布小点的弧形表面二种形式。

当接通电源后驱动电机带动转动轴筒旋转，转动轴筒内腔中的喷施器顶端的按摩触头做旋转按摩，需要喷施护肤液时使用者可根据自我感觉在面部点压按摩触头，则护肤液便从触头压盖上的小孔中喷入按摩部位，达到按摩与喷施护肤液同步进行的目的。

本实用新型的有益效果是：可以在对面部实施按摩的同时向按摩部位喷施护肤液，使面部按摩更加趋于完美。

附图说明

下面结合附图和实施例对本实用新型进一步说明。

图 1 是本实用新型的一种可以喷施美容护肤液的便携式面部按摩器的剖面构造图。

图 2 是本实用新型的驱动电路原理图。

图 3 是本实用新型的转动轴筒上的止锁套。

图 4 是本实用新型的喷施器内放大了的活塞导向体。

图中 1.塑料壳体，2.后盖，3.转动轴筒，4.按摩触头，5.触头压盖，6.输液管压轴，7.喷施器壳体，8.活塞，9.活塞导向体，10.活塞缸，11.活塞缸上压盖，12.喷施器壳体盖，13.弹簧，14.止逆球，15.止锁套，16.逆顺开关，17.驱动电机，18.变阻器，19.联轴器，20.转轴凹槽，21.止锁套凸台，22.电池压盖，23.喷施器壳体铸造线，24.触头铸造线，25.出液孔，26.活塞导向体内管，27.按摩触头内腔室，28.电池组。

具体实施方式

在图 2 中，电池组(28)、逆顺开关(16)与变阻器(18)连接后通过绝缘软芯导线和驱动电机(17)连接组成驱动电路，驱动电机(17)的旋轴方向由逆顺开关(16)控制，电机(17)的转速可由变阻器(18)进行调节。

在图 1 所示的实施例中，塑料壳体(1)内的电池组(28)与安装在壳体上的逆顺开关(16)、变阻器(18)通过绝缘软芯导线与驱动电机(17)相连组成本实用新型的驱动电路装置，电池组(28)的下方有电池压盖(22)，为便于止锁套(15)和电机(17)的安装，在电机(17)后的塑料壳体上有后盖(2)。本实用新型的机械传动装置是由转动轴筒(3)与止锁套(15)组成，转动轴筒(3)伸入该按摩器塑料壳体(1)的内腔中并与该按摩器塑料壳体(1)后部进入的止锁套(15)对接锁紧，其锁紧方式是通过止锁套(15)内的凸台(21)图 3 所示，在装配时卡入转动轴筒(3)尾部的凹槽(20)内来完成的，转动轴筒(3)与驱动电机(17)之间是通过联轴器(19)连接的。本实用新型的喷施器安装在机械传动装置的转动轴筒(3)的内腔中，通过喷施器壳体(7)和按摩触头(4)外表面上的铸造线(23)、(24)与转动轴筒(3)内腔中的铸造线相齿合，从

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而带动喷施器一起旋转。该喷施器是由触头压盖(5)、按摩触头(4)、输液管压轴(6)、活塞(8)、活塞导向体(9)、弹簧(13)、止逆球(14)顺次连接并安装在活塞缸(10)内，活塞缸(10)的上沿与活塞缸压盖(11)对接并通过喷施器壳体盖(12)旋紧在喷施器壳体(7)上。图 4 所示的活塞导向体(9)上安装的活塞(8)有一定的轴向活动间隙。该机械传动装置中的转动轴筒(3)的前端面为带有向外翻边的圆弧形表面，在圆弧形表面上有均布的小麻点。

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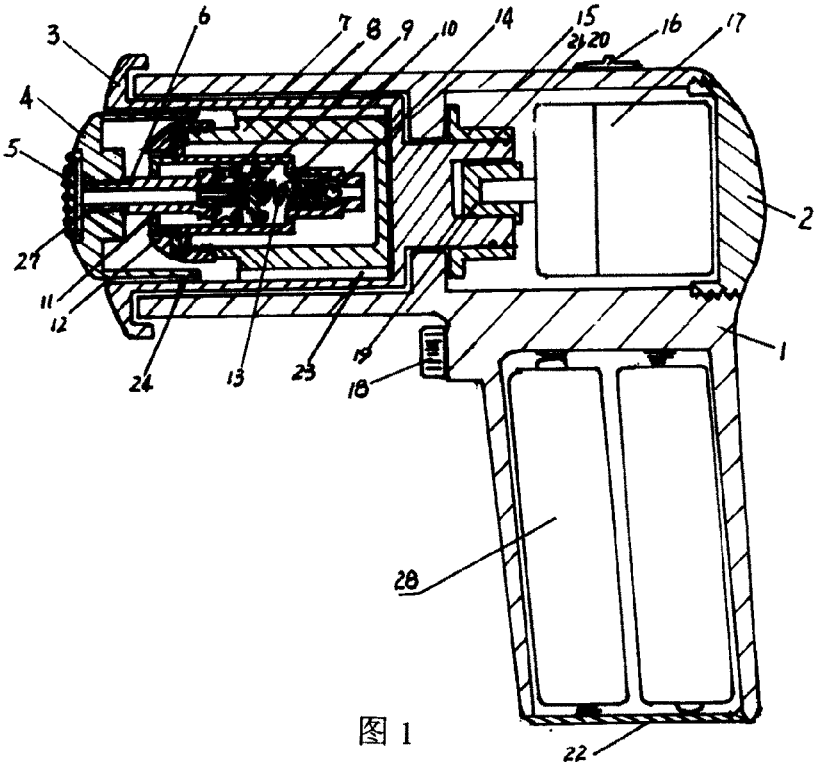


图 1

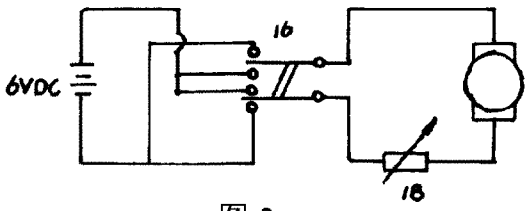


图 2

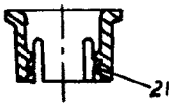


图 3

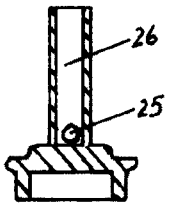


图 4

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Description

A kind of portable face massor that can spray skincare liquid

Affiliated technical field

This utility model relates to a kind of face massor, especially a kind of portable face massor that can spray skincare liquid.

Background technology

At present, the face massor kind that can see on the market seldom, and function is simple, generally mostly be simple vibration type or revolving, so in use often in the massage process, produce the sensation of many discomforts, the facial massage effect obviously reduced owing to can not be used skin care liquid timely.

Summary of the invention

In order to overcome existing face massor function of use dullness, can not be in time with smear skin care liquid and cooperate and use this deficiency synchronously, this utility model provides a kind of portable face massor that can spray skincare liquid, this masseur sprays skincare liquid to the massage position when portion implements massage over there, makes facial massage be tending towards perfect more.

The technical scheme that its technical problem that solves this utility model adopts is: a kind of portable face massor that can spray skincare liquid, form by plastic casing, mechanical driving device, sprayer and drive circuit, a contrary clockwise switch and a rheostat are housed on plastic casing, and the intravital set of cells of shell connects it in turn by lead and inserts in the drive motors.Rotation beam barrel in the mechanical driving device stretches into the inner chamber of this housing from the front end of plastic casing, the front end that rotates beam barrel has to the edge that turns up, the rear end of beam barrel is extended a cylinder-shaped shaft vertically downwards, on the outer wall of rotating shaft close end annular groove is arranged, loosening for preventing to rotate beam barrel, there is a cylinder tube shape to end lock tube and enters in the plastic casing rotating shaft fit with the turning cylinder tube rear end from bonnet vertically, ending boss on the lock tube snaps in the groove in the rotating shaft of turning cylinder tube rear end, the drive motors that has a shaft coupling from the bonnet of plastic casing enter in the plastic casing with the rotating shaft of turning cylinder tube rear end on endoporus peg graft, on the internal chamber wall that rotates beam barrel, foudry line is arranged, insert in the inner chamber and fixing the sprayer that outer surface has foudry line, the arcuate surface of outward flanging can be made into two kinds of forms of curved surfaces of slick curved surfaces and uniform point.

The top of this sprayer is that an outer surface is arcual tubulose massage contact, the outer surface center of massage contact is inlaid with the contact gland of a circle, uniform liquid outlet on the gland, tight fit is equipped with piped tube for transfusion last item in the centre

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bore of massage contact inboard, along the tube for transfusion last item to next end, the piston guide body prolongs axially to be inserted in the piston inner hole and to insert and is fixed in the endoporus of tube for transfusion last item, with spring, reverse stopping ball is mounted in the piston cylinder in turn, and the upper edge of piston cylinder is docked with the piston cylinder upper press cover and is tightened on the sprayer housing by the sprayer case lid.The circular arc outer surface of described massage contact can be made into two kinds of forms of curved surfaces of slick curved surfaces and uniform point.

When energized rear drive driven by motor is rotated the beam barrel rotation, the vertical massage contact of sprayer in the turning cylinder tube inner chamber is done the rotation massage, user can be according to feeling at face points pressing massage contact in the time of need spraying skin care liquid, then skin care liquid just sprays into the massage position the aperture from the contact gland, reaches massage and sprays the purpose that skin care liquid carries out synchronously.

The beneficial effects of the utility model are: spray skin care liquid to the massage position when portion implements massage over there, make facial massage be tending towards perfect more.

Description of drawings

Below in conjunction with drawings and Examples this utility model is further specified.

Fig. 1 is a kind of sectional structural map that can spray the portable face massor of skincare liquid of the present utility model.

Fig. 2 is a drive circuit schematic diagram of the present utility model.

Fig. 3 is the lock tube that ends on the rotation beam barrel of the present utility model.

Fig. 4 is the piston guide body that has amplified in the sprayer of the present utility model.

1. plastic casings among the figure, 2. bonnet 3. rotates beam barrel, 4. massage contact, 5. contact gland, 6. tube for transfusion last item, 7. sprayer housing, 8. piston, 9. piston guide body, 10. piston cylinder, 11. piston cylinder upper press covers, 12. sprayer case lid, 13. spring, 14. reverse stopping balls, 15. end lock tube, 16. contrary clockwise switch, 17. drive motors, 18. rheostats, 19. shaft coupling, 20. rotating shaft grooves, 21. end the lock tube boss, 22. the battery gland, 23. sprayer shell cast lines, 24. contact foudry lines, 25. liquid outlet, 26. pipe in the piston guide body, 27. massage contact inner cavity chamber, 28. set of cells.

The specific embodiment

In Fig. 2, set of cells (28), contrary clockwise switch (16) are connected the back and connect to form drive circuit by soft core lead of insulation and drive motors (17) with rheostat (18), the direction of principal axis that revolves of drive motors (17) is controlled by contrary clockwise switch (16), and the rotating speed of motor (17) can be regulated by rheostat (18).

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In the embodiment shown in fig. 1, set of cells (28) in the plastic casing (1) is connected to form driving circuit device of the present utility model with the contrary clockwise switch (16), the rheostat (18) that are installed on the housing by soft core lead of insulation and drive motors (17), there is battery gland (22) below of set of cells (28), for ease of ending the installation of lock tube (15) and motor (17), bonnet (2) is arranged on the plastic casing behind the motor (17).Mechanical driving device of the present utility model is by rotating beam barrel (3) and ending lock tube (15) and form, rotate that beam barrel (3) stretches in the inner chamber of this masseur plastic casing (1) and dock locking with the lock tube (15) that ends that this masseur plastic casing (1) rear portion enters, its locking mode is shown in Figure 3 by the boss (21) that ends in the lock tube (15), in assembling the time snaps in the groove (20) that rotates beam barrel (3) afterbody, finish, rotate between beam barrel (3) and the drive motors (17) and be connected by shaft coupling (19).Sprayer of the present utility model is installed in the inner chamber of rotation beam barrel (3) of mechanical driving device, mutually meshing by the foudry line (23) on sprayer housing (7) and massage contact (4) outer surface, (24) and the foudry line that rotates in beam barrel (3) inner chamber, rotate together thereby drive sprayer.This sprayer is to be connected in turn and be installed in the piston cylinder (10) by contact gland (5), massage contact (4), tube for transfusion last item (6), piston (8), piston guide body (9), spring (13), reverse stopping ball (14), and the upper edge of piston cylinder (10) is docked with piston cylinder gland (11) and is tightened on the sprayer housing (7) by sprayer case lid (12).Piston guide body (9) shown in Figure 4 is gone up the piston of installing (8) certain axial play.The front end face of the rotation beam barrel (3) in this mechanical driving device is the arcuate surface that has outward flanging, and uniform age spot is arranged on arcuate surface

Claims

1, a kind of portable face massor that can spray skincare liquid, be by plastic casing, mechanical driving device, sprayer and drive circuit are formed, it is characterized in that: a contrary clockwise switch (16) and a rheostat (18) are housed on plastic casing (1), set of cells (28) in the housing (1) connects it in turn by lead and inserts in the drive motors (17), rotation beam barrel (3) in the mechanical driving device stretches into the inner chamber of this housing (1) from the front end of plastic casing (1), the front end of this rotation beam barrel (3) has to the edge that turns up, the rear end of beam barrel (3) is extended a cylinder-shaped shaft vertically downwards, annular groove (20) is arranged on the outer wall of rotating shaft close end, one cylinder tube shape ends lock tube (15) and enters in the plastic casing (1) and the rotating shaft fit that rotates beam barrel (3) rear end from bonnet (2) vertically, the boss (21) that ends on the lock tube (15) snaps in the groove (20) that rotates beam barrel (3) rear end, the drive motors (17) that has shaft coupling (19) enters in the plastic casing (1) from the bonnet (2) of plastic casing (1) and pegs graft with the endoporus that rotates in beam barrel (3) the rear end rotating shaft, on the internal chamber wall that rotates beam barrel (3), foudry line is arranged, insert and fixing the sprayer that outer surface has foudry line in the inner chamber.
2, a kind of portable face massor that can spray skincare liquid according to claim 1, it is characterized in that: the top of sprayer is the tubulose massage contact (4) that an outer surface is a circular arc, the outer surface center of massage contact (4) is inlaid with the contact gland

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(5) of a circle, gland (5) is gone up uniform liquid outlet, tight fit is equipped with piped tube for transfusion last item (6) in the centre bore of massage contact (4) inboard, along tube for transfusion last item (6) to next end, piston guide body (9) prolongs axially to be inserted in piston (8) endoporus and to insert and is fixed in the endoporus of tube for transfusion last item (6), with spring (13), reverse stopping ball (14) is mounted in the piston cylinder (10) in turn, and the upper edge of piston cylinder (10) is docked with piston cylinder upper press cover (11) and is tightened on the sprayer housing (7) by sprayer case lid (12).

3, a kind of portable face massor that can spray skincare liquid according to claim 2 is characterized in that: the circular arc outer surface of massage contact (4) can be made into two kinds of forms of curved surfaces of slick curved surfaces and uniform point.

4, a kind of portable face massor that can spray skincare liquid according to claim 1 is characterized in that: the arcuate surface of rotating beam barrel (3) outward flanging can be made into two kinds of forms of curved surfaces of slick cambered surface and uniform point.

