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(54) **WATER RESISTANT CLEANING APPARATUS**

(57) A water-resistant cleaning apparatus comprising a plurality of devices with moveable skin titivation heads. The devices are spaced apart from each other by a handle. The apparatus further comprises at least one driving means for movement of the heads. The at least one temporary attachment mechanism is arranged in use

for attachment of the apparatus to a vertical planar surface. The apparatus further comprises an integral power source. The power source is arranged in use to move the heads and the driving means is activated by pressure on at least one of the devices.

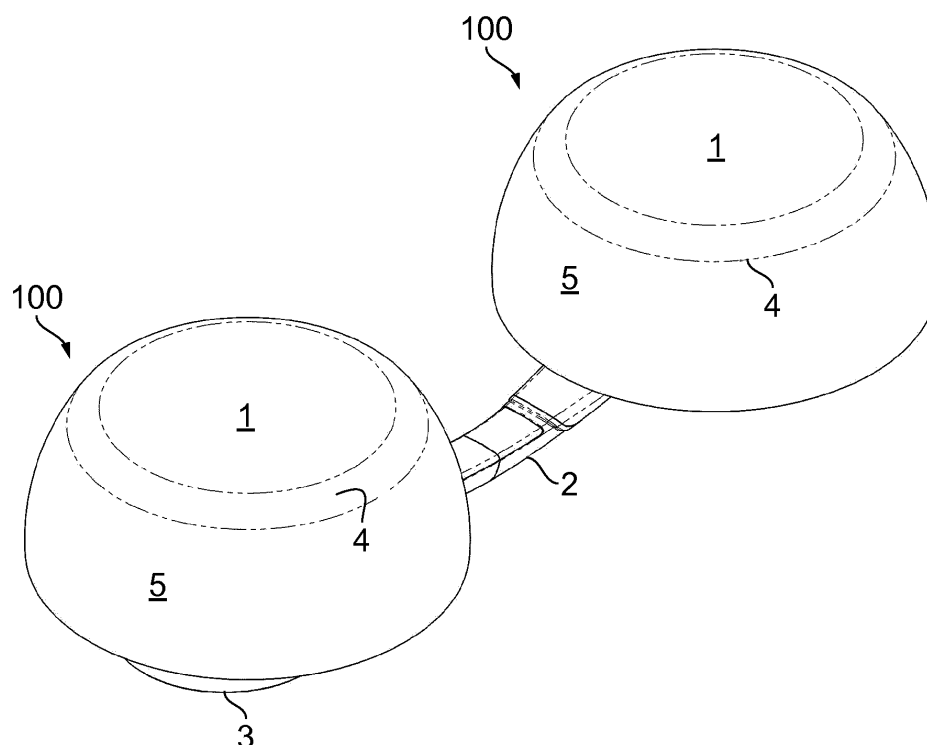


FIG. 1

Description

Field of the Invention

[0001] The present invention relates to water-resistant cleaning apparatus, in particular apparatus attachable to a surface such as a wall for cleaning purposes; more particularly but not exclusively apparatus for cleaning a user's back.

Background

[0002] Increasing numbers of users are encouraged to have showers instead of baths when bathing.

[0003] Whilst most users enjoy bathing a common problem, particularly with showering, has been an inability to effectively clean the user's back.

[0004] Automated systems that allow users to clean hard to reach parts of the body are typically expensive and difficult to install, requiring permanent installation through the drilling of holes in walls etc.

Prior Art

[0005] Accordingly a number of patent applications have been filed in an attempt to resolve the problem or similar, including the following:

Granted United States patent US-B8631523 (Schneider) discloses a back-scratching device comprising: a base upon which a plurality of interchangeable parts. The interchangeable parts comprise: rubber nodules, bristled nodules, and spring-loaded scrubbers; wherein the spring-loaded scrubbers feature a sandpaper surface that is mounted upon a spring, which can rotate with respect to the base; wherein the rubber nodules have different sizes and shapes.

Chinese utility model CN-U-203263245 (Hu) relates to the field of daily supplies, in particular to an electric bathing brush. A rubber band cushion is adhered to a panel between bristles of the brush and the brush handle. A rotation motor drives the bristles to clean back and forth in a crossed mode at the pores.

United States patent application US-A-2009/241257 (Malta) discloses a shower-mounted back-scrubber device installed on the wall of a shower stall. Scrub brushes rotate and reciprocate vertically.

United Kingdom patent application GB-A-2472064 (Williams) discloses a back scrub apparatus with a moveable washing head.

United States patent US-B1-6996861 (Clark) discloses a cleansing and massaging apparatus mounted on a shower stall wall. It has plurality of rotating brush heads with power control.

United States patent US-B1-7175357 (Brignoni) discloses a back scrubber device with a plurality of brushes.

United States patent application US-A-5495632 (Baker) discloses a motorised hand held scrubber with a plurality of heads spaced by a handle.

Japanese patent application JP-A-2003265576 (Sekisui) discloses a back washing machine having rotary heads.

Devices of the prior art are either incapable of effectively easing a user's difficulty in clean their own back, or are expensive and difficult to install, requiring permanent installation so that they cannot also be easily used as handheld devices.

Summary of the Invention

[0006] According to a first aspect of the present invention a water-resistant cleaning apparatus comprises: a plurality of devices with moveable skin titivation heads; and at least one driving means for driving the heads, the devices are spaced apart from each other and connected together by a handle, characterised in that the driving means is activated by application of a force.

[0007] According to a second aspect of the present invention a water-resistant cleaning apparatus comprises: at least one device comprising at least one moveable titivation head; and at least one driving means for driving at least one said titivation head, the at least one device is connected to a handle, characterised in that the driving means is activated by application of a force.

[0008] Preferably one driving means drives one said titivation head. In other preferable embodiments one driving means drives a plurality of the heads or all of the heads.

[0009] Advantageously the titivation head(s) operate(s) to clean skin, fur, or other surface to be scrubbed, buffed, or cleaned upon application of the force which may be applied by a user holding the handle.

[0010] Preferably the driving means is arranged to be activated application of the force to at least one of the heads. Advantageously merely pressing one of the heads against a surface such an area of skin, fur, or other surface applies the force which activates the driving means so the head(s) is (are) driven to clean the surface.

[0011] Preferably the driving means is arranged to be activated by application of the force to the handle. Advantageously a person holding the handle merely has to apply the force to the handle. Advantageously the force may be applied to the handle by the user holding the handle and pressing against it.

[0012] Preferably the handle is arranged to press at least one of the heads against a surface to be cleaned so as to apply the force. Advantageously a user merely has to use the handle to press at least one the heads

against their skin to make the driving means drive the head(s) and clean their skin or to clean the fur of an animal, or to clean, buff, or scrub the surface of an object.

[0013] Preferably the cleaning apparatus comprises a switch. Preferably the switch is switched to activate the driving means by application of the force. Advantageously the driving means is activated by switching the switch on and the driving means is de-activated by switching the switch off.

[0014] Preferably the cleaning apparatus comprises a delay means, such as a timer, which changes from one state to another after a predetermined time. Preferably the delay means is arranged to switch the switch so as to de-activate the driving means a predetermined time after the driving means is activated by switching the switch.

[0015] Preferably the cleaning apparatus comprises a speed regulator. Preferably the speed regulator regulates the driving means. Preferably the speed regulator regulates the speed of the driving means. As the driving means drives the heads, the speed regulator regulates the speed that the heads are driven, or at least one of the head is driven, by the driving means.

