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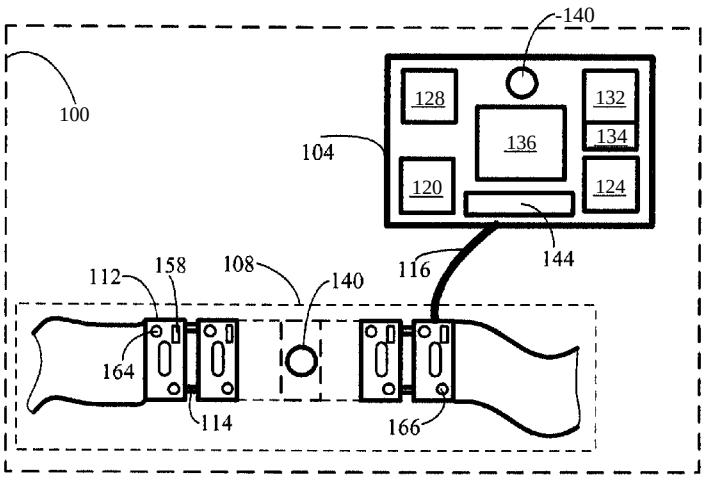

FIG. 1A

(57) Abstract: Apparatus comprising an array of individually controlled skin treatment units to be applied to a skin segment with each of the units comprising a housing defining a cavity that fluidly communicates with a source of vacuum pressure having an inner side terminated by a rim facilitating sealing of the cavity when the unit is applied to the skin, dimensions of the cavity being suffi - cient to accommodate a volume of a skin segment drawn into the cavity by the source of vacuum pressure to create a skin protrusion.

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AMENDED CLAIMS
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1. An apparatus (100) comprising:

an array (108, 1008, 1108) of individually controlled skin treatment units (112) to be applied to a skin segment with each of the skin treatment units (112) comprising:

a housing (404) defining a cavity (154, 408) that fluidly communicates with a source of vacuum pressure, with an inner side of the housing (404) terminated by a rim (416) coated by a low friction coating facilitating sealing of the cavity (154, 408) when the skin treatment unit (112) is applied to the skin, dimensions of the defined cavity (154, 408) being sufficient to accommodate a volume of a skin segment drawn into the defined cavity (154, 408) by the source of vacuum pressure to create a skin protrusion (632, 1104, 1204) and wherein application and release of vacuum pressure to the skin treatment unit (112) generates a back and forth massaging movement of at least a portion of a volume of skin against the rim (416) coated by a low friction coating, and

wherein each of the skin treatment units (112) of the array (108, 1008, 1108) has at least two degrees of rotational movement (336, 340, 342, 344) with respect to an adjacent skin treatment unit so that the array (108, 1008, 1108) can conform to topography of the skin segment.

2. The apparatus according to claim 1, wherein each cavity (154, 408) comprises:

at least one electrically controlled vacuum valve (164) associated with each cavity (154, 408) and configured to connect the cavity (154, 408) to the source of vacuum pressure, the source of vacuum pressure being operative to deliver vacuum to the cavity (154, 408);

a vacuum tubing (162) with one end connected to the source of vacuum pressure wherein two or more vacuum valves (164) are connected in parallel to a second end of the vacuum tubing (162); and

at least one electrically controlled air valve (166) associated with each cavity (154, 408) and configured to connect the cavity (154, 408) to an air delivery source, wherein

the source of vacuum pressure is operative to draw skin into the cavity (154, 408) when the cavity (154, 408) is applied to the skin and the air delivery source is operative to restore skin drawn into the cavity to its initial position.

3. The apparatus according to claim 2, wherein the air delivery source is selected among the group of sources consisting of ambient air and an air pressure supply pump (124).

4. The apparatus according to claim 3, wherein ambient air restores skin drawn into the cavity (154, 408) to its initial position by releasing vacuum in the cavity (154, 408) and air pressure restores skin drawn into the cavity (154, 408) to its initial position by pushing it out of the cavity (154, 408).

5. The apparatus according to any of claims 3 or 4, wherein the air pressure supply pump (124) provides air pressure to the cavity (154, 408) through a tubing (170) having one end connected to the air pressure supply pump (124) and wherein two or more air valves (166) are connected in parallel to the other end of the tubing (170) not connected to the air pressure supply pump (124).