Drawings

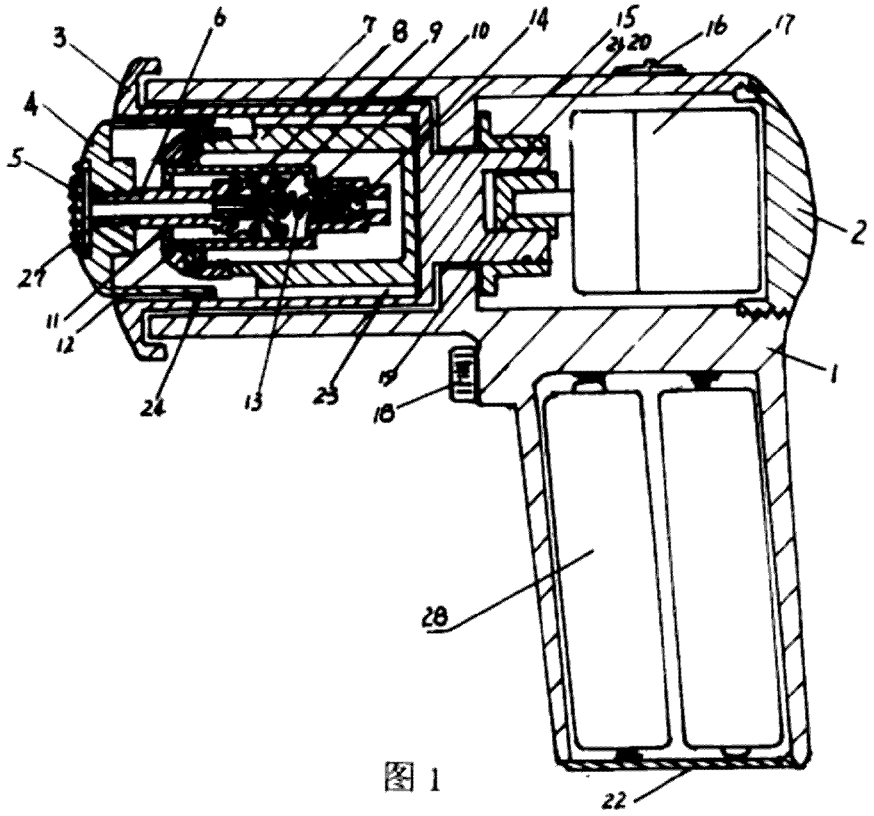


图 1

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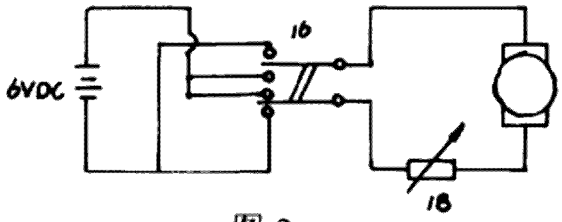


图 2

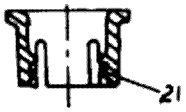


图 3

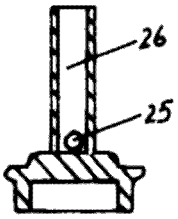


图 4

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JPH0992246A BATTERY HOUSING DEVICE

The EPO does not accept responsibility for the accuracy of data originating from authorities other than the EPO, nor does it guarantee that such data is complete, up-to-date or fit for specific purposes.

The wording below is an initial machine translation of the original publication. To apply more advanced translation technology, use Patent Translate.

[0001] The present invention relates to relates to a battery housing device for accommodating a battery for supplying power to the printed circuit board.

[0002] In general, a timer setting data, measurement data, in electronic circuits meter reading data and the like are stored in the volatile memory, the battery has been used as a backup power supply, the battery is in such an electronic circuit it is necessary to carry out the battery replacement to a new battery with exhaustion.

[0003] Then, since it is necessary to exchange the battery without erasing stored data stored in the volatile memory in this case, without interruption of the current supplied to the electronic circuit, stably continue to the electronic circuit while supplying a current, it is necessary to exchange the new battery and a used battery. Conventionally, as such a battery replacement method, for example, there is known a method as shown in FIG.

[0004] In this way, on the printed circuit board 11, the power from the battery in order to supply to the electronic circuit, power supply male connector 13, 15 to electrically act on the same are arranged in two places. And, the exchange to the new battery 19 of the used battery 17 is carried out as described below.

[0005] First, connect the female connector 23 of the new battery 19 to the power supply for the male connector 15 with the female connector 21 is not connected of used batteries 17, the female connector 21 of the used battery 17 is a power supply on the printed circuit board 11 It is pulled out from the male connector 13. Next, the printed circuit board 11 used battery 17 is fixed to is removed by bundling band 25, the replacement of the new new battery 19 connected are re-fixed with bundling band 25 on the printed circuit board 11 again the battery It takes place.

[0006] The present invention is, however, in such a conventional battery exchange method, it is necessary to attach and detach the connector in order street, battery replacement work is complicated, the wrong procedure, to erase the memory data because fear is, there is a problem that can not be a battery replacement operation easily. Further, it takes time to attachment and detachment of a battery for holding the battery in the bundling band, much time is disadvantageously needed for replacement work.

[0007] The present invention has been made to solve such conventional problems, and an object thereof is to provide a battery housing device which can perform battery replacement easily, reliably.

[0008] SUMMARY OF THE INVENTION The battery housing device of claim 1, said holder battery discharge port is formed on one surface of the rectangular tube-shaped holder the battery is housed, the battery discharge port of the holder a lid member which is

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detachably arranged on the opposite side to cover the battery, and a holder electrode having a substrate mounting terminals connected to the printed board disposed on opposite sides of the holder, the lid-side electrodes arranged on both sides of the lid member When subjected lid side coupling terminal or lid side coupling terminal is formed on the lid side electrode, and, receiving the holder-side coupling terminal receiving or the lid-side coupling terminal is formed in the holder electrode and the lid-side coupling terminal is connected There and having a holder-side coupling terminal to be connected.

[0009] Battery housing device according to claim 2, characterized by comprising providing a battery holding member for opening said battery outlet when replacing the battery in said holder to said battery outlet of the holder.

[0010] [Action] In the battery housing device of claim 1, the exchange of used batteries, first the fitted lid member to the holder is done by withdrawing from the holder, used batteries in this state is held in the holder .

[0011] Then, in this state, current is supplied to the printed circuit board side from the substrate mounting pin. Next, a new battery is mounted to the lid member, the lid member is inserted into the holder. Then, receiving the coupling terminal or coupling terminal formed on both sides of the lid-side electrode of the lid member is connected to the coupling terminal receiving or coupling terminal formed on both sides of the holder electrodes of the holder.

[0012] Then, in this state, the current from the new battery from the board mounting terminal on the printed circuit board side starts to be supplied. In conjunction with the insertion into the holder of the lid member, used batteries is gradually pushed into the battery discharge port formed on one surface of the holder with a new battery.

[0013] And, the last in the lid member is fully inserted into the holder, is completely discharged from the battery discharge port by the new battery is used batteries, is wearing a new battery in the holder, it is fitted lid member and the holder at the same time , replacement of the battery is completed. In the battery housing device of claim 2, in normal cells by cell holding member formed in the battery discharge port side of the holder is held in the holder.

[0014] On the other hand, the battery holding member is opened at the time of battery exchange, used batteries are discharged.

[0015] [Embodiment of the invention will be described below embodiment showing the details of the present invention with reference to the accompanying drawings. Figure 1 shows one embodiment of a battery housing device of the present invention, the battery housing device is mounted on a printed circuit board.

[0016] Reference numeral 31 illustrates, for example a rectangular tubular holder made of ABS resin in FIG. On both sides of the holder 31, the holder electrode 33 made of a conductive material such as copper are placed opposite. Holder electrode 33 is firmly fixed to the holder 31, for example by an adhesive.

[0017] Between the holder electrode 33, the battery 35 is capable of holding. Reference numeral 37 in the figure indicates a box-shaped lid member having an opening for instance the holder 31 side made of ABS resin. On both sides of the lid member 37, lid side electrode 39 made of a conductive material such as copper are placed opposite.

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[0018] The lid-side electrode 39 is firmly fixed by the lid member 37, for example, an adhesive. Battery 35 is capable of holding between the lid-side electrode 39. Figure 2 shows the holder electrode 33 and the lid-side electrode 39, the lower end of the square-shaped holder electrode 33, substrate mounting terminal 33a to be connected soldered to the printed circuit board to be described later are integrally formed.

[0019] The bottom of the holder electrodes 33, groove-like holder-side coupling terminal receives 33b are formed. The central portion of the holder electrode 33 holder side contact 33c contacting the electrode of the battery 35 is formed. The lid-side electrode 39 has a square shape, the lid-side coupling terminal 39b that protrudes on the holder electrode 33 side in the lower portion are integrally formed.

[0020] At the center of the holder electrode 33 side of the lid side electrode 39, semicircular convex lid side contact 39c is formed. In this embodiment, on one side of the holder 31 is formed with a battery outlet 41. This up and down of the battery outlet 41, the plate-shaped battery holding member 43 is formed integrally freely open and close the hinge 45 as a fulcrum.

[0021] The battery outlet 41 of the holder 31, locking projections 47 are formed, the locking projections 47 is engaged with the hole portion 49 formed in the cell holding member 43. In the above-described battery housing device is exchanged to a new cell of the used batteries is performed as described below. First, it is performed by pulling out the lid member 37 is fitted into the holder 31, as shown in FIG. 3 (a) from the holder 31, a substrate mounting terminals 33a used battery 35A is held by a holder 31 in this state current is supplied to the printed circuit board 53 side from.

[0022] Next, a new battery 35B is mounted to the lid member 37 as shown in FIG. 3 (b), the lid member 37 is inserted into the holder 31. Then, the lid-side coupling terminal 39b formed on both sides of the lid side electrode 39 of the lid member 37 as shown in FIG. 3 (c), the holder-side coupling terminal receives 33b formed on both sides of the holder electrodes 33 of the holder 31 It is connected to.

[0023] In this state, a current from the new cell 35B mounted on the cover member 37 to the printed circuit board 53 starts to be supplied. In conjunction with the insertion into the holder 31 of the lid member 37, the new battery 35B, used batteries 35A is gradually pushed into the battery discharge port 41 formed on one surface of the holder 31.

[0024] The force which the used batteries 35A is pushed, the engagement of the battery holding member 43 and the holder 31 is released, the battery holding member 43 is opened. Finally, as shown in FIG. 3 (d), when the lid member 37 is fully inserted into the holder 31, is completely discharged from the battery discharge port 41 used batteries 35A is the new battery 35B, the holder 31 the new battery 35B is mounted, fitted lid member 37 and the holder 31 is at the same time, replacement of the battery is completed.

[0025] In an assembled battery housing device as described above, the lid-side coupling terminal 39b provided on the lid side electrode 39, Further, since the holder-side coupling terminal receives 33b provided on the holder electrode 33, is housed in the battery housing device the used batteries 35A, without instantaneous interruption of the current supplied to the electronic circuit formed on the printed circuit board 53, it is possible to replace new

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batteries 35B while supplying a current stably continue the electronic circuit, battery replacement work easily, can be reliably performed.

[0026] Further, it is possible to replace the used battery 35A only the battery housing device to the new cell 35B, without using a connector or the like extra parts, it is possible to permit high-density mounting. In addition, since there is provided a board mounting terminal 33a to the holder electrode 33, is the device easily can be fixed on the printed circuit board 53, and, the apparatus fixed this device on the board mounting terminal 33a and the printed circuit board 53 at the same time enables conduction between the pattern, the mounting man-hours can than conventional reduced significantly.

[0027] Incidentally, in the embodiment described above, the holder-side coupling terminal receives 33b provided on the holder electrode 33, an example is described in which a lid-side coupling terminal 39b to the lid-side electrode 39, the present invention is limited to the embodiment of not, the holder-side coupling terminal provided on the holder electrode may be a battery housing device having a cover-side coupling terminal received in the lid-side electrode. Further, in the above embodiment, although the battery of cylindrical been described as an example, the present invention is not intended to be limited to the embodiments according, battery housing device for accommodating a battery such as button shape or a disc-shaped or rectangular But good.

[0028] As described above, according to the present invention, in the battery housing device of claim 1, the installed coupling terminal or coupling terminal received to cover electrode, further, it is provided with the coupling terminal received or coupling terminal to the holder electrode, a battery housing the used batteries housed in the device, without instantaneous interruption of the current supplied to the electronic circuit, it is possible to replace new batteries while supplying a current stably continue the electronic circuitry, battery replacement work the ease, can be reliably performed.

[0029] In the battery housing device of claim 2, is provided with the battery holding member to the battery discharge side of the holder during normal can reliably hold the battery housed in the holder.

[0030] Brief description of the drawings

[0031] Is a perspective view showing an embodiment of a battery housing device of FIG 1 the present invention.

[0032] It is a front view showing the holder electrode and the lid-side electrode of the device of FIG 2 FIG.

[0033] It is a side view showing the operation of the apparatus of Figure 3. Figure 1.

[0034] Figure 4 is an explanatory view showing a conventional battery replacement method.

