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(54) **MASCARA BRUSH**

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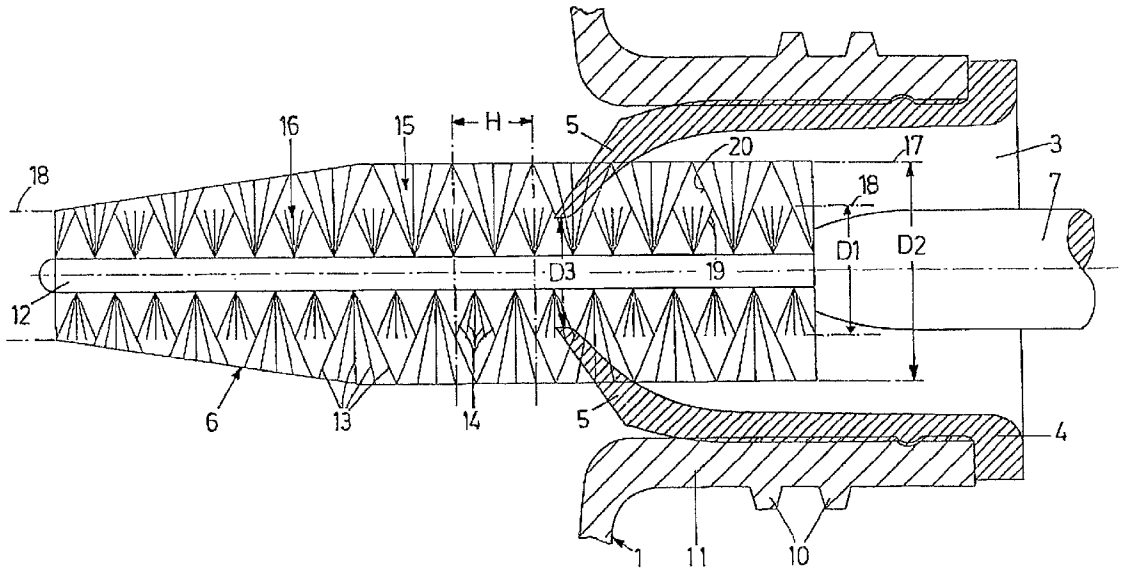
(57) **ABSTRACT**

In a mascara brush comprising a multiplicity of bristles fixed between two helically twisted wire segments, with bristles or tufts of bristles with varying radial lengths extending from the wire core formed by the helically twisted wires, provision is made for the tips of tie shorter bristles to be located essentially on a nearly rotation-symmetrical, especially cylindrical, inner envelope.



