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(54) **POWERED BACK SCRUBBING APPARATUS**

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(57) **ABSTRACT**

A powered wall-mounted back washing apparatus is a device the aids in the washing and exfoliating of one's back during the activity of taking a shower. The device is designed to be permanently installed on the shower wall. The apparatus aids in the washing of one's back by the mechanism of multiple short rotation brush assemblies and nozzles providing soap and/or water in succession. Each nozzle assembly is connected to a pump and tubing system, which in turn is attached to a reservoir that will provide soap and/or water at the point of contact with person's back. A self-contained reservoir may be filled with soap and water by user prior to use. The apparatus functions by the activation of the pumps providing both soap and water in sequence along with constant semi-rotation of the brush assemblies. This ergonomically-designed invention provides superior washing functionality and ease of use.

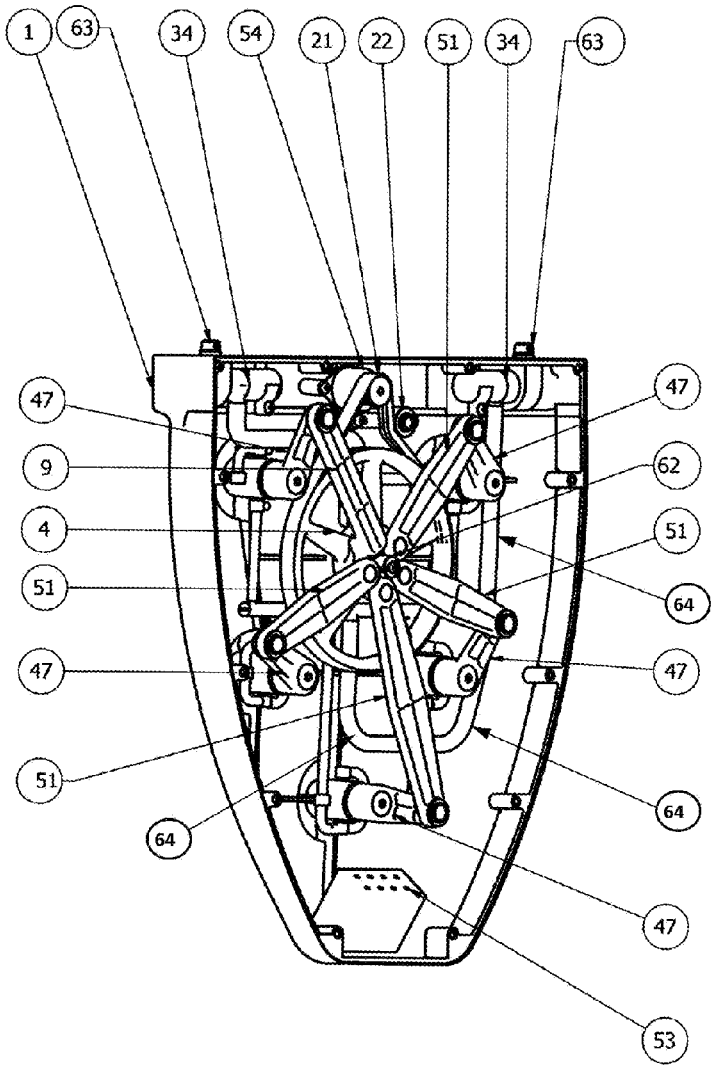


Figure 1

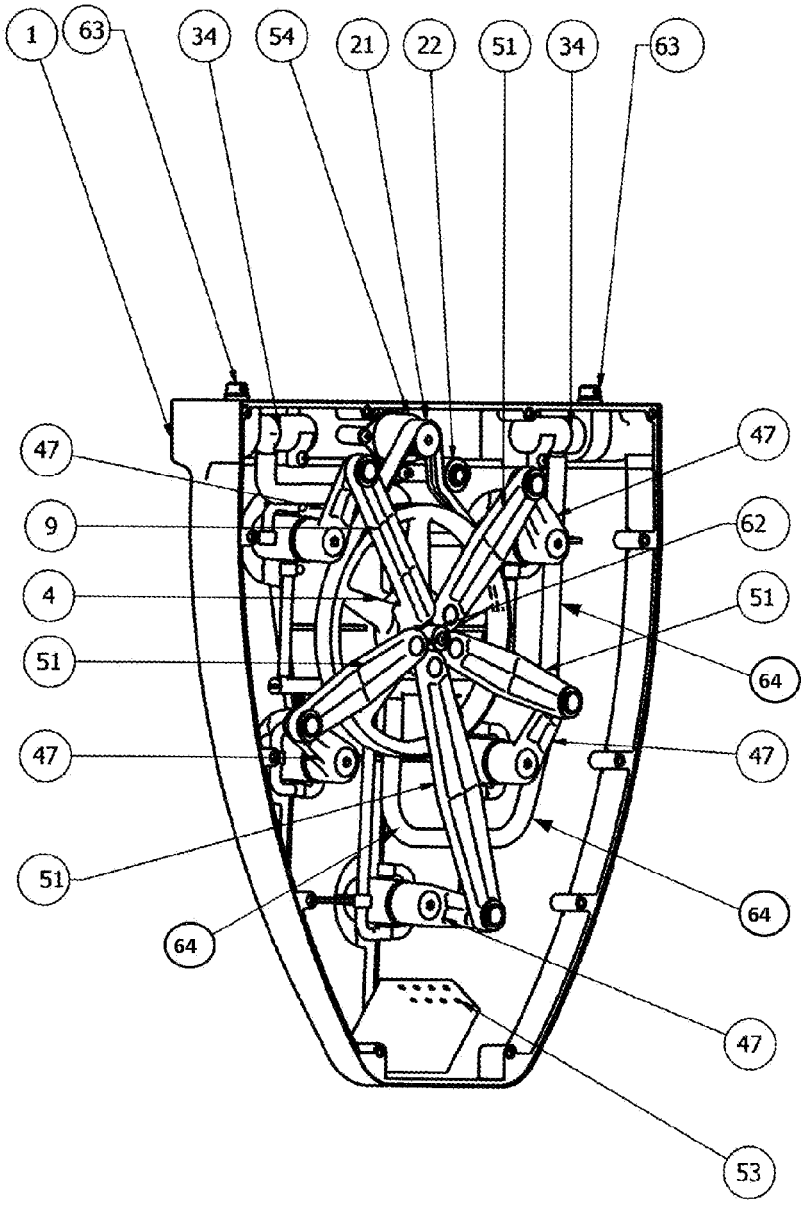


Figure 2

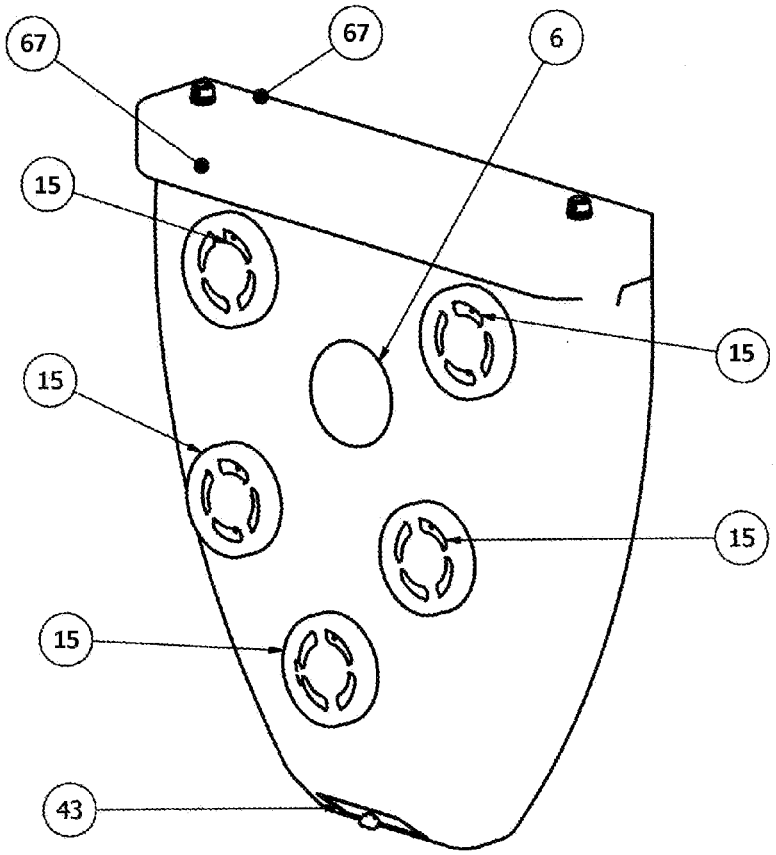


Figure 3

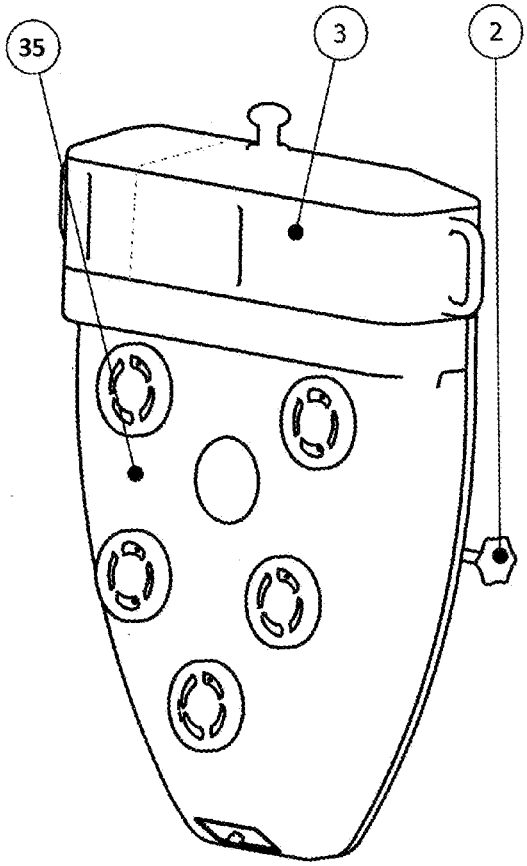


Figure 4