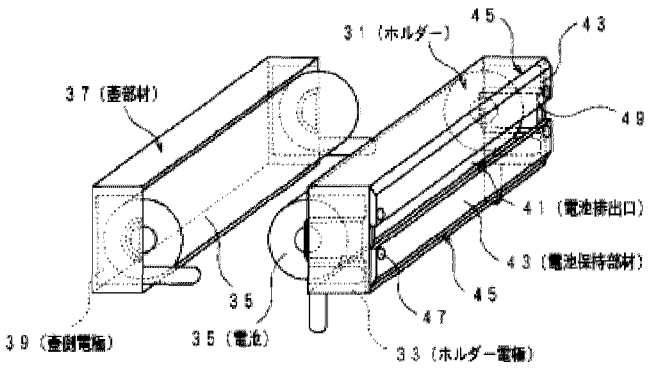
[0035] Description of the code

[0036] 31 holder 33 holder electrode 33a board mounting terminal 33b holder side coupling terminal received 35 battery 37 cover member 39 cover-side electrode 39b lid side coupling terminal 41 battery discharge port 43 the cell holding member 53 printed circuit board

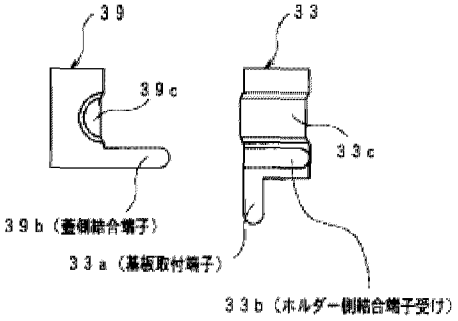
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Drawings

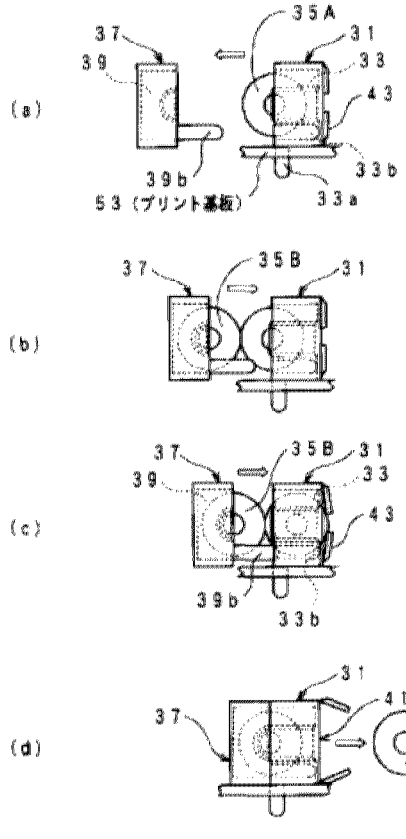
【図１】



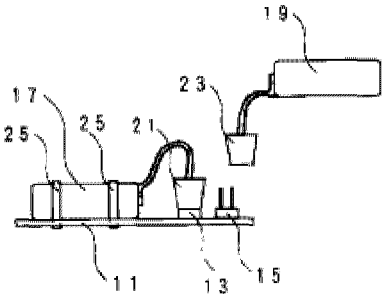
【図２】



【図３】



【図４】



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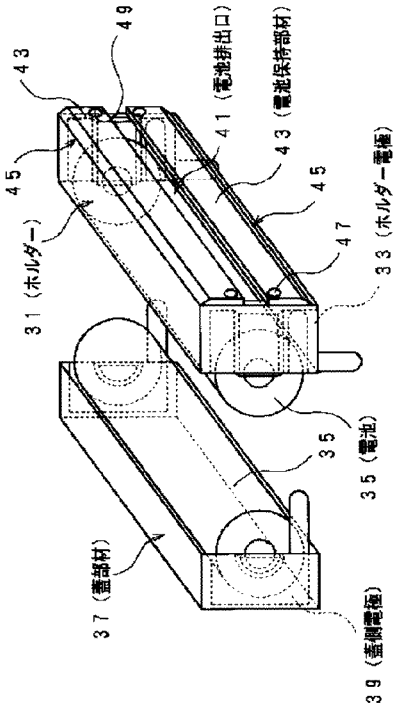
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(54)【発明の名称】　電池収納装置

(57)【要約】

【課題】　本発明は、プリント基板に電源を供給する電池を収納するための電池収納装置に関し、電池交換を容易、確実に行うことができることを目的とする。

【解決手段】　電池が収納される矩形筒状のホルダーの一面に電池排出口が形成された前記ホルダーと、前記ホルダーの前記電池排出口の反対側に脱着自在に配置され前記電池を覆う蓋部材と、前記ホルダーの両側に配置されプリント基板に接続される基板取付端子を有するホルダー電極と、前記蓋部材の両側に配置される蓋側電極と、前記蓋側電極に形成される蓋側結合端子または蓋側結合端子受け、および、前記ホルダー電極に形成され前記蓋側結合端子が接続されるホルダー側結合端子受けまたは前記蓋側結合端子受けが接続されるホルダー側結合端子とから構成する。



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【特許請求の範囲】
【請求項１】　電池が収納され一面に電池排出口の形成される矩形筒状のホルダーと、
前記ホルダーの前記電池排出口の反対側に着脱自在に配置され前記電池を覆う箱状の蓋部材と、
前記ホルダーの両側に配置されプリント基板に接続される基板取付端子を有するホルダー電極と、
前記蓋部材の両側に配置される蓋側電極と、
前記蓋側電極に形成される蓋側結合端子または蓋側結合端子受けと、
前記ホルダー電極に形成され前記蓋側結合端子が接続されるホルダー側結合端子受けまたは前記蓋側結合端子受けが接続されるホルダー側結合端子と、
を有することを特徴とする電池収納装置。
【請求項２】　請求項１記載の電池収納装置において、前記ホルダーの前記電池排出口に、前記ホルダー内の電池の交換時に前記電池排出口を開放する板状の電池保持部材を設けてなることを特徴とする電池収納装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、プリント基板に電源を供給する電池を収納するための電池収納装置に関する。
【０００２】
【従来の技術】一般に、タイマー設定データ、測定データ、検針データ等が揮発性メモリに記憶されている電子回路においては、電池がバックアップ用電源として使用されており、このような電子回路では電池の消耗とともに新しい電池への電池交換を行う必要がある。
【０００３】そして、この際に揮発性メモリに記憶されている記憶データを消去することなく電池の交換を行う必要があるため、電子回路への供給電流を瞬断させることなく、電子回路に安定継続して電流を供給しながら、使用済み電池と新しい電池の交換を行う必要がある。従来、このような電池交換方法として、例えば、図４に示すような方法が知られている。
【０００４】この方法では、プリント基板１１上に、電池からの電源を電子回路へ供給するために、電気的に同一に作用するように電源供給用雄コネクタ１３，１５が２箇所に配置されている。そして、使用済み電池１７の新しい電池１９への交換は以下述べるように行われる。
【０００５】先ず、使用済み電池１７の雌コネクタ２１が接続されていない電源供給用雄コネクタ１５に新しい電池１９の雌コネクタ２３を接続し、使用済み電池１７の雌コネクタ２１がプリント基板１１上の電源供給用雄コネクタ１３から抜脱される。次ぎに、結束帯２５でプリント基板１１に固定されていた使用済み電池１７が取り外され、新たに接続した新しい電池１９が再度プリント基板１１に結束帯２５を用いて固定し直され電池の交換が行われる。
【０００６】
【発明が解決しようとする課題】しかしながら、このような従来の電池交換方法では、コネクタを順番通りに着脱する必要があり、電池交換作業が煩雑になり、手順を誤って、記憶データを消去させるおそれがあるため、電池交換作業を容易にできないという問題があった。また、電池を結束帯で固定しているため電池の着脱に時間がかかり、交換作業に多大な時間が必要になるという問題があった。
【０００７】本発明は、かかる従来の問題を解決するためになされたもので、電池交換を容易、確実に行うことができる電池収納装置を提供することを目的とする。
【０００８】
【課題を解決するための手段】請求項１の電池収納装置は、電池が収納される矩形筒状のホルダーの一面に電池排出口が形成された前記ホルダーと、前記ホルダーの前記電池排出口の反対側に着脱自在に配置され前記電池を覆う蓋部材と、前記ホルダーの両側に配置されプリント基板に接続される基板取付端子を有するホルダー電極と、前記蓋部材の両側に配置される蓋側電極と、前記蓋側電極に形成される蓋側結合端子または蓋側結合端子受け、および、前記ホルダー電極に形成され前記蓋側結合端子が接続されるホルダー側結合端子受けまたは前記蓋側結合端子受けが接続されるホルダー側結合端子とを有することを特徴とする。
【０００９】請求項２の電池収納装置は、前記ホルダーの前記電池排出口に前記ホルダー内の電池の交換時に前記電池排出口を開放する電池保持部材を設けてなることを特徴とする。
【００１０】
【作用】請求項１の電池収納装置では、使用済み電池の交換は、先ずホルダーに嵌合された蓋部材をホルダーから引き抜くことにより行われ、この状態では使用済み電池はホルダーに保持されている。
【００１１】そして、この状態では、基板取付端子からプリント基板側に電流が供給されている。次ぎに、蓋部材に新しい電池が装着され、蓋部材がホルダーに挿入される。すると、蓋部材の両側の蓋側電極に形成された結合端子または結合端子受けが、ホルダーの両側のホルダー電極に形成された結合端子受けまたは結合端子に接続される。
【００１２】そして、この状態では、基板取付端子からプリント基板側に新しい電池からの電流が供給され始める。この蓋部材のホルダーへの挿入に連動して、新しい電池により使用済み電池がホルダーの一面に形成された電池排出口に押し出されていく。
【００１３】そして、最後に蓋部材がホルダーに完全に挿入されると、使用済み電池が新しい電池により電池排出口から完全に排出され、ホルダー内に新しい電池が装着され、同時に蓋部材とホルダーが嵌合され、電池の交

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換が終了する。請求項２の電池収納装置では、通常時にはホルダーの電池排出口側に形成される電池保持部材により電池がホルダー内に保持される。

【００１４】一方、電池交換時には電池保持部材が開かれ、使用済み電池が排出される。

【００１５】

【発明の実施の形態】以下、本発明の詳細を図面に示す実施形態について説明する。図１は本発明の電池収納装置の一実施形態を示しており、この電池収納装置はプリント基板に実装される。

【００１６】図において符号３１は、例えばＡＢＳ樹脂からなる矩形筒状のホルダーを示している。このホルダー３１の両側には、銅等の導電材からなるホルダー電極３３が対向して配置されている。ホルダー電極３３は、ホルダー３１に、例えば接着剤により強固に固定されている。

【００１７】このホルダー電極３３の間には、電池３５が保持可能とされている。図において符号３７は、例えばＡＢＳ樹脂からなるホルダー３１側に開口部を有する箱状の蓋部材を示している。蓋部材３７の両側には、銅等の導電材でできた蓋側電極３９が対向して配置されている。

【００１８】蓋側電極３９は、蓋部材３７に、例えば接着剤により強固に固定されている。この蓋側電極３９の間には電池３５が保持可能とされている。図２は、ホルダー電極３３と蓋側電極３９とを示すもので、四角形状のホルダー電極３３の下端には、後述するプリント基板に半田付け接続される基板取付端子３３ａが一体形成されている。

【００１９】ホルダー電極３３の下部には、凹溝状のホルダー側結合端子受け３３ｂが形成されている。ホルダー電極３３の中央部には電池３５の電極と接触するホルダー側接点３３ｃが形成されている。蓋側電極３９は、四角形状をしており、下部にはホルダー電極３３側に突出する蓋側結合端子３９ｂが一体形成されている。

【００２０】蓋側電極３９の中央のホルダー電極３３側には、半円凸状の蓋側接点３９ｃが形成されている。この実施形態では、ホルダー３１の一側には電池排出口４１が形成されている。この電池排出口４１の上下には、板状の電池保持部材４３がヒンジ部４５を支点として開閉自在に一体形成されている。

【００２１】ホルダー３１の電池排出口４１には、係止用凸部４７が形成されており、この係止用凸部４７が電池保持部材４３に形成される穴部４９に係合されている。上述した電池収納装置では、使用済み電池の新しい電池への交換は以下述べるように行われる。先ず、図３（ａ）に示すようにホルダー３１に嵌合された蓋部材３７をホルダー３１から引き抜くことにより行われ、この状態では使用済み電池３５Ａはホルダー３１に保持されており基板取付端子３３ａからプリント基板５３側に電流が供給されている。

【００２２】次ぎに、図３（ｂ）に示すように蓋部材３７に新しい電池３５Ｂが装着され、蓋部材３７がホルダー３１に挿入される。すると、図３（ｃ）に示すように蓋部材３７の両側の蓋側電極３９に形成された蓋側結合端子３９ｂが、ホルダー３１の両側のホルダー電極３３に形成されたホルダー側結合端子受け３３ｂに接続される。

【００２３】この状態で、蓋部材３７に装着された新しい電池３５Ｂからプリント基板５３に電流が供給され始める。この蓋部材３７のホルダー３１への挿入に連動して、新しい電池３５Ｂにより、使用済み電池３５Ａがホルダー３１の一面に形成された電池排出口４１に押し出されていく。

【００２４】この使用済み電池３５Ａが押し出される力により、電池保持部材４３とホルダー３１の係合が解かれ、電池保持部材４３が開かれる。そして、最後に図３（ｄ）に示すように、蓋部材３７がホルダー３１に完全に挿入されると、使用済み電池３５Ａが新しい電池３５Ｂにより電池排出口４１から完全に排出され、ホルダー３１内に新しい電池３５Ｂが装着され、同時に蓋部材３７とホルダー３１が嵌合され、電池の交換が終了する。

【００２５】以上のように構成された電池収納装置では、蓋側電極３９に蓋側結合端子３９ｂを設け、さらに、ホルダー電極３３にホルダー側結合端子受け３３ｂを設けたので、電池収納装置に収納されている使用済み電池３５Ａを、プリント基板５３に形成される電子回路への供給電流を瞬断することなく、電子回路に安定継続して電流を供給しながら新しい電池３５Ｂに交換することが可能になり、電池交換作業を容易、確実に行うことができる。

【００２６】また、この電池収納装置のみで使用済み電池３５Ａを新しい電池３５Ｂに交換することができるため、コネクター等余分な部品を使用することなく、高密度実装を可能にすることができる。さらに、ホルダー電極３３に基板取付端子３３ａを設けたので、プリント基板５３上に本装置を容易に固定可能であり、かつ、本装置固定と同時に本装置の基板取付端子３３ａとプリント基板５３上のパターンとの導通が可能となり、実装工数を従来よりも大幅に低減することができる。

【００２７】なお、上述した実施形態では、ホルダー電極３３にホルダー側結合端子受け３３ｂを設け、蓋側電極３９に蓋側結合端子３９ｂを設けた例について説明したが、本発明は係る実施形態に限定されるものではなく、ホルダー電極にホルダー側結合端子を設け、蓋側電極に蓋側結合端子受けを設けた電池収納装置でも良い。また、上述した実施形態では、円柱形の電池を例にして説明したが、本発明は係る実施形態に限定されるものではなく、釦形や円盤形または直方体等の電池を収納する電池収納装置でも良い。

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【００２８】

【発明の効果】以上述べたように、請求項１の電池収納装置では、蓋電極に結合端子または結合端子受けを設け、さらに、ホルダー電極に結合端子受けまたは結合端子を設けたので、電池収納装置に収納されている使用済み電池を、電子回路への供給電流を瞬断することなく、電子回路に安定継続して電流を供給しながら新しい電池に交換することが可能になり、電池交換作業を容易、確実に行うことができる。

【００２９】請求項２の電池収納装置では、ホルダーの電池排出側に電池保持部材を設けたので、通常時にはホルダー内に収納されている電池を確実に保持することができる。

【図面の簡単な説明】

【図１】本発明の電池収納装置の一実施形態を示す斜視図である。

【図２】図１の装置のホルダー電極と蓋側電極を示す正面図である。

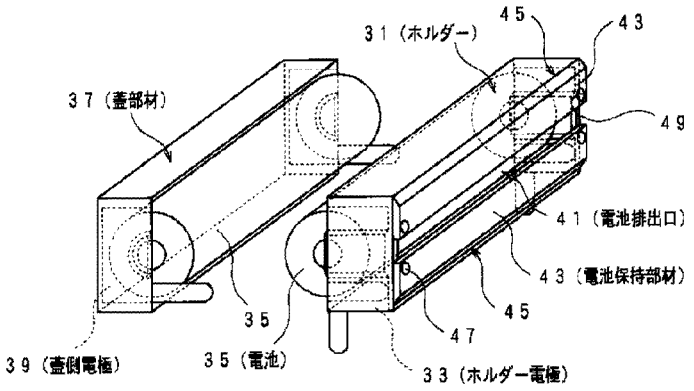
【図３】図１の装置の作用を示す側面図である。

【図４】従来の電池交換方法を示す説明図である。

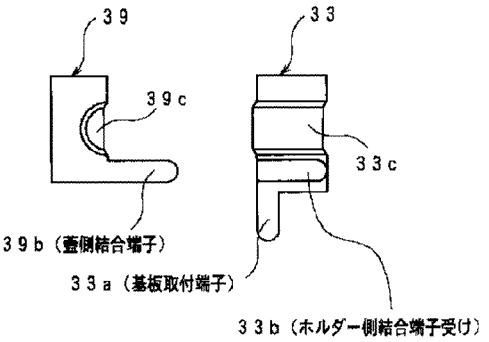
【符号の説明】

３１　ホルダー
３３　ホルダー電極
３３ａ　基板取付端子
３３ｂ　ホルダー側結合端子受け
３５　電池
３７　蓋部材
３９　蓋側電極
３９ｂ　蓋側結合端子
４１　電池排出口
４３　電池保持部材
５３　プリント基板