[0016] In an alternative embodiment the speed regulator only regulates the speed of the heads. For example the speed regulator may comprises a clutch that limits the speed the driving means moves the heads.

[0017] Preferably the apparatus comprises a speed regulator which is arranged to regulate the speed of at least one of the heads according to the force applied to the head. Advantageously a person merely needed to apply more force by pressing harder against the head to cause the head to move faster.

[0018] Preferably the speed regulator regulates the speed of the speed that the heads, or at least one of the heads, moves so that the speed undulates.

[0019] Preferably the speed regulator and the switch are an integral unit.

Preferably the speed regulator is an electronic device. Preferably the speed regulator limits current a power source supplies to the driving means. In an alternative embodiment the speed regulator limits voltage the power source supplies. Preferably the speed regulator switches power on and off supplied to the driving means repeatedly so as to regulate the speed of the driving means. Advantageously where the switch and the speed regulator are an integral unit, the speed regulator is an efficient and inexpensive unit for activating and de-activating the driving means and regulating the speed of the heads by regulating the speed of driving unit.

[0020] Preferably the speed regulator is a hydraulic device. Preferably the speed regulator limits a flow rate or a pressure of fluid provided to the driving means. Preferably the speed regulator is a valve which restricts flow or pressure of the fluid provided to the driving means. In an alternative preferred embodiment the speed regulator is a bypass gate which diverts some or all of the fluid from being provided to the driving means.

[0021] Advantageously the user may control the speed of the head by the amount of force which they use press the head against their skin. Preferably the speed regulator is arranged regulate the head to move faster the harder the user presses. Preferably the speed that the heads are driven, or at least one of the head is driven, is proportional to the force applied by the user to the handle, or the device, or a portion of the device preferably the head. Preferably the speed regulator regulates the speed the at least one of the heads is driven in proportion to the force applied to the head.

[0022] Preferably at least one of the devices comprises the switch. Preferably each device comprises its own switch for activating its own driving means by application of the force. Advantageously application of the force to each device individually drives the head which each device comprises. Alternatively and also preferably one device comprises a switch arranged to activate driving means in each or all of the devices so as to drive all of the heads upon application of the force to the device comprising the switch. Advantageously a simple arrangement of the switch is possible whereby the force is applied to the device to make the switch activate the driving means.

[0023] Preferably the handle comprises the switch. Advantageously a simple arrangement of the switch is possible whereby the force is applied to the handle.

[0024] Preferably relative movement between the handle and at least one of the devices switches the switch. Advantageously a user may clean their skin by merely pressing the at least one device against their skin with the handle to switch the switch. Preferably relative movement between the handle and at least one of the heads switches the switch. Advantageously the user merely has to press the head which cleans their skin against their skin so that the switch activates the driving means to drive the head.

[0025] Preferably relative movement between the handle and at least one of the devices controls the speed regulator. Preferably relative movement between the handle and at least one of the heads controls the speed regulator.

[0026] Preferably the amount of relative movement causes the speed regulator to make a corresponding amount of variation in the speed of the head. Advantageously a user can feel the relative movement which helps the user control the speed of the head. Preferably relative movement between the handle and a housing which covers one of the driving means switches the switch. Advantageously the switch may be housed in the housing so as to protect it from a wet environment in which the cleaning head cleans.

[0027] Preferably relative movement between the handle and a housing which covers one of the driving means controls the speed regulator.

[0028] Preferably relative movement between the driving means and at least one of the heads switches the switch. Advantageously the driving means may be rigidly

fixed to a handle which makes the apparatus sturdy. The head may move with respect to the driving means fixed to the handle so advantageously a user merely has to press the head against their skin with the handle.

[0029] Preferably relative movement between the driving means and at least one of the heads controls the speed regulator.

[0030] Preferably the switch comprises a resiliently deformable means or a magnet which urges the switch to de-activate the driving means. A user merely has to lift the head off their skin to remove the force which activates the driving means. Advantageously the resilient deformable means or the magnet will switch the switch to de-activate the driving means with the force is removed.

[0031] Preferably the switch is arranged so that hydraulic pressure urges the switch to de-activate the driving means. In this embodiment the switch comprises a hydraulically activated device such as a switch that is switched by hydraulic pressure. Advantageously the apparatus may be a hydraulically operated apparatus that derives the power for operation from an internal hydraulic pump or an external supply of pressurized liquid. Advantageously showers for cleaning usually are connected to an external supply of pressurized liquid.

[0032] Advantageously the water resistant cleaning apparatus is useful for cleaning people, cars, boats, as well as people. Advantageously the apparatus may be used under water for cleaning and scrubbing the submerged portions of boat hulls, docks, piers, and so forth. Advantageously the apparatus may be used for scrubbing the portions of these structures that are above the water surface.

[0033] Preferably the switch is an electric switch to electrically activate the driving means. Advantageously the switch works conveniently with a driving means that is an electric motor or a hydraulic motor operable by an electric actuator.

[0034] Preferably the switch comprises a hydraulic valve to hydraulically activate the driving means. Advantageously the switch works conveniently to activate and de-activate the driving means in an embodiment where the driving means is a hydraulic motor.

[0035] Preferably there is provided a water-resistant cleaning apparatus comprises: a plurality of devices with moveable skin titivation heads, characterised in that said devices are spaced apart from each other and connected together by a handle; at least one driving means drives at least one of the heads; wherein the driving means is arranged in use to move the heads and wherein the driving means is activated by pressure on at least one of the devices.

[0036] Advantageously the driving means has a pressure sensitive device arranged to activate the driving means when pressure is applied to one of the device operate effectively when the apparatus so that a user simply presses an area of skin to be cleaned against the cleaning head in order to clean the skin.

[0037] Preferably the water resistant cleaning appara-

tus comprises at least one temporary attachment mechanism which is arranged for attaching the apparatus to a surface. Preferably the temporary attachment mechanism comprises at least one suction cup.

[0038] Advantageously in use the apparatus maybe attached by the attachment mechanism, preferably temporarily, to a surface such as a shower stall wall. Advantageously a person merely has to press their skin, such as a hard to reach area of their back against the head. Then the head will move, clean, and scrub their skin.

[0039] Preferably at least one temporary attachment mechanism is fitted, preferably detachably, on the handle so as to connect the handle to the surface. Advantageously the handle together with the device(s) may be temporarily detached from the temporary attachment mechanism so as to be held for manual exfoliating, scrubbing, and cleaning.

[0040] Preferably the attachment mechanism is fixed to a plate and the handle is securable, preferably temporarily and detachably to the plate, for use of the apparatus.

[0041] Preferably the water-resistant cleaning apparatus is comprising: a plurality of devices with moveable skin titivation heads, characterised by said devices spaced apart from each other by a handle; at least one driving means for movement of the heads; at least one temporary attachment mechanism arranged in use for attachment of the apparatus to a surface; the driving means is arranged in use to move the heads and the driving means is activated by pressure on at least one of the devices.

[0042] Preferably the apparatus comprises two devices. Preferably the two devices are a pair. Advantageously a pair of devices simplifies the apparatus and makes it easy to balance the device on the handle so that the device is easy for a user to hold for cleaning.

[0043] Preferably the devices have separate housings to cover the driving means. Preferably the head of each device is external to the cover. Advantageously the housings shield the driving means from water to which the heads are exposed for cleaning.

