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(54) Title: HEATING APPLICATOR FOR COSMETIC PRODUCT

(57) Abstract: This invention relates to a cosmetic product applicator, including: - an application unit (12) comprising an application head (22) of the cosmetic product and a heating element (20); and - a gripping member (14) comprising an electrical energy source (52), the application unit and the gripping member respectively comprise a first (28) and a second (54) electrical connectors able to be assembled and dissociated in a reversible manner, said first and second connectors respectively comprising a first (60) and a second (62) contact surfaces able to electrically connect the heating element and the electrical energy source. The first (28) and second (54) electrical connectors are configured to authorize a putting into contact and/or a dissociation of the contact surfaces (60, 62) by translation along an axis (18, 50) of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

FIG.2

[Diagram showing the application unit and its connectors]
Heating applicator for cosmetic product

This invention relates to a cosmetic product applicator, of the type comprising: an application unit, said application unit comprising an application head of the cosmetic product and a heating element; and a gripping member comprising an electrical energy source; with the application unit and the gripping member comprising respectively a first and a second electrical connector able to be reversibly assembled and dissociated, with said first and second connectors being respectively arranged along a first and a second axes of connection, said first and second connectors comprising respectively a first and a second contact surfaces, said contact surfaces being able to come into contact with one another in assembled configuration, in such a way as to electrically connect the heating element and the electrical energy source.

By "cosmetic product", we mean, in the sense of this invention, a product as defined in Regulation (EC) N° 1223/2009 of the European Parliament and of the Council of November 30, 2009, relating to the cosmetic products.

The cosmetic product intended to be applied by the applicator according to the invention is in particular in the form of a powder, a compacted solid, or a fluid such as a liquid. The product is advantageously a product intended to be placed on the keratin fibers of a user, such as the eyelashes or the eyebrows. The product is for example a makeup product such as a mascara.

It is known to apply a makeup product such as a mascara using a heating element, intended to curve and/or extend the eyelashes.

Such an applicator is described in particular in document FR 2 947 703.

In a known manner, such an applicator comprises a gripping member and the electrical energy source is housed in said gripping member.

Moreover, for such heating applicators, it is interesting to be able to dissociate the application member from the energy source. This makes it possible in particular to propose kits at a relatively economical cost, the electrical portion able to be retained.

Document US8262302 as such proposes a kit comprising several first reservoir / application member sub-assemblies and a second sub-assembly comprising the energy source and the resistive wire.

More precisely, document US8262302 provides hollow application members able to receive in a removable manner a rod holding the resistive wire.

The development of such application members is as such particularly complex and these application members are inconvenient to use. For example, it is not possible to insert molding the application member on the resistive wire.
Moreover, the resistive wires have a limited lifetime which, in fact, makes the lifetime of the gripping sub-assembly also very limited.

Document WO2015/023084 also describes an applicator of the aforementioned type, wherein a mascara brush integrates a heating element and can be connected to the gripping portion via screwing.

Such a connector system remains inconvenient for the user. Indeed, changing or replacing the application member involves a step of unscrewing the old application member then a step of screwing a new application member.

As such, there is a need for a simple solution that makes it possible to replace or change easily and/or frequently an application member of a heating applicator.

To this effect, the invention has for object a cosmetic product applicator of the aforementioned type, wherein the first and second connectors are configured to authorize a putting into contact and/or a dissociation of the contact surfaces by translation along the first and/or second axes of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

According to further advantageous aspects of the invention, the applicator comprises one or several of the following features taken in isolation or in any technically possible combination:

- At least one of the first and second contact surfaces has a rotational symmetry, respectively along the first and/or second axis of connection;

- The first and second connectors form an electrical connector of the jack type, with one of said first and second connectors being a male plug and the other of said first and second connectors being a female socket;

- The gripping member further comprises an electronic device for regulating the supply of energy to the heating element, said electronic device being electrically connected to the electrical energy source and to the second connector;

- The application head comprises a main body with an elongated shape, and a plurality of application reliefs extending laterally protruding from said main body, with the application head and the first connector being arranged at two opposite ends of the application unit;

- The electrical energy source of the gripping member is a rechargeable battery.

