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Tranchant et al.(10) **Pub. No.: US 2008/0216857 A1**(43) **Pub. Date: Sep. 11, 2008**(54) **APPLICATOR DEVICE FOR APPLYING A
COSMETIC AND THE USE OF SUCH A
DEVICE**(30) **Foreign Application Priority Data**

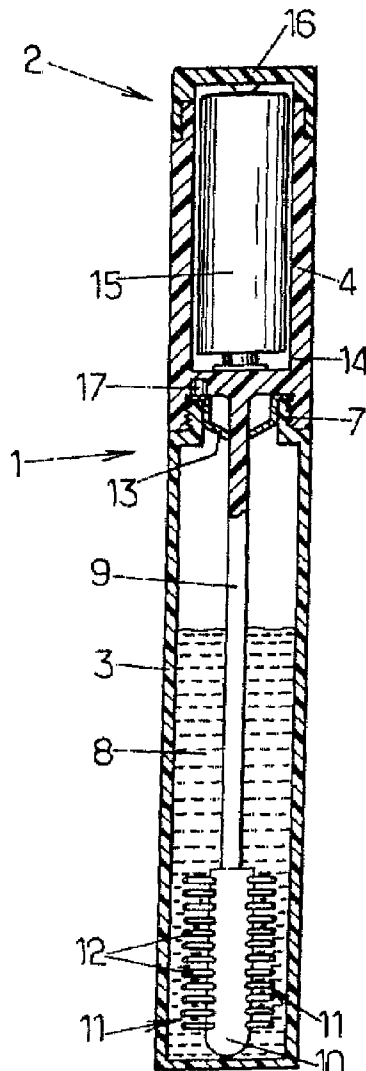