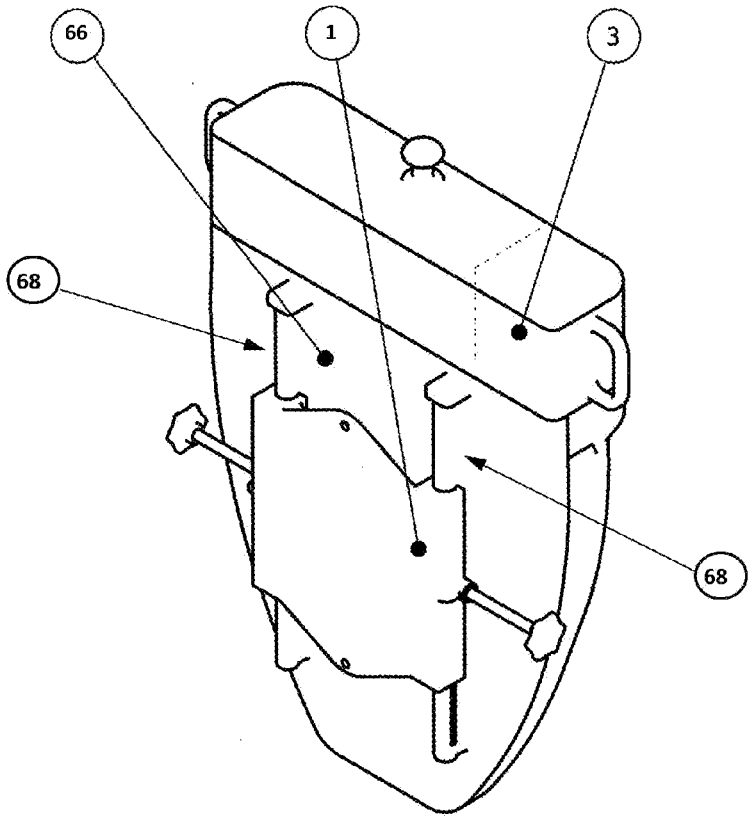


Figure 5

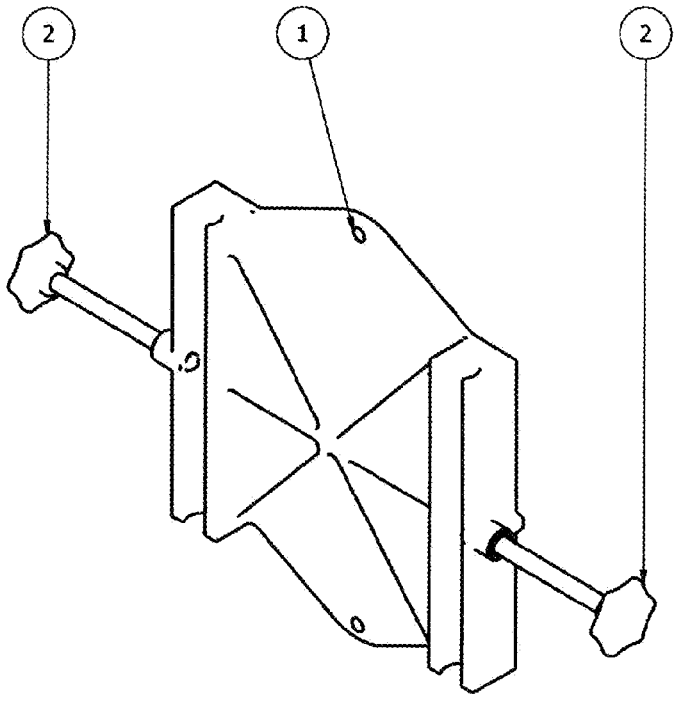


Figure 6

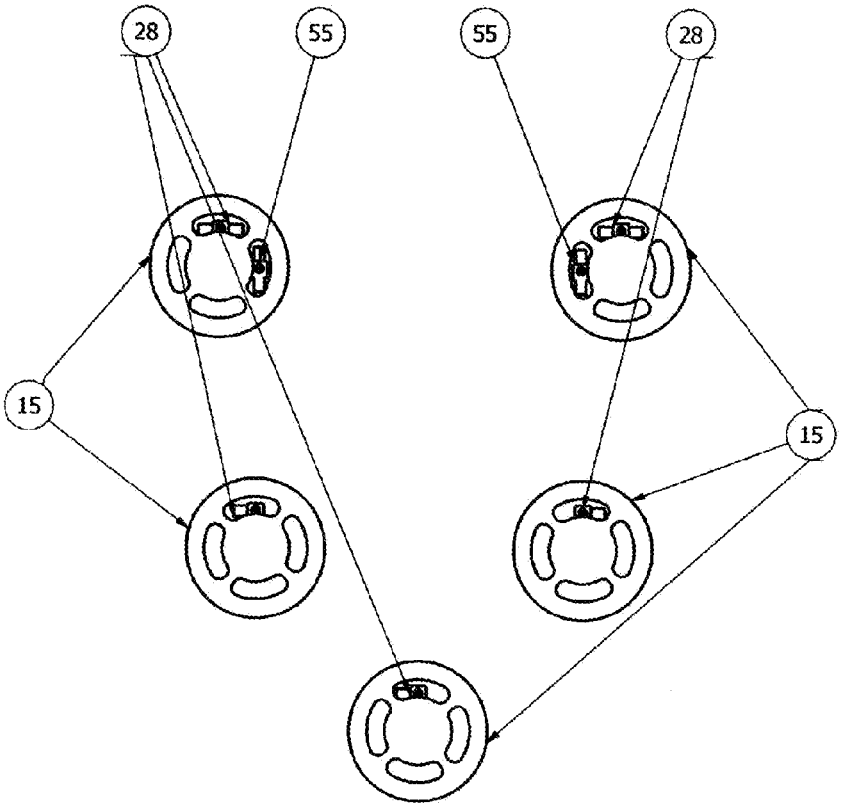
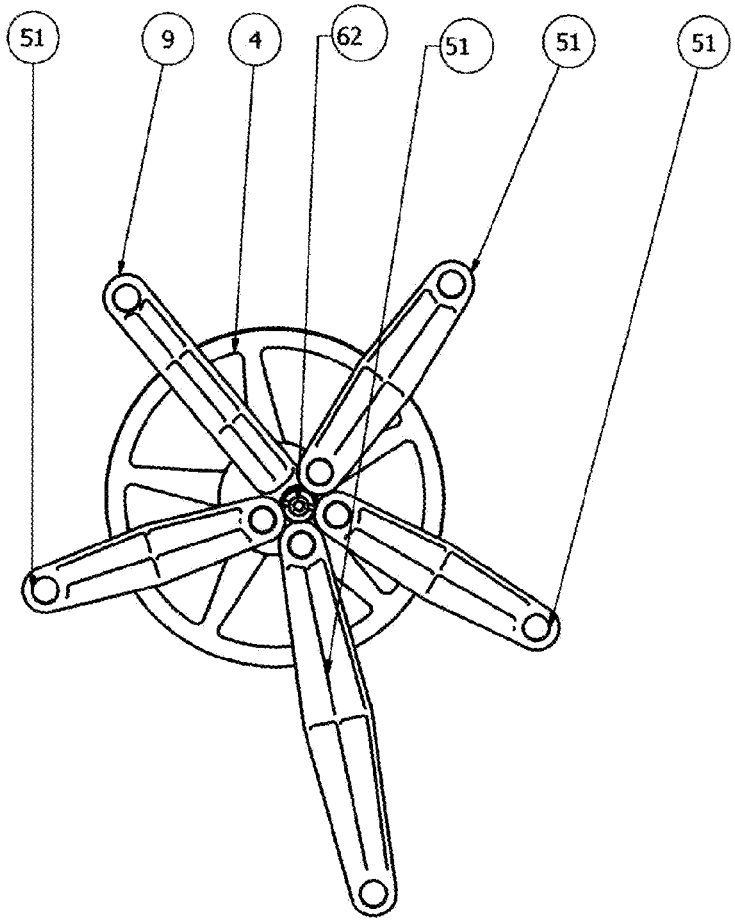


Figure 7



POWERED BACK SCRUBBING APPARATUS

RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 61/908,514 filed on Nov. 25, 2013

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The invention relates to personal cleaning devices, in particular, an apparatus to aid in the cleansing of one's back while taking a shower.

[0004] 2. Description of Related Art

[0005] There has long been a necessity to provide a device that aids in back washing while in the shower. While many accessories may aid in this activity, all have specific functionality and none encompasses unique advantages that said apparatus provides. Accordingly, there is a need for a non-labor intensive device that provides stimulating and effective back washing while in the shower.

[0006] Prior art includes several designs of devices that, although meet specific requirements and specifications, do not include the functionality of the current invention. Said apparatus include functionality and features such as: coordinated semi-rotation (−/+90°) of the brushes as to not pinch or catch skin or hair upon use, easily adjustable wall mount with built-in connection rails, built-in water reservoir as to save water and to not rely on a plumbing connection, and separate tubing systems for soap and water as to avoid clogging and as to simplify.

[0007] A prior art search failed to reveal any patents that read on the current invention. Prior art has been shown to be different from the present invention. The prior art and differences from the present invention can be summarized as follows:

[0008] U.S. Pat. No. 5,517,705 describes a back scrubbing device. This device is connected directly to the shower plumbing system, has no ability for personal adjustment and no automatic soap dispenser.

