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(54) **SKIN CARE DEVICE**

(57) The invention relates to a skin care device (1) comprising a body (10) and a head (100) rotating with respect to said body (10). The body (10) comprises a shaft (14) that extends along a shaft axis (X) and is adapted to put the rotating head (100) in rotation about the

shaft axis (X). The rotating head (100) has a contact face (130) with the skin with a center (C) offset with respect to the shaft axis (X). The contact face (130) with the skin is tilted with respect to a plane perpendicular to the shaft axis (X).

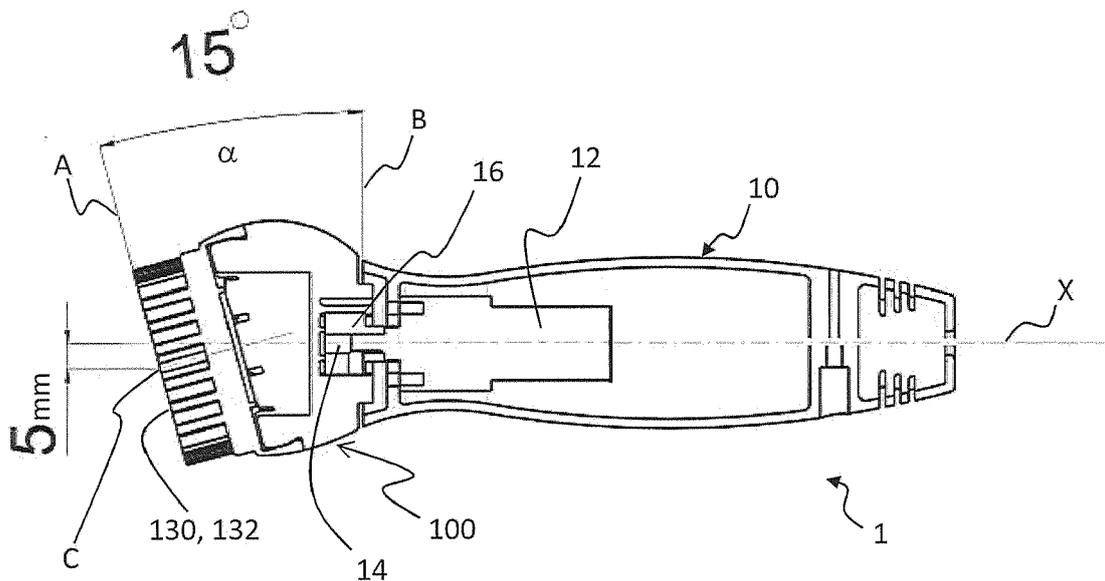


FIG. 3

Description

[0001] The present invention refers to a skin care device, in particular for the care of the facial skin.

[0002] Skin care devices are known in the art.

[0003] For example, FR 2 942 712 describes a device comprising a contact member mounted on a housing. The contact member has central axis B-B' and a contact face with keratin. The device comprises a first shaft for setting the contact member in rotation, which extends along an axis C-C', in which the contact member is free to rotate about the axis C-C' and is mounted on the first shaft so that the axis C-C' is parallel to the central axis B-B' and transversally far from it. The device also comprises an assembly for setting the first shaft in rotation that comprises a second shaft that extends along an axis A-A', situated transversally far from the axis C-C', and an eccentric fixedly connected to the second shaft so as to connect the first shaft to the second shaft.

[0004] The Applicant observes that the device described by this document requires a complicated mechanism for moving the contact member, formed from two shafts and an eccentric, to produce an abrasion or massage of the skin cells.

[0005] The Applicant faced the technical problem of making a skin care device that is simultaneously efficient and simple to make.

[0006] The Applicant has found that by using a device with a rotating head and a shaft for setting the rotating head in rotation, in which the head has a contact face with the skin that has a center offset with respect to the shaft and is tilted with respect to a plane perpendicular to said shaft, it is possible to obtain a rotary movement of said head that ensures, with constructive simplicity, a cleaning action of the skin that is simultaneously efficient and delicate, together with a massaging action that is pleasant for the user.

[0007] The present invention therefore relates to a skin care device comprising a body and a head rotating with respect to said body, wherein the body comprises a shaft that extends along a shaft axis and is adapted to put the rotating head in rotation about the shaft axis, and wherein the rotating head has a face for contact with the skin with center offset with respect to the shaft axis, characterized in that said face is tilted with respect to a plane perpendicular to the shaft axis.

