical member (14g) of the molded brush portion (14), and the proximal end (15b) of the non-molded brush portion comes to rest in the hollow space (14d) of the stem (14a), the hollow space being at least as long as the proximal end (15b) of the wire core (i.e. 3 - 6 mm). Two views of a fully assembled applicator head are shown in figures 8A and 8B. In order to make sure the non-molded brush portion remains in the molded brush

portion, the hollow space (14d) of the stem (14a) may be provided with one or more flexible (14m) tabs that allow the proximal end (15b) of the non-molded brush portion (15) to be forced into the hollow space of the stem, but that prevent accidental removal therefrom. Once the applicator head is assembled, the stem (14a) of the
5 molded brush portion (14) can be secured to the distal end of a rod (12) as explained above to complete the mascara applicator.

When assembled, the longitudinal axis (A-A) of the molded brush portion (14) is parallel to the longitudinal axis (B-B) of the non-molded brush portion (15).

Together, the molded brush portion and the non-molded brush portion fill an angular
10 sector of 360°. The molded brush portion fills an angular sector of 180° - 200°, which is significantly greater than the 30° - 120° of the arrangement brush portion (4) in US patent 7,231,926. The greater angular size of the comb portion provides better grooming of the lashes, especially curling.

The distal end (14i) of the assembled applicator is covered with the bristles to
15 facilitate making-up those eyelashes that are near the inner canthus of the eye. This feature is missing from the applicator of US patent 7,231,926, which has no bristles on its distal end.

Also, because we use the hollow space (14d) in the side wall (14e) of the stem for assembly, we were able to extend the bristles of the non-molded brush the full
20 length of the hollow space (14j), so there is no gap between the non-molded brush portion and the molded brush portion, as there is in U.S. patent 7,231,926. Consequently, the non-molded brush portion will not be able to slide back and forth in the molded brush portion.

25

What we claim is:

1. A cosmetic applicator head (13) comprising a molded brush portion (14) and the non-molded brush portion (15);

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the molded brush portion (14) comprises:

a stem (14a) that has:

a proximal end (14b);

a distal end (14c); and

10

a hollow space (14d) that opens onto the distal end of the stem, and onto a side wall (14e) of the stem;

a main body (14f) that has:

an opened proximal end (14h) that connects to the distal end (14c) of the stem (14a);

15

a closed distal end (14i) having a groove (14k);

a semi cylindrical member (14g) that defines a hollow space (14j), such that the hollow space (14j) of the main body is contiguous with the hollow space (14d) of the stem;

20

wherein:

the semi-cylindrical member (14g) occupies an angular space of approximately 180° - 200° ;

the outside surface of the semi-cylindrical member (14g) features a

25

multitude of bristles (14l), as does the closed distal end (14i) of the main body; and

the side wall (14e) of the stem (14a) is devoid of bristles; and

the non-molded brush portion (15) comprises:

30

a twisted wire core (15a) that supports a multitude of fiber bristles (15e), the twisted wire core having proximal (15b) and distal (15c) ends that are devoid of bristles;

wherein:

the multitude of fiber bristles (15e) define a semi-cylindrical bristle envelope that occupies an angular space of approximately 160° - 180°;

5 the twisted wire core (15a) of the non-molded brush portion (15) rests in the hollow space (14j) of molded brush portion (14);

the distal end (15c) of the twisted wire core (15a) rests in the groove (14k) of the molded brush portion (14); and

the proximal end (15b) of the twisted wire core (15a) rests in the hollow space (14d) of the molded brush portion (14).

10

2. The cosmetic applicator head (13) of claim 1 wherein the bristles (14l) of the semi-cylindrical member (14g) are arranged in columns (14p), there being from 4 to 10 columns, each column having from 5 to 50 bristles.

15 3. The cosmetic applicator head (13) of claim 1 wherein the closed distal end (14i) of the molded brush portion (14) features a multitude of molded bristles (14l).

4. The cosmetic applicator head (13) of claim 1 wherein the length of the distal end (15c) of the twisted wire core (15a) that is devoid of bristles is from 2 mm to 5 mm, and the length of the proximal (15b) end of the twisted wire core that is devoid of bristles is from 3 mm - 6 mm.

20

5. The cosmetic applicator head (13) of claim 1 wherein the hollow space (14d) of the stem (14a) is provided with one or more flexible (14m) tabs that allow the proximal end (15b) of the non-molded brush portion (15) to be forced into the hollow space of the stem, but that prevent its accidental removal therefrom.