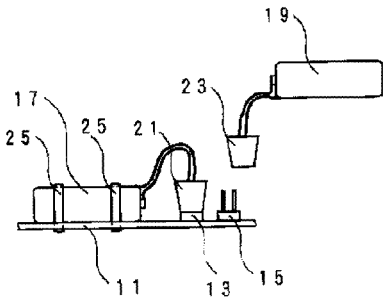
【図１】



【図２】

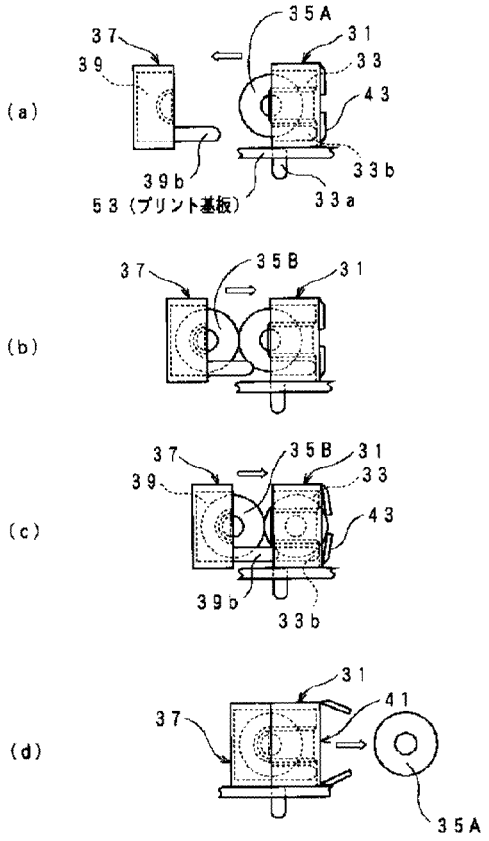


【図４】



Petitioner Therabody Ex-1004, 2105

【図３】



Petitioner Therabody Ex-1004, 2106

Battery cell comprises cell housing, electrode disposed in inner region of housing, and electrolyte material provided between housing and electrode, where cell housing includes cap assembly having housing cover and two battery contacts

Abstract

The battery cell comprises a cell housing, an electrode disposed in an inner region of the housing, and an electrolyte material provided between the housing and the electrode. The cell housing includes a cap assembly having a housing cover and two battery contacts for electrically contacting the battery cell. The battery contact comprises a current collector arranged in an inner region of the cell housing, and a battery terminal arranged in an outer region of the cell housing. The current collector has a recess, and is electrically coupled to the electrode. The battery cell comprises a cell housing, an electrode disposed in an inner region of the housing, and an electrolyte material provided between the housing and the electrode. The cell housing includes a cap assembly having a housing cover and two battery contacts for electrically contacting the battery cell. The battery contact comprises a current collector arranged in an inner region of the cell housing, and a battery terminal arranged in an outer region of the cell housing. The current collector has a recess, and is electrically coupled to the electrode. A portion of the battery terminal is guided through the recess of the current conductor. A welded joint is formed an inner surface of the recess to connect the battery connector with the current collector. Each of the battery contacts comprises two welds (16). The battery contact comprises a cylindrical or conical section facing the inner region of the cell housing. The battery contact further comprises a first and a second connection part (32, 34) made from different materials. The second connection part is connected to current collector. A gasket is arranged between the battery contact and housing cover. An independent claim is included for a method for manufacturing a lid arrangement for battery cell.

Description

- [0001]

  The present invention relates to a battery cell having a cell case, two electrodes forming a cathode and an anode disposed in an inner portion of the cell case, and an electrolyte material disposed in the inner portion of the cell case surrounding the electrodes, the cell case a lid assembly having a housing cover and two battery contacts for electrically contacting the battery cell.

- [0002]

  Furthermore, the present invention relates to a method for producing a cover assembly for a cell housing of a battery cell, wherein the battery cell has two electrodes, which are arranged in an inner region of the cell housing, and an electrolyte material, which is arranged in the inner region of the cell housing and surrounding the electrodes ,

- State of the art
- [0003]

  A battery is an electrochemical energy store and an energy converter. As the battery discharges, stored chemical energy is converted to electrical energy by an electrochemical reaction. The electrical energy can be used by a consumer that is electrically coupled to the battery. In principle, batteries are differentiated between primary and secondary batteries. Primary batteries can only be discharged once and not recharged. In contrast, the secondary batteries are rechargeable. In the following, the term "battery" or "battery cell" is used as a synonym for the secondary battery or secondary cell.

- [0004]

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In motor vehicles, a battery is used, among other things, to supply power to the headlights, the on-board electronics and the starter for starting the internal combustion engine. In electric or hybrid vehicles, the battery additionally serves as an energy store for the electric drive of the motor vehicle. It thus determines significantly the performance and range of the vehicle.

- [0005]

The batteries used in motor vehicles (for example lithium-ion batteries) often have a prismatic shape for reasons of volumetric efficiency. Inside the case is a flat-pressed coil, which is rolled out of an aluminum foil, a copper foil, as well as two plastic foils serving as diaphragms. The aluminum foil and the copper foil are coated with reactive cathode and anode materials. The battery housing is filled with a liquid electrolyte after inserting the coil and before the pressure-tight closure.

- [0006]

The cathode and anode foil of the coil are not precisely matched, but slightly offset one above the other to allow electrical contact between the two films. The contacting of the projecting foil strips takes place with welded strip-shaped sheet metal parts made of copper and / or aluminum, the so-called current collectors. When contacting the above-mentioned current collectors in the interior of the battery case and when carrying out the current paths through the housing in an outer area of the battery cell, various aspects must be considered. Thus, the current paths must first be electrically insulated from the metallic housing. Furthermore, the tightness of the current feed through the housing must be ensured. This refers in particular to the discharge of pressurized, liquid electrolyte. In addition, there is the requirement to be able to apply mechanical loads, in particular transverse forces and bending moments, from the outside to the battery contacts.

- [0007]

To cover these requirements, a plurality of components is used in known battery cells, which produce the electrical contact with the arranged inside the battery cell electrodes. For this purpose, the components are connected to each other by means of a complex combination of rivet, laser welding and friction welding. Usually, the welded connections are arranged on an inner side and an outer side of a housing cover of the cell housing. Changes to the construction of the housing cover are therefore difficult to implement. Due to the large number of components used and the associated rivet, laser welding and Reibschweißverbindungen also has a high sensitivity to errors. Thus, for example, electrolyte material can escape from the battery cell or else the electrical contact with the electrodes can be interrupted. Furthermore, lateral forces can be better absorbed.

- Disclosure of the invention
- [0008]

The present invention therefore provides a battery cell having a cell case, two electrodes disposed in an inner portion of the cell case, and an electrolyte material disposed in the inner portion of the cell case surrounding the electrodes, the cell case having a lid assembly with a case lid and two battery contacts for electrically contacting the battery cell, each of the battery contacts having a current collector arranged in the inner region of the cell housing, which has a recess and is electrically coupled to one of the electrodes, and has a battery terminal arranged at least partially in an outer region of the cell housing one each Section of the battery terminal is guided through the recess of the current collector, wherein on an inner surface of the recess in each case a welded connection is formed to connect the battery terminal with the current collector.

- [0009]

Further, the present invention provides a method for manufacturing a lid assembly for a cell case, a battery cell, the battery cell having two electrodes disposed in an inner portion of the cell case and an electrolyte material disposed in the inner portion of the cell case and surrounding the electrodes. wherein initially a housing cover is provided having an outer

side and an inner side, wherein a battery terminal for electrically contacting the battery cell is provided, wherein the battery terminal is inserted into an opening of the housing cover from the outside, so that a first end of the battery terminal the outer side protrudes and a second end of the battery terminal protrudes on the inside, wherein a current collector is provided, which has a recess and is electrically coupled to one of the electrodes, wherein the current collector at the second end de s battery terminal is mounted from the inside of the housing cover, so that the recess of the current collector at least partially surrounds the second end of the battery terminal, and wherein the current collector and the battery terminal are connected by means of a welded connection, which is formed on an inner surface of the recess.

- Advantages of the invention
- [0010]

  In the battery cell according to the invention only a few components for the electrical contacting of the electrodes are needed. Thus, each of the battery contacts according to the invention has only one battery connection and one current collector, which are connected via a welded connection. Due to the lower complexity of the battery contacts, any necessary changes to the design of the battery contacts can be made easier. In addition, the smaller number of components leads to reduced costs and a reduced susceptibility to failure of the battery cell.

- [0011]

  In addition, the components of the battery contacts are mounted in known battery cells in a direction from an inner side of the housing cover to an outer side of the housing cover and repeatedly welded together.

- [0012]

  In contrast, the machining direction is reversed in the manufacture of the lid assembly according to the invention. According to the inventive method, the components of the battery contacts (battery terminal, current

conductor) are mounted in a direction from an outer side of the housing cover to an inner side of the housing cover. Subsequently, the components are welded together from the inside of the housing cover. This reversal of the machining direction is technically feasible since the manufacture of the cover assembly is carried out as an upstream process for the complete assembly of the battery cell. The applied method thus leads to a simple and cost-effective installation of the components of the battery contacts.

- [0013]

  In this case, the battery terminal and the current conductor, which are used for contacting the positive electrode, for example made of aluminum. By contrast, the components (battery connection, current conductor) for contacting the negative electrode are made of copper, for example. By using the same materials for the respective battery connection and current collector, the components can be reliably connected to one another in a simple manner.

- [0014]

  In a preferred embodiment, each of the battery contacts has a maximum of two welded joints.

- [0015]

  Due to the small number of components that are used for the battery contact according to the invention, a maximum of two welded joints are required to make the battery contact. This leads to increased mechanical stability and greater reliability of the battery cell. Furthermore, the battery cell can be made simpler and therefore cheaper.

- [0016]

  In a further embodiment, the battery connection has a conical section on its end facing the inner region of the cell housing.

- [0017]

The conical section, which tapers towards the end of the battery connection, allows the current collector to be simply pressed onto the battery connection. This additionally increases the mechanical stability of the connection between the current conductor and the battery connection.

- [0018]

  In an alternative embodiment, the battery connection has a cylindrical section at its end facing the inner region of the cell housing.

- [0019]

  According to a further embodiment, the battery connection has a first and a second connection part, which are made of different materials, wherein the second connection part is connected by means of the welded connection to the current conductor, and wherein the first and the second connection part are connected by means of a second welded connection.

- [0020]

  By way of example, the first connection part can be made of aluminum and the second connection part can be made of copper. This embodiment of the battery contacts is used, for example, for contacting the negative electrode. Since the current arrester coupled to the negative electrode is usually made of copper, the welded connection between the current conductor and the second terminal part of the battery terminal can be carried out on identical materials. This leads to a reliable welded connection between these components.

- [0021]

  In a further embodiment, the current conductor is a bent sheet metal part.

- [0022]

  Bending allows the current arrester to be easily manufactured.

- [0023]

According to a further embodiment, a sealing ring is arranged between the battery connection and the housing cover.

- [0024]

  The sealing ring ensures that even a pressurized electrolyte material can not escape from the cell housing. In addition, the sealing ring assumes an insulation function. The sealing ring thus isolates the current-carrying battery connection against the cell housing. In addition, the sealing ring is used for the absorption of transverse forces, which are exerted on the battery contacts from the outside.

- [0025]

  According to a preferred embodiment of the method according to the invention, the battery terminal and the current conductor are manufactured in such a way that a press fit is formed when the current conductor is attached to the battery terminal.

- [0026]

  Due to the interference fit, the current conductor is fixed to the battery connection. Subsequently, the interference fit is additionally secured by the welded joint. This results in a very stable connection between the current conductor and the battery connection. This reduces the sensitivity of the battery contacts to mechanical loads or forces. This leads to a high reliability of the battery cell produced according to the invention.

- [0027]

  According to a further embodiment of the method, the current conductor and the battery terminal are connected by laser welding.

- [0028]

  The laser welding process creates a reliable and durable connection between the current collector and the battery connector. The laser welding

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process is carried out at a very high speed and high power in order not to damage a sealing element / a sealing ring, which is arranged for example between the battery connection and the housing cover, by an excessive thermal load. In this case, using the laser welding preferably components with the same material materials are connected to each other (for example, aluminum-aluminum, copper-copper). However, it is also possible to connect components made of different materials (for example, aluminum-copper) by laser welding.

- [0029]

  In a further embodiment of the method, the battery connection is produced by extrusion.

- [0030]

  In extrusion molding, by simply changing the extrusion die, different terminal geometries of the battery terminal can be made (eg, thread, tenon, quadrilateral). This allows the use of different technologies for contacting the battery cells with each other or for connecting a consumer to the battery cell (for example, screws, welding, clamps).

- [0031]

  According to a further embodiment of the method, the provision of the battery connection comprises the provision of a first and second connection part and a connection of the first connection part and the second connection part by means of a second welded connection.

- [0032]

  By dividing the battery connection into a first and second connection part different materials for the two connection parts can be used. In particular, it can thus be ensured that the same materials are connected to one another in the laser welding process between the battery terminal and the current conductor. If, for example, the current conductor is designed to make contact with the negative electrode in copper, then the second

terminal part of the battery terminal can also be made in copper in order to enable a similar laser welding connection. For the first connection part of the battery connection, for example aluminum can be selected in this embodiment. This measure therefore leads to increased flexibility in the choice of material for the battery connection.

- [0033]

  In a further embodiment of the method, the first connection part and the second connection part are connected by friction welding.

- [0034]

  By friction welding, for example, the first connection part in aluminum and the second connector part are made in copper. Thus, the subsequent laser welding connection can be performed on similar materials. By means of the friction-welded connection, a reliable connection is made between the first and the second connection part. This leads to a high mechanical stability of the battery contact according to the invention.

- [0035]

  Alternatively, ultrasonic welding can also be used.

- [0036]

  It is understood that the features, properties and advantages of the device according to the invention also apply or can be applied correspondingly to the method according to the invention.

- Brief description of the drawings
- [0037]

  1 shows in schematic form an embodiment of a cover assembly according to the invention for a cell housing of a battery cell;

- [0038]

2 shows several embodiments of a battery terminal according to the invention for contacting a positive electrode of the battery cell;

- [0039]

  3 shows several embodiments of a battery terminal according to the invention for contacting a negative electrode of the battery cell; and

- [0040]

  4 shows a diagram for explaining an embodiment of a method according to the invention.

- Embodiments of the invention
- [0041]

  In 1 is in schematic form an embodiment of a lid assembly according to the invention 10 for a cell housing 12 one in 1 unspecified battery cell shown. The cell case 12 has an in 1 only hinted housing container 14 in which, for example, a positive electrode, a negative electrode and an electrolyte material are arranged. In a mounted state of the battery cell is the lid assembly 10 by means of welds 16 with the housing container 14 connected. The cell case 12 is thus closed.