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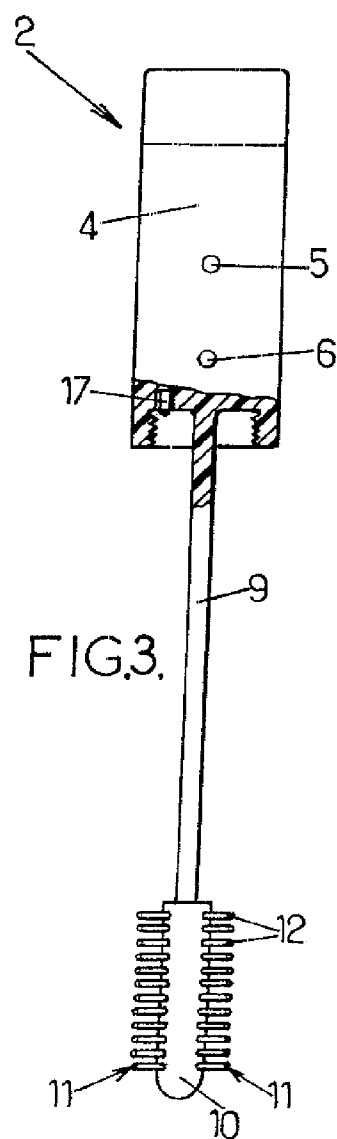
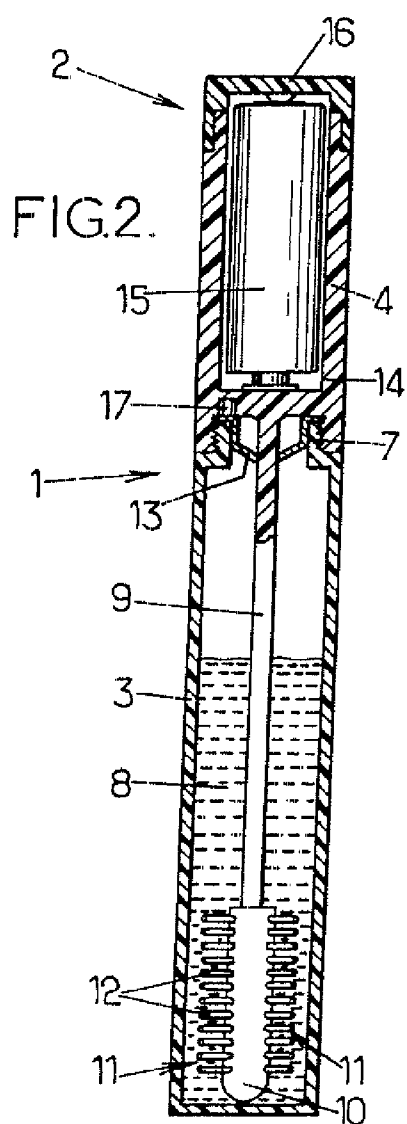
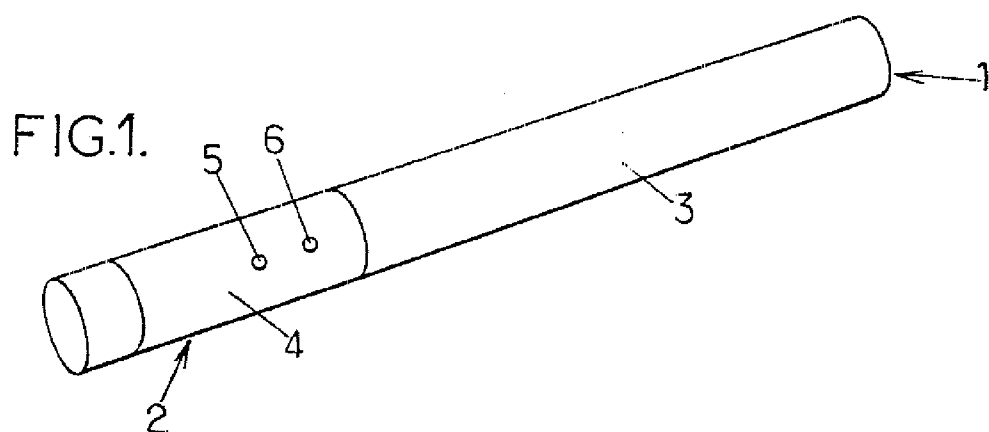
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Marigny-les-Usages (FR); **Marc**
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Correspondence Address:

MILLER, MATTHIAS & HULL
ONE NORTH FRANKLIN STREET, SUITE 2350
CHICAGO, IL 60606 (US)(52) **U.S. Cl. 132/218; 401/118; 401/126; 401/2**(57) **ABSTRACT**

An applicator device for applying a cosmetic, the applicator device comprising a reservoir adapted to contain cosmetic in fluid form, an applicator having a cap that closes the reservoir and that is secured to a rod carrying an applicator head, a heater device adapted to heat the applicator head and controlled by a control circuits and a sensor adapted to detect the reservoir being opened by the cap being removed, the control circuit being connected to said sensor and being adapted to cause the heater device to operate only when said sensor detects such opening.

(73) Assignee: **LVMH Recherche,** Saint Jean de
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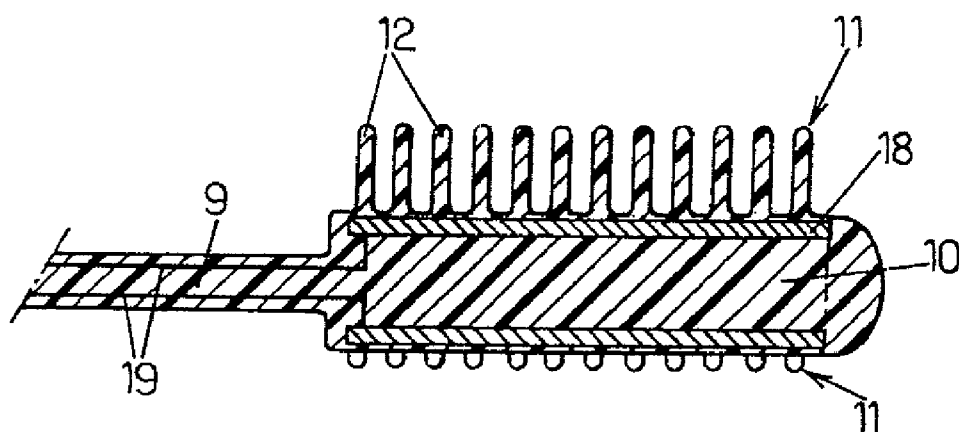
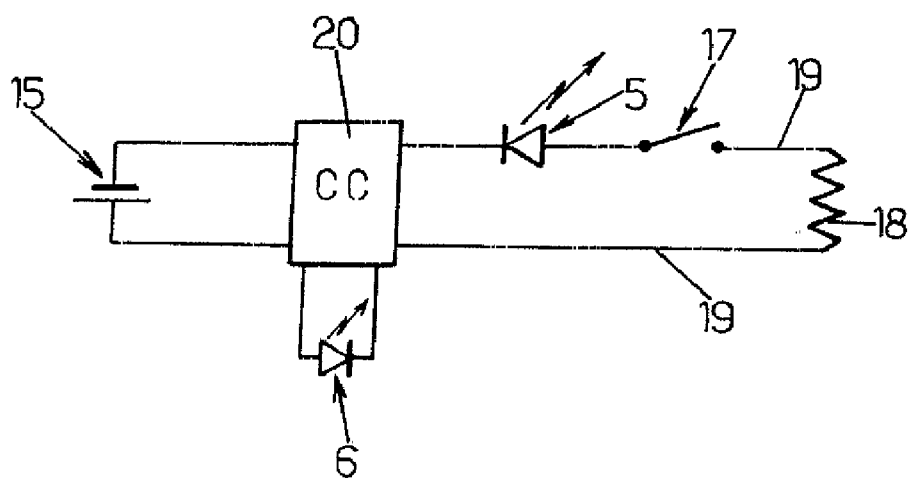


FIG. 4.

FIG. 5.



APPLICATOR DEVICE FOR APPLYING A COSMETIC AND THE USE OF SUCH A DEVICE

[0001] The present invention relates to applicator devices for applying cosmetics, and to uses of such devices.

BACKGROUND OF THE INVENTION

[0002] More particularly, the invention relates to an applicator device for applying a cosmetic, the applicator device comprising:

[0003] a reservoir adapted to contain cosmetic in fluid form (i.e. in the form of a liquid that can be more or less viscous or semi-liquid);

[0004] an applicator having a cap that is adapted to close the reservoir and that is secured to a rod adapted to penetrate into said reservoir when the cap closes said reservoir, said rod carrying an applicator head adapted to apply the cosmetic to a portion of the body of a user (in particular for making up keratinous fibers such as eyelashes, eyebrows, and hair); and

[0005] a heater device adapted to heat the applicator head and controlled by a control circuit.

[0006] Document EP-A-1 466 541 describes an example of such an applicator device, in which the heater device is essentially adapted to heat the cosmetic contained in the reservoir. That device suffers from the drawbacks of having high energy consumption, insofar as it requires a relatively large quantity of cosmetic contained in the reservoir to be heated unnecessarily, and insofar as it is limited to one type of cosmetic composition having a predefined thermal profile. In addition, repeated heating of the cosmetic contained in the reservoir can, even with an appropriate thermal profile, lead to the cosmetic losing some of its physico-chemical properties with use.

OBJECTS AND SUMMARY OF THE INVENTION

[0007] A particular object of the present invention is to mitigate those drawbacks.

[0008] To this end, according to the invention, an applicator device of the type in question is being provided with at least one sensor adapted to detect the reservoir being opened by the cap being removed, the control circuit being connected to said sensor and being adapted to cause the heater device to operate only when said sensor detects such opening.

[0009] By means of these features, the applicator device of the invention has lower energy consumption and avoids degrading the cosmetic contained in the reservoir because only the cosmetic carried by the applicator head once said head has been removed from the reservoir is normally heated.