[0008] Preferred characteristics of the device according to the invention are set out in the dependent claims.

[0009] The present invention can have at least one of the following preferred characteristics.

[0010] Preferably, said face is tilted with respect to the plane perpendicular to the shaft axis by an angle $\alpha \geq 5^\circ$, preferably $\geq 10^\circ$.

[0011] Preferably, said face is tilted with respect to the plane perpendicular to the shaft axis by an angle $\alpha \leq 35^\circ$, more preferably $\leq 30^\circ$, even more preferably $\leq 25^\circ$, even more preferably $\leq 20^\circ$.

[0012] Preferably, the center of the face is offset with

respect to the shaft axis by a distance of at least 2.5 mm.

[0013] Preferably, the center of the face is offset with respect to the shaft axis by a distance less than or equal to 10mm, more preferably less than or equal to 7.5 mm.

5 **[0014]** Preferably, the shaft is adapted to put the rotating head in rotation in two opposite directions of rotation.

[0015] Preferably, the shaft is adapted to put the rotating head in rotation according to complete rotations of 360° in a same direction of rotation.

10 **[0016]** Preferably, the body comprises a motor (preferably electric) equipped with a motor shaft that constitutes said shaft.

[0017] Preferably, said face is substantially planar, in other words it extends generally on a plane.

15 **[0018]** Preferably, a free end of the shaft is coupled with said head. In a suitable manner, the free end of the shaft is fixedly connected to said head, in other words it is fixed to the head so that they move as if they were a single piece. The free end of the shaft is coupled with said head so as to transfer the rotational motion of the shaft to the head.

20 **[0019]** In an embodiment, said free end of the shaft is coupled, preferably through a shape coupling, with a seat formed in the head. More preferably, the seat is formed in a surface of the head that is opposite said face.

25 **[0020]** Preferably, said free end of the shaft has a coupling member with said seat. The coupling member is adapted for transferring the rotational motion of the shaft to the head. For example, the coupling member can be a nut, preferably with hexagonal section; the seat also being preferably hexagonal in shape.

[0021] The rotation speed of the shaft can vary from 40 to 80 revs/minute, for example 60 revs/minute.

30 **[0022]** Preferably, the body comprises a motor (preferably electric) and the shaft is set in rotation directly by said motor.

[0023] Preferably, the head is removable from said body. Preferably, the head is interchangeable.

35 **[0024]** In an embodiment, the head comprises a removable portion, said face being defined on said portion.

[0025] Preferably, the head comprises an interchangeable portion, said face being defined on said portion.

40 **[0026]** The face of the head can be equipped with bristles (of equal or different length to one another) or with elements (such as rotating micro-spheres, particles, feet) projecting with respect to a plane on which the face extends.

[0027] In a preferred embodiment, the face is substantially circular in shape.

45 **[0028]** Further characteristics and advantages of the present invention will become clearer from the following detailed description of some preferred embodiments thereof, made with reference to the attached drawings. The different characteristics in the single configurations can be combined with each other as desired according to the previous description, if it is necessary to have the advantages resulting specifically from a particular combination.

[0029] In such drawings,

- figures 1 and 2 show exploded perspective views of a device according to an embodiment of the invention, seen from two different directions;
- figure 3 shows a longitudinal section of the device of figures 1 and 2;
- figure 4 shows a front view of the device of figures 1 and 2, in which a contact face with the skin is clearly visible.

[0030] In the following description, in order to illustrate the figures identical reference numerals are used to indicate constructive elements with the same function.

[0031] With reference to the quoted figures, a skin care device is shown, wholly indicated with 1.

[0032] The device 1 can be used in general for the care of the skin of the human body, in particular for the care of the facial skin. The device 1 can be used in particular to clean and/or massage the skin.

[0033] The device 1 comprises a body 10 and a head 100.

[0034] The body 10 is generally oblong and extends along a longitudinal axis.

[0035] The body 10 is formed from two longitudinal half-shells 10a and 10b fixed together through suitable fixing means, for example screws (not illustrated).

[0036] The body 10 comprises a motor 12, preferably of the electric type, which is equipped with a shaft 14 (hereinafter also called "motor shaft") and with a coupling member, preferably a nut 16. For example, the nut 16 has a hexagonal section.

