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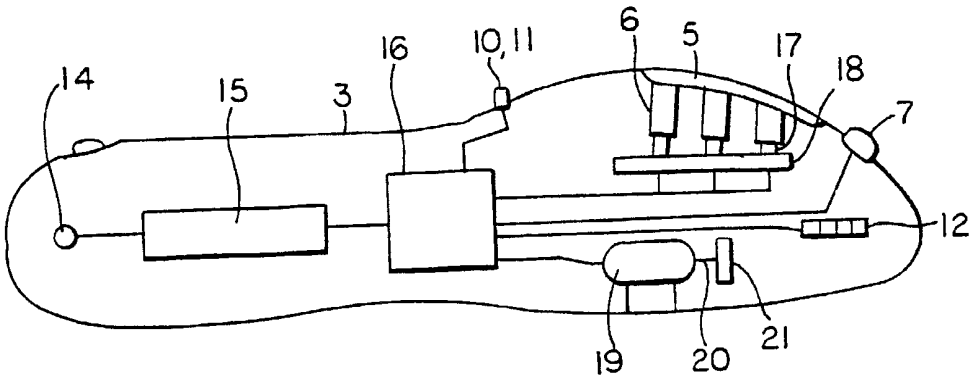
(54) Title: MASSAGE AND TONING DEVICE AND METHOD OF USE



(57) Abstract: A massage and toning device has a heat generator, vibration generator and electrical stimulation circuit disposed in a hand-held housing. A distal end of the housing is placed in contact with the skin and moved thereover, with heat, vibration and electro-stimulating current transmitted to the skin and underlying tissue and muscles. Using the device, both massage and toning are achieved.

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MASSAGE AND TONING DEVICE AND METHOD OF USE

TECHNICAL FIELD

This invention relates to skin toning and massage and more particularly to a hand held unit for selectively stimulating the skin using heat, vibration and/or electrical stimulation, and combinations thereof.

BACKGROUND

In U.S. Patent No. 5,551,949, a hand-held infrared massaging device is described which also has mechanical vibration transmitted to an infrared transparent portion of the housing.

In U.S. Patent No. 5,336,159, a two headed infrared massaging device is disclosed which also utilizes mechanical vibration.

In U.S. Patent No. 5,476,504, an electrical stimulation device utilizes conductive rollers for providing electrical stimulation as the rollers traverse the skin.

In U.S. Patent No. 4,957,480, assigned to the assignee of this application, a method of toning the muscles and tissues of the human face is disclosed which utilizes applying predetermined galvanic currents, frequencies and polarities through moistened tips of electrodes which are continually moistened with a liquid solution of charged particles for introduction into the tissue. The device used for electro-stimulation is a console unit, with separate electrodes

connected to it by wires.

The use of heat and vibration for massaging the skin is known and has been used in various ways for many years. Generally, such massage relaxes the muscles to release tension and reduce stress.

Electro-stimulation, on the other hand, has been used to effect toning by causing contractions that in essence work the muscles under the skin. Massage and toning, seeking different results, have been considered incompatible in that one seeking to relax muscles to reduce tension would not consider electro-stimulation as a means to achieve that end, particularly as electro-stimulation can be uncomfortable to sensitive individuals receiving the treatment. Because of that, there has been some hesitation in adopting its use.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a device which can selectively apply heat, vibration or electro-stimulation, and combinations thereof to the skin.

It is a further object to provide a massage and toning device which can simultaneously massage and tone a person's skin and muscles, while reducing any discomfort associated with electro-stimulation.

It is a further object to provide such a device as an integral hand-held unit.

It is another object to provide a method for massaging and toning a person's skin and muscles.

It has been discovered that, with a particular selection of operating parameters, heat, vibration and electro-stimulation can be applied sequentially or simultaneously to massage and

tone the skin using a single unit, avoiding and/or minimizing any uncomfortable feeling associated with electro-stimulation, without reducing its effectiveness.

A device according to the present invention comprises a housing, a vibration generator disposed in the housing, delivering vibration to a distal end of the housing, a heat generator disposed in the housing for generating heat at the distal end thereof, a heat conductive surface provided on the housing adjacent the heat generator, a pair of electrodes disposed in close proximity to the heat conductive surface, an electro-stimulator circuit for applying an electrical pulse to said electrodes, and at least one switch for selectively activating the vibration generator, infrared generator and electrical stimulation circuit individually or collectively.

A method for using such a device would include the steps of:

providing such a device;

applying a liquid conductive material to an area of the skin to be treated;

actuating the heat generator;

optionally activating the vibration generator;

optionally actuating the electro-stimulator circuit; and

moving the distal end of the device over the surface to be treated in a selected pattern.