The invention further relates to an application unit for an applicator such as described hereinabove, comprising: an application head of the cosmetic product; a heating element; and a first electrical connector connected to the heating element, said first connector being arranged along a first axis of connection; said first connector being able to be assembled and dissociated in a reversible manner to a second connector; said
first connector comprising a first contact surface, able to come into contact with said second connector in assembled configuration; the first connector being configured to authorize a putting into contact and or a dissociation of the first contact surface and of said second connector by translation along the first axis of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

The invention further relates to an assembly for packaging a cosmetic product, comprising: an application unit such as described hereinabove; and a reservoir able to receive cosmetic product, said reservoir able to be assembled in a reversible manner with the application unit in such a way as to close said reservoir, with the application head being received inside said reservoir in closed configuration.

The invention further relates to a gripping member for an applicator such as described hereinabove, comprising an electrical energy source and a second electrical connector connected to said source, said first connector being arranged along a first axis of connection, said second connector being able to be assembled and dissociated in a reversible manner to a first connector; said second connector comprising a second contact surface, able to come into contact with said first connector in assembled configuration; the second connector being configured to authorize a putting into contact and or a dissociation of the second contact surface and of said first connector by translation along the second axis of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

The invention further relates to an assembly for the carrying out of cosmetic product applicator, comprising: a gripping member such as described hereinabove, wherein the electrical energy source is a rechargeable battery, and an electrical charger able to supply energy to the battery of the gripping member, said charger comprising third electrical connector able to cooperate with the second connector.

The invention further relates to a kit for the carrying out of an applicator such as described hereinabove, comprising: a plurality of application units such as described hereinabove; and a gripping member such as described hereinabove; with the first connector of each application unit and the second connector of the gripping member able to be assembled and dissociated in a reversible manner, with the first connector of each application unit and the second connector of the gripping member able to cooperate in assembled configuration, in a form-fitting manner, in order to electrically connect the heating element of said application unit and the electrical energy source of the gripping member.
According to further advantageous aspects of the invention, the kit comprises one or several of the following features taken in isolation or in any technically possible combination:

- each application unit is assembled in a reversible manner to a reservoir containing a dose of cosmetic product, in such a way as to close said reservoir, with the application head of each application unit being received inside the corresponding reservoir;

- the electrical energy source of the gripping member is a rechargeable battery, and the kit further comprises an electrical charger able to supply energy to the battery of the gripping member, said charger comprising a third electrical connector able to cooperate with the second connector of the gripping member.

The invention will be easier to understand in view of the following description, provided solely as a non-restricted example and with reference to the drawings, wherein:

- figure 1 is a schematic, cross-sectional view of an applicator according to an embodiment of the invention;

- figure 2 is a schematic, cross-sectional view of a first element of a kit for the carrying out of an applicator according to an embodiment of the invention; and

- figure 3 is a schematic, cross-sectional view of a second element of a kit for the carrying out of an applicator according to an embodiment of the invention.

Figure 1 shows an applicator 10 of cosmetic product, in particular mascara. The applicator 10 comprises in particular an application unit 12 and a gripping member 14.

The application unit 12 comprises an application rod 16, substantially arranged along a first longitudinal axis 18. The application unit 12 also comprises a heating element 20, for example in the form of a resistive wire. The heating element 20 is preferentially arranged inside the application rod 16. The heating element 20 is for example inserted into a tube forming the rod 16, or said rod 16 is molded on the heating element 20.

The application unit 12 further comprises an application head 22, assembled to a first end of the rod 16 according to the axis 18. The application head 22 is able to apply a cosmetic product on the keratin fibers. The application head 22 is preferably a mascara brush or comb. More particularly, the application head 22 comprises a main body 24 with an elongated shape, substantially arranged along the axis 18. The application head 22 further comprises a plurality of application reliefs 26, of the hair or pin type, extending laterally protruding from the main body 24.