[0037] The nut 16 is fixed (for example with a grub screw 17) to a free end of the motor shaft 14; the other end of the motor shaft 14 being fixed to the motor 12. The nut 16 is fixedly connected to the motor shaft 14, in other words it is connected to the motor shaft 14 so that they move as if they were a single piece.

[0038] The motor shaft 14 extends along a shaft axis X. In an embodiment, the shaft axis X can coincide with or be parallel to the longitudinal axis along which the body 10 extends.

[0039] The motor 12 is adapted to put the motor shaft 14 with the nut 16 in rotation about the shaft axis X. The motor shaft 14 and the nut 16 are therefore adapted to rotate about the shaft axis X, with respect to the body 10.

[0040] The motor 12 can be electrically powered by an internal battery (not illustrated) and/or by an external power supply (for example through a connection cable, not illustrated).

[0041] The head 100 is connected to the body 10 so as to be able to rotate with respect to it.

[0042] In particular, the head 100 comprises a first portion 110 for connection to the body 10 and a second portion 120 adapted to face towards the skin to be treated.

[0043] The first portion 110 of the head 100 comprises a seat 112, for example having a hexagonal section, for a shape coupling with the nut 16. In particular, the nut 16

is engaged in the seat 112 so as to make the head 100 fixedly connected to the nut 16 and to the motor shaft 14, in other words so that the head 100, the nut 16 and the motor shaft 14 move as if they were a single piece. For example, the nut 16 is engaged in the seat 112 by mechanical interference.

[0044] Thanks to this direct coupling (without intermediate members) between the motor shaft-nut assembly 14, 16 and the head 100, when the motor shaft-nut assembly 14, 16 is set in rotation by the motor 12, the rotation is transmitted to the head 100 which, therefore, also rotates with respect to the body 10 about the shaft axis X. In particular, the head 100 rotates according to successive complete rotations of 360° in a same direction.

[0045] The second portion 120 of the head 100 comprises a face 130. In the illustrated embodiment, the face 130 is circular in shape, with center C. Moreover, in the illustrated embodiment, the face 130 is equipped with bristles 132 adapted for treating the skin.

[0046] Preferably, the second portion 120 is removable from said first portion 110, for example through suitable clamping members 121. This characteristic is advantageous, since it allows to remove the second portion 120 to facilitate the cleaning operations of the face 130 and to make it possible to interchange it with other portions equipped with different elements.

[0047] As shown in detail in figure 3, the face 130 defines a plane A that is tilted with respect to a plane B perpendicular to the shaft axis X. In the illustrated embodiment, the plane A is tilted by an angle α of 15° with respect to the plane B.

[0048] Moreover, as shown in figures 3 and 4, the face 130 has center C offset with respect to the shaft axis X. In the illustrated embodiment, the center C is offset with respect to the shaft axis X by a distance of 5 mm, illustrated in figure 3 in a plane perpendicular to the shaft axis X. Such a distance remains unchanged during the rotation of the head 100 about the shaft axis X.

[0049] Thanks to the combination of the aforementioned characteristics (face that rotates according to successive complete rotations of 360°, tilted face and offset face with respect to the shaft axis X), the device 1 is capable of generating a roto-translational movement of the face 130, with application of variable pressure on the skin of the user such as to reproduce a movement made by the fingers of a hand during a circular massaging action: a pressure of the fingers followed by release with rotary movement from the center towards the periphery of the face.

[0050] Such movement is capable of producing both a cleaning action and a massage action on the skin of the user. In particular, the cleaning is accurate and deep, thanks to the rotary movement that delicately, but effectively, lifts the impurities, make-up residue and dead cells. The massage, obtained thanks to the combined action of the offsetting and tilting of the face 130, reproduces that typically given by the fingers of a user on the

skin. Advantageously, the massage thus obtained, as well as more effectively removing impurities and dead cells, stimulates the skin and the microcirculation and can convey the active ingredients of cosmetics, exerting a revitalizing and stimulating action.