Preferably, when using heat and/or vibration, the device should be moved with a back and forth motion with or without an additional circular motion. When using electro-stimulation, intermittent stops may additionally be made at selected location, and the device held there for 1-10 seconds, more preferably about 2-8 seconds, and particularly 4-5 seconds.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a front elevation view of the massage and toning device of the applicant's invention.

Fig. 2 is a cross-sectional side view of the device of Fig. 1.

Fig. 3 is a schematic view of the circuit for the electro-stimulator.

Fig. 4 is a view showing the device in use.

Fig. 5 is a chart illustrating the method of the present invention using heat.

Fig. 6 is a chart illustrating the method of the present invention using vibration.

Fig. 7. Is a chart illustrating the method of the present invention using electro-stimulation.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Fig. 1, a hand-held massage and toning device 1 according to the present invention is shown. The device 1 has a housing 2 which has a handle portion 3 shaped for gripping by the hand for hand-held use. The housing 2 has a proximal end 3 and a distal end 4 which has a window 5 therein. The window 5 is an infrared transparent portion which in this embodiment has thermal conductive cylindrical receptacles 6 that extend downward into the housing, best seen in Fig. 2.

A pair of electrodes 7 and 8 are located in proximity to the window, the electrodes spaced apart for use in providing electrical stimulation of the skin at a predetermined current, frequency and pulse cycle. In one embodiment of the invention, these may be spring biased outwardly from the housing to allow adapting to surface contours as the unit moves over the skin. The electrodes are separated by about 1 inch, center to center, leaving a space of about 3/8 inch

therebetween, though other spacings are possible.

The proximal end of the housing has an inclined surface 9 to provide a large contact area while leaving the hand sufficient room to grip the device and to operate a pair of switches 10 and 11 that control the application of heat and vibration. In this embodiment, the switches provide on/off control of these features. A selector switch 12 is located on the side of the housing for activating the electro-stimulator. This is easily activated by the thumb. The selector switch 12 has an "off" position, and three separate "on" positions so that the selector switch can be set at what could be termed low, medium and high energy electro-stimulation, the choice depending on the type and sensitivity of skin on which the device will be used.

The hand-held unit contains an integral rechargeable power supply as seen in Fig. 2 and also has means for connecting to a recharging source. Here, a pair of electrodes 13a, 13b are shown which mate to electrodes in a power supply base (not shown) so that the power supply is recharged when the unit is not in use. If use with a base is inconvenient, or connection to an external power source is desired, such as when the batteries are depleted, a socket 14 is also provided for accepting a prong from a typical charging unit (not shown) therein, both systems for charging being known in the art.

Referring to Fig. 2, a side cross-sectional view of the device is shown. The power supply comprises rechargeable batteries 15 located in the handle portion 3 of the housing 2. These provide power to a control circuit 16 that in turn is connected to the switches 10, 11 and 12. The control circuit 16 provides power to a plurality of heating elements 17 mounted on a board 18, with the elements located in the receptacles 6 to generate heat when the heat switch is activated. Similarly, the control circuit provides power to a motor 19 that drives a shaft 20 having an

electric weight 21 for producing vibration, when the vibration switch is activated. The control circuit provides power to the electrodes 7 and 8 when the thumb switch 12 is activated, the circuit providing particular power outputs relating to the position of the thumb switch. Fig. 3 shows the schematic for the electro-stimulation circuit.

While each individual stimulation, i.e. heat, vibration and electrical, can be used separately or in various combinations, in one embodiment of the invention, all three are used simultaneously, such that the heat and vibration, applied to the skin, temper and moderate the effects of the electro-stimulation, without reducing the physical effectiveness of the skin toning.

Contrary to the perception of those skilled in the art, massaging techniques can be combined with toning by electro-stimulation to reduce tension, relieve stress while further toning the skin and muscles.

Referring to Fig. 4, in operation, a user removes the device 1 from its recharging base and selects the desired combination of stimulation. For example, the user may switch on the infrared generator, the mechanical vibrator and set the electro-stimulator selector switch to the middle position. In one embodiment of the invention, a conductive lotion 21 or other liquid or gel is spread over a surface 22 to be treated, to reduce friction and increase conductivity. The distal end of the device is then pressed onto the skin and moved slowly over the surface, in a back and forth pattern, for from about 30 seconds to several minutes, depending on the surface area covered, and the individual inclination of the user. Preferably, a liquid containing charged particles or which is ionized in some way can enhance effectiveness by penetrating into the epidermis to further increase muscle and skin tone.

In one embodiment of the invention, the infrared generator provides sufficient heat to

warm the surface over which the device moves, without rising to an uncomfortable level. This may range from about 80°F up to about 130°F. Similarly, the mechanical vibration generator provides vibration at known levels that do not cause discomfort.

