(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 November 2004 (18.11.2004)

PCT

(10) International Publication Number
WO 2004/098616 A1

(51) International Patent Classification[7]: A61K 33/08, C09K 3/14

(21) International Application Number: PCT/US2004/013208

(22) International Filing Date: 30 April 2004 (30.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/429,925 5 May 2003 (05.05.2003) US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) **Title:** METHOD, APPARATUS, AND COMPOSITION FOR TREATING ACNE

(57) **Abstract:** A composition including a base, a plurality of abrasive particles, and an acne treatment agent. An apparatus including a handle, a head, and an applicator coupled to the head, the applicator having dimensions suitable for contacting localized areas of human skin. A method including applying a composition to an area of human skin, the composition comprising a base; a plurality of abrasive particles; and an acne treatment agent and manipulating the composition over the area of human skin with a handle-operated instrument.

WO 2004/098616 A1

METHOD, APPARATUS, AND COMPOSITION FOR TREATING ACNE

FIELD

The embodiments disclosed herein relate generally to skin treatment, and more particularly to treating acne.

BACKGROUND

Facial skin rejuvenation has been accomplished by chemical treatment referred to as "chemical peels" or laser treatment referred to as "laser surgery" and exfoliation by machine driven means, such as with emery paper. Such methods generally require medical supervision and involve some risk of deleterious side effects as well as pain and discomfort during treatment. These methods all require long recovery time between treatments.

Microdermabrasion (e.g., microexfoliation, particle skin resurfacing) is a technique in skin care in which a controlled exfoliation of the skin is performed to improve and remove skin abnormalities. A typical microdermabrasion machine consists of a vacuum pump compressor that draws crystals of corundum (aluminum oxide or alumina) from a container through an output tube into a hand piece. When the hand piece is applied to skin it creates a path wherein crystals are drawn across the skin into an suction tube that leads to a disposal container for the used crystals and abraded skin. A filter in the suction tube protects moving parts of the vacuum pump. A technician manipulates the hand piece over the skin of the subject to induce exfoliation.

Thus, a compressor, a corundum supply, a vacuum, and a disposal container are required in order for a specialty clinic, with trained technicians, to conduct microdermabrasion on patients. However, such an elaborate, expensive system is not practical for home use.

Besides requiring facial skin rejuvenation, many adults and adolescents also require treatment for acne. Acne is caused by bacteria called P. acnes that live on human skin. During puberty and prior to some women's menstrual cycles, the body produces higher levels of androgens, which can overstimulate the skin's oil-producing (e.g., sebaceous) glands. When these glands are stimulated, an oily substance known as sebum is produced.

Excessive amounts of sebum can clog hair follicles, which results in follicular plugs called comedones. These clogged follicles allow P. acnes to proliferate. Some people are hypersensitive to P. acnes, and these people have excessive immune responses to the bacteria, which results in acne.

The two main types of acne are comedonal acne, consisting of whiteheads and blackheads, and inflammatory acne, with red and sometimes tender papules, pustules and cysts. Adults and teenagers may have a combination of comedonal and inflammatory acne.

DESCRIPTION OF THE DRAWINGS

Various embodiments are illustrated by way of example and not by way of limitation in the figures of the accompanying drawings in which like references indicate similar elements. It should be noted that references to "an," "one," "the," "other," "alternative," or "various" embodiments in this disclosure are not necessarily to the same embodiment, and such references mean at least one.

Figure 1 is a plan view of one embodiment of a portable applicator having a snap-on disk with an applicator pad coupled to a portion of the applicator.

Figure 2 is a side view of the applicator of **Figure 1**.

Figure 3 is a cross-sectional back side view of the applicator of **Figure 1**.

Figure 4 is an exploded side view of the applicator of **Figure 1**.

Figure 5 is an exploded side view of a second embodiment of an applicator.

Figure 6 is a flow chart describing one embodiment of an operation to treat skin.

Figure 7 is a side view of a third embodiment of an applicator.

Figure 8 is a side view of a fourth embodiment of an applicator.

Figure 9 is a side view of a fifth embodiment of an applicator.

Figure 10 is a side view of a sixth embodiment of an applicator.

Figure 11 is a flow chart describing one embodiment of an operation to treat acne.

DETAILED DESCRIPTION

In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the various embodiments. It will be apparent to one skilled in the art that the embodiments may be practiced without some of these specific details. In other instances, certain structures and devices are omitted or simplified in order to avoid obscuring the details of the various embodiments.

The following description and the accompanying drawings provide examples for the purposes of illustration. However, these examples should not be construed in a limiting sense as they are not intended to provide an exhaustive list of all possible implementations.

A composition is disclosed including a base, a plurality of abrasive particles, and an acne treatment agent. Suitable abrasive particles include inorganic particles such as corundum (e.g., aluminum oxide, alumina, and Al_2O_3), magnesium oxide (e.g., MgO), and precious stones including, but not limited to, diamond, garnet, sapphire, ruby, emerald, and topaz. In one embodiment, the abrasive particles are microcrystals having an average particle size on the order of 34 microns (μm) to 556 μm (320 to 30 grit). More preferably, the average particle size of the microcrystals is on the order of about 42 μm to 198μm (280 to 60 grit).

The abrasive nature of the particles in the composition render the composition suitable as an exfoliator to improve the look and feel of an area of human skin and remove skin abnormalities. More specifically, the abrasive particles tend to remove the outer layer of skin (the epidermis) to expose an underlayer of skin. The human body responds by producing a new layer of skin.

The acne treatment agent can include, for example, one or more of the following: salicylic acid, benzoyl peroxide, sulfur, retinol, triclosan, green tea

extract, oceanik clay, lactic acid, glycolic acid, secretions of the Chilean snail Helix Aspersa Müller, zinc oxide, talc, camphor, tea tree oil, tea tree extract, koala nut extract, coenzyme Q10, sodium hyaluronate, polyethylene, polyethylene glycol, aloe vera, panthenol, allantoin, sodium sulfacetamide, sodium chloride, magnesium stearate, iron oxide, goat milk, glycerin, emu oil, vitamin A (palmitate), vitamin E (tocopherol), prunella vulgaris extract, colloidal silver, aluminum magnesium silicate, laurel sulfate, tartaric acid, hydroquinoline, and hydroxy acid.