[0051] Preferably, the head 100 of the device 1 is associated with a plurality of second removable and interchangeable portions 120 having respective faces 130 with different treatment characteristics, which the user can use interchangeably as a function of the treatment wanted at that time. For example, it is possible to foresee faces 130 with bristles 132 of different length in the same face, to also treat the difficult-to-reach parts of the face (for example the sides of the nose, the periocular area, the contours of the face); faces 130 with bristles 132 of different hardness and/or length from face to face or, in general, faces 130 equipped with elements (such as micro-spheres, particles, feet) projecting with respect to a base plane on which the face extends. For example, faces 130 equipped with small rotating spheres can be particularly useful for a stimulating action of the tissues and a refreshing effect on the periocular area, subject to bags, swelling and tiredness marks.

[0052] The body 10 is equipped with a suitable control device (not illustrated) adapted for allowing a user to actuate the motor 12. Preferably, the control device comprises means for selecting the rotation speed of the motor shaft 14 between a plurality of rotation speeds. For example, it is possible to foresee two rotation speeds, a lower one of which is for a more delicate skin treatment and a pleasant massaging effect and a higher one of which is for a more vigorous treatment. The rotation speeds can, for example, be selected in a range of speeds comprised between 40 and 80 revolutions per minute. Preferably, the control device comprises means for selecting the direction of rotation of the motor shaft 14 among two opposite directions of rotation, for example one for the right side of the face and the other for the left side of the face, so that the head 100 always rotates from the inside towards the outside of the face, respecting a typical manual massaging action.

[0053] As will be clear from the present description, the invention, in its various aspects, makes it possible to produce a cleaning action that is effective and at the same time delicate, guaranteeing a good degree of comfort for the user, together with a pleasant massaging action; all of this through a constructive simplicity of the device 1. Indeed, the aforementioned actions are obtained through a single motor shaft 14 directly engaged in the head 100 of the device 1, the face 130 of which is tilted and offset with respect to the shaft axis X, without the need to provide additional shafts, eccentrics and complicated gears.

Claims

1. Skin care device (1) comprising a body (10) and a head (100) rotating with respect to said body (10),

wherein the body (10) comprises a shaft (14) which extends along a shaft axis (X) and is adapted to put the rotating head (100) in rotation about the shaft axis (X), and wherein the rotating head (100) has a face (130) for contact with the skin with a center (C) offset with respect to the shaft axis (X), **characterized in that** said face (130) is tilted with respect to a plane perpendicular to the shaft axis (X).

2. Device (1) according to claim 1, wherein said face (130) is tilted with respect to the plane perpendicular to the shaft axis (X) by an angle $\alpha \geq 5^\circ$.
3. Device (1) according to claim 1 or 2, wherein said face (130) is tilted with respect to the plane perpendicular to the shaft axis (X) by an angle $\alpha \leq 35^\circ$.
4. Device (1) according to any one of claims from 1 to 3, wherein the center (C) of the face (130) is offset with respect to the shaft axis (X) by a distance of at least 2.5 mm.
5. Device (1) according to any one of claims from 1 to 4, wherein the center (C) of the face (130) is offset with respect to the shaft axis (X) by a distance less than or equal to 10 mm.
6. Device (1) according to any one of claims from 1 to 5, wherein the shaft (14) is adapted to put the rotating head (100) in rotation according to complete rotations of 360° in a same direction of rotation.
7. Device (1) according to any one of claims from 1 to 6, wherein the body (10) comprises a motor (12) provided with a motor shaft constituting said shaft (14).
8. Device (1) according to any one of claims from 1 to 7, wherein a free end of the shaft (14) is connected to one seat (112) obtained in the head (100).
9. Device (1) according to claim 8, wherein said free end of the shaft (14) has a member (16) for coupling to said seat (112).
10. Device (1) according to any one of claims from 1 to 9, wherein the shaft (14) is adapted to put the rotating head (100) in rotation in two opposite rotation directions.
11. Device (1) according to any one of claims from 1 to 10, wherein said shaft (14) is the only shaft of the body (10).