As with the electro-stimulation, each of the heat and vibrating devices can have selectable levels of low, medium, high to provide maximum flexibility to the user to enhance comfort and effectiveness.

The electro-stimulation is preferably applied at from 0.5 to about 100Hz with a galvanic current of from about 100 to 1000 micro amperes, more preferably about 200 to 800 and a particular preferred level is 640 micro amperes. In a preferred embodiment, the electro-stimulator can be applied at 350, 400 and 640 micro amperes levels corresponding to low, medium and high settings. In another embodiment, these may be 400, 640 and 1000 respectively. The frequency can also be varied and the electrodes can be operated at about 300 to 540 micro amperes at a frequency of about 0.5 to about 20 Hz, or about 30 to about 100 Hz , with alternating polarity, more preferably about 90 to 100 Hz .

The stimulation is preferably applied in a particular on/off pattern, that somewhat corresponds to muscle tightening/muscle relaxing. A preferred pulse would be 10% - 40% on cycle, 90-60% off, more preferably 15-30% on cycle, 85-70% off cycle, and in particular 25% on/75% off may be used.

It is also possible to reverse polarity in a sequence so as to enhance effectiveness. For example, alternating the polarity of the electrodes from positive to negative for a duration of about 1 to about 4 seconds, and then reversing again. This can all be predetermined in the unit or be user adjustable, though it is preferred to preprogram the unit to simplify use.

The circuit board 16 incorporates the electronic components for effecting application of the heat and vibration and the electronic components needed for power conditioning for electro-stimulation. Of course, these functions can be provided by software or be burned into a chip and the invention is not limited to use of the disclosed components.

There are five infrared bulbs 17 that reside in the tubes 6 in the window 5 for conducting heat to the window, each bulb having a maximum range of 127°F at 15 min. Of course, the number and the type of heating element can vary.

In operating the unit, various methods can be used as follows:

Treating the face as an example, cleansing is recommended prior to initiating the treatments. Then, for a heat treatment, the heat switch is turned on and a conductive liquid or gel is applied to the treatment area. Such a liquid may be obtained from Dermispa, McLean, Virginia. The distal end of the device is then placed against the skin, for example, against the chin, and then moved back and forth along the jawline.

With reference to Fig. 5, the unit is moved slowly, upward over the lower, middle and upper cheek while continuing the back and forth movement. The unit can then be moved to the temple and forehead then down to the nose and back up to the forehead. This process is then repeated over to the other side of the face. Preferably, the heat treatment should be applied repetitively for about 3-5 minutes.

To provide a vibration treatment, the vibration generator switch is turned on and again, the treatment begins at or near the chin. Preferably, the unit is moved with a combined circular motion as the unit traverses the jawline in a back and forth motion, as shown in Fig. 6. The motion can be clockwise alternated with counterclockwise. Again, the unit is moved upwards as

described above, to the temple, forehead and nose. Preferably, the vibration treatment is applied repetitively for about 3-5 minutes.

Additional liquid or gel should be applied to keep the surface moist.

To provide an electro-stimulation treatment, the unit selector switch is set at the desired power level and the unit is placed on selective areas and held for a few seconds as an initial step, for example, areas A, B, C and D of Fig. 7. Then, the unit should be slid over from position A to position D in a back and forth motion, along the jaw line.

This is then repeated with Positions E, F and G, that is, first holding for a time, then sliding from E to G in a back and forth motion.

The steps of stopping at certain points should continue to be alternated with the sliding movement over the skin. Then, combined positions should be used by placing the device between positions and holding, such as between A and E, B and F, C and G, for a few seconds.

The selected stop position is preferably held for 4-5 seconds, and the sliding movement, as before, should move slowly upwardly from the jawline over the lower, middle and upper cheek.

The sensation on the skin should be barely perceptible but may be a tingling and stimulation sensation. Near the eye area, low or medium intensity levels should be used and the procedure should involve placing the electrodes on position H, and hold for a few seconds, then move to I, and J, then start at position H and slide back and forth between positions H and J. This should be repeated 1-10 times, more preferably 2-8 times and particularly 5 times. These steps are then repeated on the other side of the face. Preferably, toning is done for about 3-5 minutes.

If any twitching is experienced, the device should be repositioned or a lower intensity used.

The choice of intensity depends on the skin being treated. High intensity can be used on normal or oily skin, medium around the eyes, and on normal or dry skin, and low intensity around the eyes and on sensitive skin.

As described above, these treatments may be used sequentially or overlap by merging the stop positions for electro-stimulation with the movements used for heat/vibration treatment and any combination is possible using the applicants' invention.