Preferably, a portion of the heating element 20 is arranged in the vicinity of the application reliefs 26, in such a way as to diffuse heat to the keratin fibers in contact with said reliefs 26.
According to a first alternative, the application head 22 is assembled in a fixed manner with the application rod 16. According to a second alternative, the application head 22 is removable.

The application unit 12 also comprises a first electrical connector 28. Preferably, the first connector 28 is assembled to a second end of the rod 16 along the axis 18. The heating element 20 is electrically connected to the first electrical connector 28. A structure of said connector will be specified hereinbelow.

In the embodiment shown in figure 1, the application unit 12 is able to be assembled in a reversible manner with a reservoir 30 of cosmetic product, as shall be detailed hereinbelow. In the second end of the rod 16, the application unit 12 as such comprises a reversible assembly element 32 with said reservoir 30. The assembly element has for example the shape of a cap 32 defining a cylindrical cavity 34. A bottom of said cavity 34 is fixed to the second end of the rod 16, with said cavity being directed towards the application head 22. A wall of the cavity 34 comprises a tapping 36.

Preferably, the first connector 28 is rigidly connected to the cap 32, on the side opposite the cavity 34.

The gripping member 14 comprises an external cap 48 with an elongated shape, extending along a second longitudinal axis 50. The gripping member 14 further comprises an electrical energy source 52, contained in the cap 48. The energy source 52 is in particular of the electrical battery type.

On a first axial end, the cap 48 preferably has a base 53 in the form of a flat surface, substantially perpendicular to the second longitudinal axis 50.

On a second axial end of the cap 48, the gripping member 14 comprises a second electrical connector 54, electrically connected to the energy source 52.

As shall be described hereinbelow, the second electrical connector 54 is able to cooperate with the first electrical connector 28 of the application unit 12, so that the source of energy 52 supplies energy to the heating element 20.

Preferably, the gripping member 14 further comprises an electronic device 56 for regulating the supply of energy to the heating element 20. The electronic device is for example an electronic board 56, received inside the cap 48 and electrically connected to the energy source 52 and to the second connector 54.

Preferably, the gripping member 14 further comprises a control button or buttons (not shown) and/or on indicating light or lights of the LED type (not shown), arranged on an external face of the cap 48 and electrically connected to the electronic board 56.
In figure 1, the application unit 12 and the gripping member 14 are shown in
dissociated configuration. The application unit 12 and the gripping member 14 are able to
be assembled in a reversible manner in order to form the applicator 10.

In particular, the first connector 28 and the second connector 54 are able to be
assembled in a reversible manner in order to electrically connect the energy source 52
and the heating element 20.

The first connector 28 and the second connector 54 are respectively arranged
along a first and a second axes of connection. The axes of connection are confounded in
the assembled configuration of the connectors 28, 54. In the example of figure 1, the first
axis of connection corresponds to the first longitudinal axis 18 and the second axis of
connection corresponds to the second longitudinal axis 50. Alternatively, the axes of
connection are inclined with respect to the longitudinal axes 18, 50.

The first 28 and second 54 connectors are able to be assembled and dissociated
in a reversible manner. The first connector 28 and the second connector 54 respectively
comprise a first 60 and a second 62 contact surfaces. The first 60 and second 62 contact
surfaces, of complementary shape, are in contact with one another in the assembled
configuration of the connectors 28, 54. Preferably, each one of the first 60 and second 62
contact surfaces comprises at least two points of contact separated from one another.

In order to facilitate the assembly and the dissociation, the first 28 and second 54
connectors are configured to authorize a putting into contact and/or a dissociation of the
contact surfaces 60, 62 by translation along the first 18 and/or the second 50 axes of
connection, without rotation of the first and second connectors in relation to one another
about said axis of connection.