- [0042]

  The lid arrangement 10 has a housing cover 18 and two battery contacts 20 for electrically contacting the battery cell. Here is the battery contact 20a in a mounted state of the battery cell with the positive electrode and the battery contact 20b electrically coupled to the negative electrode of the battery cell.

- [0043]

  The cell case 12 is at the bushings of the battery contacts 20 through the housing cover 18 using sealing elements / sealing rings 22 sealed. Thus, for example, prevents electrolyte material from the cell housing 12 exit. In addition, the battery contacts 20 using the sealing rings 22 opposite the

housing cover 18 electrically isolated. Furthermore, the sealing rings serve 22 for receiving mechanical loads, for example, from an outside of the cell housing 12 on the battery contacts 20 be exercised.

- [0044]

  Each of the battery contacts 20 has one in an interior of the cell housing 12 arranged current conductor 24 and at least partially in the exterior of the cell housing 12 arranged battery connection 26 on. The current collector 24a is electrically coupled to the positive electrode in a mounted state of the battery cell. Analogous is the current conductor 24b electrically coupled to the negative electrode of the battery cell. The current collector 24 are preferably designed as sheet metal parts. Here is the current conductor 24a for example, aluminum and the current conductor 24b made of copper.

- [0045]

  The current collector 24 each have a recess 28 into which the associated battery connection 26 is introduced. On an inner surface of the recess 28 is in each case a laser welding connection 30 formed around the battery connector 26 with the current collector 24 connect to.

- [0046]

  In this embodiment, assume that the battery terminal 26a made of aluminum. As is the current collector 24a Made of aluminum, the laser weld joint 30a between two components (current conductor 24a , Battery connection 26a), which have the same materials are executed. A laser welding connection for dissimilar materials is possible, but the laser welding process is preferably used for the connection of similar materials. For example, if an external contact of the battery terminal 26b be made in aluminum, so there is the possibility of the battery connection 26b form as a two-part battery connection. This indicates the battery connection 26b a first connection part 32 and a second connection part 34 on. The first connection part 32 is then for example made of aluminum and the second

connection part 34 made of copper. The first connection part 32 is by means of a friction-welded connection 36 with the second connection part 34 connected. Due to this construction of the battery connection 26b can the laser welding connection 30b that the current conductor 24b and the second connection part 34 connecting with each other, be carried out for similar materials.

- [0047]

  From the above-described construction of the lid assembly 10 It can be seen that only very few components for contacting the electrodes of the battery cell are necessary. As a result, the battery contact 20a For example, only one laser welding connection 30a on. Also the battery contact 20b only has the laser welding connection 30b and the friction-welded connection 36 on. Due to the maximum of two welded joints, for each of the battery contacts 20 are needed, a high mechanical stability of the battery contacts 20 reached. The reliability of the battery cell is increased.

- [0048]

  By the inventive arrangement of the welds 30 . 36 becomes a very simple assembly of the lid assembly 10 allows. This can reduce the cost of manufacturing the battery cell. Because the welds 30 . 36 on an inside of the lid assembly 10 can be arranged, design changes for the lid assembly 10 be implemented more easily. This increases the flexibility in the design of the lid assembly 10 ,

- [0049]

  2 shows several embodiments of the battery connector 26a for contacting the positive electrode of the battery cell. The battery connection 26a is preferably produced by extrusion. This can be realized by changing the extrusion tool different connection geometries. For example, the battery connector 26a provided with a thread or a pin or in square shape. This allows the use of different technologies for contacting the battery cells with

each other or for contacting a consumer. For example, it is possible to make contact via screwing, welding or clamping.

- [0050]

  In addition, the battery connection 26a and the current collector 24a preferably made so that when plugging the Stromableiters 24a on the battery connection 26a forms a press fit. This is indicated by the battery connection 26a advantageously a conical section 38a on. This can be achieved by simply pressing on the current conductor 24a on the battery connection 26a a good fixation or pre-fixation between these two components can be achieved.

- [0051]

  3 shows several embodiments of the battery terminal according to the invention 26b for contacting the negative electrode of the battery cell. Analogous to the battery connection 26a also becomes the battery connection 26b preferably produced by extrusion, in order to realize different connection geometries. Unlike the battery connection 26a is the battery connection 26b either in one piece or in two parts (first connection part 32 , second connection part 34).

- [0052]

  In the two-part embodiment, the first connection part 32 and the second connection part 34 by means of friction welding connection 36 connected. The two-part embodiment allows flexible adaptation of the materials of the first connection part 32 and the second connector 34 to the respective requirements. For example, the material and the connection geometry of the first connection part 32 be selected depending on the desired connection technology for contacting an external consumer. By contrast, the material selection is based on the second connection part 34 on the type of connection to the current conductor 24b , In one embodiment, the second connector part 34 made of copper. Is the current conductor 24b also made of copper, so the laser welding connection 30b be

carried out between similar materials. As material for the first connection part 32 For example, aluminum can be chosen.

- [0053]

  Analogous to the battery connection 26a also indicates the battery connection 26b a conical section 38b on to when pressing the current conductor 24b on the battery connection 26b To obtain a good mechanical fixation between these two components.

- [0054]

  In 4 is a diagram for explaining an embodiment of a method according to the invention 40 shown. The procedure 40 serves for producing the lid assembly 10 that form part of the cell housing 12 forms the battery cell. The manufacture of the lid assembly 10 is preferably carried out as a pre-process to the final assembly of the battery cell, wherein the lid assembly 10 over the welds 16 with the housing container 14 is connected.

- [0055]

  In a first step 42 First, the housing cover 18 and the battery connections 26 provided. In this embodiment, the battery terminal is 26a in one piece and the battery connection 26b executed in two parts. For making the battery connection 26b first becomes the first connection part 32 and the second connection part 34 provided. Subsequently, the first connection part 32 and the second connection part 34 by means of friction welding connection 36 connected. This will be the battery connection 26a and the first connection part 32 made of aluminum and the second connection part 34 made of copper.

- [0056]

  In addition, in the first step 42 of the procedure 40 the current conductors 24 provided. The current collector 24a For example, it is made of aluminum and the current conductor 24b made of copper. Preferably, the battery connections 26 produced by extrusion.

- [0057]

  In one step 44 become the battery connections 26 including the sealing rings 22 from an outside into corresponding openings of the housing cover 18 introduced. In each case, a first end of the battery connections protrudes 26 on the outside and a second end of the battery connections 26 on an inside of the housing cover 18 out.

- [0058]

  In a further step 46 become the current conductors 24 from the inside of the housing cover 18 on the conical section 38 the respective battery connections 26 pressed. This surrounds the recesses 28 the current conductor 24 the second end of the respective associated battery terminals 26 ,

- [0059]

  In one step 48 become the current conductors 24 and the battery connections 26 by means of laser welding connections 30 connected to create a reliable and durable connection between these components. The laser welding process is carried out at a high speed and high power around the inner sealing rings 22 thermally harmless.

- [0060]

  In the production method according to the invention 40 becomes the mounting order / machining direction in the assembly of the lid assembly 10 vice versa compared to known methods. Thus, in known methods, the individual components are mounted from an inner side of a housing cover to an outer side of the housing cover and welded together.

- [0061]

  According to the method of the invention 40 become the components of the battery contacts 20 from the outside of the housing cover 18 to the inside of the housing cover 18 assembled. Subsequently, the current

conductors 24 and the battery connections 26 welded from the inside. This is technically feasible, since the assembly of the lid assembly 10 is executed as a pre-process.

- [0062]

  Using the method according to the invention 40 may be the number of components and the associated complexity of the lid assembly 10 be reduced. This eventually leads to a low error sensitivity of the battery cell.

- [0063]

  Although thus a preferred embodiment of the manufacturing method according to the invention 40 and a cover assembly thus produced 10 It has been shown that various modifications and changes can be made without departing from the scope of the invention.

- [0064]

  For example, both battery connections 26 be made in one piece or two parts.

- [0065]

  In addition, for the battery connections 26 Any other materials are used.

Claims

1. Battery cell, comprising: - a cell housing (12), Two electrodes located in an inner area of the cell housing (12) are arranged, and - an electrolyte material, which in the interior of the cell housing (12) and surrounds the electrodes, wherein the cell housing (12) a lid assembly (10) with a housing cover (18) and two battery contacts (20) for electrically contacting the battery cell, each of the battery contacts (20) one in the interior of the cell housing (12) arranged current conductor (24), which has a recess (28) and is electrically coupled to one of the electrodes, and at least partially in an outer region of the cell housing (12) arranged battery connection (26), wherein in each case a portion of the battery terminal (26) through the recess (28) of the current

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conductor (24) is guided, wherein on an inner surface of the recess (28) each have a welded connection (30) is formed around the battery connector (26) with the current conductor (24) connect to.

2. A battery cell according to claim 1, wherein each of the battery contacts (20) a maximum of two welded joints (30 . 36) having.
3. Battery cell according to claim 1 or 2, wherein the battery connection (26) at its inner area of the cell housing (12) facing end has a cylindrical portion.
4. Battery cell according to claim 1 or 2, wherein the battery connection (26) at its inner area of the cell housing (12) end facing a conical section (38) having.
5. Battery cell according to one of claims 1 to 4, wherein the battery connection (26) a first and a second connector part (32 . 34), which are made of different materials, wherein the second connecting part (34) by means of the welded connection (30) with the current conductor (24), and wherein the first and the second Connection part (32 . 34)) by means of a second welded joint (36) are connected.
6. Battery cell according to one of claims 1 to 5, wherein the current conductor (24) is a bent sheet metal part.
7. Battery cell according to one of claims 1 to 6, wherein between the battery terminal (26) and the housing cover (18) a sealing ring (22) is arranged.

8. Procedure (40) for producing a cover assembly (10) for a cell housing (12) of a battery cell, wherein the battery cell has two electrodes which are located in an inner region of the cell housing (12) are arranged, and an electrolyte material, which in the interior of the cell housing (12) and surrounding the electrodes, wherein the method (40) comprises the steps: - providing a housing cover (18) having an outer side and an inner side, - providing a battery connection (26) for electrical contacting of the battery cell, - insertion of the battery connection (26) in an opening of the housing cover (18) from the outside so that a first end of the battery connector (26) protrudes on the outside and that a second end of the battery connector (26) protrudes on the inside, - providing a current conductor (24), which has a recess (28) and can be electrically coupled to one of the electrodes, - attaching the current conductor (24) at the second end of the battery connector (26) from the inside of the housing cover (18), so that the recess (28) of the current conductor (24) the second end of the battery connector (26) at least partially surrounds, and - connecting the Stromableiters (24) and the battery connection (26) by means of a welded connection (30), which on an inner surface of the recess (28) is formed.

9. Method according to claim 8, wherein the battery connection (26) and the current conductor (24) are manufactured so that when attaching the current conductor (24) on the battery connector (26) forms a press fit.
10. Method according to claim 8 or 9, wherein the current conductor (24) and the battery connector (26) are connected by laser welding.

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11. Method according to one of claims 8 to 10, wherein the battery connection (26) is produced by extrusion.
12. Method according to one of claims 8 to 11, wherein the provision of the battery connection (26) comprises the following steps: - providing a first and second connection part (32 . 34)), and - connecting the first connection part (32) and the second connection part (34) by means of a second welded connection (36).
13. Method according to claim 12, wherein the first connection part (32) and the second connection part (34) are connected by friction welding.
14. Method according to claim 12, wherein the first connection part (32) and the second connection part (34) are connected by ultrasonic welding.

Drawings

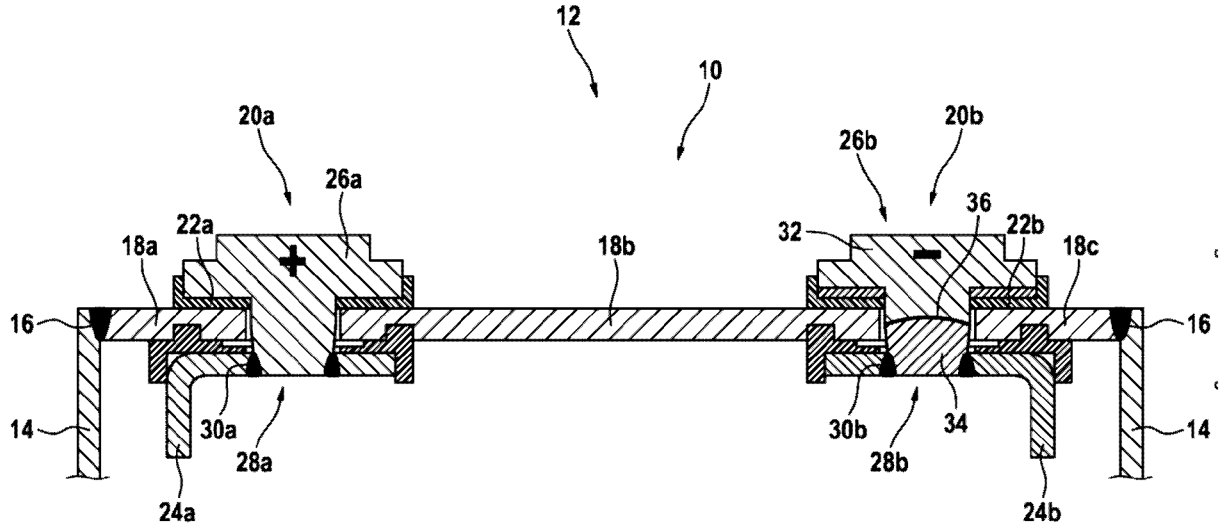


FIG. 1

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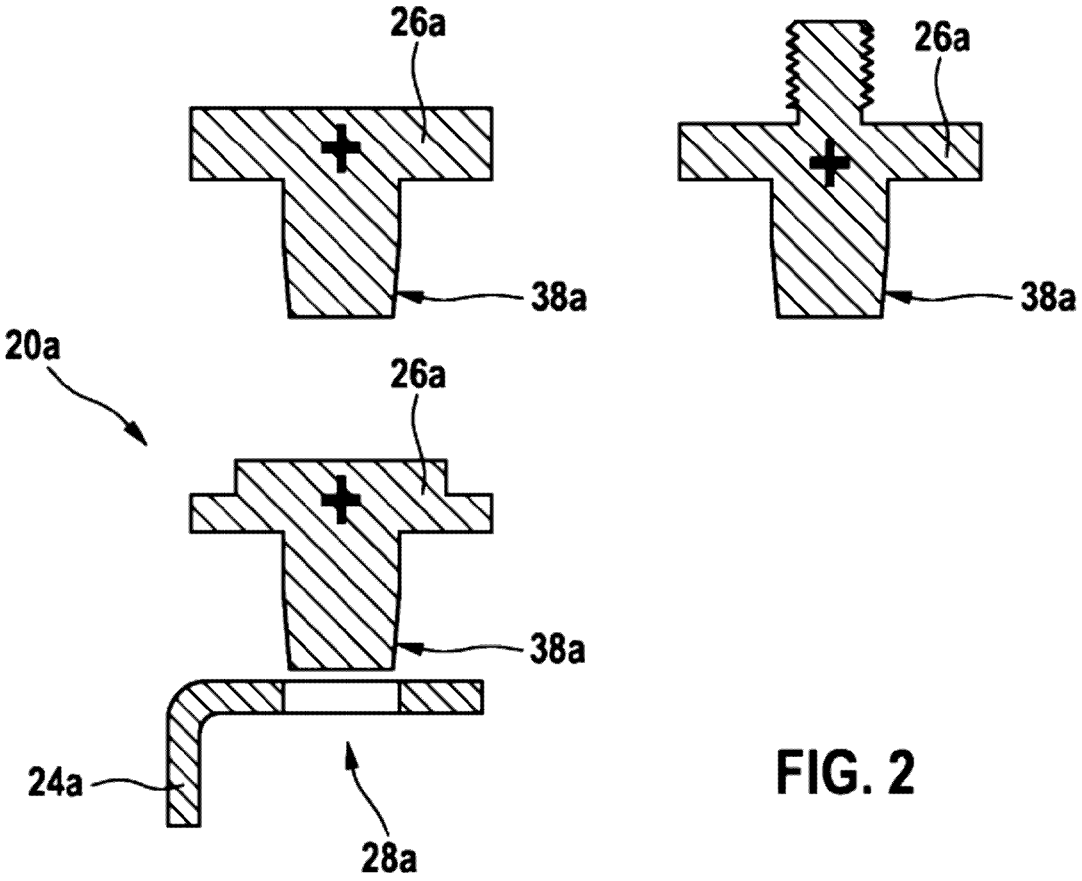