For best results, the treatments should be applied about 3 times per week, for 10-15 minutes each.

While particular embodiments of the invention have been shown and described, it will be understood that various changes or modifications could be made without varying from the present invention.

We claim:

CLAIMS

Claim 1. A hand-held device for massaging and toning the skin comprising:

a housing having a proximal end shaped for gripping by a hand and a distal end;

a vibration generator located in the housing for generating vibration in the distal end of the housing;

a heat generator located in the housing for generating heat in the distal end of the housing;

a pair of electrodes located on the distal end of the housing;

an electro-stimulator circuit for applying an electrical pulse to the electrodes;

a power supply located in the housing for powering the vibration generator, heat generator and electro-stimulation circuit; and

at least one switch located on the housing for controlling the power supply.

Claim 2. The device of claim 1 wherein at least three switches are mounted on the housing for activating the vibration generator, heat generator and electro-stimulation circuit respectively.

Claim 3. The device of claim 1 further comprising a control circuit located in the housing for controlling the power supplied to the electrodes.

Claim 4. The device of claim 1 wherein the vibration generator is a motor driving an eccentric weight.

Claim 5. The device of claim 1 wherein the heat generator is a plurality of heat generating bulbs, the device further comprising an infrared transplant window having receptacles for receiving the heat generating bulbs mounted on the distal end of the housing.

Claim 6. The device of claim 1 wherein the electro-stimulation circuit supplies a galvanic current at a frequency of from about 0.5 to about 1000 Hz , with the current being from about 100 to 1000 micro amperes.

Claim 7. The device of claim 1 wherein the power supply comprises at least one battery.

Claim 8. The device of claim 1 wherein the power supply comprises at least one rechargeable battery and further comprising means mounted on the housing for connecting to an external power supply.

Claim 9. The device of claim 1 wherein the heat generator heats the distal end to a temperature in the range of about 80 - 140°F.

Claim 10. A method for toning and massage of skin comprising:

providing a hand-held device having a housing having a proximal end shaped for gripping by a hand and a distal ends, a vibration generator located in the housing for generating vibration in the distal end of the housing;

a heat generator located in the housing for generating heat in the distal end of the housing, a pair of electrodes located on the distal end of the housings, an electro-stimulator circuit for applying an electrical pulse to the electrode, a power supply located in the housing for powering the vibration generator, heat generator and electro-stimulation circuit, at least one switch located on the housing for controlling the power supply;

activating the at least one switch;

contacting the skin; and,

moving the distal end of the device over the skin.