The acne treatment agents generally perform at least one of reducing the level of P. acnes bacteria, reducing sebum production, and unclogging pores. In various embodiments, salicylic acid is included in the composition as the acne treatment agent in an amount comprising approximately 0.25%-5.0% of the composition by weight. It is generally understood that salicylic acid helps unclog pores by chemically destroying the follicular plug (e.g., comedone).

In various embodiments, sulfur is included in the composition as the acne treatment agent in an amount comprising approximately 5.0%-10.0% of the composition by weight. In other embodiments, benzoyl peroxide is included in the composition as the acne treatment agent in an amount comprising approximately 5.0%-10.0% of the composition by weight. Benzoyl peroxide destroys the P. acnes bacteria by penetrating the follicle and releasing hydrogen peroxide, in which P. acnes bacteria cannot survive. Benzoyl peroxide is also known to provide drying action, sebostatic effects, and mild skin desquamation.

With one or more (and preferably a series) of these exfoliation/acne treatments, it is believed that the skin subject to the treatment may be improved. Such improvements include improvement in the appearance of fine lines, wrinkles, stretch marks, inflammatory and/or non-inflammatory acne, acne scars, surgical scars, rough or coarse textured skin, age spots, blotchy skin conditions, and sun damaged skin.

In one embodiment, the composition comprises a base that is capable of suspending the plurality of abrasive particles within the base. The base of the

composition may further include antioxidants, aromas/fragrances, vitamins (particularly vitamins A, C and E), minerals, emulsifiers, toners, acids (e.g., glycolic acid or salicylic acid), scrubs, serums, lotions, liquids, elixirs, sun screens, and tonics. Antimicrobial, bactericidal, and thickening agents may also be included in the composition.

In another embodiment, the base of the composition is a liquid containing a cleansing component including, for example, soaps, salicylic acid, and a lauryl sulfate (e.g. sodium lauryl sulfate or sodium laureth sulfate). Other components such as surfactants and emulsifiers may further be included.

In one embodiment, abrasive particles of corundum (e.g., alumina) microcrystals are combined with a cream moisturizer base in an amount of about 5 to 100 grams of corundum per ounce of creme, preferably 10 to 50 grams per ounce, and more preferably 10 to 20 grams per ounce. For example, a suitable composition comprises 20 to 70 percent by weight corundum, 20 to 70 percent aloe gel, and 5 to 20 percent sodium lauryl sulfate.

The abrasive particles suspended in the base provide gentle microdermabrasion of the skin for resurfacing/rejuvenating the skin, leaving it smooth and soft after each treatment without the need of any recovery time. Thus, the treatment may be repeated as often as on a daily basis, in order to reduce and erase fine lines and wrinkles; reduce pore size; reduce or erase sun damage, age spots and skin discoloration; firm skin and muscle tone; reduce sagging; enhance new epidermal cells; and decongest acne skin conditions. This method of rejuvenating the skin, and particularly the facial skin, is ideal for those unwilling or unable to undergo laser surgery, a chemical peel, or machine-driven exfoliation.

One example of a suitable composition including a cream base, corundum (aluminum oxide) microcrystals, and salicylic acid includes:

Ingredients	Percentage
Salicylic Acid	1.00
Aluminum Oxide	40.00
Water	31.35
Caprylic/Capric Triglyceride	3.50
Ethylhexyl Palmitate	3.20
Safflower Seed Oil	3.00
Cetearyl Alcohol	2.00
Sodium Cetearyl Sulfate	1.90
Stearic Acid	1.50
Cetyl Alcohol	1.50
Wheat Germ Oil	1.20
Propylene Glycol	1.20
Triethanolamine	1.00
Carbomer	0.90
Nordihydroguaiaretic Acid	0.90
Chamomile Oil	0.90
Oleanolic Acid	0.85
PEG-60 Almond Glyceride	0.70
Caprylyl Glycol	0.60
Glycerin	0.60
Phenoxyethanol	0.50
Allantoin	0.25
Ascorbyl Palmitate	0.20
Methylparaben	0.20
Tocopheryl Acetate (vitamin E)	0.15
Butylparaben	0.15
Retinyl Palmitate (vitamin A)	0.10
Chamomile Extract	0.10
Comfrey Root Extract	0.10
ConeFlower Extract	0.10
Golden Seal Extract	0.10
Isobutylparaben	0.10

Propylparaben	0.10
Ethylparaben	0.05

In one embodiment, the composition is provided in a jar (not shown) having a mouth large enough for an applicator of the various devices described below to be dipped into the composition in the jar. Alternatively, the composition may be scooped out of the jar by hand and applied to the skin area to be treated. Pump mechanisms or squirt bottle tube configurations for dispensing the compositions are also suitable.

One embodiment of a suitable apparatus for buffing the skin includes a portable device having a vibrating head and an applicator coupled to the vibrating head. The applicator has dimensions suitable for contacting localized areas of human skin.

Referring to **Figures 1** and **2**, a powered (e.g., by a direct current ("DC") battery or by an alternating current ("AC") power source) applicator apparatus (e.g., vibrator) comprises a vibrating device encased in head portion 10 of the apparatus housing. The apparatus also includes handle portion 11, which is adapted to house in an interior volume, a removable/replaceable power source, such as batteries (e.g., multiple AA batteries), optional circuitry for coupling to an AC power source, and circuitry to operate a motor (e.g., DC) driven apparatus. The apparatus, in one embodiment, is formed of a plastic casing.