25

6. A cosmetic applicator comprising a handle (11), an extended rod (12), and an applicator head (13) according to claim 1 that depends from the distal end (12a) of the rod.

30

Prior Art (U.S. Patent 7,231,926)

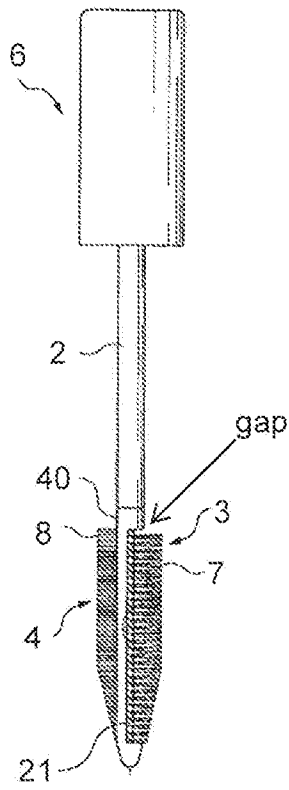


FIG. 1

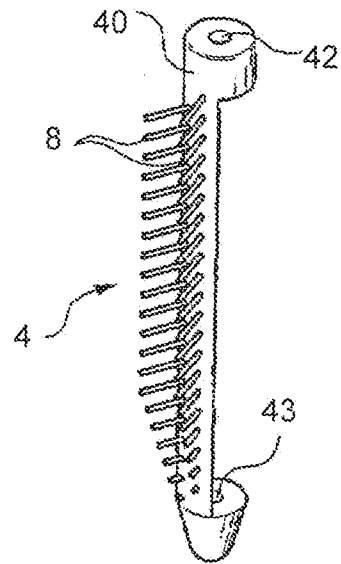


FIG. 2