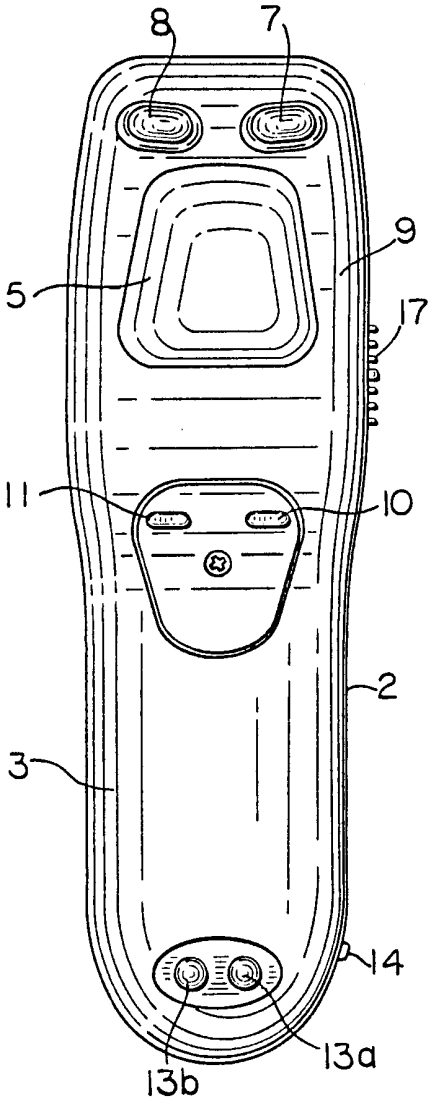


FIG. 1

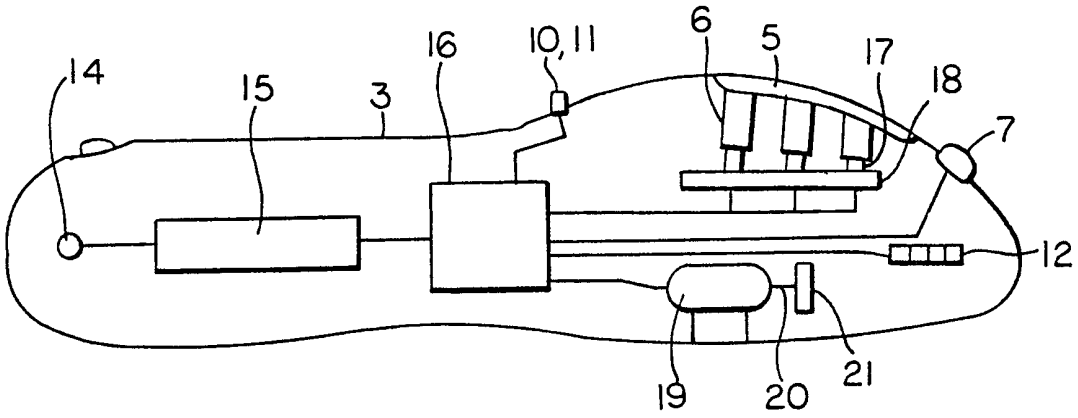
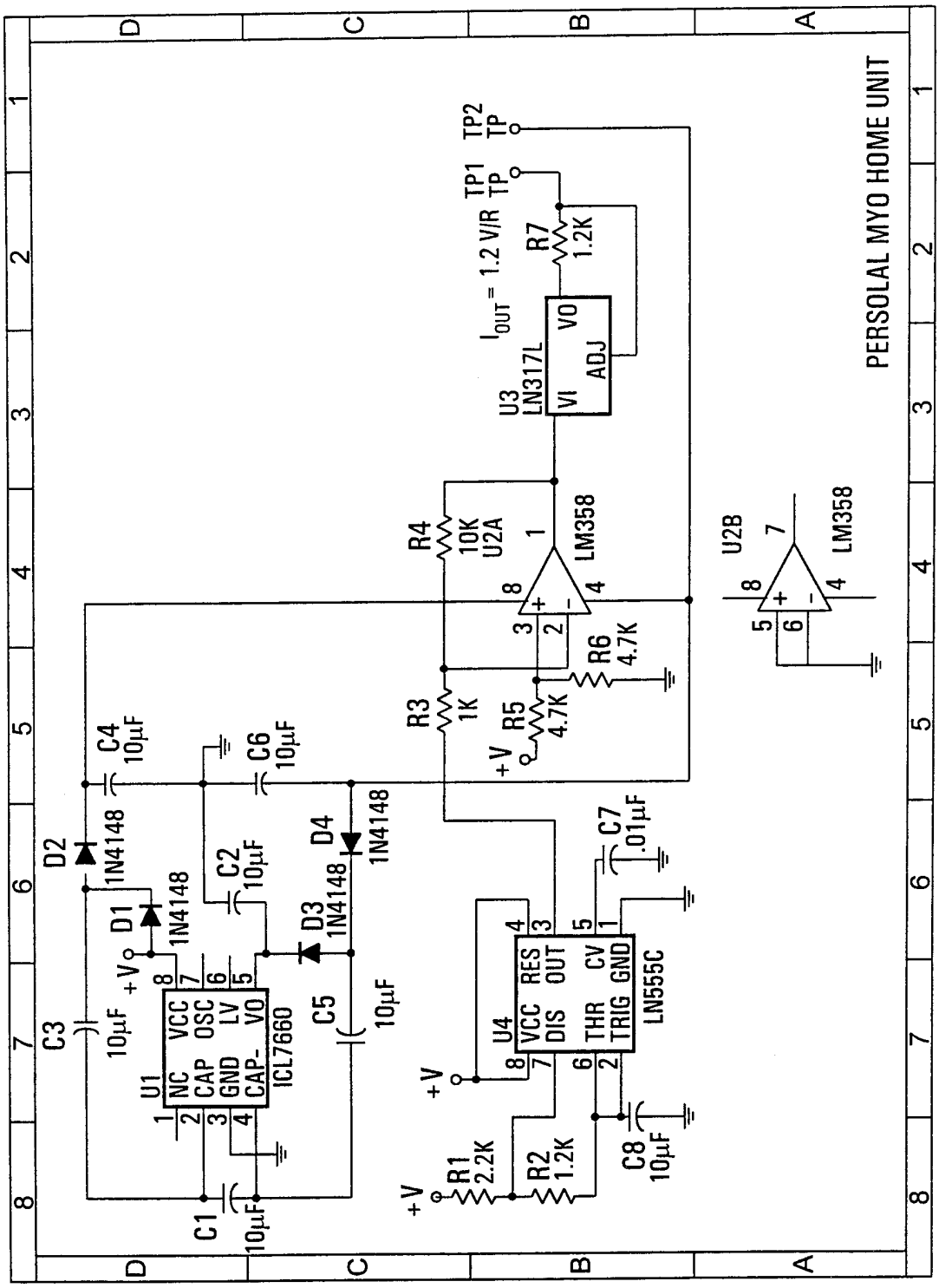