The apparatus also includes applicator 12 coupled to head portion 10 of the apparatus. In the embodiment shown in **Figures 1** and **2**, applicator 12 is a porous material such as a cloth or sponge having dimensions suitable for contacting an area of human skin, for example, a sponge pad, e.g., a polyurethane sponge pad, a latex sponge pad, or other closed-cell sponge material. One suitable sponge material is commonly referred to as "make-up" sponge material, which is used representatively in the makeup arts. In one embodiment, the pore size of the sponge material ranges from 15 microns to about 410 microns.

Open-cell sponge material may be used either in place of, or in conjunction with, closed-cell material. Likewise, applicator 12 may comprise a

non-porous material, such as synthetic rubber, plastic or latex, which can be used in place of, or in conjunction with, porous material.

In one embodiment, the applicator has a pore size that is at least as large as the average particle size of the abrasive particles. In another embodiment, the applicator has a pore size that enables the abrasive particles to move within the applicator during manipulation of the composition over the skin. Pore sizes such as these advantageously allow the abrasive particles to recede into the applicator to prevent the skin from becoming unduly abraded during use. In one embodiment, the pore sizes are sufficiently small that the abrasive particles do not become so deeply-seated in the applicator that the abrasive effect of the particles is lost. Stated differently, the pore size is established such that the level of absorption of the particles into the applicator does not render them ineffective as an abrasive.

In various embodiments, a heating unit may also be disposed either within applicator 12, adjacent thereto, or both. In an embodiment, the heating unit is capable of heating the applicator to a temperature between 100° F and 120° F. The heating unit may be, for example, an infrared light, an ultraviolet light, and/or a resistive heating element connected to the power source. The heat from the heating unit advantageously soothes the skin during treatment.

Figure 3 shows a schematic cross-sectional view of the apparatus of **Figure 1**, specifically the vibrator portion of the apparatus. In cross-section, the operation of the vibrating mechanism is described. The apparatus includes, in this embodiment, a removable power source. In this case, the apparatus includes handle portion 11 having interior chamber 25 to accommodate the removable power source. In one embodiment, the power source to operate the vibrator is two AA batteries that fit within interior chamber 25 of handle portion 11. Conductors 23 and 24 define ends of the interior chamber. Leads 26 and 28 coupled to conductor 23 bring current to/from motor 40. Lead 26 is coupled to circuit board 30 that includes switch 35 to control the operation of motor 40. Switch 35 may be a two-position switch (ON/OFF) or a multiple position switch for operating motor 40 at multiple speeds.

Motor 40 is disposed in an interior portion 20 of head portion 10 and includes shaft 42 extending from one end of motor 40. Shaft 42 is rotated (as illustrated) with the operation of motor 40.

Coupled to an end of shaft 42 of motor 40 is eccentric mass 45. In this embodiment, eccentric mass 45 is a semi-cylindrical body coupled at its axis to post 42. In this manner, as eccentric mass 45 rotates, its shape generates a rhythmic motion in head portion 10 of the apparatus, which produces a vibration.

Figure 4 shows an exploded side view of the apparatus of **Figure 1**. The apparatus includes handle portion 11 that is sized in one portion to be grasped by a human subject. Handle portion 11 includes interior volume 25 for accommodating a removable/replaceable power source, such as one or more batteries 50 (e.g., two AA batteries). Cover 55 snaps into the body of handle portion 11 to enclose the power source within the interior volume of handle portion 11.

Figure 4 also shows the configuration of applicator 12 relative to head portion 10 of the apparatus. In one embodiment, applicator 12 is coupled to cap 13 (such as by an adhesive between applicator 12 and one surface of cap 13). Cap 13, as illustrated, is a circular body having a diameter similar to the diameter of vibrating head 27 of head portion 10 of the apparatus. In one embodiment, vibrating head 27 has a diameter on the order of about one to two inches (about 2.5-5 centimeters). In one embodiment, the diameter of vibrating head 27 is slightly larger on the order of, for example, 0.01 to 0.03 inches (1-2 millimeters) than the main body of head portion 10 as represented by lip 19.

An underside of cap 13 has interior volume 17. One or more protrusions 18 extend from the side walls of cap 13 (defining interior volume 17) so that cap 13 does not fit easily over lip 19 of head portion 10. Cap 13 is made of a thin plastic material, in one embodiment, which allows the cap to be deformed and snapped over lip 19, vibrating head 27, and onto head portion 10 to securely hold cap 13 in place. Alternatively, the cap may have a groove that snaps over a ridge around the inside wall of the head.

Applicator 12, which is secured to the top of cap 13 may be replaced after many uses. In one embodiment, applicator 12 and cap 13 may be removed from the apparatus after use and cleaned. When it is considered to be no longer useful after, for example, one or more cleanings, applicator 12 (and cap 13) may be discarded and replaced. In one embodiment, applicator 12 can be replaced and discarded after a single use. In this embodiment, applicator 12 may be coupled to the cap 13 by adhesive tape, form fit, or similar manner of removably attaching the applicator 12 to cap 13.

In the embodiment described with reference to **Figures 1** through **4**, an apparatus including a vibrating mechanism is described. It is believed that in applying a composition to an area of human skin and manipulating the composition with a vibrating apparatus and/or by movement of a user's hand (e.g., buffing the skin), as described with reference to **Figure 6** and the accompanying text, the vibrating action (e.g., of the applicator) helps stimulate skin, muscle, and tissue to revitalize the treated area. It is appreciated that, in use, the vibrating mechanism may or may not be used.

It is also contemplated to buff the skin with a mechanism capable of rotating or spinning the applicator either in place of or in conjunction with the vibrating motion described above. In an embodiment, the spinning mechanism is configured to spin the applicator about a central axis of the applicator. In another embodiment, the spinning mechanism is configured to spin the applicator about an off-center axis of the applicator (e.g., to produce a random orbit). A representative random or standard orbit oscillation is on the order of 6,000 or fewer revolutions per minute.