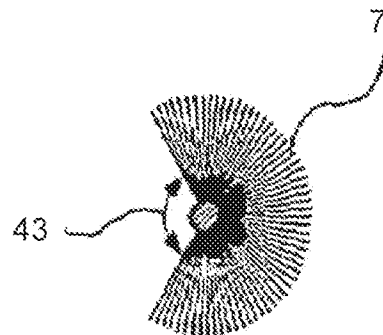


FIG. 3

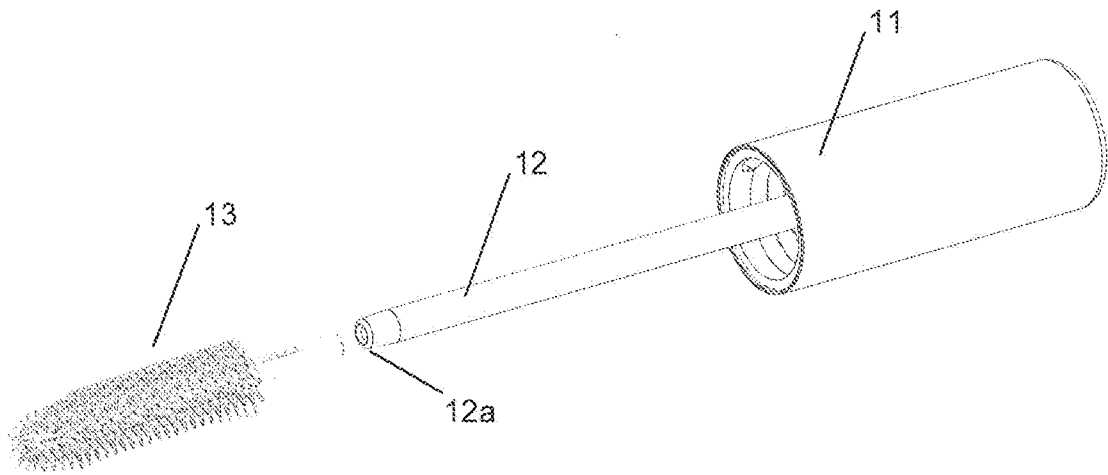


FIG. 4A

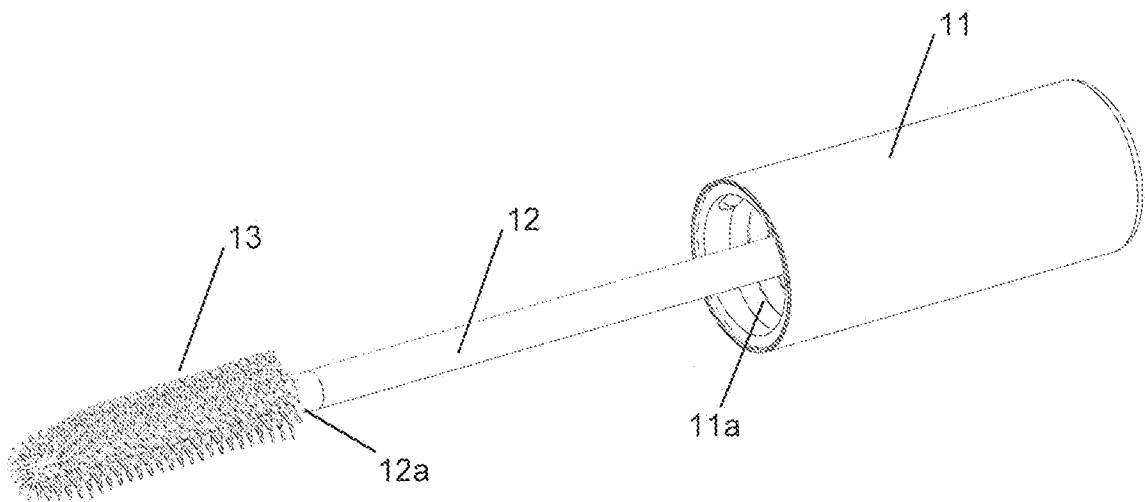


FIG. 4B

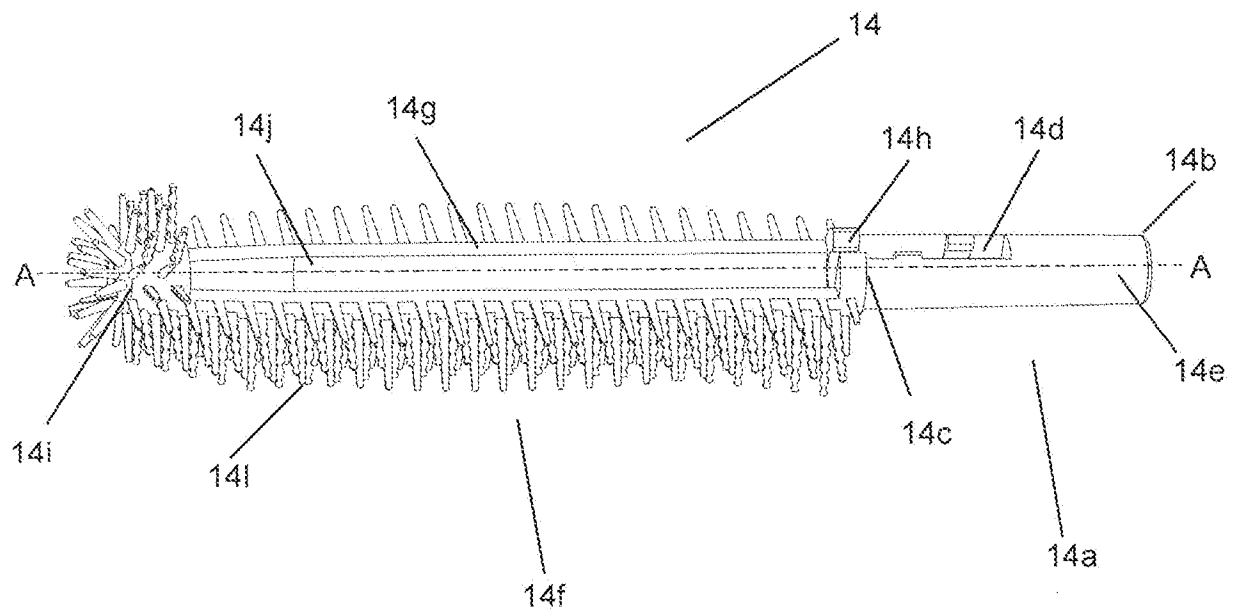


FIG. 5A

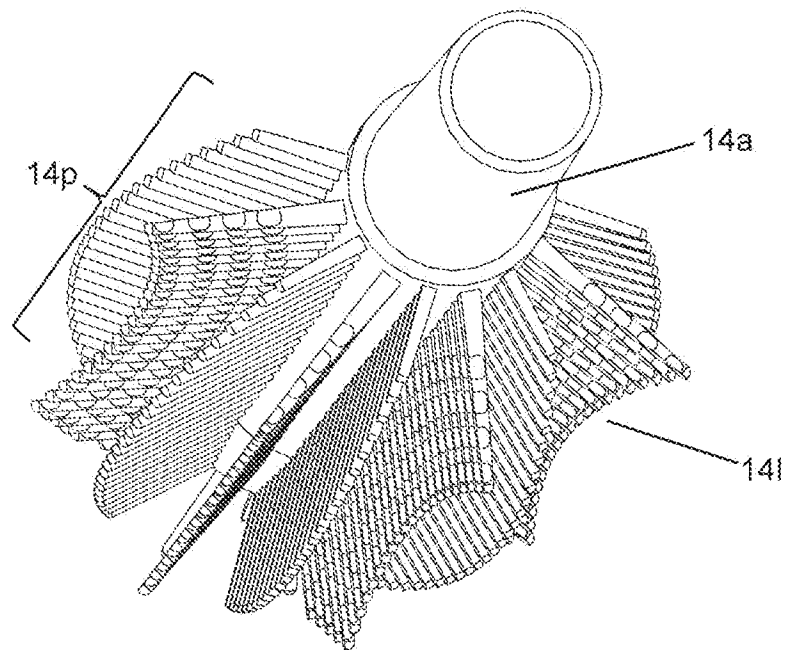


FIG. 5B

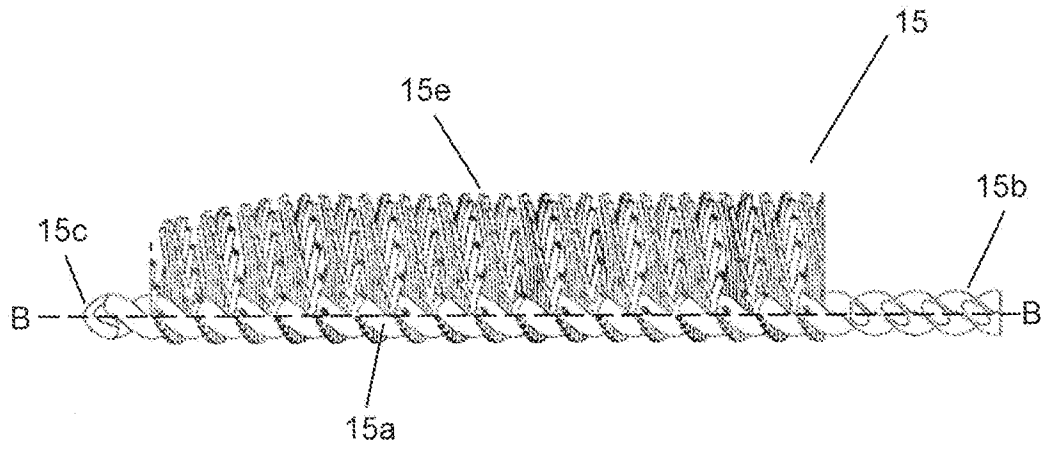


FIG. 6A

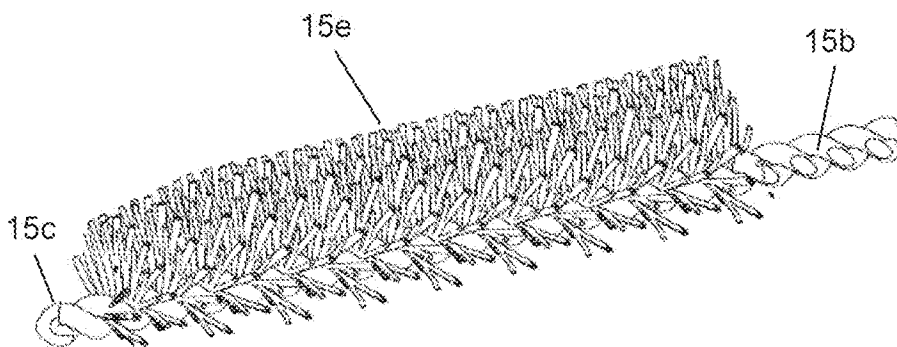