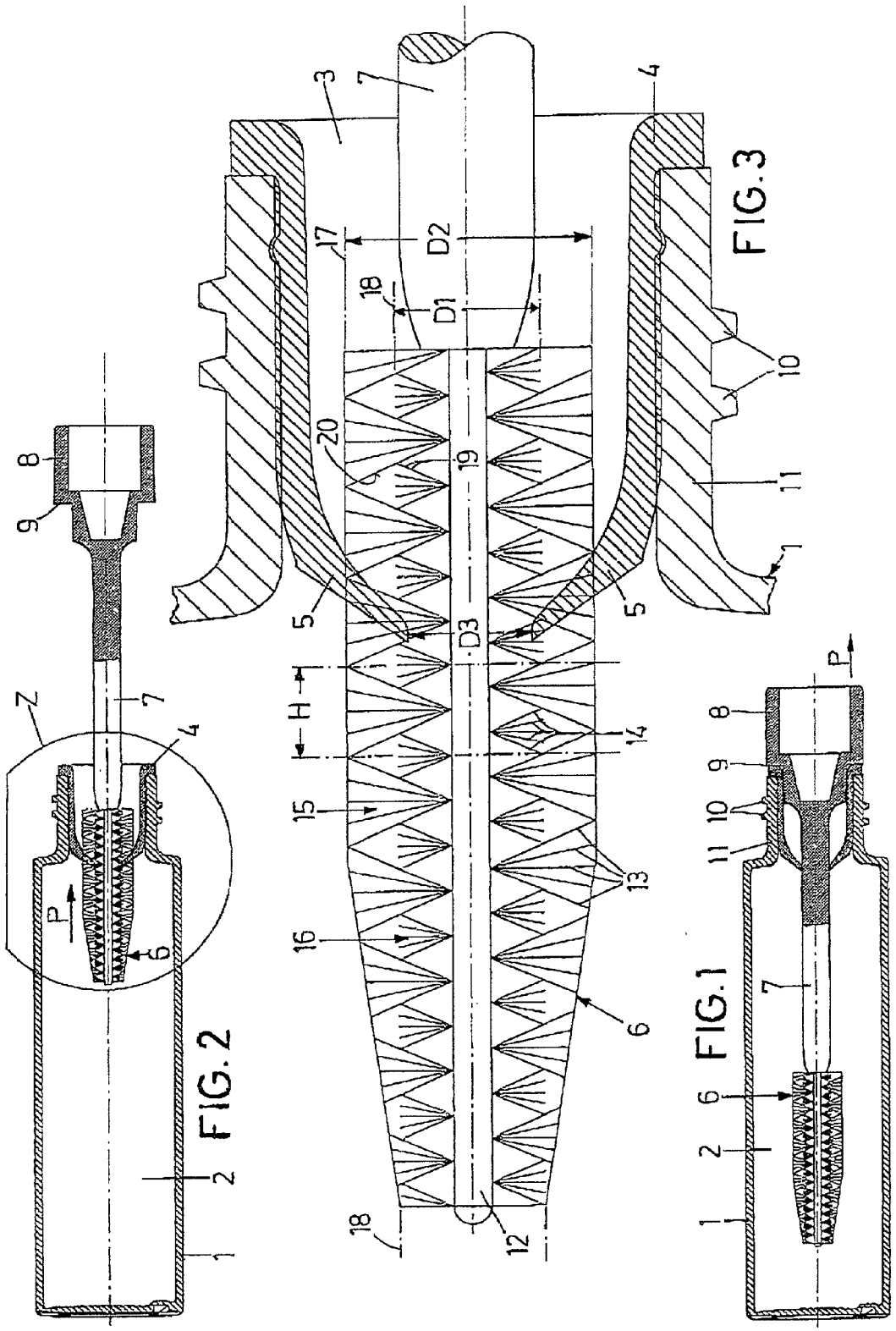


FIG. 3

FIG. 2

FIG. 1

MASCARA BRUSH

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention is concerned with a mascara brush comprising a multiplicity of bristles fixed between two helically twisted wire segments, with bristles or tufts of bristles with varying radial lengths extending from the wire core formed by the helically twisted wires.

[0003] 2. Background Art

[0004] A mascara brush of this type according to the preamble is known, for example, from DE 44 46 521 Al.

[0005] There are various reasons for providing bristles of varying lengths, directed mainly at utilizing the resulting varying stiffness of the bristles by attaining, in this manner, very good transfer properties for the liquid mascara and coverage for application to the eyelashes on one hand, and advantageous combing and separating properties on the other hand. Conventionally, bristles of varying lengths were realized either by feeding in bristles of varying lengths more or less statistically distributed during the manufacture of the brush prior to the twisting of the wires, or by trimming the longer bristles, not only in the sense of evening them out but specifically to produce a certain exterior geometry with varying bristle lengths, resulting, for example, in a conic configuration of the entire bra or its tip, or in brushes with indentations in their outer faces.

SUMMARY OF THE INVENTION

[0006] Proceeding from the above, the invention has as its object to further improve the useful properties of a mascara brash of this type, and particularly also to make it possible to provide a defined wiping mechanism for the shorter bristles during withdrawal of the brash from the mascara-filled container and when passing the wiper means provided in the container opening.

[0007] This object is met according to the invention in such a way that the tips of the shorter bristles are essentially located on a nearly rotation-symmetrical, especially cylinder-shaped, inner envelope. An envelope in this context is intended to mean a geometrical three-dimensional surface structure on which the ends of the bristles are located, or which is formed by the ends of the bristles.