[0009] U.S. Pat. No. 6,996,861 describes a shower mounted back cleansing and massaging device. This device is directly mounted to the shower head pipe, providing no alternative mounting location. The device also requires the user to turn on each set of brushes individually, has no water rinse capabilities and has full rotation on the brushes, possibly causing skin pinching and hair catching.

[0010] U.S. Pat. No. 5,774,907 describes a Shower wall back scrubber and massager. This device is connected directly to the shower plumbing system and has no soap dispensing capability.

[0011] U.S. Pat. No. 6,732,394 describes a positional body scrubbing device. This device is essentially one large rotating brush and therefore has no other similar characteristics to the present invention.

[0012] U.S. Pat. No. 7,451,513 describes a back-scrubbing and cleaning apparatus. This device is connected to the wall via suction cups, provides no self-contained rinse mechanism and no discernible soap dispensing mechanism.

[0013] U.S. Pat. No. 5,345,640 describes a motorized back scrubber. This device connects directly to the shower plumbing system and provides no soap dispense capability.

[0014] Accordingly, due to deficiencies in the devices as illustrated above, there is a need for a back scrubbing device that includes the characteristics and functionality of the present invention.

SUMMARY OF THE INVENTION

[0015] The present invention is a self-contained back scrubbing apparatus that includes features advantages and a combination of features that are not seen in the prior art. Featured in this invention is a self-contained soap and water reservoir, a separate soap and water dispense system, short degree rotation brush assemblies and adjustable wall mount. The waterproof cabinet is made of plastic with a somewhat rectangular shape with a gradual anatomically correct profile at the brush surfaces and a slight rearward taper at the bottom. The apparatus has a water tight battery compartment on the bottom of the cabinet. It uses batteries power to operate a motor contained within the cabinet. The functional scrubbing surface contains 5 rotary heads "brush head assemblies", comprised of a washing or exfoliating or scrubbing material attached to each assembly. A reservoir to be filled with water and liquid soap attaches to the top of the main body. Two separate pumps send water and/or soap to nozzles located on the brush head assemblies. Separate tubing systems connect the soap and/or water reservoirs to the nozzles. The pumps activate in a defined sequence. This sequence is pre-determined prior to use. Concurrent to the pumps functioning, a drive wheel is attached to a motor within the cabinet via a belt. The drive wheel is connected to 1 main drive arm via a eccentric hub which is in turn connected to 4 slave drive arms. Each drive arm is connected to a brush arms which are directly connected to the brush head assemblies. Due to the architecture of the hub (offset but direct connection to the wheel), the arms rotate the brush head assemblies no more 90 degrees in either direction, resulting in a non-pinching operation for skin and hair.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] FIG. **1** is a rear view of the apparatus with the back cover removed showing the interior of the apparatus.

[0017] FIG. **2** is a front view of the apparatus showing the brush head assemblies and base for reservoir attachment.

[0018] FIG. **3** is a front view of the apparatus showing the attached reservoir and adjustable wall hanging assembly.

[0019] FIG. **4** is a rear view of the apparatus showing the height adjustment rails and wall connection assembly.

[0020] FIG. **5** is front view of the wall connection assembly.

[0021] FIG. **6** is a cut-away view of the brush head assembly showing the location of the nozzles.

[0022] FIG. **7** is cut-away view of the drive wheel assembly.