In addition, various embodiments include a sonic wave generator disposed either within the applicator, adjacent thereto, or both. In operation, sonic waves created by the sonic wave generator travel through the applicator and massage the skin of the user. One suitable sonic wave generator is an ultrasound generator that generates sound waves from, for example, a vibrating crystal in a generator. The sound waves may be used to increase circulation to an area being treated.

Figure 5 shows an embodiment of a manually-manipulated or operated apparatus. Apparatus 50 includes handle 55 suitable for manipulation by a hand of a human subject. Handle 55 includes, at one end, head portion 58 having dimensions suitable for accommodating cap 13 and applicator 12 in a manner similar, in one embodiment, to the manner described with reference to **Figures 1** through **4**.

Figure 7 shows a further embodiment of a manually-manipulated apparatus. Apparatus 70 includes head portion 72 and a handle portion coupled to the head portion and suitable for manipulation by a human hand. The handle portion includes first member 74 extending from head portion 72 and second member 76 coupled to first member 74 at an angle (θ). Angle θ is between 0 and 180 degrees. Second member 76 has first end 76A, second end 76B, and an intermediate portion between first end 76A and second end 76B. Applicator 78 is coupled to head portion 72 and has dimensions suitable for contacting localized areas of human skin.

The shape of the handle portion allows a user to grip the apparatus in different fashions to facilitate application of a suitable composition, as described herein. For example, a user can slide their fingers under second member 76 so that a palm of the user is facing down towards head portion 72. Alternatively, a user can grasp second member 76 with their fingers.

Figure 8 shows another embodiment of a manually-manipulated apparatus. Apparatus 80 includes head portion 82 and a handle portion coupled to the head portion and suitable for manipulation by a human hand. The handle portion includes first member 84 extending from head portion 82 and second member 86 coupled to first member 84. Applicator 88 is coupled to head portion 82 and has dimensions suitable for contacting localized areas of human skin.

Second member 86 has first end 86A, second end 86B, and an intermediate portion between first end 86A and second end 86B. The intermediate portion of second member 86 is coupled to first member 84. In addition, the intermediate portion of second member 86 has grooves 89 formed therein. Each groove 89 can accommodate at least one human finger.

Although grooves 89 are disposed on the underside of second member 86 in **Figure 8**, grooves 89 may be placed in any orientation and/or location on second member 86 to facilitate handling by a user.

Figure 9 shows yet another embodiment of a manually-manipulated apparatus. Apparatus 90 includes head portion 92 and a handle portion coupled to the head portion and suitable for manipulation by a human hand. The handle portion includes first member 94 extending from head portion 92 and second member 96 coupled to first member 94. Applicator 98 is coupled to head portion 92 and has dimensions suitable for contacting localized areas of human skin.

Second member 96 has first end 96A, second end 96B, and an intermediate portion between first end 96A and second end 96B. First end 96A of second member 96 is coupled to first member 94.

Figure 10 shows an alternative embodiment of a manually-manipulated apparatus. Apparatus 100 includes head portion 102 and a handle portion coupled to the head portion and suitable for manipulation by a human hand. The handle portion includes first member 104 extending from head portion 102 and second member 106 coupled to first member 104. Applicator 108 is coupled to head portion 102 and has dimensions suitable for contacting localized areas of human skin.

Second member 106 has first end 106A, second end 106B, and an intermediate portion between first end 106A and second end 106B. First end 106A of second member 106 is coupled to first member 104 at an angle (β). In the embodiment shown, β is an obtuse angle.

Figure 6 shows a flow chart illustrating a method utilizing either the apparatus comprising the motor-driven vibrating mechanism or the manually-manipulated device. Initially, a human user attaches an applicator to the apparatus (e.g., vibrator or random orbit motion apparatus) (block 400). Next, the composition of, for example, moisturizer, abrasive particles, and acne treatment agent, is disposed on the applicator (block 420). This can be accomplished either by dipping the applicator into a container with the composition disposed inside or by disposing the composition directly onto the

applicator (i.e., with a dispenser, a squirt bottle tube, spatula or other suitable means).

The user then applies the composition disposed on the applicator to the area of skin to be treated (block 440). For example, a user may initially apply approximately one-quarter inch of the composition across the entire surface of a porous applicator. The user then dots the composition (e.g., disposed on the applicator) on areas of the skin to be treated at locations, on the order of, for example, three inches apart.

Subsequently, the user manipulates the composition over the area of skin to be treated with the apparatus (vibrator) (block 460). In an embodiment, manipulation of the composition (block 460) is characterized by moving the apparatus (e.g., vibrator or random orbit motion apparatus) over the area of skin using firm, upward, circular strokes. In one example, the manipulation of the composition is continued for one to ten minutes or until the composition has been worked into the skin and the skin appears soft and smooth.

Finally, the user wipes off any unabsorbed portion of the composition (block 480) and may optionally rinse or cleanse the area. In one embodiment, the composition including a moisturizer as a principal component may be worked in until substantially all of the moisturizer (and any other components) is taken up by the skin and only the abrasive particles remain on the surface of the skin. The abrasive particles may be brushed off and the area of skin cleansed with a mild cleanser. In an alternative embodiment, before applying the composition to the skin, the user cleanses the area of skin with a mild cleanser using gentle circular strokes, rinses the skin with tepid water, and pats the skin dry with a soft towel.

It should be noted that in applying the composition to the skin 440, the user may dab the composition on certain areas of the skin before switching the apparatus (vibrator) on to manipulate the composition over the skin. Alternatively, the user may simultaneously apply the composition to the skin and manipulate the composition over the area of skin to be treated. Alternatively, the user may simultaneously apply the composition to the

applicator, dot the area to be treated and manipulate in rotary strokes. Using the vibrator applicator, the user may manipulate the applicator with the vibrator in the on (vibrate) position, or in the off position for a lighter treatment.