[0008] One of the unique features of the invention thus lies in the fact that the shorter bristles, too, which cannot be trimmed independently from the longer bristles in the finished brush, have a defined envelope and accordingly entirely defined combing and storage properties and also a defined diameter relative to a wiper means.

[0009] In a further improvement of the invention, provision is made for the tips of the longer bristles to be located on a rotation-symmetrical, especially cylinder-shaped, outer envelope, and it may be provided in a manner known per se that the envelope of these longer bristles conically narrows towards the tip and the outer bristles may be trimmed especially in such a way that the envelope of the trimmed sections conically narrows towards the envelope of the shorter bristles.

[0010] A particularly advantageous design provides for the shorter and longer bristles to extend away from the wire core, flaring outward in a tuft-like manner, with the outer tuft boundaries of the shorter bristles extending at approximately mid-height to the outer tuft boundaries of the bristle tufts of the longer bristles. This results in storage capacities in the resulting created spaces that increase the transfer capacity.

[0011] The diameter of the inner envelope is 1 to 8 mm and the diameter of the outer envelope is 3 to 15 mm. The diameter of the wire core in the bristle-covered region is advantageously 1.0 to 6.0 mm, preferably approximately 1.3 mm, whereas the diameter of the wire core in the region outside he bristle-covered area is advantageously 0.75 to 4.0 mm, preferably approximately 1.0 mm.

[0012] A particularly advantageous density of the bristle tips is attained in a design in which the bristle tips are essentially evenly distributed on the outer envelope and 20 to 60 bristle tips are located on an imagined cylinder slice of the outer envelope perpendicular to the wire core of 2 mm height.

[0013] The longer bristles may be trimmed at least partly in such a way that the trimmed bristle tips are recessed disc-like or helical relative to the outer envelope.

[0014] The tips of the longer bristles may be split or polished.

[0015] The shorter bristles advantageously have a maximum filament cross section of 0.03 to 0.15 mm and the longer bristles have a maximum filament cross section of 0.075 to 0.3 mm. To the extent in which a maximum filament cross section is discussed here, this takes into consideration the fact that the bristles may also have non-circular cross sections.

[0016] In a further embodiment longer and shorter bristles may be disposed within one and the same winding of the wire core.

[0017] The invention is also concerned with a mascara unit with a mascara brush of the above type, comprising a container for holding liquid mascara with an opening into which a wiper means has been inserted for the mascara brush, the latter being fixed in a closure cap for the container, with provision made according to the invention for the fee inside diameter of the wiper means to be slightly smaller than the diameter of the inner envelope of the shorter bristles.

[0018] The invention will be described in greater detail below based on a preferred embodiment, in combination with a drawing

BRIEF DESCRIPTION OF THE DRAWING

[0019] **FIG. 1** shows a section through an inventive mascara unit with attached brush;

[0020] **FIG. 2** shows an illustration with partially withdrawn brush; and

[0021] **FIG. 3** shows an enlarged illustration of the area Z in **FIG. 2**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0022] A mascara unit shown in the drawing comprises a container **1** with an interior space **2** for accepting liquid

mascara, with the container **1** incorporating an opening **3** in which a wiper means **4** with wiper lips **5** is locked in place.

[**0023**] A mascara brush **6** is fixed on a wand **7** that has on its top a projection **8** that sealingly rests with an annular shoulder **9** against the top of the wiper means **4** when in the closed, attached condition and is connectable to a screw-on cap not shown in the drawing per se and formed on an exterior thread **10** on the outside of the reduced container neck **11** encompassing the opening **3**.

[**0024**] In **FIG. 2 a** position is shown in which the brush **6** is in the process of passing the region of the wiper means **4** in the direction of the arrow P.

[**0025**] The brush **6** itself and the wiper means **4** are shown enlarged in **FIG. 3**. From this **FIG. 3** it is apparent that a multiplicity of longer bristles **13** and shorter bristles **14** are fixed, under formation of tufts **15** of longer bristles **13** and tufts **16** of shorter bristles **14**, in a wire core **12** that is formed of helically twisted wire segments.