FIG. 2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U4 LN555C
VCC DIS RES OUT THR TRIG CV GND
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TP2 TP
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R2 1.2K
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R7 1.2K
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C3 10µF
C4 10µF
C5 10µF
C6 10µF
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FIG. 3

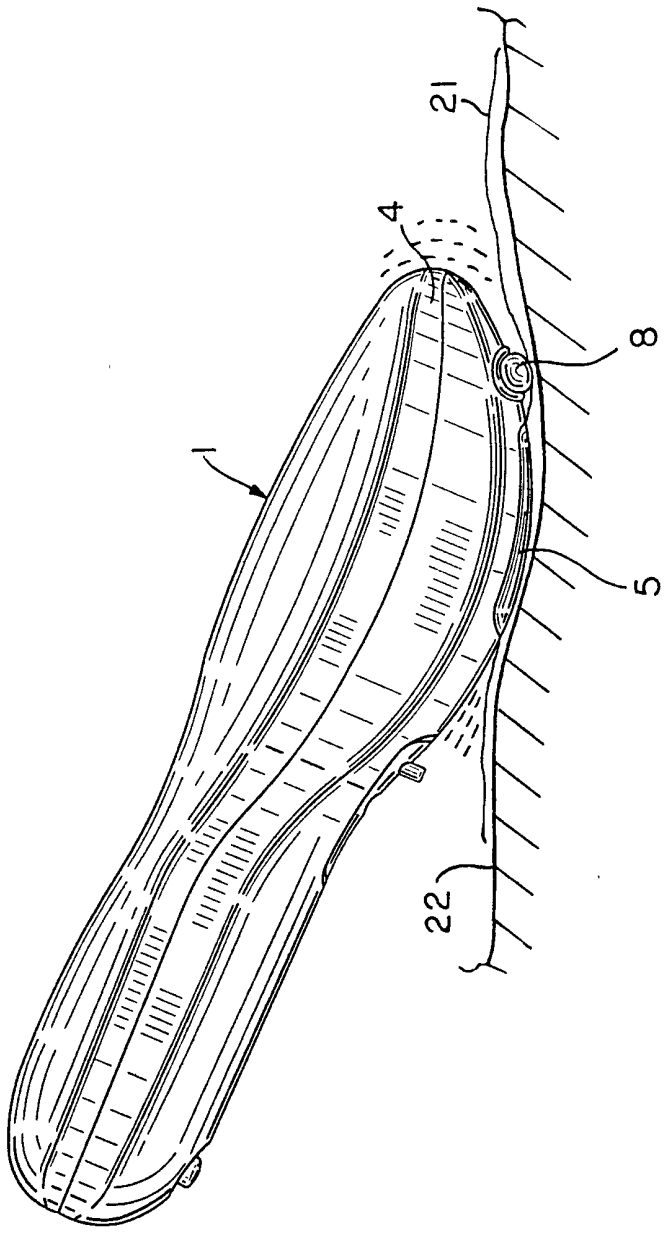


FIG. 4

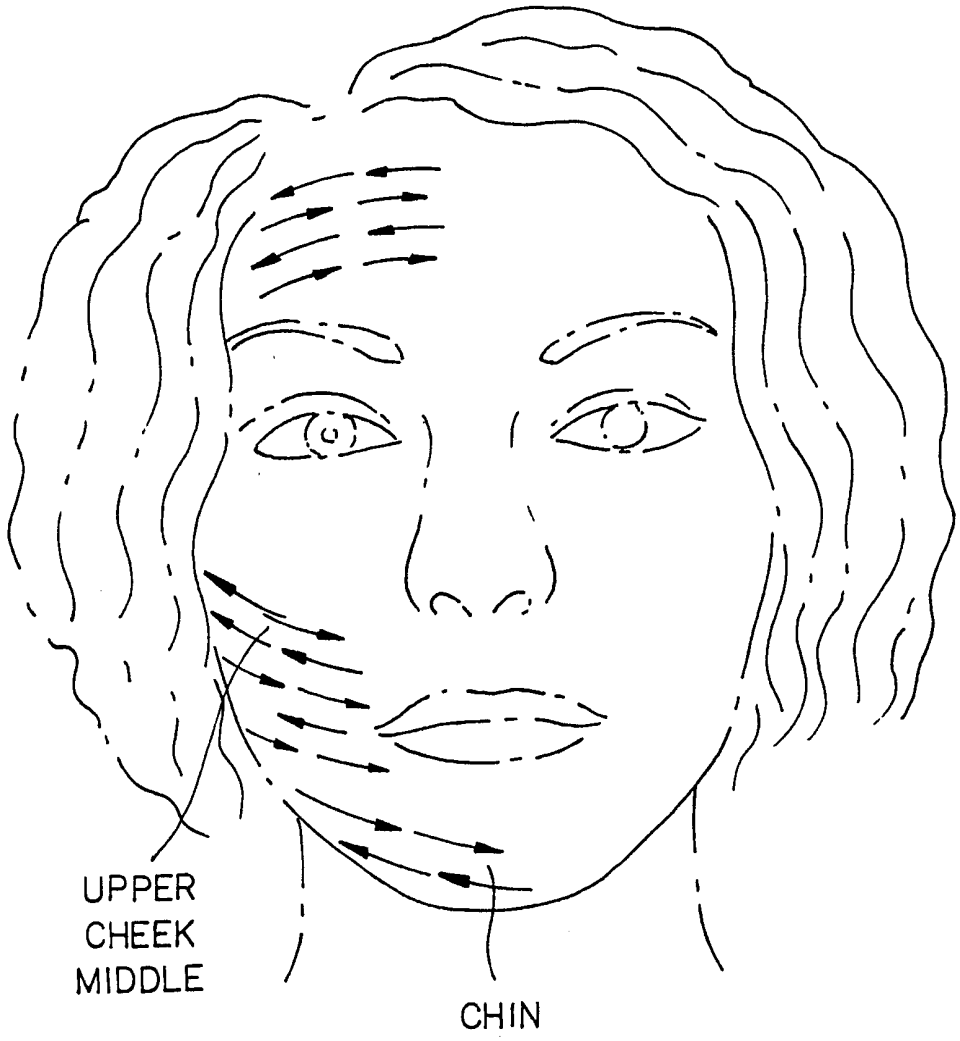
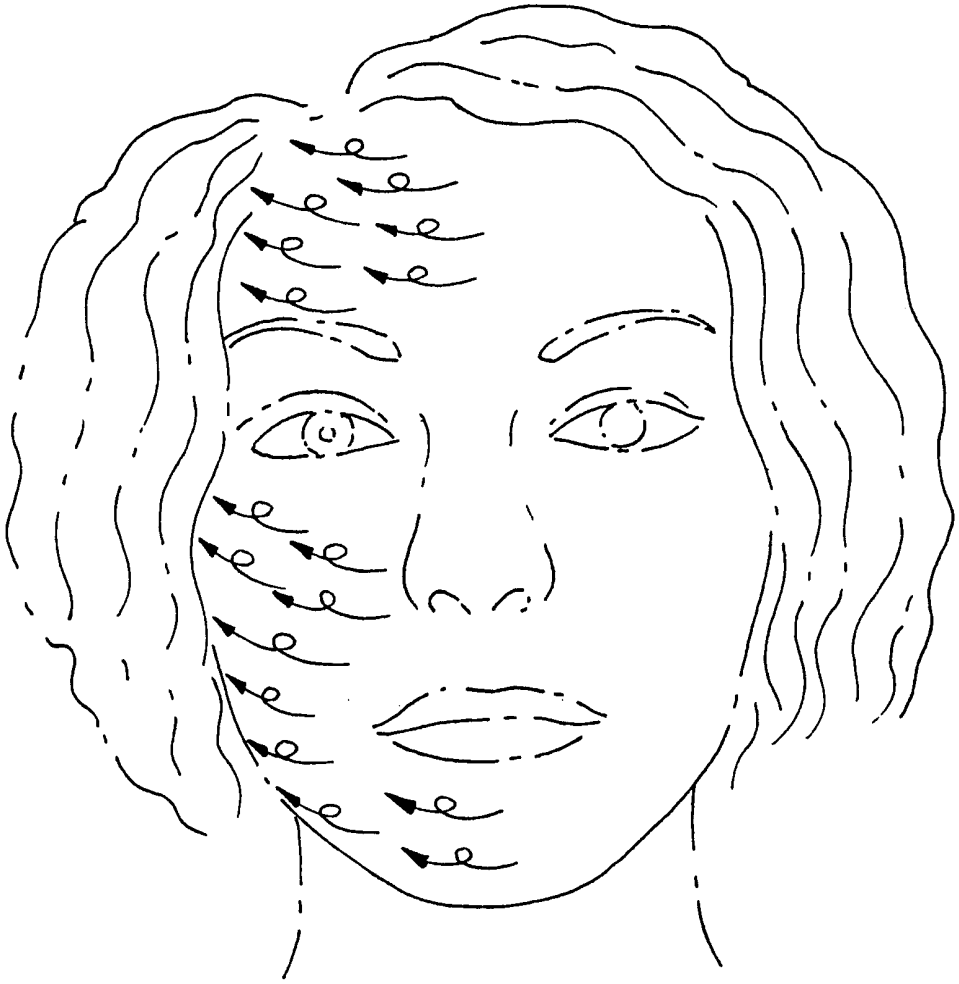