Figure 11 shows a method of treating skin using a composition that includes abrasive particles and an acne treatment agent. At block 210, the composition is applied either directly or indirectly (as described above) to an area of skin to be treated. In one embodiment, the composition comprises a base, a plurality of abrasive particles having an average particle size of less than about 125 microns, and an acne treatment agent.

At block 212, the composition is manipulated over the skin. As described above, manipulation can entail manual-movement or motor-driven movement of an applicator over the skin. In addition, manipulation can include at least one of vibrating, spinning, heating, and propagating sonic waves through the applicator.

The method described in **Figure 11** advantageously removes a portion of the epidermis of a layer of human skin (e.g., microdermabrasion) while simultaneously administering an acne treatment agent to the skin. The type of acne treatment agent in the composition determines the mechanism by which the composition treats the acne. For example, acne can be treated by reducing the level of P. acnes bacteria, reducing sebum production, and unclogging pores. The abrasive characteristic of the particles in the composition improves accessibility to the pores of the skin so that the acne treatment agent can have increased effectiveness (e.g., improved access allows certain agents to more efficiently kill P. acnes bacteria and to unclog pores).

It is to be understood that even though numerous characteristics and advantages of various embodiments have been set forth in the foregoing description, together with details of structure, function, and formulations of the various embodiments, this disclosure is illustrative only. Changes may be made in detail, especially matters of structure, management of parts, and compositional formulation, without departing from the scope of the various embodiments as expressed by the broad general meaning of the terms of the appended claims.

CLAIMS

I claim:

1. A composition comprising:

a base suitable for application to human skin;

a plurality of abrasive particles having an average particle size of less than about 125 microns; and

an acne treatment agent.

2. The composition of Claim 1, wherein the acne treatment agent comprises:

at least one of salicylic acid, benzoyl peroxide, and sulfur.

3. The composition of Claim 2, wherein the acne treatment agent comprises:

salicylic acid in an amount comprising approximately 0.25%-5.0% of the composition by volume.

4. The composition of Claim 2, wherein the acne treatment agent comprises:

benzoyl peroxide in an amount comprising approximately 5.0%-10.0% of the composition by volume.

5. The composition of Claim 2, wherein the acne treatment agent comprises:

sulfur in an amount comprising approximately 5.0%-10.0% of the composition by volume.

6. The composition of Claim 1, further comprising:

at least one of a vitamin, a mineral, an antioxidant, a cleanser, and an emulsifier.

7. The composition of Claim 1, wherein the abrasive particles comprise:

at least one of corundum, magnesium oxide, and a precious stone.

8. The composition of Claim 7, wherein the precious stone comprises:

at least one of diamond, garnet, sapphire, ruby, emerald, and topaz.

9. A method comprising:

applying a composition to an area of human skin, the composition comprising a base, a plurality of abrasive particles, and an acne treatment agent; and

manipulating the composition over the area of human skin with a motor-driven apparatus.

10. The method of Claim 9, wherein manipulating comprises:

buffing the skin with the apparatus, the apparatus comprising a handle portion suitable for manipulation by a human hand, a head portion coupled to the handle portion, and

an applicator coupled to the head portion and having dimensions suitable for contacting localized areas of human skin.

11. The method of Claim 9, wherein the applicator comprises:

a porous mass.

12. The method of Claim 11, wherein the porous mass has a pore size that is at least as large as an average particle size of the abrasive particles.

13. The method of Claim 11, wherein the porous mass has a pore size that enables the abrasive particles to move within the porous mass during manipulation of the composition.

14. The method of Claim 9, wherein manipulating comprises:

at least one of vibrating and spinning the applicator.

15. The method of Claim 9, further comprising:

heating the applicator.

16. The method of Claim 9, further comprising:

propagating sonic waves through the applicator.

17. A method comprising:

applying a composition to an area of human skin, the composition comprising a base, a plurality of abrasive particles having an average particle size of less than about 125 microns, and an acne treatment agent; and

manipulating the composition over the area of human skin.

18. The method of Claim 17, wherein manipulating comprises:

buffing the skin with an apparatus having a handle portion suitable for manipulation by a human hand,

a head portion coupled to the handle portion, and

an applicator coupled to the head portion and having dimensions suitable for contacting localized areas of human skin.

19. The method of Claim 17, wherein the applicator comprises:

a porous mass.

20. The method of Claim 19, wherein the porous mass has a pore size that is at least as large as an average particle size of the abrasive particles.

21. The method of Claim 19, wherein the porous mass has a pore size that enables the abrasive particles to move within the porous mass during manipulation of the composition.

22. A method comprising:

removing at least a portion of an epidermis from an area of human skin with a composition comprising abrasive particles having an average particle size of less than about 125 microns; and

simultaneously administering an acne treatment agent to the area of skin.

23. The method of Claim 22, wherein removing comprises:

performing microdermabrasion on the area of skin.

24. The method of Claim 23, wherein administering comprises:

introducing a composition containing an acne treatment agent capable of at least one of reducing the level of P. acnes bacteria, reducing sebum production, and unclogging pores.