[0044] In some embodiments the devices are provided in separate housings, joined by the handle, wherein the apparatus comprises a bridge between two housings. The housings may consist of independent parts or a unitary part in relation to the handle. Preferably the handle comprises a bridge between the two housings.

[0045] Preferably the devices are housed in separate housings. An alternative which is also preferable is that at two, or preferably more, devices have separate housings in which driving means and power source are housed. Preferably the cleaning head is external to the housing and is driven by the driving means via a drive train which passes through the housing. Preferably the driving train includes a rotary spindle of the driving means which pierces the housing and impels the cleaning head to rotate.

[0046] Preferably the apparatus comprises an integral

power source arranged to provide power to the driving means via the switch.

[0047] The handle may comprise plural attachment mechanisms, wherein the housings and devices attach to the handle and the handle to the surface. In other embodiments the handle is displaced from the at least one attachment mechanism in use.

[0048] Preferably apparatus comprises a driving means and the driving means comprises a motor with a rotary spindle.

[0049] Preferably each device includes its own driving means. Preferably each head is independently driven or moveable in relation to pressure applied thereto, independent of pressure applied to the, or each, other device. Preferably the driving means is arranged to rotate the head, preferably about the rotary axis of the driving means. Preferably the driving means is arranged to oscillate the head. Preferably the driving means is arranged to swing the head. Preferably the driving means is arranged to move the head along a straight path and/or a curved path. Preferably the driving means is arranged to move the head in complex motion comprising rotation, oscillation, swinging, straight and/or curved motion.

[0050] Preferably the motor is a hydraulic motor. Preferably the apparatus comprises a hydraulic connection to provide pressurized liquid from an external source to the hydraulic motor. Preferably the hydraulic connection is for water a water spigot or shower head so as to use water from a pressurized liquid circuit or a shower water supply to drive the hydraulic motor.

[0051] In an alternative preferable embodiment the driving means is an electric motor. Preferably the apparatus comprises its own power source, such as preferably a battery for the motor. Preferably the driving means and the power source are housed in at least one of the housings.

[0052] Preferably the water resistant cleaning apparatus comprises an integral power source to operate the driving means.

[0053] In some embodiments the housings include the power source for each device, which power source typically comprises a battery or batteries. Said battery or batteries may be rechargeable and/or displaceable and/or independently available.

[0054] In other embodiments the handle contains the power source, which power source typically comprises a battery or batteries. Said battery or batteries may be rechargeable and/or removable.

[0055] In some embodiments a single driving means is activated by pressure on either head wherein for example the housings are displaceably mounted on the handle and relative movement between the handle and housings activates the driving means. Advantageously automatic activation causes the apparatus to save power and leaving it ready for when it is needed next.

[0056] Preferably relative movement of the cleaning head along the direction of the rotary axis of the cleaning head operates a switch which activates the driving means

when pressure is applied against the cleaning head. Preferably relative movement between the handle and the housings switches a switch which activates the driving means.

5 **[0057]** In other embodiments each housing houses a driving means. Preferably the housing is arranged to shield the driving means and preferably a power supply for the driving means from liquid. Advantageously the apparatus is operable where the head is in an environment that is wet such as where the head is wet for cleaning or
10 the apparatus is submerged where the driving means is an electric motor housed in the housing. Each head is independently driven or moveable in relation to pressure on its own outer face, independent of other devices.

15 **[0058]** Preferably the heads rotate in or on the housing in movement wherein the devices comprise surface texture arranged to exfoliate. Preferably the head has a surface texture which is arranged for exfoliation while the head is being rotated by the driving means. Advantageously a user has only to press the head where the head has a surface texture arranged for exfoliation or scrubbing against skin of a person, or fur of an animal, or other surface to of an object to be cleaned such as a wall, boat hull, pier post, and so forth, to exfoliate or scrub the surface. Preferably the head comprises a flexible or malleable surface with raised and lowered parts for exfoliating, cleaning, or scrubbing the surface. Ideally the driving means includes multiple rotation settings, and in some
25 embodiments reverse rotation setting. Preferably temporary attachment mechanisms are included on the device.
30 Preferably the devices comprise heads displaceable from each housing. Preferably the head is removable from the device and re-attachable to the device. Different outer face textures may be installed according to user preference. Such heads comprise flexible or malleable surfaces with raised and lowered parts and may in some further embodiments include means for providing detergent or skin cleansing and/or moisturising product onto or into the outer face and/or reservoirs for such.

35 **[0059]** In some embodiments the temporary attachment mechanisms are included on the handle. In other embodiments the temporary attachment mechanism comprises a plate having suction cups or similar, onto which plate the handle is secured in use. Advantageously in this way the temporary attachment mechanisms may be maintained in place on the planar surface, such as a painted wall, glass or tiles. In this way a more secure attachment is maintained and the handle may be secured thereto as and when required.

40 **[0060]** The temporary attachment mechanism preferably comprises a plurality of suction cups in preferred embodiments, preferably wherein at least one suction cup is available for each device. The suction cups may further include a detachment means such as a tab for release of vacuum in the suction cup.
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[0061] Advantageously the handle may clip onto and off the temporary attachment mechanisms in use so that the device may also comprise a handheld portable clean-

ing device in use.

[0062] In some further embodiments only one device or only housing of a device may be detached from the handle and/or attachment mechanisms. A remaining housing and device remain attached to the surface and another device is usable for cleaning purposes elsewhere.

[0063] Preferably a single device is displaceable and removable from the handle and/or attachment mechanisms. Preferably the device is re-attachable to the handle via the attachment mechanisms. Preferably devices can be attached and reattached one at a time so that when one device is detached from the handle the remaining device remains attached. In this way advantageously a user may lean back against one device and activate against their back and utilise another device to clean their front. In some embodiments the apparatus therefore comprises multiple modular parts, for example wherein a number of devices are mounted on a wall and at least one device and handle are detachable therefrom.

[0064] In some further embodiments in addition or the alternative the apparatus may be comprised in, attachable over or adjacent to a shower or shower head or shower stall wall, for example so as to channel showering water therethrough.

[0065] Preferably the apparatus comprises a hydraulic connection for connecting to a pressurized supply of liquid. Preferably the device, or at least one of the devices, comprises a channel or a conduit in fluid communication with the hydraulic connection and the head. Preferably pressurized liquid enters channel conduit through the hydraulic connection. Preferably the head is porous or has an opening or has perforations through which pressurized liquid, delivered to the head through the channel or conduit, may exit. Preferably the liquid which enters the hydraulic connection may pass through the conduit and out through the porous head or opening in the head or perforations in the head. Advantageously in use the pressurized liquid aids the head to exfoliate, scrub, and clean, preferably as the head is driven to move by the driving means. Preferably the channel or conduit is also in fluid communication with the switch, and/or speed regulator, and/or driving means. Advantageously the switch, and/or speed regulator, and/or driving means are all preferably operable by the pressurized fluid which enters the channel or conduit through the hydraulic connection. Preferably the channel or conduit comprises two hydraulic connections where preferably one of the connections is adapted for connecting to supply of hot liquid, such as hot water. Preferably the other connection is adapted for connecting to a supply of cold water. Advantageously the hot and cold water mix in the conduit to provide a supply of warm water. Preferably in use liquid is delivered through the conduit to the head through which it exits for effective cleaning. Preferably in use liquid is delivered through the conduit to an opening proximate to the head for effective cleaning.