In other terms, it is possible to assemble and to dissociate the connectors 28, 54
by a pure translation movement, of the plugging type, without association with a
movement of rotation as in the case with a screwing.

In particular, the contact surfaces 60, 62 do not have reliefs of the threading type.

The application unit 12 the gripping member 14 of the applicator 10 can as such be
disconnected easily, by traction along the axis 18, 50, and reconnected according to an
inverse movement.

According to an embodiment, at least one of the contact surfaces 60, 62 is able to
be deformed during the translation movement of the connectors 28, 54 in relation to one
another along the first 18 and/or the second 50 axes. Said contact surface is for example
formed from at least one flexible metal strip.
According to an embodiment, the first 28 and second 54 connectors are of the type that allows for a flat plugging, for example of the USB port type. However, such connectors require an angular indexing of said connectors in relation to one another.

According to another preferred embodiment, at least one of the contact surfaces 60, 62 has a rotational symmetry, respectively along the first 18 and/or the second 50 longitudinal axis. As such, the angular indexing is not necessary.

For example, the first 28 and second 54 connectors form and electrical connector of the "jack" type, with the first connector 28 preferentially forming the female base and the second connector 54 preferentially forming the male plug of said "jack" connector. In particular, the male plug 54 has an elongated shape, of revolution along the second axis 50.

Preferentially, the "jack" 2.5 mm format is used.

In assembled configuration, the first 28 and second 54 connectors have a mechanical resistance that is sufficient to secure the application unit 12 and the gripping member 14. Preferably, the gripping member comprises an additional means 64 of reversible mechanical assembly with the application unit 12. Said additional means is for example a ring 64, arranged axially around the second connector 54 and able to be inserted in a reversible manner around the cap 32.

The reservoir 30 shown in figure 3 is able to be assembled in a reversible manner with the application unit 12, in order to form an assembly for packaging a cosmetic product according to an embodiment of the invention. The reservoir 30 comprises an outer wall 68 with an elongated shape, for example cylindrical. The outer wall 68 defines an internal cavity 70, able to receive cosmetic product. In particular, the internal cavity 70 is able to contain a fluid product such as a mascara composition.

An end of the wall 68 has an axial opening 72, allowing for the introduction into the cavity 70 of a portion of the application unit 12, in particular the application head 22. Preferentially, in the vicinity of the axial opening 72, an internal face of the wall 68 carries a squeezing device 74, formed of a flexible tapered skirt. The squeezing device 74 is able to retain a portion of the cosmetic product in the cavity 70 when the application head 22 is extracted from said cavity.

In the vicinity of the axial opening 72, the reservoir 30 comprises a reversible assembly element 76 with the application unit 12. The element 76 is able to cooperate with the assembly element 32 of said application unit 12. For example, the reversible assembly element 76 is a threading carried by an external face of the wall 68, said threading 76 being able to cooperate with the tapping 36 of the cap 32.
In closed position, when the tapped cap 32 is screwed on the threading 76, the application unit 12 is entirely received in the cavity 70 except for said cap 32. Said cap then closes the opening 72 of the reservoir.

In the case where the energy source 52 of the gripping member 14 is an electrical battery, the gripping member 18 is able to cooperate with a charger 20 in order to recharge said battery. The charger 80 is represented in figure 4.

The charger 80 comprises a base 82 and a third electrical connector 84, able to cooperate with the second connector 54. The third connector 84 has for example a shape identical to the first connector 28, such as the shape of a female "jack" base.

The base 82 comprises a fourth connector 86 able to be connected to an external source of electrical energy. The fourth connector 86 is for example a wall socket or a USB socket.

According to an embodiment, the application unit 12 and the gripping member 14 are sold in dissociated configuration, in the form of a kit for the carrying out of an applicator 10. According to a first alternative, the application unit 12 is sold assembled to a reservoir 30 containing the cosmetic product, as such forming the assembly for packaging a cosmetic product described hereinabove.