FIG. 6B

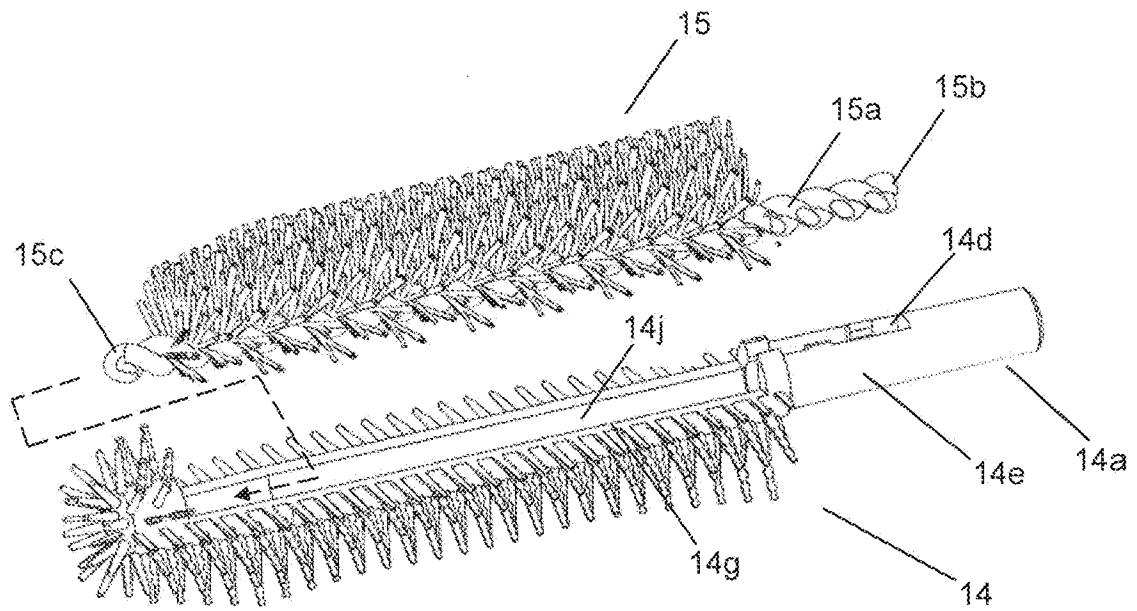


FIG. 7A

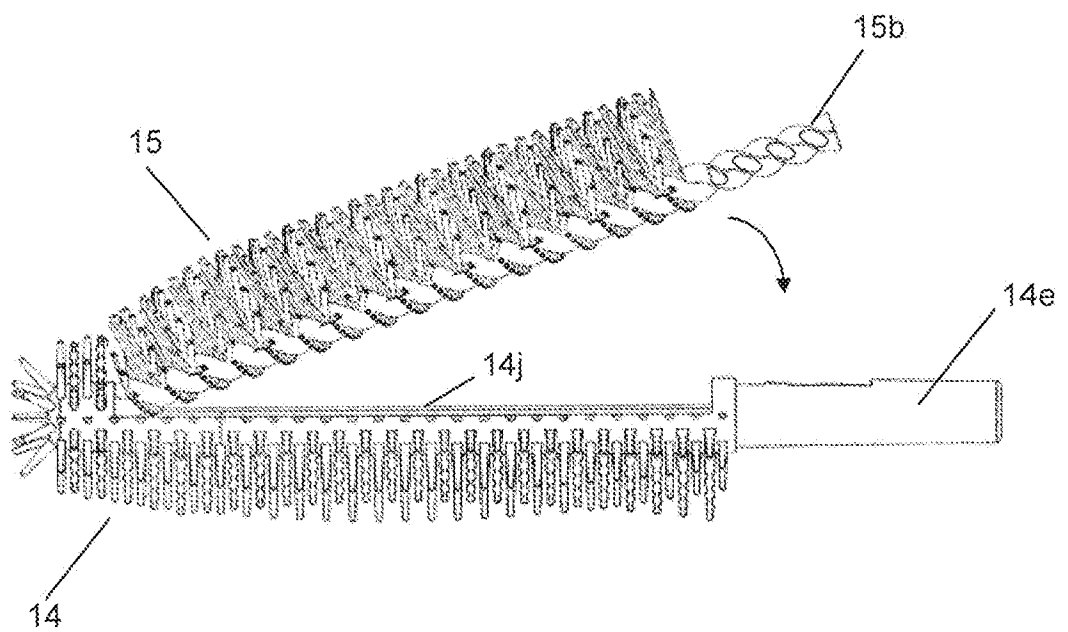


FIG. 7B

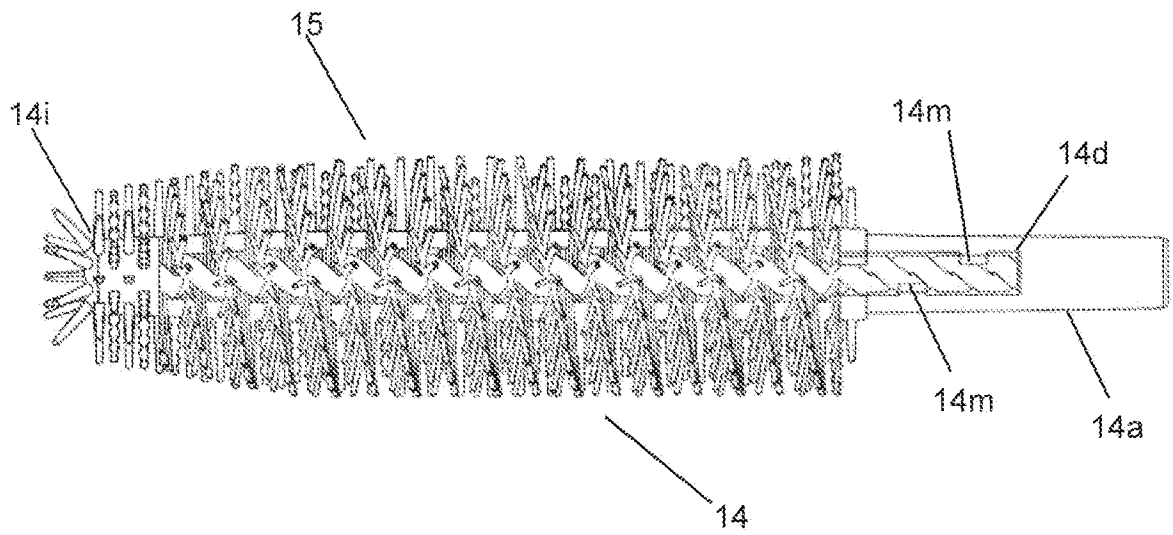


FIG. 8A

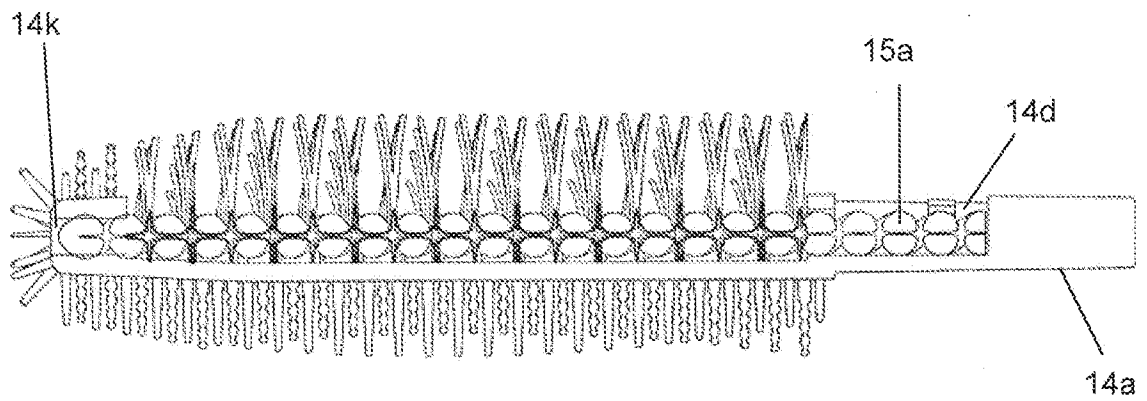


FIG. 8B

A. CLASSIFICATION OF SUBJECT MATTER

A45D 33/26(2006.01)i, A45D 34/04(2006.01)i, A45D 40/26(2006.01)i, A45D 33/00(2006.01)i, A45D 34/00(2006.01)i, 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 33/26; A45D 40/26; A45D 19/00; A45D 24/16; A45D 34/04; A45D 24/00; A46D 3/00; A45D 33/00; A45D 34/00; A45D 40/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & keywords: mascara, cosmetic, brush, comb, bristles

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 7231926 B2 (KIM, YOON-HOI) 19 June 2007 See column 5, lines 7-14; claim 1; figures 1-12b.	1-6
A	KR 20-2013-0003209 U (JANGUP SYSTEM CO., LTD.) 30 May 2013 See the whole document.	1-6
A	US 2010-0175708 A1 (KIM, TAE JIN) 15 July 2010 See the whole document.	1-6
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