LIST OF NUMBERS ASSOCIATED WITH ITEMS SHOWN IN THE DRAWINGS

[0023] **1** Wall Mount Bracket

[0024] **2** Bearing

[0025] **3** Reservoir

[0026] **4** Drive Wheel

[0027] **5** Connection nut

[0028] **6** Maintenance Cover

[0029] **9** Drive Arm

[0030] **15** Brush Head Assembly

[0031] **21** Drive Belt

[0032] **22** Tensioner Pulley

[0033] **28** Water Nozzle
[0034] **34** Pump
[0035] **35** Front Cover
[0036] **43** Battery Cover
[0037] **47** Brush Arm
[0038] **51** Slave Arm
[0039] **53** Battery Holder
[0040] **54** Motor
[0041] **55** Soap Nozzle
[0042] **62** Eccentric Hub
[0043] **63** Reservoir Connecting Tabs
[0044] **64** Tubing System
[0045] **66** Back Cover
[0046] **67** Reservoir Platform
[0047] **68** Adjustment Rails

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0048] Referenced now are the drawings, specifically, elements that embody the invention as listed above. The present invention is a motorized back scrubbing apparatus employing two simultaneous functionalities and practical design as to provide the user with a thorough cleanse and pleasurable experience upon use. The first functional element of the invention is the concurrent and programmed dispense of water and soap upon ones back. This provides the detergent, lather and rinse elements needed in proper cleansing. Additionally, the apparatus provides a continuous rotation of brushes as to provide soft surface exfoliation to the users' back. Each functionality is initiated simultaneously and positively adds to the users experience when using the present invention.

[0049] The liquid dispense action shall be described first. Prior to use the reservoir **3** must be filled with both liquid soap and water. The separation of each section is noted in FIGS. **3** and **4**. Soap is to be added to the smaller section and water to the larger. The reservoir **3** is then place on the top of the apparatus on the reservoir platform **67** and as such, connects to the reservoir connection tabs **63**. The reservoir connection tabs **63** are then connected directly to each pump and tubing system, as illustrated in FIG. **1**.

[0050] Upon activation of the apparatus, liquid of either type travels through the pump **34** into the tubing system **64**. From the tubing system **64**, the liquid is dispensed through the water nozzles **28** and soap nozzles **55**. The reservoir **3** section for water attaches to an entirely separate pump **34** and tubing system **64** from the soap reservoir system. As such, the water section of the reservoir **3** connects direct to water nozzles **28** in each of the five brush head assemblies **15**. Conversely, the soap section of the reservoir connects only to soap nozzles **55** in the top **2** brush head assemblies **15**. See FIG. **6**. The liquid dispense cycles are pre-programmed to maximize washing functionality.

[0051] The brush rotation functionality of the apparatus is illustrated in FIGS. **1-3** and **6-7**. The drive belt **21** connects the motor **54**, the tensioner pulley **22** and the drive wheel **4**. The drive arm **9** is connected to the free rotational eccentric hub **62**, which is forged to the drive wheel **4** off-center from the exact middle of the wheel **4**. The slave arms **51** are connected directly to the drive arm **9**. This is best illustrated in FIG. **7**. The drive arm **9** and the four (4) slave arms **51** are each connected to brush arms **47**. The brush arms **47** are connected directly to each of the five (5) brush head assemblies **15**. This is best illustrated in FIG. **1**.

[0052] Upon initiation of the apparatus, the motor **54** moves the drive wheel **4** via the drive belt **21**. The tensioner pulley **22** keeps tension on belt **21** so that force may be applied. The rotation of the drive wheel **4** moves the drive arm **9**. The motion of the drive arm **9** moves the slave arms **51**. The drive arm **9** and the slave arms **51** move the brush arms **47**. The brush arms **47** in turn rotate the brush head assemblies **15** and do not exceed 90 degrees of rotation in either direction as to not pinch or catch hair or skin. The rotation of the brush head assemblies **15** provide gentle exfoliating action for the user.

[0053] The apparatus is contained in a waterproof plastic cabinet that includes a front cover **35**, battery cover **43**, back cover **66**, and maintenance cover **6**. It is molded to contain openings for the brush head assemblies **15** and attachments for the reservoir **3**.