FIG. 5



CLOCKWISE CIRCULAR MOTION

FIG.6

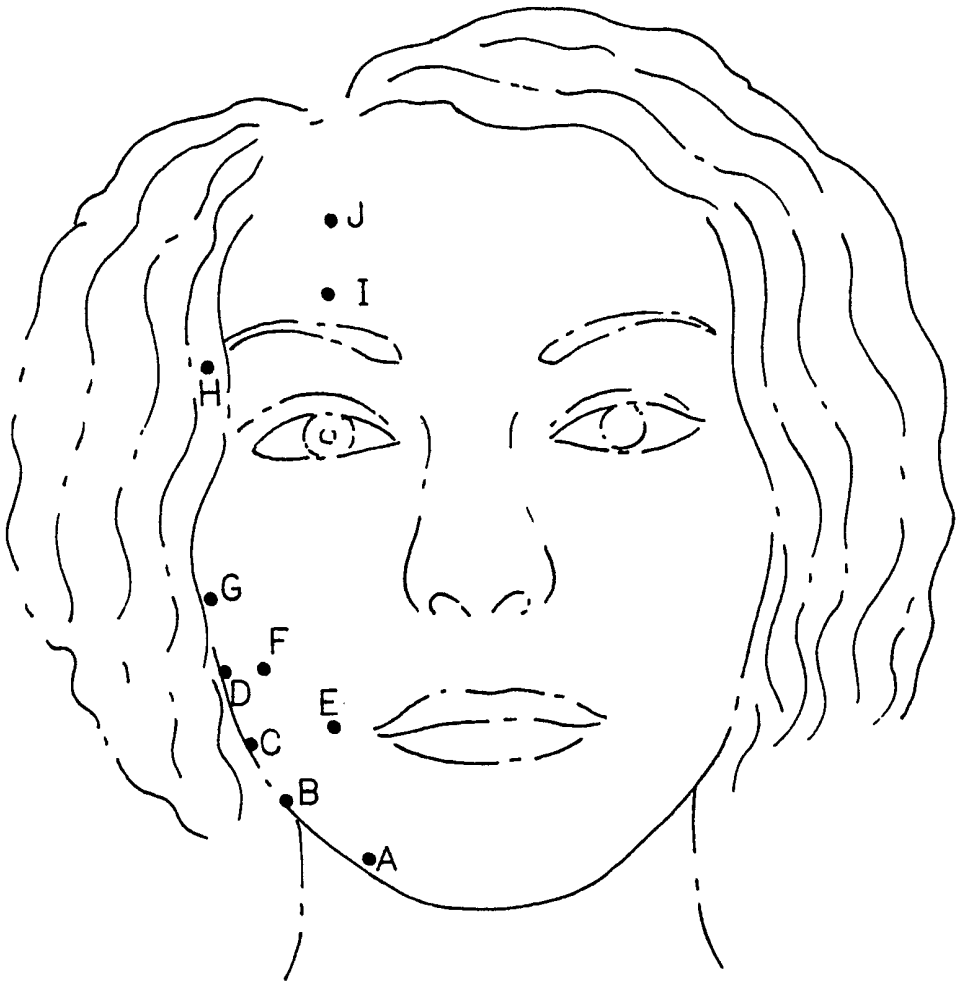


FIG. 7

INTERNATIONAL SEARCH REPORT

Int ational Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61H23/02 A61N1/32 A61N5/06

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)
IPC 7 A61H A61N

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 practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 562 706 A (LAUTERBACH ANTONIN ET AL) 8 October 1996 (1996-10-08) column 1, line 42 - line 43 column 2, line 13 - line 53 column 3, line 11 -column 4, line 23	1,3-9
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Y	US 5 551 949 A (KIM YONG) 3 September 1996 (1996-09-03) cited in the application column 3, line 6 -column 4, line 59	1,3-9

P,X	EP 1 008 366 A (HWANG MYUN BAE) 14 June 2000 (2000-06-14) the whole document	1,3-9

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 November 2000	16.11.2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Millward, R

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INTERNATIONAL SEARCH REPORT

In .ational Application No
PCT/US 00/18874

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 08, 30 June 1998 (1998-06-30) -& JP 10 057441 A (YA MAN LTD), 3 March 1998 (1998-03-03) abstract	1,4,5
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 00/18874

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: 10
because they relate to subject matter not required to be searched by this Authority, namely:

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

In. ational Application No
PCT/US 00/18874

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