[0010] In various embodiments of the device of the invention, it is optionally possible to use one or more of the following features:

[0011] the control circuit is adapted to cause the heater device to operate for a predetermined time each time the reservoir is opened;

[0012] said predetermined time lies in the range 30 seconds to 2 minutes;

[0013] the sensor comprises a contactor carried by the applicator and disposed such that the reservoir presses on said contactor when the cap closes the reservoir;

[0014] the heater device is adapted to heat the applicator head to a temperature lying in the range 35° C. to 80° C.;

[0015] the heater device comprises at least one resistive heater element;

[0016] the applicator head is provided with at least one row of teeth aligned substantially parallel to the rod, and the reservoir is provided with a wiper gasket adapted to cause the cosmetic to penetrate between said teeth;

[0017] the applicator head is provided with two rows of teeth disposed at 180° relative to each other, and the reservoir is provided with a neck provided with a wiper gasket which has a central opening receiving the rod and two slots disposed at 180° relative to each other and opening out in said central opening, said slots being adapted to receive the two rows of teeth while the applicator head is passing through the wiper gasket;

[0018] each slot has an enlarged end remote from the central opening;

[0019] the applicator device has a fluid cosmetic disposed in the reservoir; and

[0020] the cosmetic is mascara.

[0021] In addition, the invention further provides the use of an applicator device as defined above, for applying a cosmetic (in particular mascara).

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Other characteristics and advantages of the invention appear from the following description of one of the embodiments thereof, given by way of non-limiting example, and with reference to the accompanying drawings, in which:

[0023] FIG. 1 is a perspective view of a first embodiment of a cosmetic applicator device of the invention in the stowage position;

[0024] FIG. 2 is a longitudinal section view of the applicator device of FIG. 1, still in the stowage position;

[0025] FIG. 3 is a longitudinal section view of the applicator belonging to the device of FIGS. 1 and 2, in the in-use position;

[0026] FIG. 4 is an enlarged section view of the applicator head belonging to the applicator of FIG. 3;

[0027] FIG. 5 is an electrical circuit diagram of the heater system of the applicator device of FIGS. 1 to 4.

[0028] FIG. 6 is a view similar to FIG. 1; and

[0029] FIG. 7 is a section view on line VII-VII of FIG. 6.

[0030] In the various figures, like references designate elements that are identical or similar.

MORE DETAILED DESCRIPTION

[0031] FIG. 1 shows an applicator device 1 for applying a cosmetic, in particular mascara, which applicator device comprises an applicator 2 made, for example, of a plastics material or of some other material, and a reservoir 3 also made of a plastics material or of some other material.

[0032] The applicator 2 is provided with a cap 4 that closes the reservoir 3 and enables a user to take hold of the applicator 2.

[0033] In the example shown herein, the cap 4 is provided with two indicator lights 5, 6 for purposes that are explained below.

[0034] As shown in FIGS. 2 and 3, the cap 4 can be screwed or fastened in some other way onto the neck 7 of the reservoir

3, which reservoir 3 contains the cosmetic 8 in fluid form, e.g. mascara that is generally of more or less viscous or semi-liquid consistency.

[0035] The cap 4 is extended by a rod 9 which extends from said cap 4 to an end provided with an applicator head 10 adapted to apply the fluid 8 to a portion of the body of a user, in particular to the eyelashes of the user when the cosmetic 8 is a mascara. In the example shown herein, the applicator head 10 is provided with a one or more combs 11, each of which has a row of teeth 12 extending in a plane containing the central axis of the rod 9 (each tooth 12 extends radially relative to the rod 9, and the teeth 12 of the same comb 11 are aligned one behind another in an alignment direction that is substantially parallel to the rod 9). The applicator head 10 can, for example, have from one to four combs 11 angularly distributed, optionally uniformly, around the rod 9. By way of example, the applicator head 10 can have three combs 11 angularly distributed at 120° from one another. In a variant, the combs 11 could be replaced by flexible bristles disposed around the applicator head 10, thereby forming a brush.