[0054] The invention is to be attached to the wall via a wall mount assembly. The wall mount assembly includes a wall mount bracket **1** with adjustable screw-in bearing **2** attached to adjustment rails **68** that are molded into the cabinet. The wall mount bracket **1** fits tongue and groove to the adjustment rails **68**. The bearing **2** holds the cabinet in place when adjusted on the adjustment rails **68**. This is best illustrated in FIGS. **4**, **5**. The adjustment rails **68** are molded onto the back cover **66** of the cabinet as best illustrated in FIG. **4**. The wall mount bracket **1** includes two (2) holes for screws to be attached to the shower wall.

What is claimed is:

1. An apparatus for cleaning/scrubbing/exfoliating the human back in a shower that is permanently mounted on the shower wall comprising:
- a detachable reservoir containing two separate compartments;
- said reservoir connected to a pump and tubing system;
- said pump and tubing system is connected to a nozzle assembly;
- a plurality of brush head assemblies;
- number of said brush head assemblies is five (5);
- said nozzle assembly connected to each said brush head assembly;
- said pump and tubing system for moving liquid from said reservoir to said nozzle;
- a motorized mechanism connected to said brush head assemblies to move assemblies in a rotational direction;
- an adjustable wall mount bracket assembly;
- said adjustable wall mount bracket assembly attached to adjustment rails and a plastic housing which houses all elements in a waterproof container.

2. The apparatus of claim **1**, wherein said brush head assembly comprises:
- a circular plastic housing;
- brushes designed to fit within said circular plastic housing;
- nozzles as to connect to the soap and water reservoirs; and
- rotational functionality as to provide a scrubbing motion.

3. The apparatus in claim **1**, wherein said pump and tubing system comprises:
- a connection from the reservoir contents to a pump;
- said pump attached to said tubing; and
- said tubing connects to the specified nozzle for the dispensing of the specified liquid in the form of water or soap.

4. The apparatus in claim **1**, wherein said motorized mechanism comprises:
- a battery box wherein the installed battery is connected to a drive motor;

said drive motor is connected to a drive belt;
said belt is connected to a drive wheel assembly;
said belt is connected to a tensioner pulley to maintain rigidity;
said drive wheel assembly is connected to a plurality of drive arms;
each said drive arm is singularly connected to a brush arm; and
said brush arms are connected to said brush head assembly for rotation.

5. The apparatus in claim **1** wherein the brushes comprises soft nylon bristles.

6. The apparatus in claim **1** wherein the plastic housing comprises:
a waterproof plastic shell;
a back cover;
said back cover containing height adjustment rails;
said back cover connected to adjustable wall connect bracket assembly;
a molded front cover that contains a plurality of openings;
said opening molded to fit said brush head assemblies;
said opening molded to fit an eccentric cover;
said opening molded to fit battery cover;
said opening molded to fit power switch;
said opening molded to fit reservoir connecting tab.

7. The apparatus in claim **1** wherein said reservoir comprises:
said separation cuts said reservoir into two (2) sections;
each said section is designed for selected liquid;
one said section is designed for water;
one said section is designed for soap;
said reservoir is detachable from said apparatus;
said reservoir connects to said apparatus on the reservoir platform;
said reservoir connects to said pump and tubing assembly through the reservoir connecting tabs;

8. The apparatus in claim **1** wherein the adjustable wall mount bracket assembly comprises:
a connection to said height adjustment rails on said back cover;
a two slide bearings for adjustment of height;
a plate for contact with the shower wall; and
two holes in plate for insertion of screws in order for attachment to wall.

9. The motorized mechanism in claim **4**, wherein said plurality of drive arms comprises:
a main drive arm wherein said drive arm is connected to the drive wheel assembly;
said main drive arm is connected to four (4) slave drive arms; and
the plurality of said drive arms connected to a brush arm.

10. The motorized mechanism in claim **4**, wherein said drive wheel assembly comprises:
said main drive wheel is forged onto an eccentric hub;
said eccentric hub is off-center from the midpoint of said main drive wheel;
said eccentric hub is connected to said main drive arm; and
said main drive wheel is connected to said drive belt.

* * * * *