FIG. 2

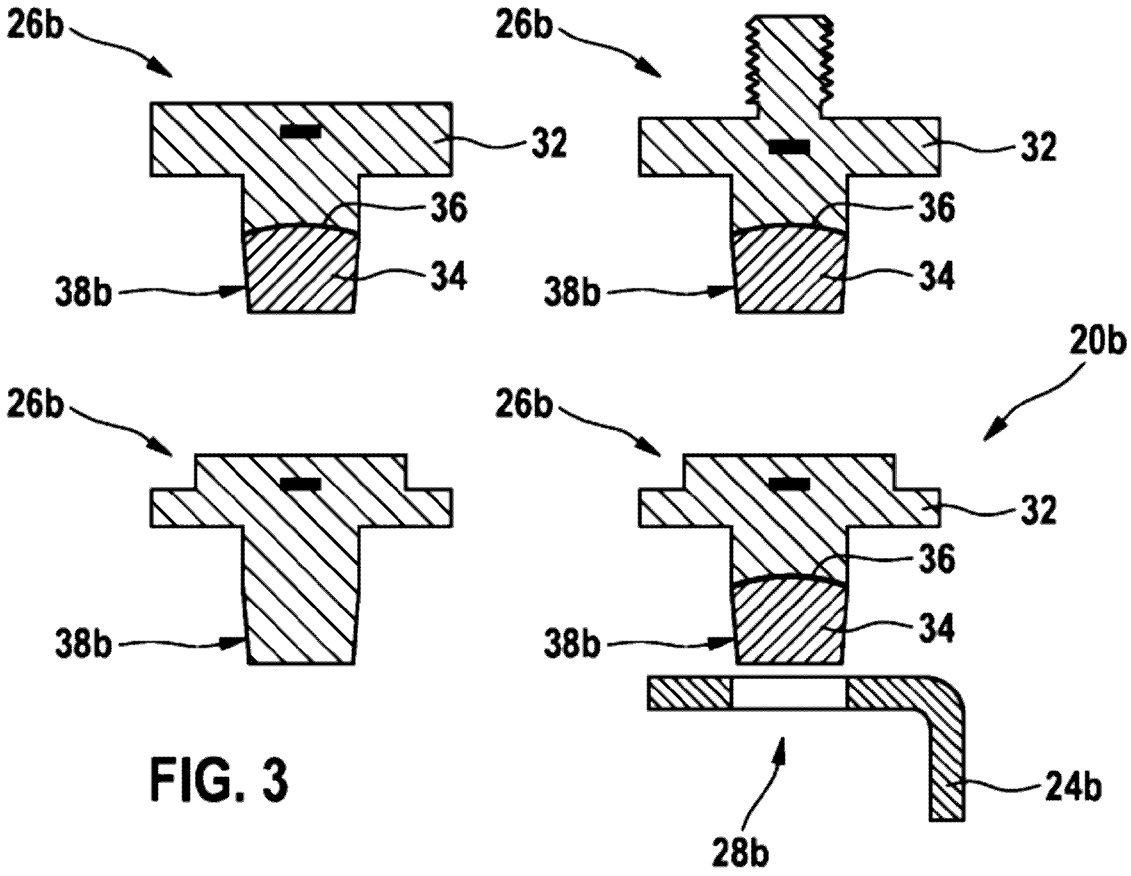

26b
32
36
38b
34
26b
32
36
38b
34
20b
26b
32
36
38b
34
26b
38b
24b
28b

FIG. 3

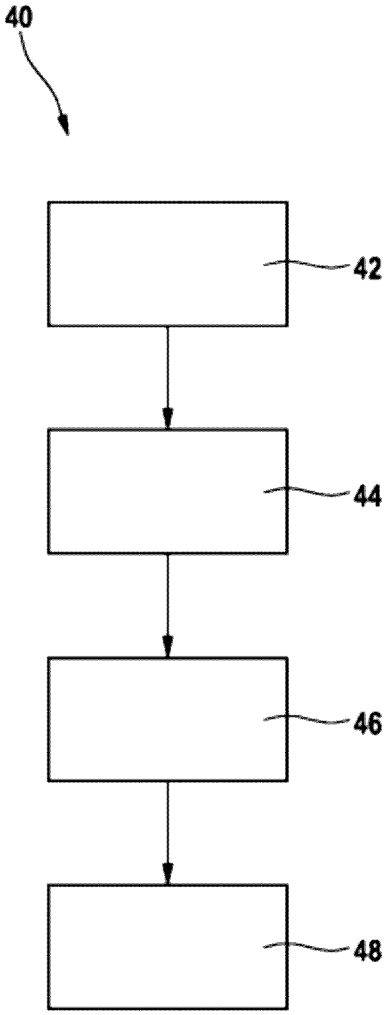


FIG. 4

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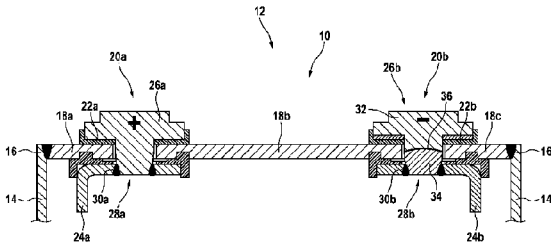
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(54) Bezeichnung: **Batteriezelle und Verfahren zum Herstellen einer Deckelanordnung der Batteriezelle**

(57) Zusammenfassung: Die Erfindung betrifft eine Batteriezelle mit einem Zellgehäuse (12), zwei Elektroden, die in einem Innenbereich des Zellgehäuses (12) angeordnet sind, und einem Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses (12) angeordnet ist und die Elektroden umgibt, wobei das Zellgehäuse (12) eine Deckelanordnung (10) mit einem Gehäusedeckel (18) und zwei Batteriekontakten (20) zur elektrischen Kontaktierung der Batteriezelle aufweist, wobei jeder der Batteriekontakte (20) einen in dem Innenbereich des Zellgehäuses (12) angeordneten Stromableiter (24), der eine Ausnehmung (28) aufweist und mit einer der Elektroden elektrisch gekoppelt ist, und einen zumindest teilweise in einem Außenbereich des Zellgehäuses (12) angeordneten Batterieanschluss (26) aufweist, wobei jeweils ein Abschnitt des Batterieanschlusses (26) durch die Ausnehmung (28) des Stromableiters (24) geführt ist, wobei an einer Innenfläche der Ausnehmung (28) jeweils eine Schweißverbindung (30) gebildet ist, um den Batterieanschluss (26) mit dem Stromableiter (24) zu verbinden.



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Beschreibung

[0001] Die vorliegende Erfindung betrifft eine Batteriezelle mit einem Zellgehäuse, zwei Elektroden, die eine Kathode und eine Anode bilden, die in einem Innenbereich des Zellgehäuses angeordnet sind, und einem Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses angeordnet ist und die Elektroden umgibt, wobei das Zellgehäuse eine Deckelanordnung mit einem Gehäusedeckel und zwei Batteriekontakten zur elektrischen Kontaktierung der Batteriezelle aufweist.

[0002] Ferner betrifft die vorliegende Erfindung ein Verfahren zum Herstellen einer Deckelanordnung für ein Zellgehäuse einer Batteriezelle, wobei die Batteriezelle zwei Elektroden, die in einem Innenbereich des Zellgehäuses angeordnet sind, und ein Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses angeordnet ist und die Elektroden umgibt, aufweist.

Stand der Technik

[0003] Eine Batterie ist ein elektrochemischer Energiespeicher und ein Energiewandler. Bei einer Entladung der Batterie wird gespeicherte chemische Energie durch eine elektrochemische Reaktion in elektrische Energie umgewandelt. Die elektrische Energie kann von einem Verbraucher, der mit der Batterie elektrisch gekoppelt ist, genutzt werden. Prinzipiell wird bei Batterien unterschieden zwischen Primär- und Sekundärbatterien. Primärbatterien können nur einmal entladen und nicht wieder aufgeladen werden. Dagegen sind die Sekundärbatterien wiederaufladbar. Im Folgenden wird der Begriff "Batterie" bzw. "Batteriezelle" als Synonym für die Sekundärbatterie bzw. Sekundärzelle verwendet.

[0004] In Kraftfahrzeugen dient eine Batterie unter anderem dazu, Strom für die Scheinwerfer, die Bordelektronik und für den Anlasser zum Starten des Verbrennungsmotors zu liefern. In Elektro- oder Hybridfahrzeugen dient die Batterie zusätzlich als Energiespeicher für den elektrischen Antrieb des Kraftfahrzeugs. Sie bestimmt damit maßgeblich die Leistungsfähigkeit und die Reichweite des Fahrzeugs.

[0005] Die in Kraftfahrzeugen eingesetzten Batterien (zum Beispiel Lithium-Ionen-Akkus) weisen aus Gründen des Volumennutzwertes oftmals eine prismatische Form auf. Im Inneren des Gehäuses befindet sich ein flachgepresster Wickel, der aus einer Aluminiumfolie, einer Kupferfolie, sowie zwei als Diaphragmen dienenden Kunststofffolien gerollt wird. Dabei sind die Aluminiumfolie und die Kupferfolie mit reaktiven Kathoden- und Anodenstoffen beschichtet. Das Akkugehäuse wird nach Einbringen des Wickels und vor dem druckdichten Verschluss mit einem flüssigen Elektrolyten befüllt.

[0006] Die Kathoden- und Anodenfolie des Wickels werden nicht passgenau, sondern leicht versetzt übereinander gelegt, um eine elektrische Kontaktierung der beiden Folien zu ermöglichen. Die Kontaktierung der überstehenden Folienstreifen erfolgt mit angeschweißten streifenförmigen Blechteilen aus Kupfer und/oder Aluminium, den sogenannten Stromkollektoren. Bei der Kontaktierung der oben genannten Stromkollektoren im Inneren des Akkugehäuses und bei der Durchführung der Strompfade durch das Gehäuse in einen Außenbereich der Batteriezelle sind verschiedene Aspekte zu beachten. So müssen die Strompfade zunächst gegenüber dem metallischen Gehäuse elektrisch isoliert werden. Des Weiteren muss die Dichtheit der Stromdurchführung durch das Gehäuse sichergestellt werden. Dies bezieht sich insbesondere auf den Austritt von unter Druck stehendem, flüssigem Elektrolyt. Außerdem besteht die Forderung, mechanische Lasten, insbesondere Querkräfte und Biegemomente, von außen auf die Batteriekontakte aufbringen zu können.

[0007] Für die Abdeckung dieser Anforderungen wird bei bekannten Batteriezellen eine Vielzahl von Bauteilen eingesetzt, die den elektrischen Kontakt zu den im Inneren der Batteriezelle angeordneten Elektroden herstellen. Dazu werden die Bauteile mittels einer komplexen Kombination aus Niet-, Laserschweiß- und Reibschweißverbindungen miteinander verbunden. Üblicherweise sind die Schweißverbindungen an einer Innenseite und einer Außenseite eines Gehäusedeckels des Zellgehäuses angeordnet. Änderungen an der Konstruktion des Gehäusedeckels sind damit nur schwer umsetzbar. Durch die Vielzahl der verwendeten Bauteile und der damit verbundenen Niet-, Laserschweiß- und Reibschweißverbindungen besteht außerdem eine hohe Fehlerempfindlichkeit. So kann beispielsweise Elektrolytmaterial aus der Batteriezelle austreten oder auch die elektrische Kontaktierung zu den Elektroden unterbrochen werden. Ferner können Querkräfte besser aufgenommen werden.

Offenbarung der Erfindung

[0008] Die vorliegende Erfindung stellt daher eine Batteriezelle mit einem Zellgehäuse, zwei Elektroden, die in einem Innenbereich des Zellgehäuses angeordnet sind, und einem Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses angeordnet ist und die Elektroden umgibt, bereit, wobei das Zellgehäuse eine Deckelanordnung mit einem Gehäusedeckel und zwei Batteriekontakten zur elektrischen Kontaktierung der Batteriezelle aufweist, wobei jeder der Batteriekontakte einen in dem Innenbereich des Zellgehäuses angeordneten Stromableiter, der eine Ausnehmung aufweist und mit einer der Elektroden elektrisch gekoppelt ist, und einen zumindest teilweise in einem Außenbereich des Zellgehäuses angeordneten Batterieanschluss aufweist, wobei jeweils ein Ab-

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schnitt des Batterieanschlusses durch die Ausnehmung des Stromableiters geführt ist, wobei an einer Innenfläche der Ausnehmung jeweils eine Schweißverbindung gebildet ist, um den Batterieanschluss mit dem Stromableiter zu verbinden.

[0009] Ferner stellt die vorliegende Erfindung ein Verfahren zum Herstellen einer Deckelanordnung für ein Zellgehäuse eine Batteriezelle bereit, wobei die Batteriezelle zwei Elektroden, die in einem Innenbereich des Zellgehäuses angeordnet sind, und ein Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses angeordnet ist und die Elektroden umgibt, aufweist, wobei zunächst ein Gehäusedeckel bereitgestellt wird, der eine Außenseite und eine Innenseite aufweist, wobei ein Batterieanschluss zur elektrischen Kontaktierung der Batteriezelle bereitgestellt wird, wobei der Batterieanschluss in eine Öffnung des Gehäusedeckels von der Außenseite eingeführt wird, so dass ein erstes Ende des Batterieanschlusses an der Außenseite herausragt und ein zweites Ende des Batterieanschlusses an der Innenseite herausragt, wobei ein Stromableiter bereitgestellt wird, der eine Ausnehmung aufweist und mit einer der Elektroden elektrisch koppelbar ist, wobei der Stromableiter an dem zweiten Ende des Batterieanschlusses von der Innenseite des Gehäusedeckels angebracht wird, so dass die Ausnehmung des Stromableiters das zweite Ende des Batterieanschlusses zumindest teilweise umgibt, und wobei der Stromableiter und der Batterieanschluss mittels einer Schweißverbindung verbunden werden, die an einer Innenfläche der Ausnehmung gebildet wird.