[0066] Preferably however the handle and housings

are synonymous or analogous wherein water resistance is advantageously made simpler and more effective and the power source and any moving parts are fully contained within a single waterproof housing. The devices may move in relation to the housings, wherein a resiliently deformable waterproof shield.

[0067] Preferably the devices have multiplanar heads, wherein the user's body may be subjected to cleaning movement and outer face engagement from multiple angles and multiple orientations. In this way thorough cleaning may be provided onto the user's body. In further embodiments different planes comprise different titivation surfaces, such as scouring, massaging or buffing.

[0068] Advantageously the heads are interchangeable so it is easy to remove the heads and put them in the washing machine or rinse them to keep clean.

[0069] Preferably the apparatus has a cover driven by the driving means. Preferably the cover has a rotary axis in parallel with a rotary spindle of the driving means. Preferably the cover is fixed to the rotary spindle. Advantageously cover may be directly driven by the spindle. Advantageously this is a simple and sturdy configuration by which driving means is able to turn the cover.

[0070] Preferably the cover is slidably connected to the rotary spindle by a gear by which the driving means turns the cover. Advantageously because the cover has a rotary axis in parallel with the rotary axis of the spindle, gear teeth on the cover may slide in the axial direction of the driving means and remain engaged with gear teeth on the rotary spindle. Advantageously the cover may slide toward the driving means in the axial direction under application of the force which activates the driving means which switches the switch.

[0071] Preferably one cleaning head is temporarily attachable to one cover. Preferably at least one of the devices has a cover driven by the driving means to which one of the heads is temporarily attachable. Preferably at least one of the heads fits on the cover like a sock or a cap. Advantageously the head is easy to obtain as a sock or cap that may be readily available without any need for specially making head for the apparatus.

[0072] Preferably a pair of the devices, where each one the pair of the devices is attached to an end of the handle forming a bridge between them, comprises a cover driven by the driving means. Preferably the covers form a matching pair to receive a matching pair of heads.

[0073] The cleaning head is removable from the cover as a sock or cap is removable and cleaning head which has the form of a sock or a cap may be put in a washing machine and washed and rinsed to clean. Advantageously the head is easily removable and easily replaceable onto the cover. Preferably the head is disposable. Preferably the cover is formed of a sponge or sponge-like material or cloth or paper towel which is suitable for cleaning skin.

[0074] Preferably the device comprises the driving means. In embodiments where there are a plurality of the devices, preferably each device comprises one of the

driving means. Preferably one driving means drives one head. Preferably each device comprises one head.

[0075] Advantageously the devices or handle clip into simple mechanisms such as 'C' clips wherein simply pulling the handle away provides the user with a handheld option to clean their body when the wall mount is not suitable.

[0076] The invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Brief Description of Figures

[0077]

Figure 1 shows an isometric view of a preferred embodiment of the apparatus;

Figure 2 shows a reverse isometric view of the embodiment shown in Figure 1;

Figure 3 shows a side view of the embodiment shown in Figure 1;

Figures 4 show plan views of the embodiment shown in Figure 1;

Figure 5 shows an end view of the embodiment shown in Figure 1;

Figure 6 shows an exploded isometric view of the embodiment shown in Figure 1; and,

Figure 7 shows a reversed isometric exploded view of the embodiment shown in Figure 1.

Detailed Description of Figures

[0078] Referring to the Figures there is shown a water-resistant cleaning apparatus comprising: a plurality of devices 100. Each device is individually capable cleaning a user when pressure is applied to its head 1 which is a moveable external component of each device 100.

[0079] Each device 100 is an assembly of parts. The assembly of parts which make up the embodiment of the devices shown in Figures 6 and 7 are now described.

[0080] Each device comprises a moveable titivation head 1 for cleaning and/or exfoliating skin to which the head is applied with pressure which activates driving means 12.

[0081] Each device 100 comprises its own top cover 10 to which one of the cleaning heads 1 is fitted like a sock. Each device also comprises a bolt 14 to connect the top cover 10 to a housing 61. The bolt 14 is parallel the rotary axis of the top cover 10. The bolt 14 is also parallel to the rotary axis of the cleaning head 1 because the cleaning head 1 fits concentrically over the top cover 10 and caps the top cover 10. The cleaning head 1 and

top cover 10 rotate about the same rotary axis which is also the longitudinal and rotary axis of the bolt.

[0082] Each device 100 comprises its own driving means 12. The driving means has a rotary spindle.

[0083] Each device 100 comprises one of the housings 61. Each housing means houses the driving means 12 and the rotary spindle passes through the housing. The rotary spindle turns the bolt 14 to which the top cover is connected. The driving 12 means 12 turns the cleaning head by turning the top cover 10.

[0084] The embodiment of the apparatus shown in Figures 1 to 4 has a pair of devices 100 with the same size and shape. Other embodiments of the apparatus have three, four, or more devices.

[0085] The apparatus comprises two different modular sections, namely the handle 2 and the device 100 which is the assembly of parts described above. Each device 100 is affixed in use to the handle by the plates 6. Each plate 6 is secured to an end of the handle 2.

[0086] The handle 2 is remove-able from the plate 6. The plate is attachable to a surface such as a shower wall and the cleaning apparatus is attachable and remove-able from the shower wall by attaching and removing the handle 2 of the apparatus to the plate. The apparatus is usable attached to the wall by pressing skin to be cleaned against the cleaning head to make the cleaning head rotate. The apparatus is usable un-attached from the wall by holding the handle and pressing the cleaning head against skin to be cleaned with the handle.

[0087] As shown in Figures 1, 2, 3, and 4 each of the housings 61 is connected to the handle 2. The devices 100 are spaced apart from each other by the handle 2. The handle is an elongate bar which sized to be grasped in its midsection. The elongate bar has two ends. These two ends are the two ends of the handle 2. Each end of the handle is attached to one of the devices. The handle 2 serves as a bridge between the devices.

[0088] In the embodiment shown in Figures 6 and 7 each device comprises a driving means 11, 12 for movement of the cleaning head 1.

[0089] In other embodiments only one of the devices comprises the driving means or part of the driving means. The driving means 12 is connected to the head 1 in the other devices 100 which do not have a driving means by a drive train. A single driving means moves the heads in a plurality of the devices. The handle 2 comprises the driving means in some embodiments of the apparatus.

[0090] The driving means 12 is activated by pressure on at least one of the devices. Specifically the driving means is activated by the pressure against the head 1. The driving means is simple to operate because a person has only to press a surface to be cleaned against the cleaning head. A person may lean against the cleaning head and the pressure of the surface of their skin against the cleaning head will activate the driving means which will drive the cleaning head.

[0091] The device 100 comprises a switch operated by pressure against the cleaning head. The switch is

housed inside the housing 61 which screens the switch from a wet environment such a shower stall.

[0092] In one embodiment the housing 61 is displaceably mounted on the handle 2 and relative movement between the handle 2 and housings 61 operates the switch which activates the driving means 12.

[0093] At least one temporary attachment mechanism 3 is arranged in use for attachment of the apparatus to a surface. No drilling is required to attach the attachment means to the surface. Thus the apparatus may be used fitted to a wall when the apparatus is attached to the wall by the attachment mechanism.

