

[54] **FACIAL TREATMENT DEVICE**

3,736,921 6/1973 Kawada 128/56

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[22] Filed: **Aug. 26, 1974**

[21] Appl. No.: **500,553**

[52] U.S. Cl. **128/40; 128/49; 128/297;**
128/65

[51] Int. Cl.² **A61H 1/00; A61M 1/00**

[58] Field of Search 128/44-50,
128/24.2, 56, 65, 57, 297-301, 38-40

[56] **References Cited**

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[57] **ABSTRACT**

A facial treatment device comprises an easy-to-grip lower casing which incorporates an electric motor, an oscillating rotary massaging member adapted to one end of an upper casing together with a sheet cover to cover the front section of said massaging member which is detachable therefrom, a piston fitted to the other end of said upper casing for reciprocation inside a cylinder so as to generate suction by means of a crank shaft, means for regulation of suction and a cover for collecting impurities during suction operation.

7 Claims, 7 Drawing Figures

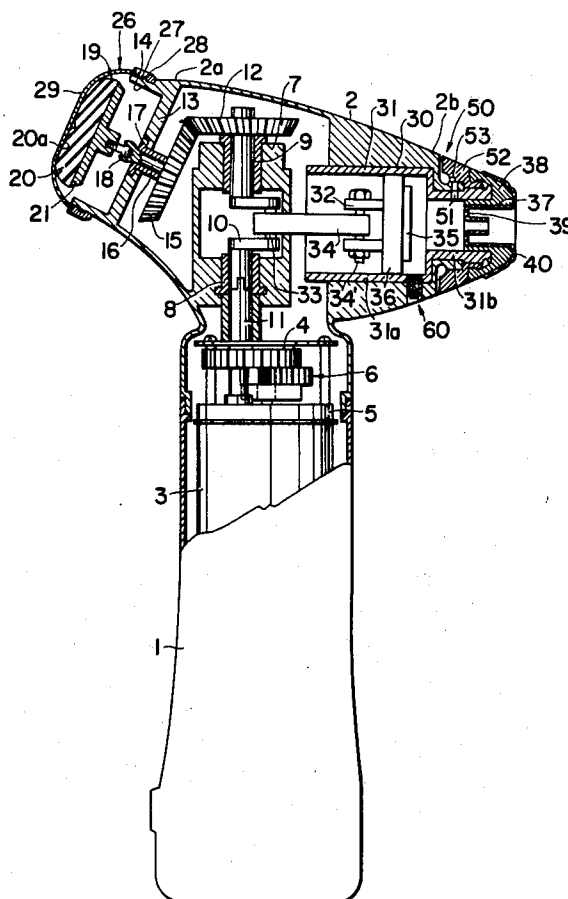


FIG. 1

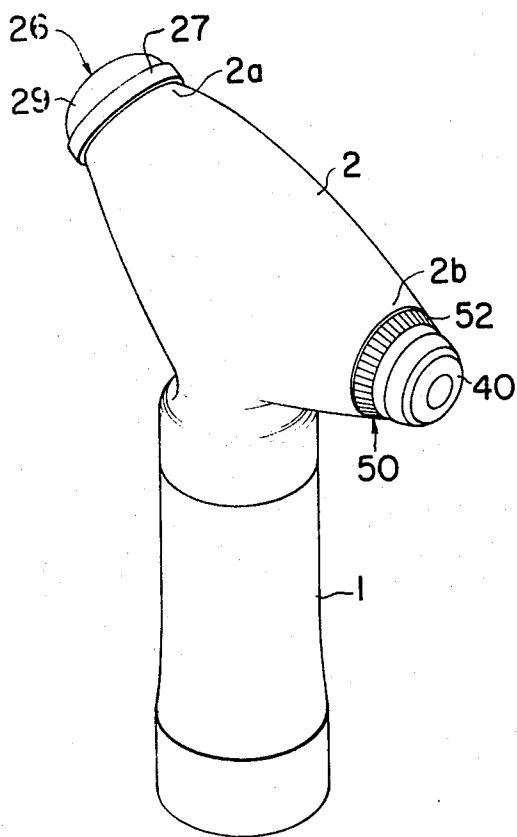


FIG. 4a

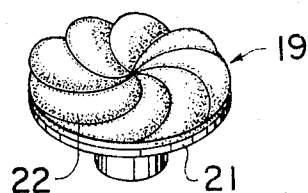


FIG. 4b

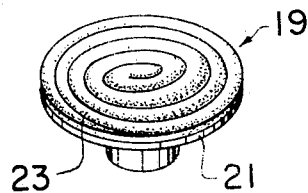


FIG. 4c

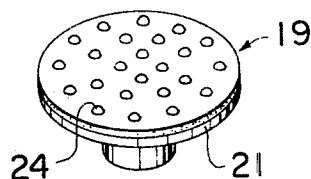


FIG. 4d

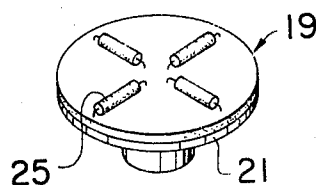


FIG. 2

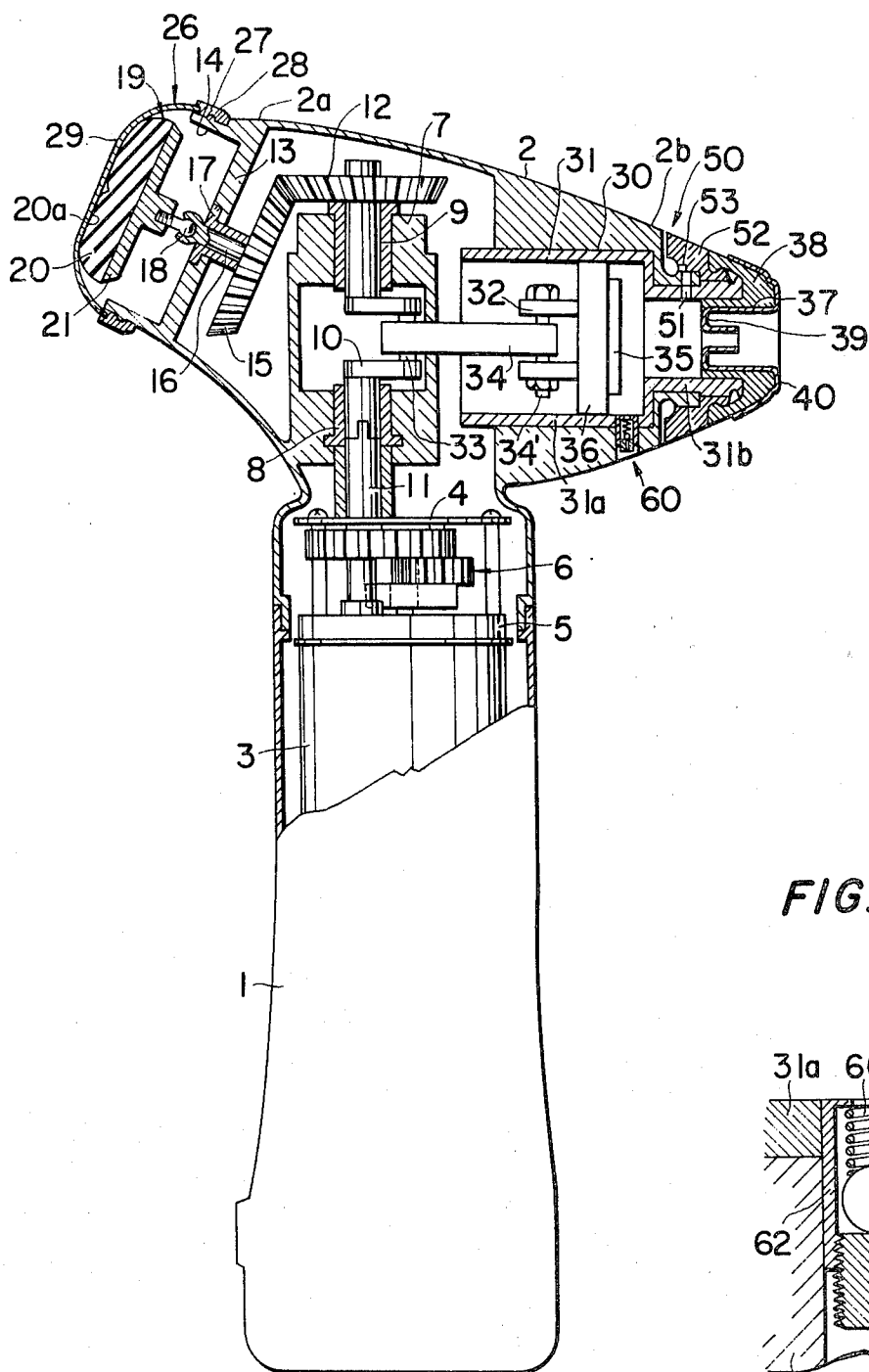
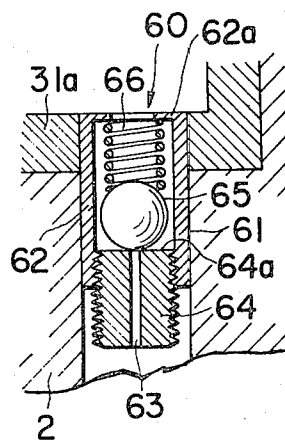