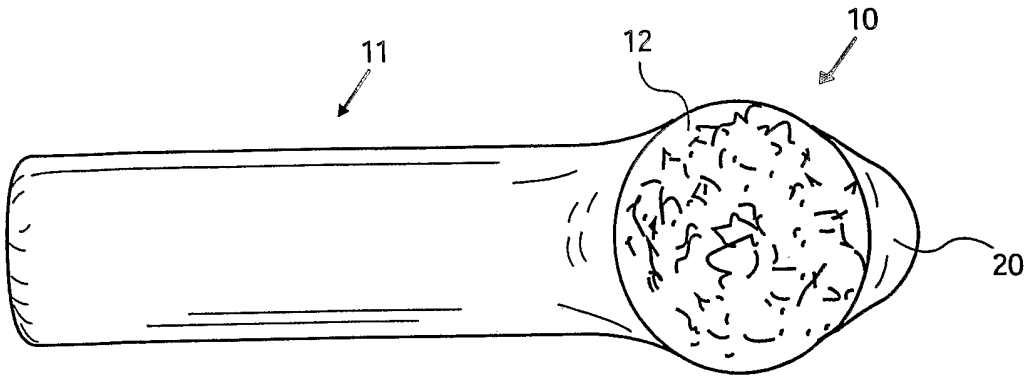

FIG. 1

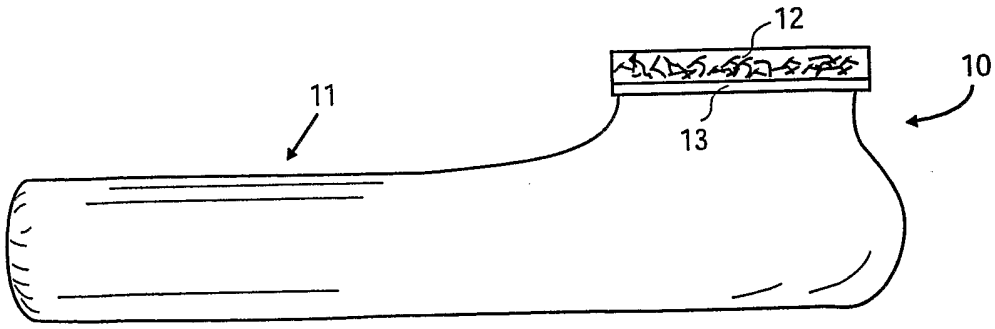

FIG. 2

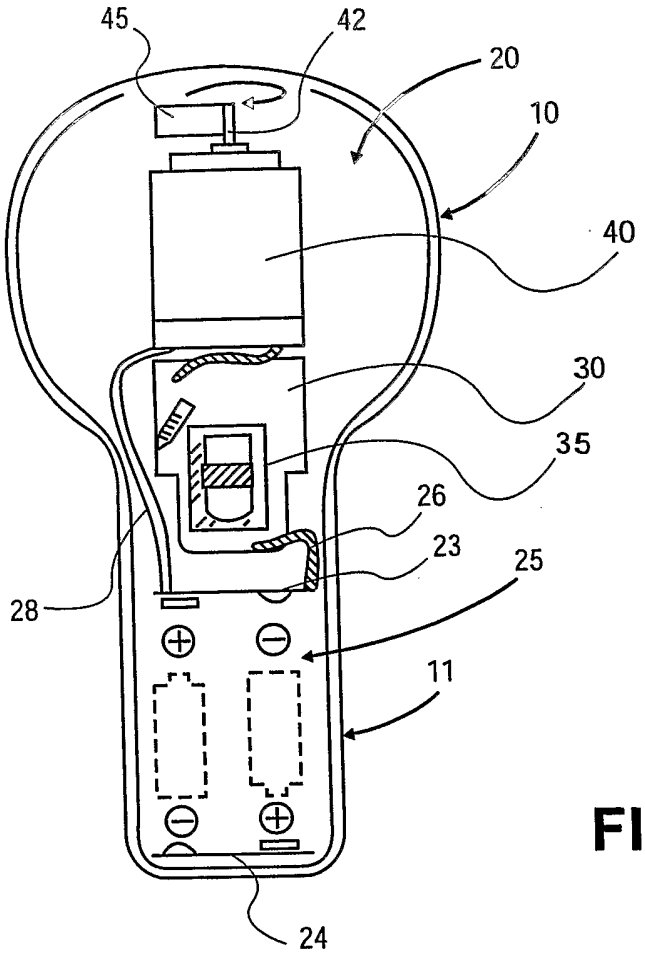

FIG. 3

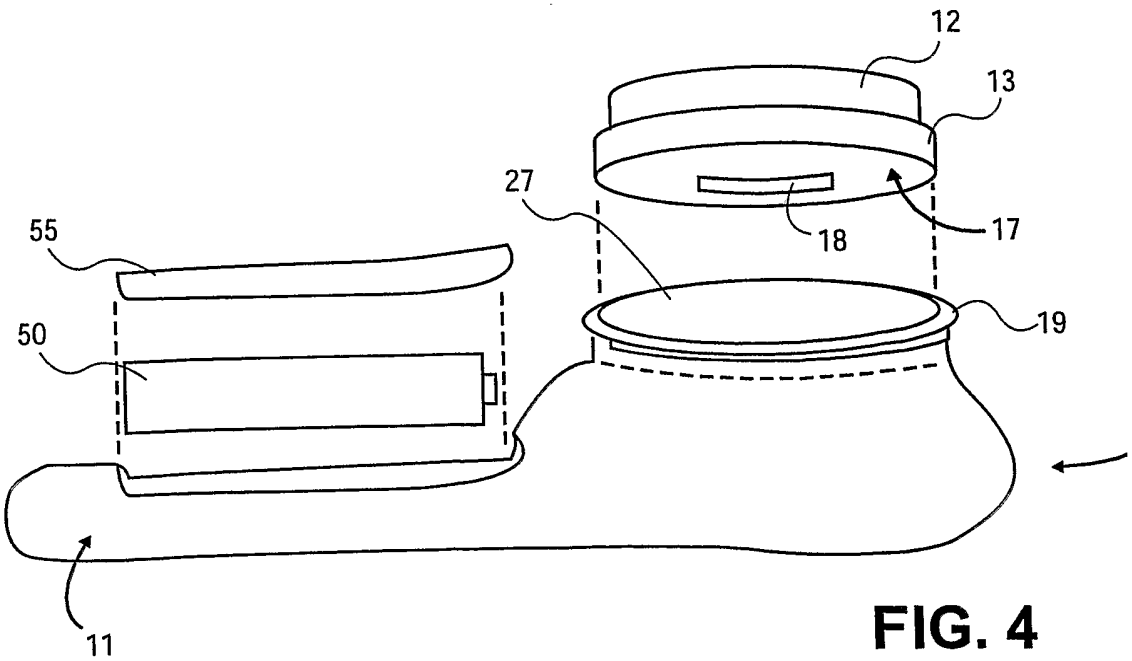

FIG. 4

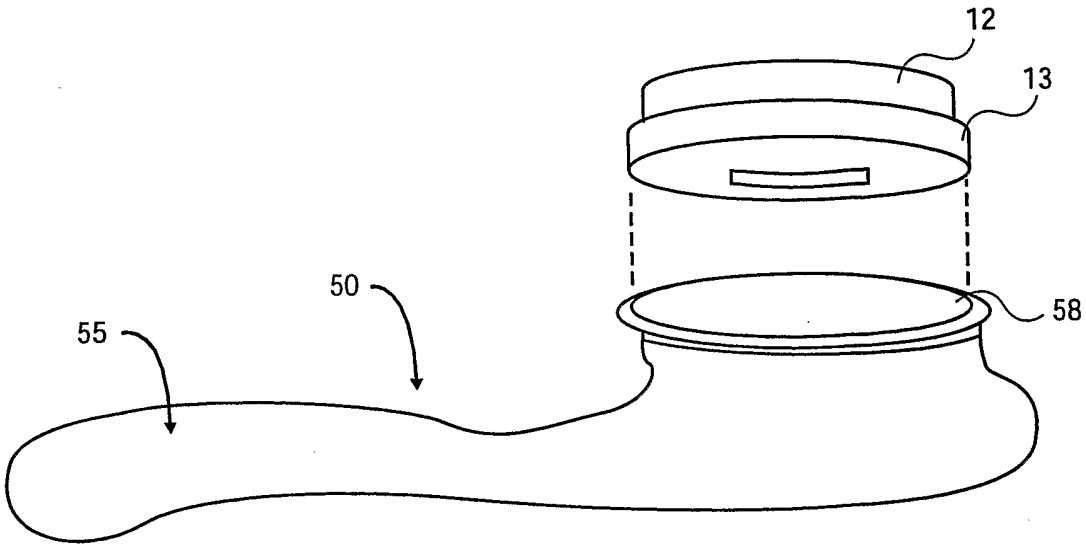

FIG. 5

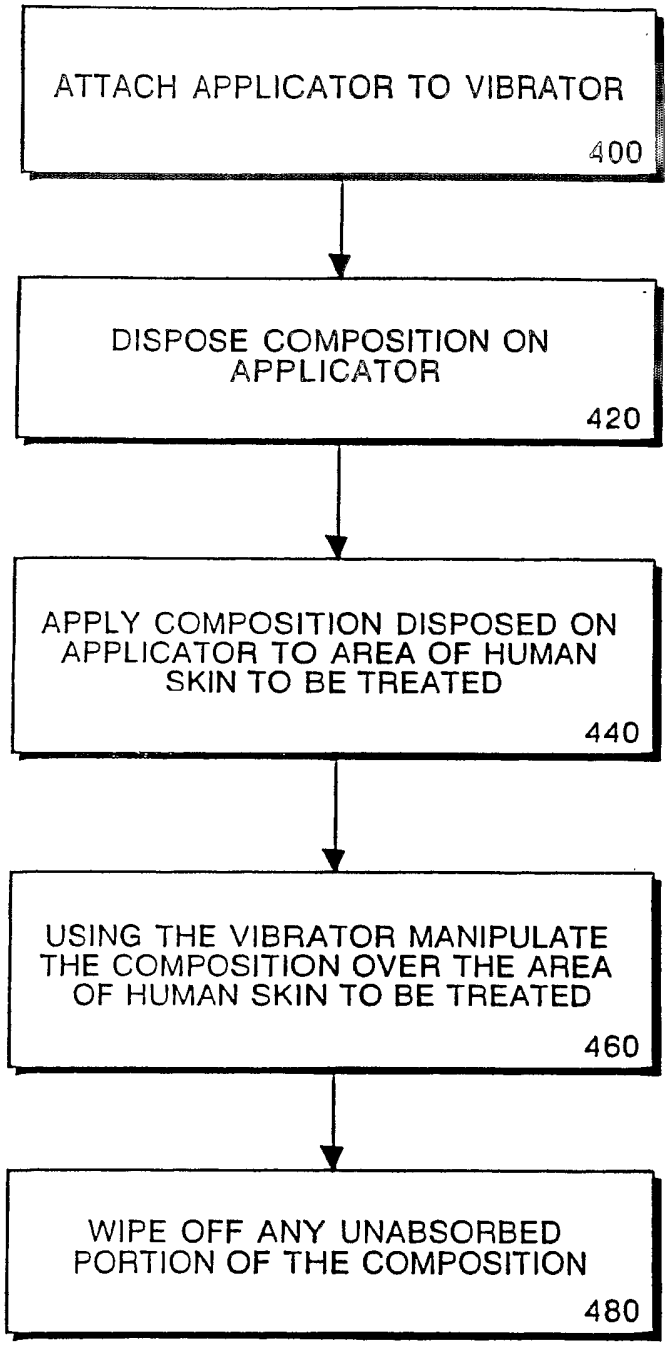
ATTACH APPLICATOR TO VIBRATOR
400
DISPOSE COMPOSITION ON APPLICATOR
420
APPLY COMPOSITION DISPOSED ON APPLICATOR TO AREA OF HUMAN SKIN TO BE TREATED
440
USING THE VIBRATOR MANIPULATE THE COMPOSITION OVER THE AREA OF HUMAN SKIN TO BE TREATED
460
WIPE OFF ANY UNABSORBED PORTION OF THE COMPOSITION
480