[0094] Also the apparatus may be unattached and be free to be used while handheld with the handle 2. A person has only to use the handle to press a cleaning head against their skin and the drive mechanism will activated to drive the cleaning head.

[0095] The apparatus comprises an integral power source 13. In the embodiment shown in the exploded view of Figure 6 and in Figure 7 each device comprises a separate power source 13. In other embodiments one device comprises the handle 2 comprises the power source 13. The power source is arranged in use to move the heads by providing power to the driving means 12.

[0096] In some embodiments the power source 13 is a battery and is connected electrically the driving means 12 which is a motor. The driving means 12 is powered by the power source 13. The power source 13 is a 12V DC motor with 10:1 ratio spur gearing. The head 1 is driven thru the spur gearing by the driving means. The driving means drives a cog 11, which runs against teeth 101 in the device top case 10.

[0097] The cleaning head 1 is attachable and removable from the top case 10. One cleaning head 1 can be removed from the top case 10 and the removed cleaning head can be replaced with another. A user can thereby choose to attach a cleaning head 1 that they prefer and replace a cleaning head 1 that has become worn out. The top case 10 is driven by the driving means 12. As shown in Figure 6 a bolt attaches the top case 10 to a rotary shaft extending from the driving mean 12. The top case 10 is umbrella shaped. The top case 10 shields other parts of the device from water. The heads 1 is removably attachable to the top case. The contour of the top case is arranged to conform to the contour of the head 1 so that the head 1 fits over the top case 10 like a cap.

[0098] A pressure sensitive device arranged to activate the driving means when pressure is applied to one of the device. In one embodiment of such a pressure sensitive device the cover 10 is displaceably mounted to another part of the device and relative movement between the handle 2 and the cover 10 activates the driving means 12. In some embodiments the top cover 10 is mounted to the rotary spindle of the driving means 12. The rotary spindle itself is connected to the driving means 12 so that the rotary spindly can move axially with respect to the driving means.

[0099] Axial movement of the spindle operates a mechanical mechanism or electrical switch which activates the driving means. In other embodiments the driving means 12 is mounted to the base of the housing 62 which is mounted to the handle or the driving means is mounted directly to the handle 2 by a connection which permits the entire driving means to be displaced. Pressure on the top case 10 is transmitted to the rotary spindle so that the spindle or driving means is displaced thereby operating a mechanical mechanism or electrical switch which activates the driving means.

[0100] In other embodiments a proximity sensor mounted on the handle detects a change in position of the handle when pressure is applied to the cleaning head. The sensor is connected to a mechanical mechanism or electrical switch which activates the driving means.

[0101] In some embodiments the cleaning head 1 is attachable and removable directly from the drive means 12. The cleaning head 1 is for example directly attachable to a spindle from a motor drive means. This obviates the need for the top cases 1.

[0102] The top case 10 covers the housing 61. The top case 10 helps prevent the housing from getting wet in use. The housing 61 covers the driving means 12. The housing 61 shields the driving means 12 from water. The cleaning head 1 which is generally wet in use is separated from the driving means by the top case 10 and the housing 61.

[0103] A sealed bearing assembly is comprised in housing 61, offset in a moulding 616. The housing is maintained on a base 62. The drive mechanism 12 is fixed to the base 12. The top case 10 rotates on the bearings. The head 1 is in turn attached to the top case and rotates with the top case.

[0104] In one embodiment, the device housing 61 comprises an internal circuit including; 2 x AA battery holders, 2 x AA Li-ion batteries, a circuit board including a controller chip and an operation switch which is activated by pressure applied to the cleaning head 1 which is transferred through the top cover 10, a 12V DC motor and gears, a compression spring, a sealed bearing assembly, and an activation pin.

[0105] The compression spring acts the head 1 to urge the head to return to a non-use condition after pressure is removed from the head 1. A time delay mechanism may allow the drive mechanism to continue move the head for a predetermined time after the head returns to the non-use condition.

[0106] The activation pin is a part of a switch or mechanism which activates the drive mechanism upon pressure being applied to the head 1.

[0107] In other embodiments the power source is a mechanical energy storage device such as a resiliently deformable device. The resiliently deformable device is mechanically connected to the driving means. In some embodiments the resiliently deformable means is a spring. In some embodiments the mechanical energy device is a wind-up mechanism. The cleaning head 1 is connected

to the driving mechanism which is in turn connected to the mechanical energy storage device. By twisting the cleaning head the driving mechanism is turned and the wind-up mechanism is wound-up.

[0108] At least one of the devices comprises a pressure sensitive mechanism to activate the driving means whereby the driving means is activated by pressure on at least one of the devices. In some embodiments the mechanism to activate the driving means is an electrical switch. The switch is arranged so that the head is electrically isolated from the power source. In some embodiments the mechanism is a mechanical switch or linkage.

[0109] Each of the cleaning heads 1 is supported on or over a housing 61. The housing 61 is connected to a base 62 for the housing. The base 62 is connected to the handle 2.

[0110] The cleaning head 1 has the shape of a hat which conforms to the exterior of the top cover 10. The head has a central cleaning area of cleaning surface 16 which is centred on the rotary axis of the cleaning head. The cleaning heads includes a buffing band 4. The buffing band 4 is a portion of the surface of the cleaning surface 1 that is located around the circumferential edge of the central cleaning surface 14.

[0111] The cleaning head 1 include sides 5 with intermediate buffing edges 4. The entire head 1 is in some embodiments is a cleaning surface such as cloth or a brush. The driving means 12 is arranged to rotate the head 1 on or over the other parts of the device. These other parts include the driving mechanism 12, the power source 13, the base of the housing 62, the housing 61, the cog 11, and the top case 10. The head 1 comprises surface texture arranged for rotation. In other embodiments central region of cleaning head which is the area proximate the axis of rotation is covered by a brush and the buffing edges are covered by another brush or a cloth that is smoother.

[0112] Ideally the devices have a 100mm diameter.

[0113] The heads 1 are interchangeable. Each head 1 is removable and attachable to and from at least one of the device assembly. The heads comprise a brush, or a cloth, or a pad. The pads may get soiled from use. Because the heads are interchangeable the device may be maintained hygienic such as with reusable or disposable pads or brushes.

[0114] The two removable heads 1 may be changed independently so each user can have their own or even have different types of heads depending on the function they want including: exfoliating, massage clean (soft), deep scrub (firmer).

[0115] The handle is secured on the plates in use by a resiliently deformable clip 8 having a C shape extending from the plate, and stud 9 projecting from the device. The user thereby clips the devices and handle onto the plates when desirous to use the apparatus as a back cleaner, or for transport or storage.

[0116] The plates 6 are located at the ends of the handle 2. The attachment mechanisms 3 are fixed to the

plates 6. Each attachment mechanism comprises a suction cup 3 formed of a resiliently deformable material such as silicone, which allow the user to securely fix the apparatus to at a desired height in a shower. The attachment means 3 is particularly suitable for attaching the apparatus to a wall in the shower, especially a vertical planar wall. The attachment means ensure that the apparatus will stay on the wall whilst in use.

[0117] The apparatus is quick and simple to install via the suction cups 3 on that wall or other surface of a shower. The temporary attachment mechanism 3 comprises a plate 6 having suction cups 3 or similar, onto which plate the handle 2 is secured in use.

[0118] The suction cup 3 is released from the surface by a lever 7. The lever 6 is connected by a hinge or rocker mechanism to the plate 6. The resilient deformability of the suction cups 3 allows movement of the apparatus even when fixed to a wall, improving cleaning characteristics and comfort.