6. The apparatus according to claim 1, wherein each cavity (154, 408) comprises:

at least one electrically controlled valve (406) associated with each cavity (154, 408) and configured to connect the cavity (154, 408) to the source of vacuum pressure when vacuum is to be delivered into the cavity or to ambient air to vent the cavity (154, 408) when vacuum is to be released from the cavity, and

a vacuum tubing (162) with one end connected to the source of vacuum pressure wherein two or more valves (406) are connected in parallel to a second end of the vacuum tubing (162).

7. The apparatus according to claim 1, wherein each cavity (154, 408) comprises:

at least one electrically controlled valve (406) associated with each cavity (154, 408) and configured to connect the cavity (154, 408) to the source of vacuum pressure when vacuum is to be delivered into the cavity or to an air pressure supply pump (124) operative to deliver air pressure to the cavity (154, 408) when vacuum is to be released from the cavity, and

a tubing with one end connected to the air pressure supply pump (124) wherein two or more valves (406) are connected in parallel to a second end of the tubing.

8. The apparatus according to any of claims 1-7, further comprising at least one energy to skin applying element to apply skin treatment energy to the skin segment.

9. The apparatus according to claim 8, wherein the energy to skin applying element is two RF electrodes (150, 508) located in the interior of the cavity (154, 408) and the apparatus further comprises:

an electrically controlled RF switch (158) configured to connect RF energy to the RF electrodes (150, 508), and

an RF power source (218) operative to deliver RF energy to the RF electrodes (150, 508),

wherein the RF energy is delivered to the RF electrodes (150, 508) by wires (906, 908) connected at one end to the RF power source (128) and the RF switches (158) are connected in parallel to the other end of the wires (906, 908).

10. The apparatus according to claim 9, further comprising at least

one ultrasound transducer (512) configure to irradiate the interior of the cavity (154, 408),

an electrically controlled ultrasound driving power supply operative to deliver electrical power to the ultrasound transducer (512), and

an electrically controlled switch configured to connect the ultrasound driving power supply to the ultrasound transducer (512),

wherein the ultrasound driving power is supplied to the ultrasound transducer (512) by wires connected at one end to the ultrasound driving power supply and the electrically controlled switches are connected in parallel to the other end of the wires.

11. The apparatus according to any of claims 1-10, further comprising a control unit (104) configured to control at least the vacuum valves (164) and the source of vacuum pressure to supply and release vacuum to the cavity (154, 408), and the air valves (166) to deliver and release air to the cavity (154, 408) and/or configured to control at least the RF switches (158) and the RF power source (128) and/or configured to control at least the ultrasound driving power supply and the electrically controlled switches according to a predetermined treatment protocol.

12. The apparatus according to claim 11, wherein a processor (132) of the control unit (104) comprises a memory (134) operative to store at least one skin treatment protocol and a unit facilitating treatment protocol entry and treatment protocol indication is selected from the group consisting of a keypad or keyboard and a touch screen.

13. The apparatus according to any of claims 1-12, wherein each of the skin treatment units (112) of the array (108, 1008, 1108) is configured to allow at least two translational movements (346 and 348, 352 and 354) with respect to the adjacent skin treatment unit and wherein said translational movements are in different planes.

14. The apparatus according to any of claims 1-13, wherein adjacent the skin treatment units of the array are connected by a joint configured to allow spatial movement (356, 360) of the skin treatment units in multiple directions in space with respect to each other.

15. The apparatus according to any of claims 1-14, wherein the array of individually controlled skin treatment units is a variable length array, and wherein the variable length array further comprises a mount (208) sized and shaped to couple and fix the variable length array to a treated skin segment such that the array can be worn.

16. The apparatus according to any of claims 1-15, wherein the array is configured to treat at least one of a group of skin segments consisting of abdomen, limbs, shoulder, lower back, and upper back.

17. Method for operating the apparatus according to claim 9 comprising:

selecting a first cavity to become operative;

switching ON vacuum valve controlling vacuum supply to the first cavity,

switching ON RF switch controlling RF power supply to the first cavity,

switching OFF RF switch controlling RF power supply to the first cavity,

switching OFF vacuum valve controlling vacuum supply to the first cavity,

switching ON air valve to first cavity, and

selecting a second cavity and repeating the same sequence.