According to a second alternative, the electrical energy source 52 of the gripping member 14 is a rechargeable battery, and the kit further comprises an electrical charger 80.

A method for carrying out and using an applicator 10 using a kit described hereinabove shall now be described. It is considered that the application unit 12 is supplied assembled to a reservoir 30 in closed position.

An end of the ring 64 of the gripping member 14 is positioned around the cap 32 of the application unit 12, in such a way that the first 18 and the second 50 axes are confounded.

The gripping member 14 is then brought closer to the application unit 12, by sliding along the first 18 / second 50 axis, in such a way as to put into contact the first 60 and second 62 contact surfaces of the electrical connectors 28, 54 and to completely insert the ring 64 around the cap 32.

Said cap 32 is then unscrewed from the threading 76 and the application unit 12 is extracted from the reservoir 30. The application unit 12 and the gripping member 14, in assembled configuration, form the applicator 10 of cosmetic product, more particularly mascara.

Said applicator 10 is then used, for example for coating the eyelashes of a user with mascara. The energy source 52 allows the heating element 20 to diffuse heat, which
has for effect to dry and/or curve the eyelashes in contact with the application head 22. According to the nature of the cosmetic product, the heat can also cause the melting of said product.

Preferably, the user adjusts the temperature and/or the length of diffusion of the heat, by means of control buttons carried by the cap 48.

At the end of use, the user reintroduces the application head 22 into the reservoir 30 and screws the cap 32 on the threading 76. The user then exerts a traction along the first 18 / second 50 longitudinal axis, in such a way as to dissociate the application unit 12 and the gripping member 14. After dissociation, in the case where the energy source 52 is a battery, the gripping member 14 is preferentially placed to be recharged on the charger 80.

As such, the gripping member 14, i.e. the portion of the applicator 10 containing the energy source 52 and the electronics 56, is never in contact with the cosmetic product contained in the reservoir 30.

Preferably, at the end of use, the applicator 10 is arranged vertically on its base 53, so as to allow the heating element 20 to cool before reintroducing the application unit 12 into the reservoir 30. The cavity 34 then receives any spills of mascara and prevents them from coming into contact with the first connector 28.

According to an embodiment of the invention, the kit described hereinabove comprises a plurality of application units 12. Preferably, each application unit 12 is assembled to a reservoir 30 that contains cosmetic product, as such forming a plurality of assemblies for packaging a cosmetic product such as described hereinabove.

According to a first alternative, said assemblies for packaging the kit are all identical. According to a second alternative, the cosmetic product and/or the application head 22 is different from one assembly to another.

As such, it is possible to use the same gripping member 14 while still changing the cosmetic product and/or the form of the mascara brush, which improves the modularity of the apparatus.

Likewise, it is possible to use the same gripping member 14 by replacing a used application unit 12. As the gripping member 14 represents the most expensive part of the applicator 10, the cost of the apparatus compared to the duration of use is reduced.
CLAIMS

1.- Cosmetic product applicator (10), comprising:
- an application unit (12), said application unit comprising an application head (22) of the cosmetic product and a heating element (20); and
- a gripping member (14) comprising an electrical energy source (52), the application unit and the gripping member respectively comprise a first (28) and a second (54) electrical connectors able to be assembled and dissociated in a reversible manner, said first and second connectors being respectively arranged according to a first (18) and a second (50) axes of connection,

sai d first and second connectors respectively comprising a first (60) and a second (62) contact surfaces, said contact surfaces being able to come into contact with one another in assembled configuration, in such a way as to electrically connect the heating element and the electrical energy source,

with the applicator characterized in that the first (28) and second (54) connectors are configured to authorize a putting into contact and/or a dissociation of the contact surfaces (60, 62) by translation along the first (18) and/or the second (50) axes of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

2.- Applicator according to claim 1, wherein at least one of the first (60) and second (62) contact surfaces has a rotational symmetry, respectively along the first (18) and/or second (50) axis of connection.