[0119] The apparatus is activated by leaning gently against it to remove the need for power switches and controls which could be awkward to use, as well as being capable of compromising water resistance of the apparatus. Ideally the driving means activates only under such pressure, whereas in some embodiments a time delay may be incorporated to continue rotation after pressure.

[0120] The invention has been described by way of examples only. Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the claims.

Claims

1. A water-resistant cleaning apparatus (100) comprises: a plurality of devices (100) with moveable skin titivation heads (1); and at least one driving means (12) for driving the heads (1), the devices (100) are spaced apart from each other and connected together by a handle (2), **characterised in that** the driving means (12) is activated by application of a force.
2. A water-resistant cleaning apparatus according to claim 1 wherein the driving means (12) is arranged to be activated application of the force to at least one of the heads (1).
3. A water-resistant cleaning apparatus according to any preceding claim comprising a switch that is switched to activate the driving means (12) by application of the force.
4. A water-resistant cleaning apparatus according to

claim 3 wherein at least one of the devices (100) comprises the switch.

5. A water-resistant cleaning apparatus according to claim 4 wherein relative movement between the handle (2) and at least one of the heads (1) switches the switch. 5
6. A water-resistant cleaning apparatus according to any one of claims 3 to 5 wherein the switch comprises a resiliently deformable means which urges the switch to de-activate the driving means (12). 10
7. A water-resistant cleaning apparatus according to any one of claims 3 to 6 wherein the switch is an electric switch to electrically activate the driving means (12). 15
8. A water-resistant cleaning apparatus according to any one of claims 3 to 7 wherein the switch comprises a hydraulic valve to hydraulically activate the driving means (12). 20
9. A water-resistant cleaning apparatus according to any one of claims 3 to 8 comprising a speed regulator arranged to regulate the speed of at least one of the heads(1) according to the force applied the at least one of the heads (1). 25
10. A water-resistant cleaning apparatus according to any one of claims 3 to 19 comprising an integral power source (13) arranged to provide power to the driving means (12) via the switch. 30
11. A water-resistant cleaning apparatus according to any preceding claim wherein the handle (2) comprises a bridge between two devices (100). 35
12. A water resistant cleaning apparatus according to any preceding claim wherein the driving means (12) is a hydraulic motor. 40
13. A water resistant cleaning apparatus according to any preceding claim comprising a connection means to a supply of pressurized liquid for driving the driving means (12). 45
14. A water-resistant cleaning apparatus according to any preceding claim wherein at least one of the devices (100) has a cover (10) to which one of the heads (1) is temporarily attachable. 50
15. A water-resistant cleaning apparatus according to any preceding claim comprising at least one temporary attachment mechanism (3) arranged in use for attaching the apparatus (100) to a surface. 55