[0036] In the stowage position shown in FIG. 2, the rod 9 passes through a wiper gasket 13 made of elastomer or the like and adapted to remove any mascara that might remain deposited on the rod 9 and any surplus mascara carried by the applicator head 10 while the cap 4 is being removed from the reservoir 3.

[0037] When the applicator head is provided with a single comb or with two combs disposed in the same plane, the wiper gasket 13 can optionally be of the type described in Document FR-A-2 738 728 for enabling each comb 11 to be wiped effectively, or a wiper as described above but that is mounted to rotate (as described, for example, in Document FR-A-2 732 869) or indeed a roller wiper (as described, for example, in Document FR-A-2 777 431), those documents being incorporated herein by reference.

[0038] By means of this wiping, the gaps between the teeth 12 are filled with cosmetic when a user takes off the cap 4 and withdraws the applicator head 10 from the reservoir 3.

[0039] The cap 4 is also provided with a cavity 14 containing one or more batteries 15. Optionally, the cavity 14 can be opened, e.g. by means of a cover 16 screwed or fitted to the top end of the cap 4, so that it is possible to replace the batteries 15 when they are flat. In a variant, the applicator device 1 could be provided with a connector designed to recharge the battery(ies) 15.

[0040] The cap 4 is provided with a sensor 17, e.g. an electrical contactor, disposed facing the neck 7 of the reservoir so that said neck 7 presses on the sensor 17 when the cap 4 closes the reservoir 3, thereby making it possible to detect such closure.

[0041] As shown in FIG. 4, the applicator head 10 can also include a resistive heater element 18 which is electrically powered by the battery 15 by means of conductors 19 situated in the rod 9.

[0042] The heater element 20 can be an annular element disposed in the applicator head 10 in the vicinity of the teeth 12, so as to heat said teeth 12 to a temperature lying in the range 40° C. to 60° C., so as to make the cosmetic carried by the applicator head 10 more fluid. The heater element 20, can be constituted by a wound metal wire, by a ceramic element, or by some other element. The applicator head can advantageously be made, at least in part, of a material that is a good heat conductor, e.g., a metal or a plastics material filled with metal.

[0043] As shown in FIG. 5, the resistive heater element 18 is electrically powered via a control circuit (CC) 20. The above-mentioned indicator light 5 can, for example, be constituted by a light-emitting diode (LED) 5, in particular by a green LED, or by an LED of some other color, mounted in series with the resistive heater element 18 at the outlet of the control circuit 20. Similarly, the contactor 17 can also be mounted in series with the resistive heater element 18. Finally, the above-mentioned indicator light can be constituted by an LED 6 that is red or that is of some other color, controlled by the control circuit 20 so that it is switched on when said control circuit detects insufficient voltage across the terminals of the battery 15, so as to indicate that said battery is flat.

[0044] The above-described device operates as follows. When a user unscrews the cap 3 and withdraws the applicator head 10 from the reservoir, said applicator head carries a certain quantity of mascara, in particular between the teeth 12 of the combs 11. During this movement, the neck 7 of the reservoir 3 ceases to press on the contactor 17, which thus closes the circuit between the control circuit 20 and the resistive element 18. Such closure is detected by the control circuit 20, which then triggers powering of the resistive heater element 18.

[0045] After a few seconds, the mascara that, by the action of the wiper, has accumulated between the teeth 12 of the comb, mainly at the bases of said teeth, is made more fluid by the heat given off. It is then spread by capillary action between the teeth of the comb in uniform manner. The user can thus apply the mascara to the eyelashes in the form of a film that is uniform and thus of improved quality so as to obtain particularly fine and effective coating of the eyelashes.