FIG. 3



FACIAL TREATMENT DEVICE

BACKGROUND OF THE INVENTION

THIS INVENTION relates to a facial treatment device which stimulates vital powers of the facial skin by applying thereto massaging actions, enhances excretion of impurities from pores such as of epidermis, sweat glands, roots of hair, etc., by a co-joint use of a vanishing cream and suction such impurities as sweat, dirt solids and the like accumulated on the epidermis and in the dermis by the suction action thereof.

OBJECTS OF THE INVENTION

The present invention has its primary object to provide a facial treatment device which assures reliable and efficient mechanical massaging actions to the facial skin as well as wiping off of dirt from the facial skin. The facial treatment device in accordance with the present and is capable of various types of massaging action by the use of several types of massaging member attachments.

SUMMARY OF THE INVENTION

Generally speaking, the facial treatment device comprises an easy to grip lower casing which incorporates an electric motor, an oscillating rotary massaging member adapted to one end of an upper casing together with a sheet cover to cover the front section of said massaging member which is detachable therefrom, a piston fitted to the other end of said upper casing for reciprocation inside a cylinder so as to generate suction by means of a crank shaft, means for regulation of suction and a cover for collecting impurities during suction operation.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawing,

FIG. 1 is a perspective view showing an outlook of a facial treatment device of this invention,

FIG. 2 is a sectional view showing an elementary configuration inside the facial treatment device,

FIG. 3 is an enlarged view of a suction regulation valve, and

FIG. 4 (a) through FIG. 4 (d) are perspective views showing various types of massaging members.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In order that our invention may be the more completely understood, we give hereinafter the preferred form of the present invention by referring to the accompanying drawing which, however, is not intended to limit the scope of the present invention in any way.

In FIGS. 1 and 2, the numeral 1 designates a lower longitudinal casing which has a slender cylindrical form for ease of gripping onto which is fitted an upper casing 2 having a shape similar to a beer-barrel slanting upwardly on the right and left at small angles with the lower casing 1. The lower longitudinal casing 1 incorporates an electric motor 3 which is activated, for instance, by power supply available at home, and a reduction gear device 6 consisting of plurality of smaller and larger gears which are interposed by upper and lower support plates 4, 5 of the motor 3. To a support member 7 which is positioned almost at the center of the upper casing 2, there is supported by longitudinal sleeves 8, 9 a longitudinal crank shaft 10, a shaft 11

from the reduction gear device 6 being connected to one end of said crank shaft 10 and a bevel gear 12 being connected to the other end thereof.

At the left edge section 2a of the upper casing 2, a stage section 13 defines a concave wall 14. To said stage section 13 is turnably fitted a shaft 16 equipped with another bevel gear 15 by means of a sleeve 17, said bevel gear 15 being capable of engagement with the abovementioned bevel gear 12. A massaging member 19 is pivoted to this shaft 16 via a universal joint 18 so that it can effect oscillating motion inside the concave 14. The massaging member 19 has a friction plate 20 made of a resilient material such as a soft rubber or the like and a rotary disc 21 to support said friction plate 20. The rotary disc 21 is secured to the universal joint 18 by a nut in a direction opposite an rotation thereof in the arrangement such that prevents it from jumping out of the massaging member 19 and can easily be detachable when the universal joint 18 is locked by the reduction gear device 6 at the time when the motor 3 is not in motion.

The massaging member 19 is available in an assortment of surface plate shapes 20a for the friction plate 20 depending on the kind of massaging actions desired. FIG. 4 illustrates four types of the massaging members as examples. FIG. 4 (a) shows the massaging member having corrugated arc 22 disposed radially on the surface whose function it is to retain an oily membrane of a vanishing cream without spreading outwardly when the cream is rubbed into the skin. The member 19 in FIG. 4 (b) has a swirly corrugated surface 23 which is suited for spreading the skin and smoothing wrinkles, and the one in FIG. 4 (c) has a surface provided with a number of small protrusions which is effective for stimulating the skin and quickening of the blood. Further the massaging member in FIG. 4 (d) has the friction plate whose surface 20a incorporates a plurality of rollers 25 disposed radially, and the massaging member having this shape supplies a good massaging effect when vanishing cream is not rubbed into the skin.