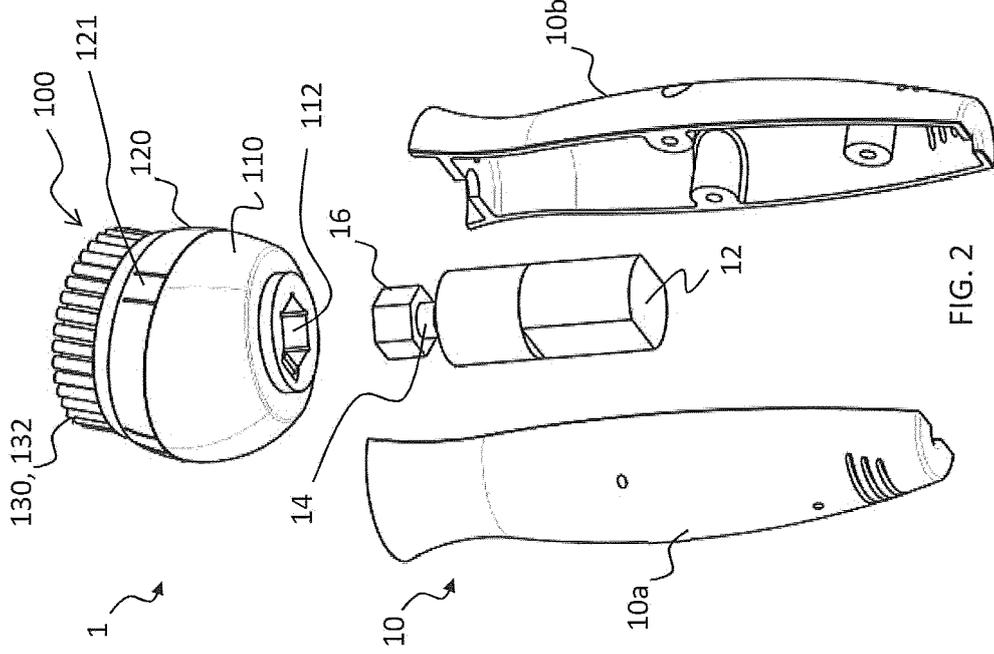


FIG. 2

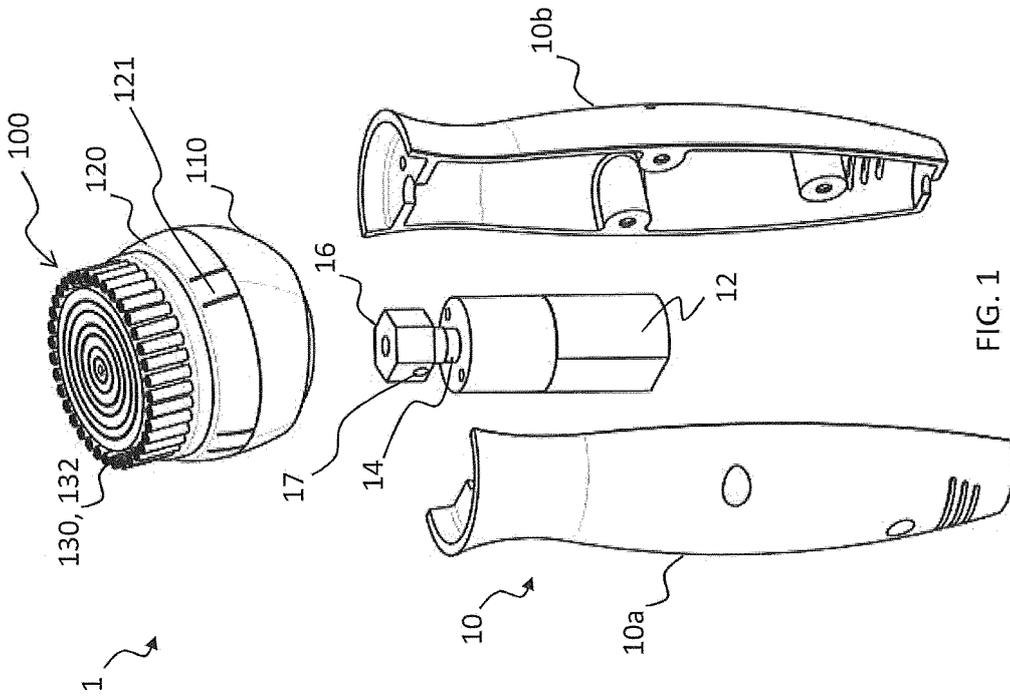


FIG. 1



EUROPEAN SEARCH REPORT

Application Number
EP 16 19 7379

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			A61H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 1 February 2017	Examiner Haller, E
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EP 16 19 7379

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01-02-2017

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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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