3.- Applicator according to claim 1 or claim 2, wherein the first (28) and second (54) connectors form an electrical connector of the jack type, with one of said first and second connectors being a male plug and the other of said first and second connectors being a female socket.

4.- Applicator according to one of the preceding claims, wherein the gripping member (14) further comprises an electronic device (56) for regulating the supply of energy to the heating element, said electronic device being electrically connected to the electrical energy source (52) and to the second connector (54).
5.- Applicator according to one of the preceding claims, wherein the application head (22) comprises a main body (24) with an elongated shape, and a plurality of application reliefs (26) extending laterally protruding from said main body, with the application head and the first connector (28) being arranged at two opposite ends of the application unit.

6.- Applicator according to one of the preceding claims, wherein the electrical energy source (52) of the gripping member (14) is a rechargeable battery.

7.- Application unit (12) for an applicator according to one of the preceding claims, comprising: an application head (22) of the cosmetic product; a heating element (20); and a first electrical connector (28) connected to the heating element, said first connector being arranged along a first axis of connection (18);

said first connector able to be assembled and dissociated in a reversible manner to a second connector;

said first connector comprising a first contact surface (60), able to come into contact with said second connector in assembled configuration;

with the applicator characterized in that the first connector is configured to authorize a putting into contact and/or a dissociation of the first contact surface (60) and of said second connector by translation along the first (18) axis of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

8.- Assembly for packaging a cosmetic product, comprising:

- an application unit (12) according to claim 7, and

- a reservoir (30) able to receive cosmetic product, said reservoir able (36, 76) to be assembled in a reversible manner with the application unit in such a way as to close said reservoir, with the application head (22) being received inside said reservoir in closed configuration.

9.- Gripping member (14) for an applicator according to one of claims 1 to 6, comprising an electrical energy source (52) and a second electrical connector (54) connected to said source, said first connector being arranged along a first axis of connection (50),

said second connector able to be assembled and dissociated in a reversible manner to a first connector;
said second connector comprising a second contact surface (62), able to come into contact with said first connector in assembled configuration;

with the gripping member characterized in that the second connector is configured to authorize a putting into contact and/or a dissociation of the second contact surface (62) and of said first connector by translation along the second (54) axis of connection, without rotation of the first and second connectors in relation to one another about said axis of connection.

10.- Assembly for the carrying out of cosmetic product applicator, comprising:

- a gripping member (14) according to claim 9, wherein the electrical energy source (52) is a rechargeable battery, and

- an electrical charger (80) able to supply energy to the battery of the gripping member, said charger comprising a third electrical connector (84) able to cooperate with the second connector (54).

11.- Kit for the carrying out of an applicator according to one of claims 1 to 6, comprising:

- a plurality of application units (12) according to claim 7 and

- a gripping member (14) according to claim 9,

with the first connector (28) of each application unit and the second connector (54) of the gripping member able to be assembled and dissociated in a reversible manner,

with the first connector of each application unit and the second connector of the gripping member able to cooperate in assembled configuration, in a form-fitting manner, in order to electrically connect the heating element (20) of said application unit and the electrical energy source (52) of the gripping member.

12.- Kit according to claim 11, wherein each application unit is assembled in a reversible manner to a reservoir (30) containing a dose of cosmetic product, in such a way as to close said reservoir, with the application head (22) of each application unit being received inside the corresponding reservoir.

13.- Kit according to claim 11 or claim 12, wherein the electrical energy source (52) of the gripping member is a rechargeable battery,

said kit further comprising an electrical charger (80) able to supply energy to the battery of the gripping member, said charger comprising a third electrical connector (84) able to cooperate with the second connector (54) of the gripping member.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. A45D40/26

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

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 , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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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
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Date of the actual completion of the international search: 18 October 2016

Date of mailing of the international search report: 27/10/2016

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

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