The upper casing 2 having the abovementioned massaging member 19 further has a hemi-spherical sheet cover 26 at the left edge section 2a thereof, said sheet cover being fitted to a lock ring 27 and a protrusion 28 of the left edge section 2a. This sheet cover 26 presses a sheet 29 made of a thin membrane of polyethylene, rubber and the like to the friction plate 20, and detachably covers the same. When this sheet cover 26 is used, the friction plate 20 does not touch the facial skin directly, it prevents the hardening and aching of the skin and imparts a deep massaging effect into the dermis.

On the other hand, at the right edge section 2b of the upper casing 2, there is bored a stepped hole 30 having a relatively large diameter into which is inserted a stepped cylinder 31 extending horizontally from the proximity of the support member 7 up to the outside of the upper casing 2. Inside the larger diameter portion 31a of the stepped cylinder 31, a piston 32 is fitted so as to reciprocate therein by the engagement of a crank pin 33 of the crank shaft 10 with a rod 34 and a connector 34'. A thin rubber member 36 is fitted to the outer periphery of the piston 32 by a locking element 35. During the forward stroke of the piston 32, the rubber member 36 is compressed so as to thereby escape the pressure, and during the return stroke, it expands so as to touch tightly with the cylinder 31 and thereby generate suction. At the distal end of the smaller diameter

portion 31b of the cylinder, there is fitted a cap 38 having a suction hole 37 which cap 38 is further covered by a cover detachably which has an annular concave chamber 39 inside the suction hole 37. Both of the smaller diameter portion 31b and the larger diameter portion 31a of the cylinder 31 are respectively provided with suction regulation valves 50 and relief valves 60.

Said suction regulation valve 50 comprises a small pore 51 which passes through the smaller diameter portion 31 of the cylinder 31, a ring 52 which is disposed rotatably in between the edge section 2b of the upper casing 2, the smaller diameter portion 31b of the cylinder and the cap 38 and a slit 53 fitted at a position to oppose the small pore 51 of the ring 52 in such a manner as to continuously vary the degree of opening of the small pore 51 in accordance with rotational angle of the ring 52. By this arrangement, the suction regulation valve 50 regulates the force of suction inside the cylinder by means of escaping a part of the force of suction 2b of the upper casing to the outside of the casing.

The relief valve 60 comprises the hole 61 passing through the larger diameter portion 31a of the cylinder and the upper casing 2, a cylindrical member 62 fitted into said hole 61, an adjusting screw 64 equipped with an air inlet 63 and screwed to said cylindrical member 62, a ball 65 disposed inside the inner plane 64b of the adjusting screw 64 so as to open or close the air inlet 63 by means of suction inside the cylinder, and a spring 66 interposed by a protruding section 62a of the cylindrical member 62 to the side of the cylinder and the ball 65. When the vacuum inside the cylinder becomes abnormally high, the relief valve 60 sucks the ball 65 against the spring 66, whereby the air inlet 63 is opened to introduce open air and lower the vacuum eventually.

In the operation of the facial treatment device of the present invention, any of the messaging members 19 suited for a desired message application massage is first fitted to the universal joint 18, and the motor 3 is switched on, whereupon the massaging member 19 initiates rotation at a predetermined speed by the reduction gear device via the crank shaft 10, bevel gears 12, 15, universal joint 18 and the like, and at the same time, the piston 32 starts reciprocation by the action of the crank shaft 10 so as to thereby generate suction. As the lower casing 1 is being gripped, the friction plate 20 of the massaging member 19 is gently pressed onto the face with or without vanishing cream either directly as it is or as it is attached by the sheet cover 26 in view of the condition of the skin of the face, and then is moved around. Subsequently massage is applied to the skin of the face by the rotation of the friction plate 20; when the skin is rubbed with a vanishing cream, impurities are extracted from pores of the roots of hair, of the sweat glands, etc., and when, on the contrary, the skin is not rubbed with the cream, wrinkles of the skin are smoothed and the flow of the blood is quickened.