FIG. 6

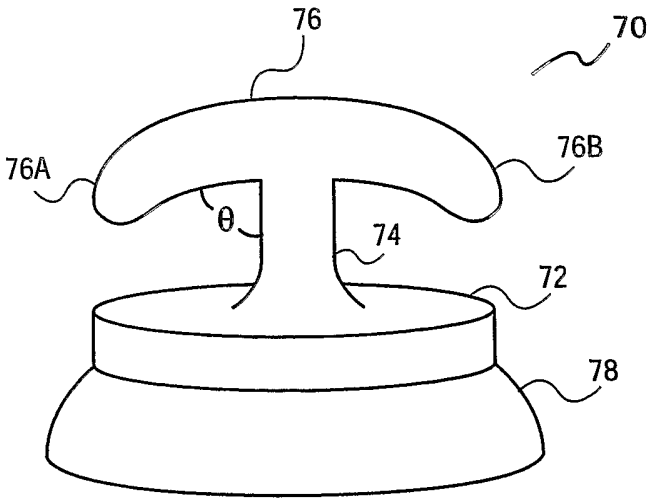

FIG. 7

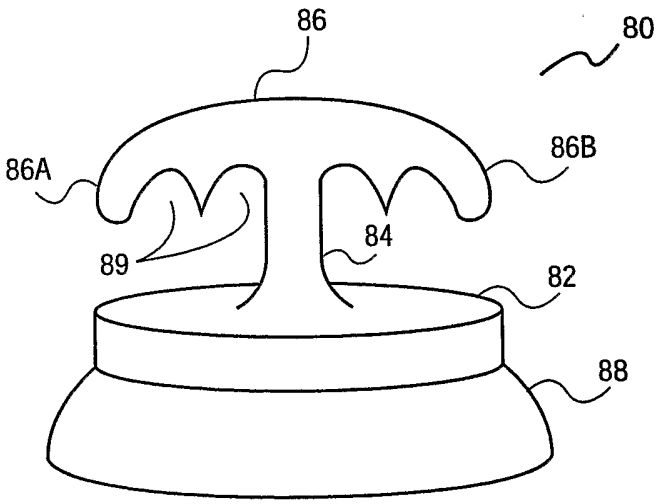

FIG. 8

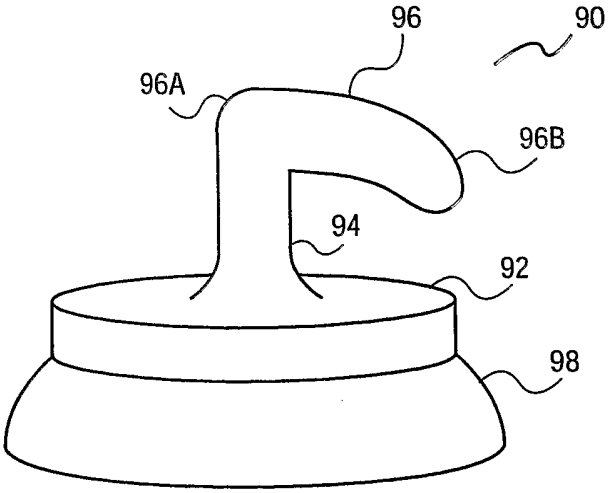

FIG. 9

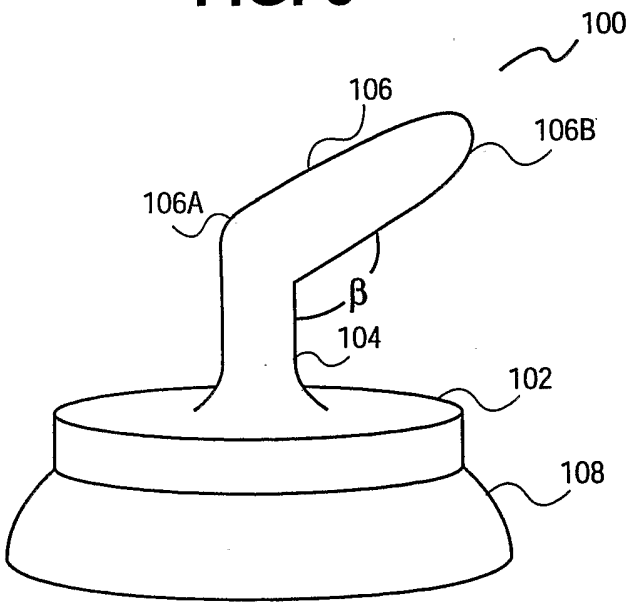

FIG. 10

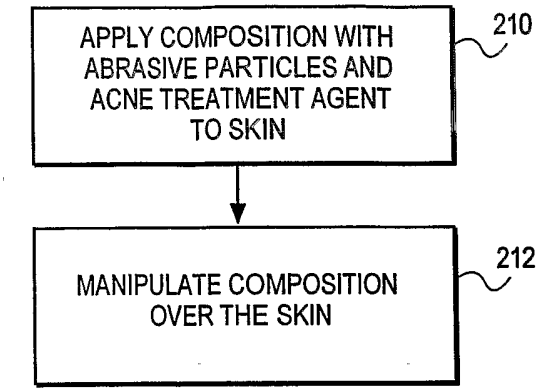
APPLY COMPOSITION WITH ABRASIVE PARTICLES AND ACNE TREATMENT AGENT TO SKIN
210
MANIPULATE COMPOSITION OVER THE SKIN
212

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/13208

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : A61K 33/08; C09K 3/14
US CL : 424/401, 691; 604/280
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)
U.S. : 424/401, 691; 604/280

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)
WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,665,364 A (MCATEE et al.) 09 Septemeber 1997 (09.09.1997), see col. 2, col. 8 and col. 15.	1-7, 17 and 22 --- 8-16, 18-21 and 23-24
X --- Y	US 6,241,739 B1 (WALDRON) 05 June 2001 (05.06.2001), see entire document.	22-24 --- 8-16 and 18-21
Y, P	US 6,652,888 B2 (RHOADES) 25 Novemebr 2003 (25.11.2003), see entire document.	8-16, 18-21and 23-24

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search
23 September 2004 (23.09.2004)

Date of mailing of the international search report
14 OCT 2004

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