Vorteile der Erfindung

[0010] Bei der erfindungsgemäßen Batteriezelle werden nur wenige Bauteile für die elektrische Kontaktierung der Elektroden benötigt. So weist jeder der erfindungsgemäßen Batteriekontakte lediglich einen Batterieanschluss und einen Stromableiter auf, die über eine Schweißverbindung verbunden sind. Aufgrund der geringeren Komplexität der Batteriekontakte können eventuell erforderliche Änderungen an der Konstruktion der Batteriekontakte einfacher vorgenommen werden. Außerdem führt die geringere Anzahl an Bauteilen zu reduzierten Kosten und zu einer reduzierten Fehleranfälligkeit der Batteriezelle.

[0011] Darüber hinaus werden die Bauteile der Batteriekontakte bei bekannten Batteriezellen in einer Richtung von einer Innenseite des Gehäusedeckels zu einer Außenseite des Gehäusedeckels montiert und mehrfach miteinander verschweißt.

[0012] Demgegenüber wird die Bearbeitungsrichtung bei der Herstellung der erfindungsgemäßen Deckelanordnung umgekehrt. Gemäß dem erfindungsgemäßen Verfahren werden die Bauteile der Batteriekontakte (Batterieanschluss, Stromableiter) in einer Richtung von einer Außenseite des Gehäusedeckels zu einer Innenseite des Gehäusedeckels montiert. Anschließend werden die Bauteile von der Innenseite des Gehäusedeckels miteinander verschweißt. Diese Umkehrung der Bearbeitungsrichtung ist technisch realisierbar, da die Herstellung der Deckelanordnung als vorgelagerter Prozess zu der kompletten Montage der Batteriezelle ausgeführt wird. Das angewandte Verfahren führt somit zu einer einfachen und kostengünstigen Montage der Bauteile der Batteriekontakte.

[0013] Dabei werden der Batterieanschluss und der Stromableiter, die für die Kontaktierung der positiven Elektrode eingesetzt werden, beispielsweise aus Aluminium gefertigt. Dagegen sind die Bauteile (Batterieanschluss, Stromableiter) zur Kontaktierung der negativen Elektrode beispielsweise aus Kupfer hergestellt. Durch die Verwendung gleicher Materialien für den jeweiligen Batterieanschluss und Stromableiter können die Bauteile auf einfache Art und Weise zuverlässig miteinander verbunden werden.

[0014] In einer bevorzugten Ausführungsform weist jeder der Batteriekontakte maximal zwei Schweißverbindungen auf.

[0015] Aufgrund der geringen Anzahl von Bauteilen, die für den erfindungsgemäßen Batteriekontakt verwendet werden, werden maximal zwei Schweißverbindungen benötigt, um den Batteriekontakt herzustellen. Dies führt zu einer erhöhten mechanischen Stabilität und zu einer größeren Zuverlässigkeit der Batteriezelle. Des Weiteren kann die Batteriezelle einfacher und damit kostengünstiger hergestellt werden.

[0016] In einer weiteren Ausführungsform weist der Batterieanschluss an seinem dem Innenbereich des Zellgehäuses zugewandten Ende einen konischen Abschnitt auf.

[0017] Durch den konischen Abschnitt, der sich zum Ende des Batterieanschlusses verjüngt, kann der Stromableiter einfach auf den Batterieanschluss aufgepresst werden. Damit wird die mechanische Stabilität der Verbindung zwischen dem Stromableiter und dem Batterieanschluss zusätzlich erhöht.

[0018] In einer alternativen Ausführungsform weist der Batterieanschluss an seinem dem Innenbereich des Zellgehäuses zugewandten Ende einen zylindrischen Abschnitt auf.

[0019] Gemäß einer weiteren Ausführungsform weist der Batterieanschluss einen ersten und einen zweiten Anschlussteil auf, die aus unterschiedlichen Werkstoffen gefertigt sind, wobei der zweite Anschlussteil mittels der Schweißverbindung mit dem Stromableiter verbunden ist, und wobei der ers-

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te und der zweite Anschlussteil mittels einer zweiten Schweißverbindung verbunden sind.

[0020] Beispielsweise kann der erste Anschlussteil aus Aluminium und der zweite Anschlussteil aus Kupfer gefertigt sein. Diese Ausführungsform der Batteriekontakte wird beispielsweise für eine Kontaktierung der negativen Elektrode verwendet. Da der mit der negativen Elektrode gekoppelte Stromableiter üblicherweise aus Kupfer hergestellt ist, kann die Schweißverbindung zwischen dem Stromableiter und dem zweiten Anschlussteil des Batterieanschlusses an artgleichen Werkstoffen ausgeführt werden. Dies führt zu einer zuverlässigen Schweißverbindung zwischen diesen Bauteilen.

[0021] In einer weiteren Ausführungsform ist der Stromableiter ein Blechbiegeteil.

[0022] Mithilfe eines Biegevorgangs kann der Stromableiter auf einfache Art und Weise hergestellt werden.

[0023] Gemäß einer weiteren Ausführungsform ist zwischen dem Batterieanschluss und dem Gehäusedeckel ein Dichtring angeordnet.

[0024] Der Dichtring stellt sicher, dass selbst ein unter Druck stehendes Elektrolytmaterial nicht aus dem Zellgehäuse austreten kann. Darüber hinaus übernimmt der Dichtring eine Isolationsfunktion. So isoliert der Dichtring den stromführenden Batterieanschluss gegen das Zellgehäuse. Außerdem wird der Dichtring für die Aufnahme von Querkräften eingesetzt, die von außen auf die Batteriekontakte ausgeübt werden.

[0025] Gemäß einer bevorzugten Ausführungsform des erfindungsgemäßen Verfahrens werden der Batterieanschluss und der Stromableiter so gefertigt, dass sich beim Anbringen des Stromableiters an den Batterieanschluss eine Presspassung bildet.

[0026] Durch die Presspassung wird der Stromableiter an dem Batterieanschluss fixiert. Anschließend wird die Presspassung durch die Schweißverbindung zusätzlich abgesichert. Damit ergibt sich eine sehr stabile Verbindung zwischen dem Stromableiter und dem Batterieanschluss. Dadurch wird die Empfindlichkeit der Batteriekontakte gegenüber mechanischen Lasten bzw. Kräften reduziert. Dies führt zu einer hohen Zuverlässigkeit der erfindungsgemäß hergestellten Batteriezelle.

[0027] Gemäß einer weiteren Ausführungsform des Verfahrens werden der Stromableiter und der Batterieanschluss durch Laserschweißen verbunden.

[0028] Mithilfe des Laserschweißprozesses wird eine zuverlässige und haltbare Verbindung zwischen dem Stromableiter und dem Batterieanschluss hergestellt. Der Laserschweißprozess wird mit sehr hoher Geschwindigkeit und hoher Leistung ausgeführt, um ein Dichtelement/einen Dichtring, das/der beispielsweise zwischen dem Batterieanschluss und dem Gehäusedeckel angeordnet ist, nicht durch eine zu hohe thermische Belastung zu schädigen. Dabei werden mithilfe des Laserschweißens vorzugsweise Bauteile mit artgleichen Materialien miteinander verbunden (zum Beispiel Aluminium-Aluminium, Kupfer-Kupfer). Allerdings besteht auch die Möglichkeit, Bauteile, die aus unterschiedlichen Materialien bestehen (zum Beispiel Aluminium-Kupfer), durch Laserschweißen zu verbinden.

[0029] In einer weiteren Ausführungsform des Verfahrens wird der Batterieanschluss durch Fließpressen hergestellt.

[0030] Beim Fließpressen können durch eine einfache Änderung des Fließpresswerkzeuges verschiedene Anschlussgeometrien des Batterieanschlusses hergestellt werden (beispielsweise Gewinde, Zapfen, Viereck). Dies ermöglicht den Einsatz unterschiedlicher Technologien zum Kontaktieren der Batteriezellen untereinander oder zum Anschluss eines Verbrauchers an die Batteriezelle (zum Beispiel Schrauben, Schweißen, Klemmen).

[0031] Gemäß einer weiteren Ausführungsform des Verfahrens weist das Bereitstellen des Batterieanschlusses das Bereitstellen eines ersten und zweiten Anschlussteils und ein Verbinden des ersten Anschlussteils und des zweiten Anschlussteils mittels einer zweiten Schweißverbindung auf.

[0032] Durch das Aufteilen des Batterieanschlusses in einen ersten und zweiten Anschlussteil können unterschiedliche Materialien für die beiden Anschlussteile eingesetzt werden. Insbesondere kann somit sichergestellt werden, dass bei dem Laserschweißvorgang zwischen dem Batterieanschluss und dem Stromableiter gleiche Materialien miteinander verbunden werden. Wird beispielsweise der Stromableiter zur Kontaktierung der negativen Elektrode in Kupfer ausgeführt, so kann der zweite Anschlussteil des Batterieanschlusses ebenfalls in Kupfer hergestellt werden, um eine artgleiche Laserschweißverbindung zu ermöglichen. Für den ersten Anschlussteil des Batterieanschlusses kann in dieser Ausführungsform zum Beispiel Aluminium gewählt werden. Diese Maßnahme führt daher zu einer erhöhten Flexibilität bei der Materialwahl für den Batterieanschluss.

[0033] In einer weiteren Ausführungsform des Verfahrens werden der erste Anschlussteil und der zweite Anschlussteil durch Reibschweißen verbunden.

[0034] Durch die Reibschweißverbindung kann beispielsweise der erste Anschlussteil in Aluminium und

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der zweite Anschlussteil in Kupfer gefertigt werden. Damit kann die anschließende Laserschweißverbindung an artgleichen Werkstoffen ausgeführt werden. Mithilfe der Reibschweißverbindung wird eine zuverlässige Verbindung zwischen dem ersten und dem zweiten Anschlussteil hergestellt. Dies führt zu einer hohen mechanischen Stabilität des erfindungsgemäßen Batteriekontakts.

[0035] Alternativ kann auch Ultraschallschweißen verwendet werden.

[0036] Es versteht sich, dass die Merkmale, Eigenschaften und Vorteile der erfindungsgemäßen Vorrichtung auch entsprechend auf das erfindungsgemäße Verfahren zutreffen bzw. anwendbar sind.

Kurze Beschreibung der Zeichnungen

[0037] **Fig.** 1 zeigt in schematischer Form eine Ausführungsform einer erfindungsgemäßen Deckelanordnung für ein Zellgehäuse einer Batteriezelle;

[0038] **Fig.** 2 zeigt mehrere Ausführungsformen eines erfindungsgemäßen Batterieanschlusses zur Kontaktierung einer positiven Elektrode der Batteriezelle;

[0039] **Fig.** 3 zeigt mehrere Ausführungsformen eines erfindungsgemäßen Batterieanschlusses zur Kontaktierung einer negativen Elektrode der Batteriezelle; und

[0040] **Fig.** 4 zeigt ein Diagramm zur Erläuterung einer Ausführungsform eines erfindungsgemäßen Verfahrens.

Ausführungsformen der Erfindung

[0041] In **Fig.** 1 ist in schematischer Form eine Ausführungsform einer erfindungsgemäßen Deckelanordnung **10** für ein Zellgehäuse **12** einer in **Fig.** 1 nicht näher bezeichneten Batteriezelle dargestellt. Das Zellgehäuse **12** weist einen in **Fig.** 1 nur andeutungsweise gezeigten Gehäusebehälter **14** auf, in dem beispielsweise eine positive Elektrode, eine negative Elektrode und ein Elektrolytmaterial angeordnet sind. In einem montierten Zustand der Batteriezelle ist die Deckelanordnung **10** mittels Schweißpunkten **16** mit dem Gehäusebehälter **14** verbunden. Das Zellgehäuse **12** ist somit verschlossen.

[0042] Die Deckelanordnung **10** weist einen Gehäusedeckel **18** und zwei Batteriekontakte **20** zur elektrischen Kontaktierung der Batteriezelle auf. Dabei ist der Batteriekontakt **20a** in einem montierten Zustand der Batteriezelle mit der positiven Elektrode und der Batteriekontakt **20b** mit der negativen Elektrode der Batteriezelle elektrisch gekoppelt.

[0043] Das Zellgehäuse **12** ist an den Durchführungen der Batteriekontakte **20** durch den Gehäusedeckel **18** mithilfe von Dichtungselementen/Dichtringen **22** abgedichtet. Somit wird beispielsweise verhindert, dass Elektrolytmaterial aus dem Zellgehäuse **12** austritt. Außerdem werden die Batteriekontakte **20** mithilfe der Dichtringe **22** gegenüber dem Gehäusedeckel **18** elektrisch isoliert. Weiterhin dienen die Dichtringe **22** zur Aufnahme von mechanischen Belastungen, die zum Beispiel von einer Außenseite des Zellgehäuses **12** auf die Batteriekontakte **20** ausgeübt werden.

[0044] Jeder der Batteriekontakte **20** weist einen in einem Innenbereich des Zellgehäuses **12** angeordneten Stromableiter **24** und einen zumindest teilweise in dem Außenbereich des Zellgehäuses **12** angeordneten Batterieanschluss **26** auf. Der Stromableiter **24a** ist in einem montierten Zustand der Batteriezelle mit der positiven Elektrode elektrisch gekoppelt. Analog dazu ist der Stromableiter **24b** mit der negativen Elektrode der Batteriezelle elektrisch gekoppelt. Die Stromableiter **24** sind vorzugsweise als Blechbiegeteile ausgeführt. Dabei ist der Stromableiter **24a** beispielsweise aus Aluminium und der Stromableiter **24b** aus Kupfer gefertigt.

[0045] Die Stromableiter **24** weisen jeweils eine Ausnehmung **28** auf, in die der zugehörige Batterieanschluss **26** eingeführt ist. An einer Innenfläche der Ausnehmung **28** ist jeweils eine Laserschweißverbindung **30** gebildet, um den Batterieanschluss **26** mit dem Stromableiter **24** zu verbinden.

[0046] In diesem Ausführungsbeispiel soll angenommen werden, dass der Batterieanschluss **26a** aus Aluminium gefertigt ist. Da auch der Stromableiter **24a** aus Aluminium hergestellt ist, kann die Laserschweißverbindung **30a** zwischen zwei Bauteilen (Stromableiter **24a**, Batterieanschluss **26a**), die die gleichen Werkstoffe aufweisen, ausgeführt werden. Eine Laserschweißverbindung für artungleiche Werkstoffe ist zwar möglich, jedoch wird der Laserschweißprozess bevorzugt für die Verbindung von artgleichen Werkstoffen verwendet. Soll beispielsweise ein äußerer Kontakt des Batterieanschlusses **26b** in Aluminium ausgeführt sein, so besteht die Möglichkeit, den Batterieanschluss **26b** als zweiteiligen Batterieanschluss auszubilden. Dabei weist der Batterieanschluss **26b** einen ersten Anschlussteil **32** und einen zweiten Anschlussteil **34** auf. Der erste Anschlussteil **32** ist dann beispielsweise aus Aluminium und der zweite Anschlussteil **34** aus Kupfer gefertigt. Der erste Anschlussteil **32** ist mithilfe einer Reibschweißverbindung **36** mit dem zweiten Anschlussteil **34** verbunden. Aufgrund dieses Aufbaus des Batterieanschlusses **26b** kann die Laserschweißverbindung **30b**, die den Stromableiter **24b** und den zweiten Anschlussteil **34** miteinander verbindet, für artgleiche Werkstoffe ausgeführt werden.