Next, while adjusting the suction by the suction regulation valve 50, the cap 38 is equipped with the cover 40 opposite the massaging member 19 is applied to the face. Then, suction is caused inside the cylinder which suctions such dirt and impurities as cream waste rubbed to the skin and spoiled by the preceding massaging process, dirt extracted thereby, face powder, fat and the like. As soon as these impurities leave the skin, they are mostly collected into the concave chamber 39 of the cover 40. The impurities thus collected in the

concave chamber 39 can be wiped off by a cloth or the like, or alternatively be washed off by removing the cover 40 from the cap 38.

Thus in accordance with the present invention, it is possible to enhance the vital powers of the facial skin and remove impurities therefrom by suction and massaging mechanically by simply applying either the massaging member 19 or the cap 38 to the facial skin. The device of this invention eliminates troublesome practice of massaging which heretofore has been done manually, and also provides an easy and simple removal of impurities by means of suction.

Further, the facial treatment device of this invention is compactly designed for ease of operation and good appearance. Being of slender cylindrical shape, the lower casing is easy to grip, and the upper casing integrates the means for applying massage for convenience. A wide variety of attachments which serve as the friction plate 20 of the massaging member 19 ensures a versatile application of the massage desired. In addition, indirect massage is also possible by the use of the cover 26 to be attached to the massaging member 19 in order to prevent damages of the skin as well as to facilitate the massage deep into the dermis. The cover 40 collects impurities almost entirely that are extracted by suction so as not to hinder the reciprocation of the piston 32, and the suction regulation valve 50 together with the relief valve 60 always ensure an optimum suction.

While certain representative embodiments and details have been shown for the purpose of illustrating the present invention, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit or scope of the invention.

What We Claim and Desire to Protect by Letters Patent Is:

1. A facial treatment comprising:
 - a. an easy to grip lower casing (1) incorporating a motor (3) therein;
 - b. an upper casing (2) angularly fitted aslant to said lower casing on both sides thereof;
 - c. a crank shaft (10) including a crank pin (33) disposed at substantially the center inside said upper casing (2) which crank shaft is interposed rotatably for connection with said motor (3) and a reduction gear mechanism (6) and may be dismantled;
 - d. a massaging member (19) with an outer side for engaging facial skin and an inner side connected to one end of said upper casing (2) via said crank shaft;
 - e. a pair of bevel gears (12) engaging with each other and a universal joint, one of said bevel gears being connected to said crank shaft, the other being connected to said universal joint, said universal joint being connected to said massaging member inner side which is mounted thereon, and capable of dismantling therefrom and of rotating while performing an oscillating motion;
 - f. a stepped cylinder in said upper casing (2) toward the other end thereof having therein a piston (32) in interlock with said crank pin (33) capable of reciprocation inside said cylinder so as to cause suction and a cap (38) having suction holes (37) fitted to the distal end (38b) of said cylinder at the other end of said upper casing.

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2. A relief valve for use in the facial treatment device as set forth in claim 1, said relief valve comprising a pore passing through the cylinder and the upper casing to interconnect the inside of the cylinder to the outside, a cylindrical element fitted into said pore, an adjusting screw equipped with an air inlet and locked to said cylindrical element, a ball adapted to said adjusting screw to open or close said air inlet by means of suction inside the cylinder, and a spring interposed between said ball and a protrusion of said cylindrical element.

3. A device as claimed in claim 1 including an elastic friction plate fitted to the outer side of the massaging member where it is in touch with the face for use in the facial treatment device wherein the surface of said elastic friction plate has a configuration to match intended type of massage.

4. A device as claimed in claim 1 including holding means at said upper casing one end, a sheet cover for use in the facial treatment device said sheet cover being a sheet made of a thin elastic membrane held by said holding means as a cover while being in touch with the outer side of the massaging member, and also being capable of dismounting.

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5. A device as claimed in claim 1 including said cover detachably fitted to said cap (38) and having a concave portion therein to collect impurities during suction.

6. A device claimed in claim 1 including a suction regulation valve comprising a small aperture passing through the cylinder and the upper casing so as to interconnect the inside of the cylinder to the outside, a ring interposed rotatably between the cylinder, the upper casing and the cap, and a slit formed at a position where the ring faces with the small aperture in such a fashion that rotation of the ring varies the opening of the small aperture.

7. A device as set forth in claim 1 including a relief valve comprising an aperture passing through the cylinder and the upper casing to interconnect the inside of the cylinder to the outside, a cylindrical element with a protrusion fitted into said aperture, an adjusting screw with an air inlet and locked to said cylindrical element, a ball in contact with said adjusting screw to open or close said air inlet by means of suction inside the cylinder, and a spring interposed between said ball and the protrusion of said cylindrical element.

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