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(72) Inventors WILLIAM E. SPRINGER
JOHN P. TUOHY
HENRY J. WALTER

(19) THE PATENT OFFICE LONDON

(54) MASSAGE DEVICE

(71) We, BRISTOL-MYERS COMPANY, a Corporation organised and existing under the laws of the State of Delaware, United States of America, having offices located at 345 Park Avenue, New York, New York 10022, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to massage devices and more particularly, this invention relates to massage devices which utilize rotating spheres and dispense massage lotion.

Moisturizing preparations in the form of lotions and creams are widely used to add moisture to the hydrophilic outmost layer of the skin, as well as to prevent the evaporation of moisture from the skin.

Cosmetic experts recommend toning and moisturizing as a regime to keep facial skin supple and pliable, and to counteract the formation of wrinkles associated with dehydration and aging.

Massaging is widely practiced to tone facial muscles to which the skin is attached. Gentle pressure causes a reaction in the tissues that increases blood supply to the treated area, which in turn supports metabolic activity. Hand massaging is usually done by slow circular stroking along the major facial muscles.

There are oscillating mechanical massaging devices, however, using these devices for facial massages is generally not satisfactory, because they usually produce only short vibratory strokes at high frequencies, which do not allow sufficient time for the muscle tissue to react.

The prior art also includes massaging devices which utilize rotating spheres, which revolve around a central axis. However, these devices include no structure for dispensing massaging lotions and are not really suitable for facial massages. Examples of this type of massaging device are disclosed in U.S. Patents 1,557,417; 1,777,151; 1,899,208 and 2,043,114.

It is also known to equip massage devices with spheres in order to apply fluid. This concept is shown in U.S. Patents 2,103,261; 2,285,105; 2,706,474; 2,895,469; 2,988,084 and 3,754,548. In these patents, the spheres are not mechanically driven while dispensing the fluid. Rather the motion imparted to the spheres is derived by manually manipulating the device instead of by a combination of manually manipulating the device, while the spheres are mechanically driven to revolve, roll and rotate.

The prior art does not teach the concept of a massaging device, which is especially suitable for facial massages and uses a combination of mechanically driven rotating spheres, which dispense a massaging or treating lotion as they are driven.

According to this invention we provide a massaging device comprising rotary massaging spheres retained in openings circumferentially disposed in the end face of a massaging head, the massaging head being rotatably supported with respect to a massage device housing and being motor-driven about its axis, and comprising a cavity in open communication with the openings receiving the massaging spheres, there being a passage extending coaxially to the axis of rotation through the massaging head which passage communicates with the cavity for introducing massage lotion to the cavity.

Two forms of the invention will now be described by way of example with reference to the accompanying drawings wherein:

Fig. 1 is an exploded view in prospective showing a massage device according to the instant invention, in combination with a

drive unit which is similar to that disclosed in U.S. Patent 3,733,634;

Fig. 2 is a top view of the massage device shown in Fig. 1;

Fig. 3 is a sectional view, taken along lines 3-3 of Fig. 2, showing the construction of the massage device of Fig. 1;

Fig. 4 is a sectional view of another embodiment of the instant invention, showing a massage unit in combination with a lotion metering and drive unit; and

Fig. 5 is an end view of the massage device of Fig. 4.

Referring now to Fig. 1, there is shown a drive unit 10 which may have any convenient configuration. Preferably, the drive unit 10 is similar to that disclosed in U.S. Patent 3,744,634, and contains a motor (not shown) and battery pack (not shown). A massage device, generally designated by the numeral 12, is coupled to the drive unit 10 for rotation by the drive unit with a coupling, generally designated by the numeral 13. The massage unit 12 includes a plurality of massaging spheres 15 for engaging the skin and kneading the muscles, which support the skin. Preferably when energized, the drive unit 10 rotates the massage unit 12 at a relatively slow speed, in the range of one to ten revolution per second. In this particular embodiment, the lotion dispensed by the massage unit 12 is injected into the massage unit through a passage 16 axially disposed in the massage unit.

Referring now to Figs. 2 and 3, in combination with Fig. 1, it is seen that the massage unit 12 has a stem 18 projecting therefrom, which is received in a bore 19 within the coupling element 13 of the drive unit 10. The massage unit is held into the drive unit as illustrated in Fig. 4. The stem 18 has a slot 30 formed in one end, and a pair of projections 21 radially extending adjacent to the slot, so that the stem will frictionally engage the bore 19, and thereby hold the massage unit 12 mounted into the drive unit 10. A pair of radial projections 22 register with recesses 23 (Fig. 1) in the coupling element 13, so that the coupling element 13 will positively drive massage unit 12. When it is desired to remove the massage unit 12 from the drive unit 10, the massage unit is simply pulled with sufficient force to overcome friction between the projections 21 and the interior surface of the bore 19.