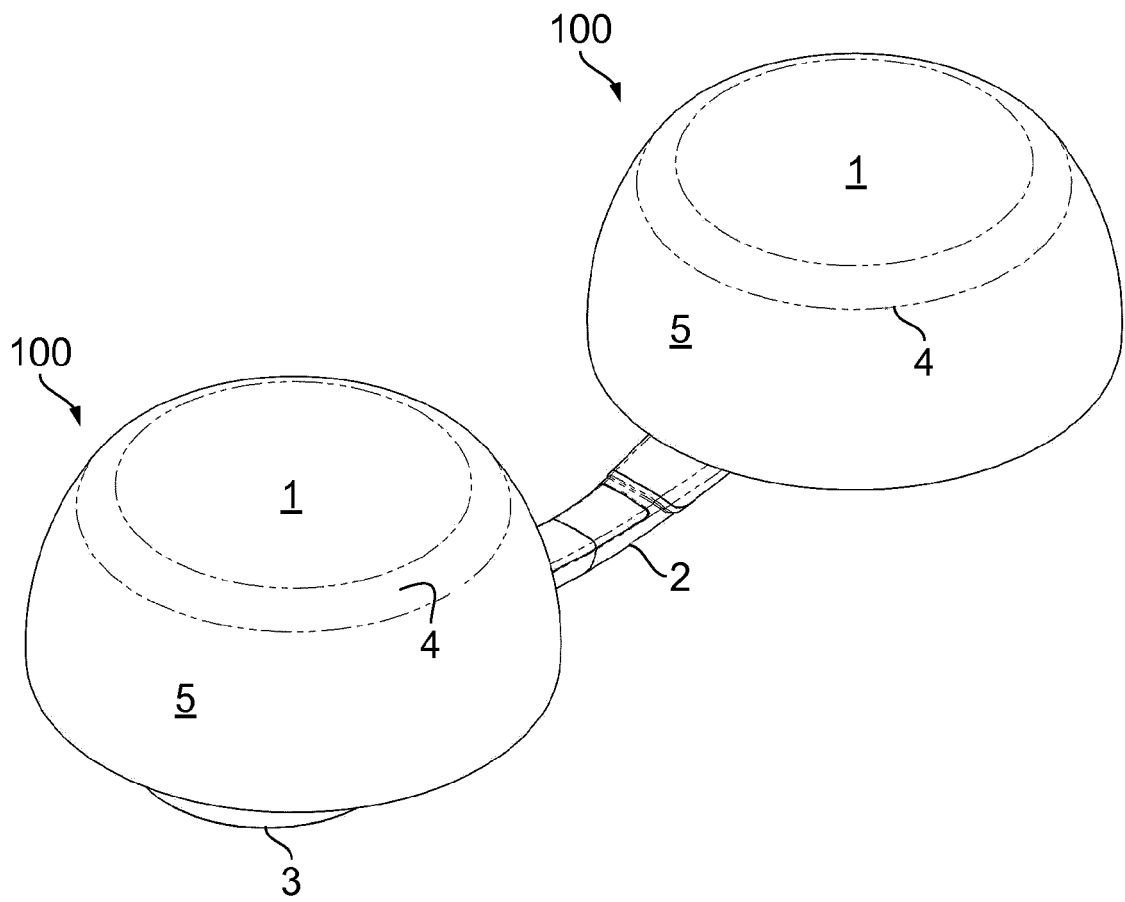


FIG. 1

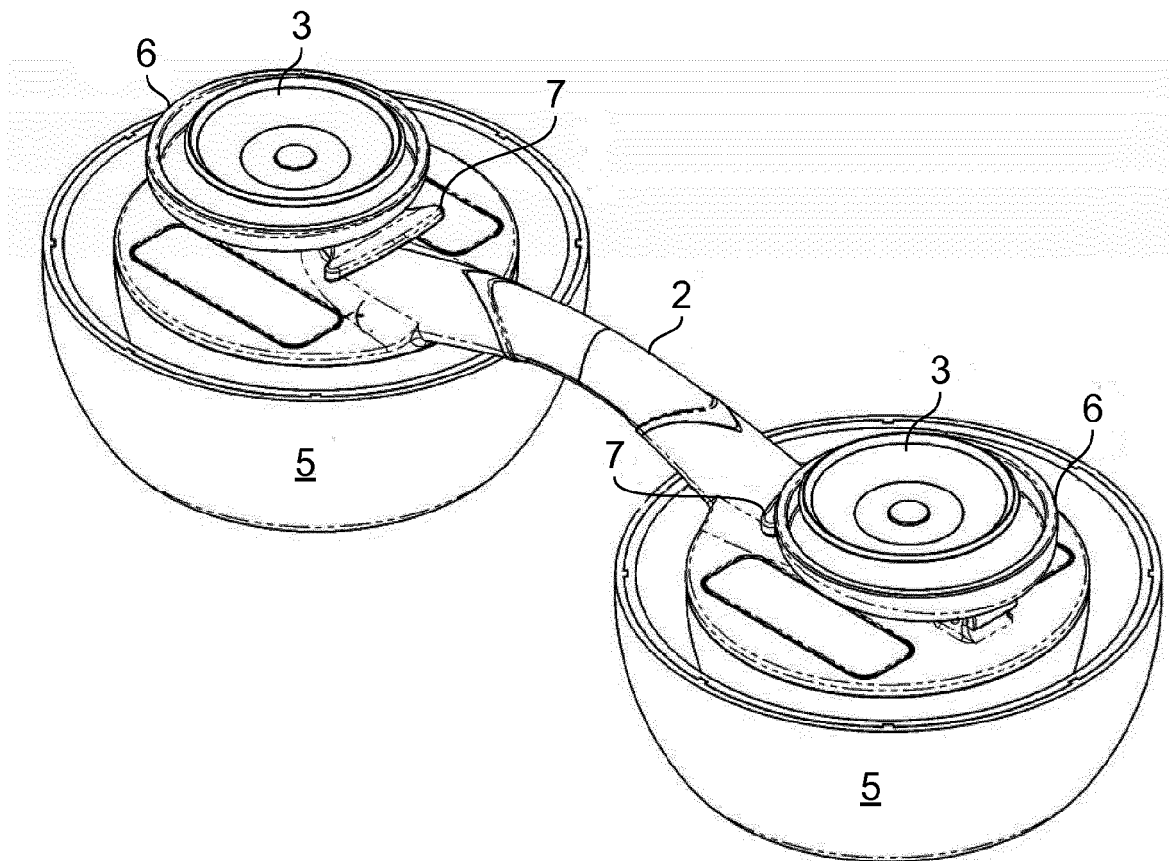


FIG. 2

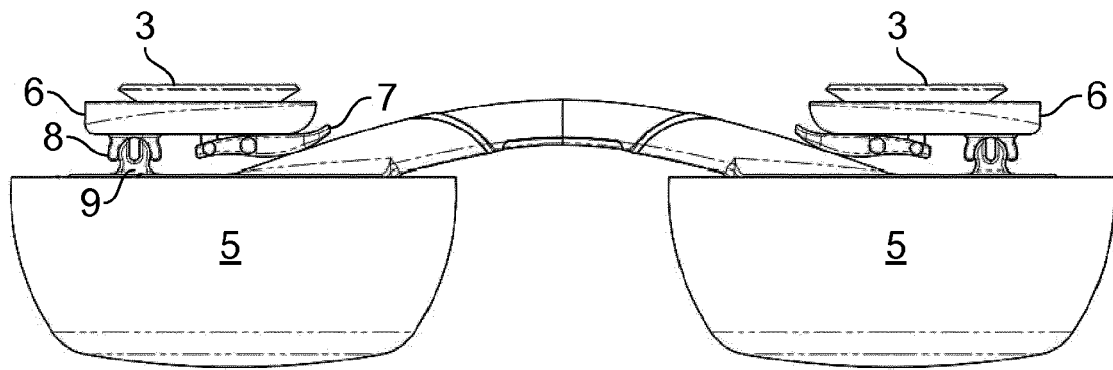


FIG. 3

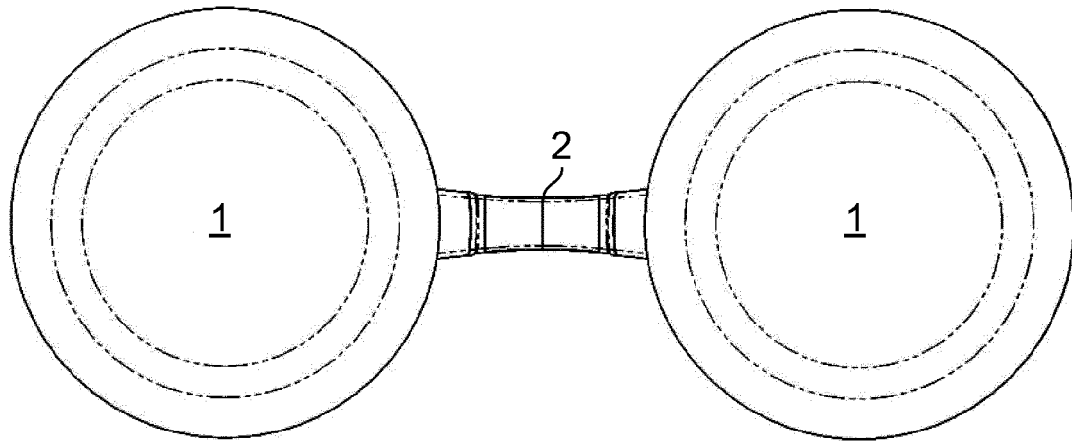


FIG. 4A

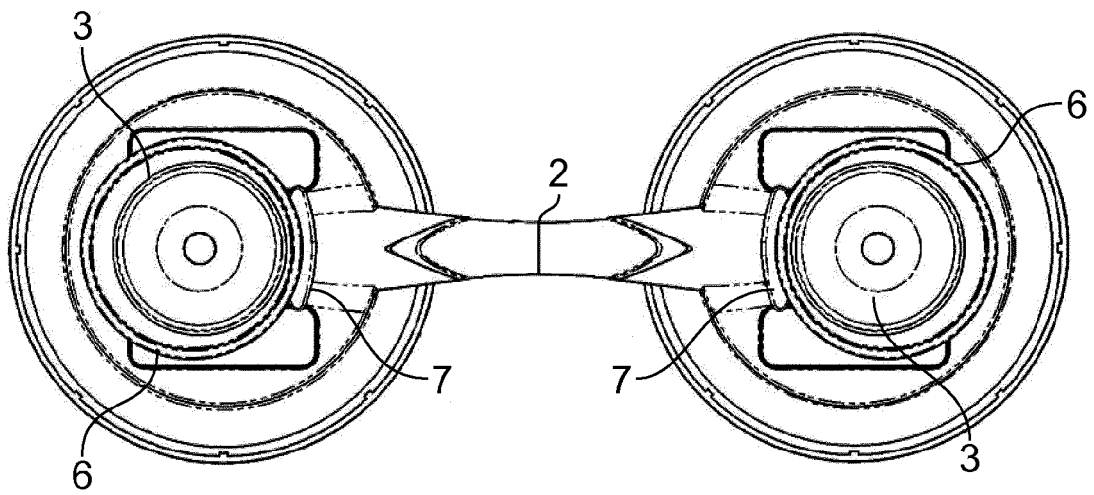