[0046] The time for which the resistive heater element 18 is powered by the control circuit 20 is limited to a certain time, lying, for example, in the range 30 seconds to 2 minutes. While the resistive heater element 18 is being electrically powered, the light indicator 5 remains on. In a variant, it is possible to connect the two terminals of the LED 5 directly to the control circuit 20 and to cause said LED to be controlled by said control circuit so that it flashes for a few seconds while the applicator head 10 is brought up to temperature, and so that it then remains on continuously for the remainder of the time for which the resistive heater element 18 is being heated.

[0047] When the user puts the cap 4 back in place on the reservoir 3, the neck 7 of the reservoir presses once again on the contactor 17 which opens and thus opens the circuit between the control circuit 20 and the resistive heater element 18, thereby guaranteeing absence of electrical power consumption that is unnecessary and/or harmful to the cosmetic 8 while the cap 4 is in place on the reservoir 3.

[0048] The embodiment shown in FIGS. 6 and 7 is similar to the embodiment described above with reference to FIGS. 1 to 5, and is thus not described in detail below. In the embodiment shown in FIGS. 6 and 7, the applicator head 10 has two rows of teeth 12 disposed at 180° relative to each other, thereby forming a double-edged flat comb. In this example, the neck 7 of the reservoir 3 can be flattened, as shown in FIG. 7, and the cap 4 can optionally be fastened to the neck by clipping.

[0049] In this example, the wiper gasket 13 can be a piece of elastomer that is similar to the wiper gasket described in Document FR-A-2 738 728, and that has:

[0050] a central opening **13a** receiving the rod **9**; and
 [0051] two slots **13b** disposed at 180° relative to each other and opening out in said central opening **13a**, said slots **13b** being adapted to receive the two rows of teeth **12** while the applicator head is passing through the wiper gasket **13**.

[0052] Each slot **13b** can have an enlarged end **13c** remote from the central opening **13a**.

What is claimed is:

1. An applicator device for applying a cosmetic, the applicator device comprising:

a reservoir adapted to contain cosmetic in fluid form;
 an applicator having a cap that is adapted to close the reservoir and that is secured to a rod adapted to penetrate into said reservoir when the cap closes said reservoir, said rod carrying an applicator head adapted to apply the cosmetic to a portion of the body of a user; and
 a heater device adapted to heat the applicator head and controlled by a control circuit;

said applicator device being provided with at least one sensor adapted to detect the reservoir being opened by the cap being removed, the control circuit being connected to said sensor and being adapted to cause the heater device to operate only when said sensor detects such opening.

2. An applicator device according to claim 1, in which the control circuit is adapted to cause the heater device to operate for a predetermined time each time the reservoir is opened.

3. An applicator device according to claim 2, in which said predetermined time lies in the range 30 seconds to 2 minutes.

4. An applicator device according to claim 1, in which the sensor comprises a contactor carried by the applicator and

disposed such that the reservoir presses on said contactor when the cap closes the reservoir.

5. An applicator device according to claim 1, in which the heater device is adapted to heat the applicator head to a temperature lying in the range 35° C. to 80° C.

6. An applicator device according to claim 1, in which the heater device comprises at least one resistive heater element.

7. An applicator device according to claim 1, in which the applicator head is provided with at least one row of teeth aligned in an alignment direction that is substantially parallel to the rod, and the reservoir is provided with a wiper gasket adapted to cause the cosmetic to penetrate between said teeth.

8. An applicator device according to claim 7, in which the applicator head is provided with two rows of teeth disposed at 180° relative to each other, and the reservoir is provided with a neck provided with a wiper gasket which has a central opening receiving the rod and two slots disposed at 180° relative to each other and opening out in said central opening, said slots being adapted to receive the two rows of teeth while the applicator head is passing through the wiper gasket.

9. An applicator device according to claim 8, in which each slot has an enlarged end remote from the central opening.

10. An applicator device according to claim 1, in which the applicator device has a fluid cosmetic disposed in the reservoir.

11. An applicator device according to claim 8, in which the cosmetic is mascara.

12. The use of an applicator device according to claim 1, for applying a cosmetic.

13. The use according to claim 12, in which the cosmetic is mascara.

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