[**0026**] The longer bristles **13** and/or bristle tufts **15** have a cylinder-shaped envelope lope **17**. The shorter bristles **14** and/or bristle tufts **16** have a cylinder-shaped envelope **18**, with the outer envelope **17** at its end region (shown on the left in the drawing) conically narrowing toward the inner envelope **18**. The diameter D1 of the inner envelope is accordingly smaller than the diameter D2 of the outer envelope. The diameter D1 of the inner envelope **18** is slightly larger than the diameter or distance D3 in the opening region between the wiper lips **5**.

[**0027**] The outer boundaries **19** of the shorter bristles **14** extend to the bristle boundaries **20** of the longer bristle tufts **15** to approximately half of their height.

What is claimed is:

1. A mascara brush comprising a multiplicity of bristles fixed between two helically twisted wire segments, with bristles or tufts of bristles with varying radial lengths extending from the wire core formed by the helically twisted wires, wherein the tips of the shorter bristles (**14**) are essentially located on a nearly rotation-symmetrical, especially cylinder-shaped, inner envelope (**18**).

2. A mascara brush according to claim 1, wherein the tips of the longer bristles (**13**) are located on a rotation-symmetrical, especially cylinder-shaped, outer envelope (**17**).

3. A mascara brush according to claim 2, wherein the outer envelope (**17**) of the longer bristles conically narrows towards the tip.

4. A mascara brush according to claim 3, wherein the outer bristles (**13**) are trimmed in such a way that the envelope (**17**) of the Ned sections conically narrows towards The envelope (**18**) of the shorter bristles (**14**).

5. A mascara brush according to claim 1, wherein the shorter and longer bristles (**14**, **13**) extend away from the wire core (**12**), flaring outward in a tuft-like manner, with the outer tuft boundaries (**20**) of the shorter bristles (**14**) extending at approximately mid-height to the outer tuft boundaries (**20**) of the bristle tufts (**15**) of the longer bristles (**13**).

6. A mascara brush according to claim 2, wherein the diameter (D1) of the inner envelope (**18**) is 1 to 8 mm and the diameter (D2) of the outer envelope (**17**) is 3 to 15 mm.

7. A mascara brush according to claim 1, wherein the diameter (D3) of the wire-core (**12**) in the bristle-covered area is 1.0 to 6.0 mm, preferably approximately 1.3 mm.

8. A mascara brush according to claim 1, wherein the diameter (D3) of the wire core in the region outside the bristle-covered area is 0.75 to 4.0 mm, preferably approximately 1.0 mm.

9. A mascara brush according to claim 2, wherein the bristles (**13**) on the outer envelope (**17**) are essentially evenly distributed and that 20 to 60 filament tips are located perpendicular to the wire core (**12**) of 2 mm height on an imagined cylinder slice of the height H of the outer envelope (**17**).

10. A mascara brush according to claim 1, wherein the longer bristles (**13**) are partly trimmed in such a way that the trimmed bristle tips are recessed disc-like or helical relative to the outer envelope (**17**).

11. A mascara brush according to claim 1, wherein the tips of the longer bristles (**13**) are split.

12. A mascara brush according to claim 1, wherein the tips of the longer bristles (**13**) are polished.

13. A mascara brush according to claim 1, wherein the shorter bristles (**14**) have a maximum filament cross section of 0.03 to 0.15 mm and the longer bristles have a maximum filament cross section of 0.075 to 0.3 mm.

14. A mascara brush according to claim 1, wherein longer and shorter bristles (**14**, **13**) are disposed in one and the same winding of the wire core (**12**).

15. A mascara unit with a mascara brush according to claim 1, comprising

a container (**1**) for accepting liquid mascara having an opening (**3**) into which a wiper means (**4**) for the mascara brush (**6**) is inserted, the mascara brush (**6**) being fixed in a closure cap for the container (**1**), wherein the free inside diameter (D3) of the wiper means (**4**) is slightly smaller than the diameter (D1) of the inner envelope (**18**) of the shorter bristles (**14**).

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