Referring specifically to Fig. 3, it is seen that the massage unit 12 defines a circular housing 24 having a cavity 25 therein, which is defined by a back wall 26, which cooperates with an annular flange 27. The annular flange 27 has a side rim 28 and a bottom wall 29. The bottom wall 29 has a plurality of openings 31 therein, each of which retains a sphere 15. The openings 31 may taper inwardly and have a minimum diameter, which is less than the maximum diameter of the spheres, so that the spheres will not fall through the openings. The openings 31 may be equally spaced around the axis of the housing 24.

As seen in Fig. 3, the passage 16 registers with the cavity 25, so that lotion may be dispensed or injected through the passage 16 for distribution by the spheres 15. The passage 16 has an annular lip 33 therearound, which helps retain the lotion in the cavity 25.

If the lotion is in the form of a relatively viscous fluid, such as a cream which will not readily run out of the passage 16, then it may be dispensed into the chamber 25, while the chamber is in any orientation. However, if the lotion is relatively non-viscous and flows relatively freely, then the unit is tilted vertically and the lotion poured through the passage 16. Upon rotating the unit, the fluid will flow by centrifugal force along the back wall 26, and into a space 35 behind the spheres 15. The centrifugal force acting on the spheres 15 and the lotion will tend to force the spheres against the openings 31, sealing them and keeping the lotion within the cavity 25. When the spheres 15 are brought into contact with the skin, the spheres will begin to rotate as they revolve and carry the lotion from the space 35 onto the skin of the user, while massaging the tissues and muscles below the skin.

Referring now to Figs. 4 and 5, there is shown a second embodiment of the instant invention, wherein a massaging unit or device, generally designated by the numeral 112, is removably attached to drive means, which is contained within a housing, generally designated by the numeral 113. In this embodiment, the drive is obtained from an electric motor 115, which rotates the massaging device 112 through a gear train, generally designated by the numeral 116. A lotion dispensing and metering unit 114 is also contained within the housing 113.

As with the embodiment of Figs. 1 through 3, the massage unit 112 has a plurality of spheres 120 mounted therein circumferentially about an axis 121. The spheres 120 project through openings 122 disposed in an end plate 123. The end plate 123 cooperates with a housing 124 to form a cavity 125 which, as will be explained hereinafter, contains the massaging lotion.

The massaging device 112 is connected by a drive shaft 126 to a gear 127. The gear 127 is driven by a gear 128 that is coaxially mounted with a gear 129, which is meshed with a gear 130 and driven by the motor 115. The gears are mounted in a mounting support within the housing itself.

The motor 115 may be energized either by batteries or by a cord connecting the motor to house current. As the motor 115 drives the unit 112, the unit will rotate about the axis 121 and when the spheres 120 are in contact with a surface, such as the skin, they will roll or rotate.

The massage lotion is dispensed into the cavity 125 through a bore 132 in the drive shaft 126. The bore 132 is aligned with a tube 133, one end of which registers with a passageway 134, having a right angle bend 135 therein. The right angle bend 135 communicates with a chamber 136, in which the lotion is stored. The lotion is then able to flow from the chamber 136 through the right angle bend 135, the passage 134, the tube 133, the bore 132 and into the cavity 125. From the cavity 125, the lotion is dispensed by the rolling spheres 120 onto the face. In order to facilitate dispensing the lotion, the openings 122, which retain the spheres 120 in place may have slots 138 which register with the cavity 125, or may be constructed as shown in Fig. 1.

The metering unit 114 includes a reservoir 140, the reservoir is unscrewed lotion. The reservoir 140 has threads about one end thereof and is screwed into a piston 143, which is slidably received in a chamber 136. The piston 143 is biased to the left by a spring 144, which pushes it against a retaining ring 145. To fill the reservoir 140, the reservoir is unscrewed from the piston 143, filled with lotion and then screwed back into the piston 143. The piston 143 has a one-way duck bill valve 146 disposed therethrough, which communicates between the reservoir 140 and chamber 136. The reservoir 140 also has a duck bill valve 147 at its opposite end, which opens to the atmosphere. A button portion 149 formed by the second end of the reservoir 140 projects out of the housing 113.

In operation, the projecting portion 149 is depressed to push the reservoir against the bias of the spring 144 engaged by the piston 143. This forces air and lotion out of the chamber 136 and through the passage 134 and the tube 133. The spring 144 then returns the piston 143 to its original position where it seats against the retaining washer 145. This causes a partial vacuum in the chamber 136 owing to the restricted area of the passageways 133 and 134 and the tube 133 that restricts the flow of lotion back into the chamber. Valve 146 then opens to let lotion flow into the chamber 136, while the valve 147 opens and lets air into the reservoir 140. Upon again pressing the projecting portion 149 of the reservoir 140, the lotion in chamber 136 is pushed to flow into the cavity 135 as described above. A sliding seal 151 is disposed between the piston 143 and the inner wall of chamber 136, and a rotating seal 152 engages the tube 133, so that all of the moving parts are effectively sealed.