FIG. 4B

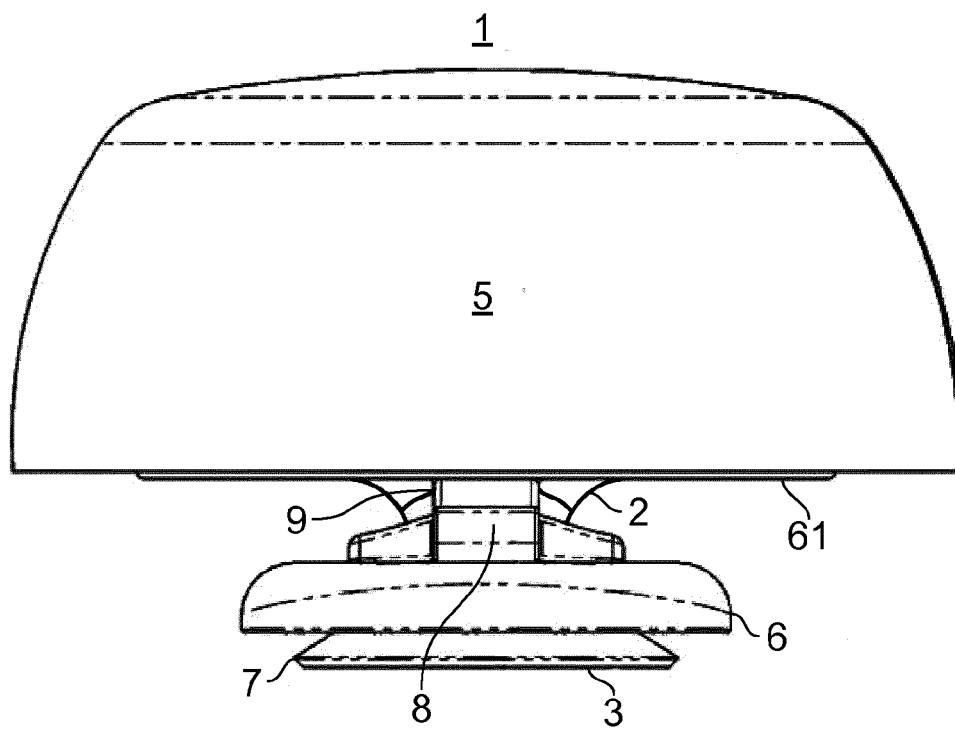


FIG. 5

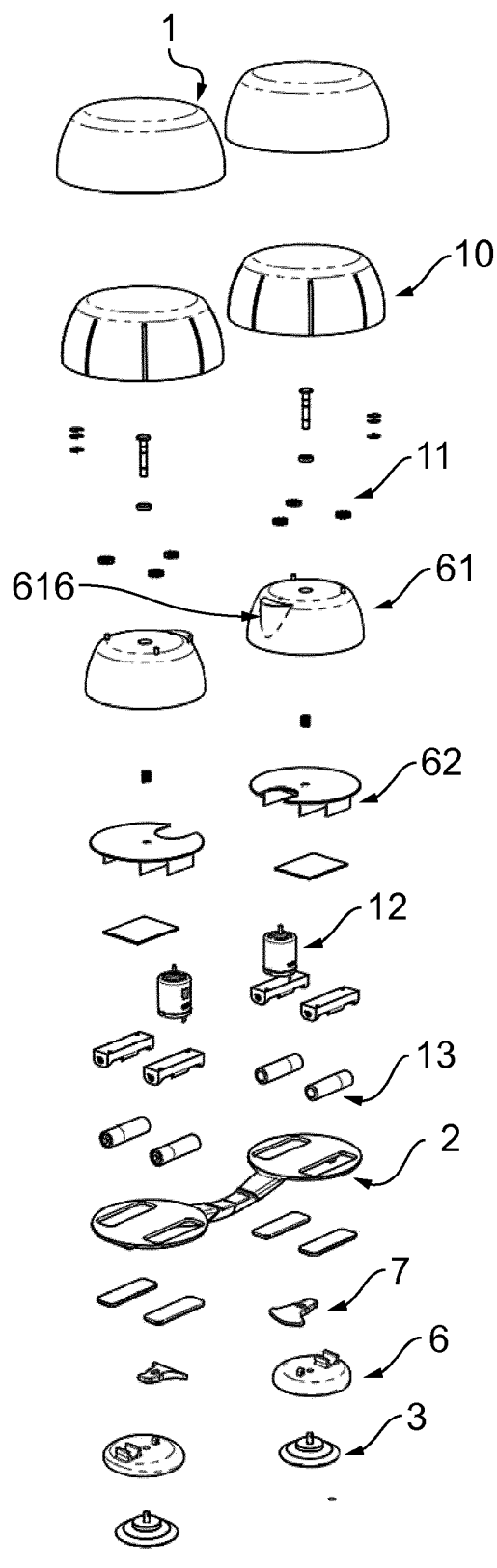


FIG. 6

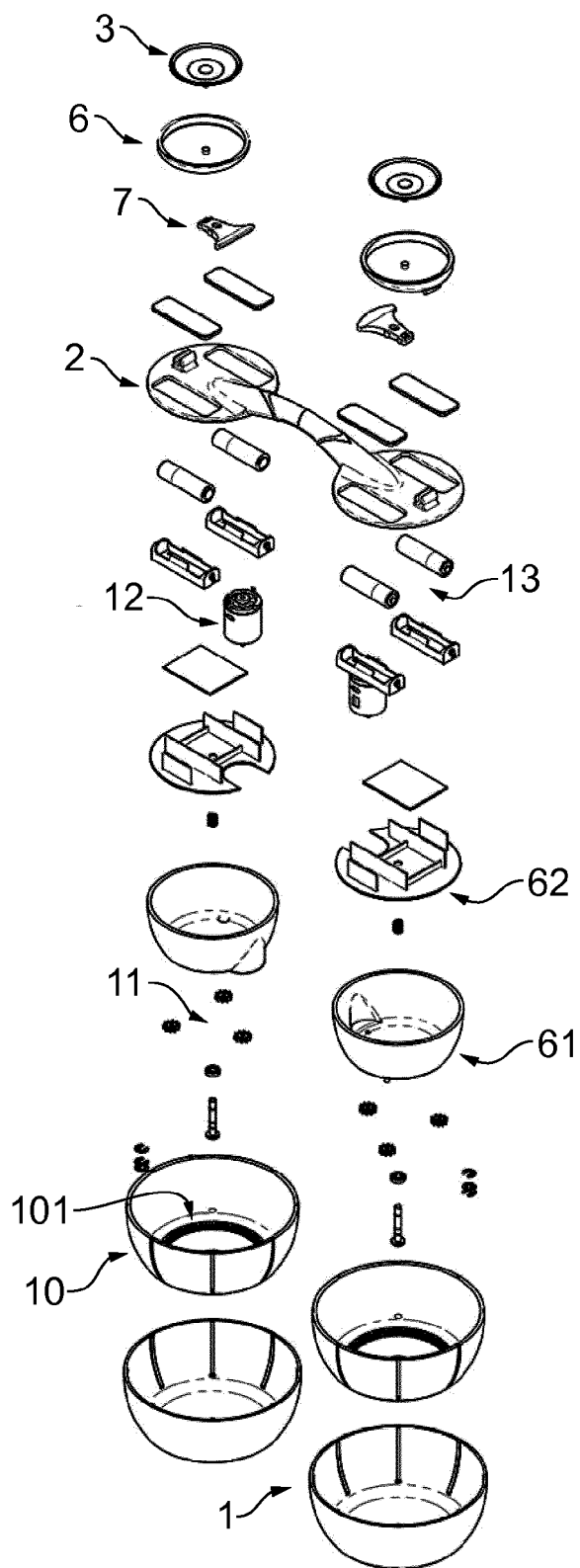


FIG. 7



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