In operation, the massaging units 12 and 112 of the first and second embodiments respectively, are manually moved as the spheres 15 and 120 are driven to revolve around a central axis and are rolled over the skin. A compound motion which enhances the massaging action is thus achieved.

The spheres 15 and 120 may be resilient so as to flex during the massage or may be stiff, so as not to flex. In addition, the spheres may have a smooth surface or a texturized surface, and may be resiliently mounted, so as to readily conform to the irregularity of user's face.

The afore-described embodiments are merely illustrative of the invention, which is to be limited only by the following appended claims.

WHAT WE CLAIM IS:

1. A massaging device comprising rotary massaging spheres retained in openings circumferentially disposed in the end face of a massaging head, the massaging head being rotatably supported with respect to a massage device housing and being motor-driven about its axis, and comprising a cavity in open communication with the openings receiving the massaging spheres, there being a passage extending coaxially to the axis of rotation through the massaging head which passage communicates with the cavity for introducing massage lotion to the cavity.

2. The massaging device as in Claim 1, wherein the massaging head is detachably connected via a plug type coupling to the motor.

3. The massaging device as in Claim 1 or 2, wherein the passage is provided in the end face of the massaging head comprising the openings for the massaging spheres.

4. The massaging device as in Claim 3, wherein the passage is defined by means having an annular lip at the side of the cavity preventing the lotion from flowing out of the cavity.

5. The massaging device as in Claim 1, wherein the passage is disposed within a rotatably driven axle of the massaging head and communicates with a lotion dispensing unit in the massaging device.

6. The massaging device as in Claim 5, wherein the lotion dispensing unit comprises a metering means upon actuation of which a predetermined amount of lotion is introduced into a chamber connected with the passage.

7. The massaging device as in Claim 6, wherein the metering means includes a re-

The motor 115 may be energized either by batteries or by a cord connecting the motor to house current. As the motor 115 drives the unit 112, the unit will rotate about the axis 121 and when the spheres 120 are in contact with a surface, such as the skin, they will roll or rotate.

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In operation, the massaging units 12 and 112 of the first and second embodiments respectively, are manually moved as the spheres 15 and 120 are driven to revolve around a central axis and are rolled over the skin. A compound motion which enhances the massaging action is thus achieved.

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2. The massaging device as in Claim 1, wherein the massaging head is detachably connected via a plug type coupling to the motor.

3. The massaging device as in Claim 1 or 2, wherein the passage is provided in the end face of the massaging head comprising the openings for the massaging spheres.

4. The massaging device as in Claim 3, wherein the passage is defined by means having an annular lip at the side of the cavity preventing the lotion from flowing out of the cavity.

5. The massaging device as in Claim 1, wherein the passage is disposed within a rotatably driven axle of the massaging head and communicates with a lotion dispensing unit in the massaging device.

6. The massaging device as in Claim 5, wherein the lotion dispensing unit comprises a metering means upon actuation of which a predetermined amount of lotion is introduced into a chamber connected with the passage.

7. The massaging device as in Claim 6, wherein the metering means includes a re-

servoir which is movably disposed against the force of a spring in the chamber, a first one-way valve connecting the reservoir with the chamber such that lotion is permitted to flow from the reservoir into the chamber but not from the chamber into the reservoir, a second one-way valve connecting the reservoir to atmosphere such that air is permitted to flow into the reservoir but not lotion to flow from the reservoir to atmosphere, a restriction between the chamber and the cavity to prevent lotion from being drawn back into the chamber at the return stroke of the reservoir while through the open first one-way valve lotion flows from the reservoir into the chamber and through the second one-way valve air flows into the reservoir whereupon lotion is urged from the chamber into the passage by actuating the reservoir against the spring force.

8. The massaging device as in Claim 7, wherein the spring retains the reservoir in the rest position against an abutment.

9. The massaging device as in any one of Claims 6 to 8, wherein between the reservoir and the chamber a piston is disposed to which the reservoir is threaded so as to be removable from the piston for charging with lotion.

10. The massaging device as in any one of Claims 6 to 9, wherein the end of the reservoir opposite the chamber extends outwardly through the massaging device housing and comprises an operating button.

11. A massaging device substantially as described herein with reference to Figures 1 to 3 or 4 and 5 of the accompanying drawings.

12. A cosmetic treatment comprising simultaneously massaging facial skin and applying a massage lotion thereto employing a massaging device according to any one of the preceding claims.

For the Applicants.
CARPMAELS & RANSFORD,
Chartered Patent Agents,
43 Bloomsbury Square,
London, WC1A 2RA.

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