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[0047] Aus dem oben beschriebenen Aufbau der Deckelanordnung **10** ist ersichtlich, dass nur sehr wenige Bauteile zur Kontaktierung der Elektroden der Batteriezelle notwendig sind. Infolgedessen weist der Batteriekontakt **20a** beispielsweise nur eine Laserschweißverbindung **30a** auf. Auch der Batteriekontakt **20b** weist lediglich die Laserschweißverbindung **30b** und die Reibschweißverbindung **36** auf. Durch die maximal zwei Schweißverbindungen, die für jeden der Batteriekontakte **20** benötigt werden, wird eine hohe mechanische Stabilität der Batteriekontakte **20** erreicht. Die Zuverlässigkeit der Batteriezelle wird erhöht.

[0048] Durch die erfindungsgemäße Anordnung der Schweißstellen **30**, **36** wird eine sehr einfache Montage der Deckelanordnung **10** ermöglicht. Dadurch können die Kosten bei der Herstellung der Batteriezelle reduziert werden. Da die Schweißstellen **30**, **36** an einer Innenseite der Deckelanordnung **10** angeordnet sind, können Konstruktionsänderungen für die Deckelanordnung **10** leichter umgesetzt werden. Dies erhöht die Flexibilität beim Design der Deckelanordnung **10**.

[0049] **Fig.** 2 zeigt mehrere Ausführungsformen des Batterieanschlusses **26a** zur Kontaktierung der positiven Elektrode der Batteriezelle. Der Batterieanschluss **26a** wird vorzugsweise durch Fließpressen hergestellt. Damit können durch eine Änderung des Fließpresswerkzeuges verschiedene Anschlussgeometrien realisiert werden. Beispielsweise kann der Batterieanschluss **26a** mit einem Gewinde oder einem Zapfen versehen oder in Viereckform ausgeführt werden. Dies ermöglicht den Einsatz unterschiedlichster Technologien zur Kontaktierung der Batteriezellen untereinander oder zur Kontaktierung eines Verbrauchers. Beispielsweise ist es möglich, den Kontakt über ein Schrauben, Schweißen oder Klemmen herzustellen.

[0050] Darüber hinaus werden der Batterieanschluss **26a** und der Stromableiter **24a** vorzugsweise so gefertigt, dass sich beim Aufstecken des Stromableiters **24a** auf den Batterieanschluss **26a** eine Presspassung bildet. Dazu weist der Batterieanschluss **26a** in vorteilhafter Weise einen konischen Abschnitt **38a** auf. Dadurch kann alleine durch das Aufpressen des Stromableiters **24a** auf den Batterieanschluss **26a** eine gute Fixierung bzw. Vor-Fixierung zwischen diesen beiden Bauteilen erreicht werden.

[0051] **Fig.** 3 zeigt mehrere Ausführungsformen des erfindungsgemäßen Batterieanschlusses **26b** zur Kontaktierung der negativen Elektrode der Batteriezelle. Analog zu dem Batterieanschluss **26a** wird auch der Batterieanschluss **26b** vorzugsweise durch Fließpressen hergestellt, um verschiedene Anschlussgeometrien realisieren zu können. Im Unterschied zu dem Batterieanschluss **26a** ist der Batterieanschluss **26b** entweder einstückig oder zweiteilig (erster Anschlussteil **32**, zweiter Anschlussteil **34**) ausgeführt.

[0052] Bei der zweiteiligen Ausführungsform sind der erste Anschlussteil **32** und der zweite Anschlussteil **34** mittels der Reibschweißverbindung **36** verbunden. Die zweiteilige Ausführungsform erlaubt eine flexible Anpassung der Werkstoffe des ersten Anschlussteils **32** und des zweiten Anschlussteils **34** an die jeweiligen Anforderungen. So können beispielsweise der Werkstoff und die Anschlussgeometrie des ersten Anschlussteils **32** in Abhängigkeit der gewünschten Verbindungstechnologie zur Kontaktierung eines externen Verbrauchers ausgewählt werden. Dagegen orientiert sich die Werkstoffauswahl für den zweiten Anschlussteil **34** an der Art der Verbindung zu dem Stromableiter **24b**. In einem Ausführungsbeispiel ist der zweite Anschlussteil **34** aus Kupfer gefertigt. Ist der Stromableiter **24b** ebenfalls aus Kupfer hergestellt, so kann die Laserschweißverbindung **30b** zwischen artgleichen Materialien ausgeführt werden. Als Werkstoff für den ersten Anschlussteil **32** kann beispielsweise Aluminium gewählt werden.

[0053] Analog zu dem Batterieanschluss **26a** weist auch der Batterieanschluss **26b** einen konischen Abschnitt **38b** auf, um beim Aufpressen des Stromableiters **24b** auf dem Batterieanschluss **26b** eine gute mechanische Fixierung zwischen diesen beiden Bauteilen zu erhalten.

[0054] In **Fig.** 4 ist ein Diagramm zur Erläuterung einer Ausführungsform eines erfindungsgemäßen Verfahrens **40** gezeigt. Das Verfahren **40** dient zum Herstellen der Deckelanordnung **10**, die einen Teil des Zellgehäuses **12** der Batteriezelle bildet. Das Herstellen der Deckelanordnung **10** wird dabei vorzugsweise als Vorprozess zu der Endmontage der Batteriezelle durchgeführt, bei der die Deckelanordnung **10** über die Schweißpunkte **16** mit dem Gehäusebehälter **14** verbunden wird.

[0055] In einem ersten Schritt **42** werden zunächst der Gehäusedeckel **18** und die Batterieanschlüsse **26** bereitgestellt. In diesem Ausführungsbeispiel ist der Batterieanschluss **26a** einstückig und der Batterieanschluss **26b** zweiteilig ausgeführt. Zum Herstellen des Batterieanschlusses **26b** wird zunächst der erste Anschlussteil **32** und der zweite Anschlussteil **34** bereitgestellt. Anschließend werden der erste Anschlussteil **32** und der zweite Anschlussteil **34** mittels der Reibschweißverbindung **36** verbunden. Dabei werden der Batterieanschluss **26a** und der erste Anschlussteil **32** aus Aluminium und der zweite Anschlussteil **34** aus Kupfer gefertigt.

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[0056] Außerdem werden in dem ersten Schritt **42** des Verfahrens **40** die Stromableiter **24** bereitgestellt. Der Stromableiter **24a** wird beispielsweise aus Aluminium und der Stromableiter **24b** aus Kupfer gefertigt. Vorzugsweise werden die Batterieanschlüsse **26** durch Fließpressen hergestellt.

[0057] In einem Schritt **44** werden die Batterieanschlüsse **26** inklusive der Dichtringe **22** von einer Außenseite in entsprechende Öffnungen des Gehäusedeckels **18** eingeführt. Damit ragt jeweils ein erstes Ende der Batterieanschlüsse **26** an der Außenseite und ein zweites Ende der Batterieanschlüsse **26** an einer Innenseite des Gehäusedeckels **18** heraus.

[0058] In einem weiteren Schritt **46** werden die Stromableiter **24** von der Innenseite des Gehäusedeckels **18** auf den konischen Abschnitt **38** der jeweiligen Batterieanschlüsse **26** gepresst. Damit umgeben die Ausnehmungen **28** der Stromableiter **24** das zweite Ende der jeweils zugeordneten Batterieanschlüsse **26**.

[0059] In einem Schritt **48** werden die Stromableiter **24** und die Batterieanschlüsse **26** mittels der Laserschweißverbindungen **30** verbunden, um eine zuverlässige und haltbare Verbindung zwischen diesen Bauteilen herzustellen. Der Laserschweißprozess wird mit einer hohen Geschwindigkeit und einer hohen Leistung ausgeführt, um die innenliegenden Dichtringe **22** thermisch nicht zu schädigen.

[0060] Bei dem erfindungsgemäßen Herstellungsverfahren **40** wird die Montagereihenfolge/Bearbeitungsrichtung bei der Montage der Deckelanordnung **10** gegenüber bekannten Verfahren umgekehrt. So werden bei bekannten Verfahren die einzelnen Bauteile von einer Innenseite eines Gehäusedeckels zu einer Außenseite des Gehäusedeckels montiert und miteinander verschweißt.

[0061] Gemäß dem erfindungsgemäßen Verfahren **40** werden die Bauteile der Batteriekontakte **20** von der Außenseite des Gehäusedeckels **18** zu der Innenseite des Gehäusedeckels **18** montiert. Anschließend werden die Stromableiter **24** und die Batterieanschlüsse **26** von der Innenseite verschweißt. Dies ist technisch umsetzbar, da die Montage der Deckelanordnung **10** als Vorprozess ausgeführt wird.

[0062] Mithilfe des erfindungsgemäßen Verfahrens **40** kann die Anzahl der Bauteile und die damit verbundene Komplexität der Deckelanordnung **10** reduziert werden. Dies führt schließlich zu einer geringen Fehlerempfindlichkeit der Batteriezelle.

[0063] Obgleich somit eine bevorzugte Ausführungsform des erfindungsgemäßen Herstellungsverfahrens **40** und einer somit hergestellten Deckelanordnung **10** gezeigt worden ist, versteht sich, dass verschiedene Abwandlungen und Modifikationen vorgenommen werden können, ohne den Rahmen der Erfindung zu verlassen.

[0064] Beispielsweise können beide Batterieanschlüsse **26** einstückig oder zweiteilig ausgeführt werden.

[0065] Außerdem können für die Batterieanschlüsse **26** beliebige andere Werkstoffe eingesetzt werden.

Patentansprüche

1. Batteriezelle, mit:
– einem Zellgehäuse (**12**),
– zwei Elektroden, die in einem Innenbereich des Zellgehäuses (**12**) angeordnet sind, und
– einem Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses (**12**) angeordnet ist und die Elektroden umgibt,
wobei das Zellgehäuse (**12**) eine Deckelanordnung (**10**) mit einem Gehäusedeckel (**18**) und zwei Batteriekontakten (**20**) zur elektrischen Kontaktierung der Batteriezelle aufweist,
wobei jeder der Batteriekontakte (**20**) einen in dem Innenbereich des Zellgehäuses (**12**) angeordneten Stromableiter (**24**), der eine Ausnehmung (**28**) aufweist und mit einer der Elektroden elektrisch gekoppelt ist, und einen zumindest teilweise in einem Außenbereich des Zellgehäuses (**12**) angeordneten Batterieanschluss (**26**) aufweist, wobei jeweils ein Abschnitt des Batterieanschlusses (**26**) durch die Ausnehmung (**28**) des Stromableiters (**24**) geführt ist, wobei an einer Innenfläche der Ausnehmung (**28**) jeweils eine Schweißverbindung (**30**) gebildet ist, um den Batterieanschluss (**26**) mit dem Stromableiter (**24**) zu verbinden.

2. Batteriezelle nach Anspruch 1, wobei jeder der Batteriekontakte (**20**) maximal zwei Schweißverbindungen (**30**, **36**) aufweist.

3. Batteriezelle nach Anspruch 1 oder 2, wobei der Batterieanschluss (**26**) an seinem dem Innenbereich des Zellgehäuses (**12**) zugewandten Ende einen zylindrischen Abschnitt aufweist.

4. Batteriezelle nach Anspruch 1 oder 2, wobei der Batterieanschluss (**26**) an seinem dem Innenbereich des Zellgehäuses (**12**) zugewandten Ende einen konischen Abschnitt (**38**) aufweist.

5. Batteriezelle nach einem der Ansprüche 1 bis 4, wobei der Batterieanschluss (**26**) einen ersten und einen zweiten Anschlussteil (**32**, **34**) aufweist, die aus unterschiedlichen Werkstoffen gefertigt sind, wobei der zweite Anschlussteil (**34**) mittels der Schweißverbindung (**30**) mit dem Stromableiter (**24**) verbunden ist, und wobei der erste und der zweite Anschluss-

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teil (**32**, **34**)) mittels einer zweiten Schweißverbindung (**36**) verbunden sind.

6. Batteriezelle nach einem der Ansprüche 1 bis 5, wobei der Stromableiter (**24**) ein Blechbiegeteil ist.

7. Batteriezelle nach einem der Ansprüche 1 bis 6, wobei zwischen dem Batterieanschluss (**26**) und dem Gehäusedeckel (**18**) ein Dichtring (**22**) angeordnet ist.

8. Verfahren (**40**) zum Herstellen einer Deckelanordnung (**10**) für ein Zellgehäuse (**12**) einer Batteriezelle, wobei die Batteriezelle zwei Elektroden, die in einem Innenbereich des Zellgehäuses (**12**) angeordnet sind, und ein Elektrolytmaterial, das in dem Innenbereich des Zellgehäuses (**12**) angeordnet ist und die Elektroden umgibt, aufweist, wobei das Verfahren (**40**) die Schritte aufweist:
– Bereitstellen eines Gehäusedeckels (**18**), der eine Außenseite und eine Innenseite aufweist,
– Bereitstellen eines Batterieanschlusses (**26**) zur elektrischen Kontaktierung der Batteriezelle,
– Einführen des Batterieanschlusses (**26**) in eine Öffnung des Gehäusedeckels (**18**) von der Außenseite, so dass ein erstes Ende des Batterieanschlusses (**26**) an der Außenseite herausragt und dass ein zweites Ende des Batterieanschlusses (**26**) an der Innenseite herausragt,
– Bereitstellen eines Stromableiters (**24**), der eine Ausnehmung (**28**) aufweist und mit einer der Elektroden elektrisch koppelbar ist,
– Anbringen des Stromableiters (**24**) an dem zweiten Ende des Batterieanschlusses (**26**) von der Innenseite des Gehäusedeckels (**18**), so dass die Ausnehmung (**28**) des Stromableiters (**24**) das zweite Ende des Batterieanschlusses (**26**) zumindest teilweise umgibt, und
– Verbinden des Stromableiters (**24**) und des Batterieanschlusses (**26**) mittels einer Schweißverbindung (**30**), die an einer Innenfläche der Ausnehmung (**28**) gebildet wird.

9. Verfahren nach Anspruch 8, wobei der Batterieanschluss (**26**) und der Stromableiter (**24**) so gefertigt werden, dass sich beim Anbringen des Stromableiters (**24**) an dem Batterieanschluss (**26**) eine Presspassung bildet.

10. Verfahren nach Anspruch 8 oder 9, wobei der Stromableiter (**24**) und der Batterieanschluss (**26**) durch Laserschweißen verbunden werden.

11. Verfahren nach einem der Ansprüche 8 bis 10, wobei der Batterieanschluss (**26**) durch Fließpressen hergestellt wird.

12. Verfahren nach einem der Ansprüche 8 bis 11, wobei das Bereitstellen des Batterieanschlusses (**26**) die folgenden Schritte aufweist:
– Bereitstellen eines ersten und zweiten Anschlussteils (**32**, **34**)), und
– Verbinden des ersten Anschlussteils (**32**) und des zweiten Anschlussteils (**34**) mittels einer zweiten Schweißverbindung (**36**).

13. Verfahren nach Anspruch 12, wobei der erste Anschlussteil (**32**) und der zweite Anschlussteil (**34**) durch Reibschweißen verbunden werden.

14. Verfahren nach Anspruch 12, wobei der erste Anschlussteil (**32**) und der zweite Anschlussteil (**34**) durch Ultraschallschweißen verbunden werden.

Es folgen 3 Seiten Zeichnungen

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Anhängende Zeichnungen

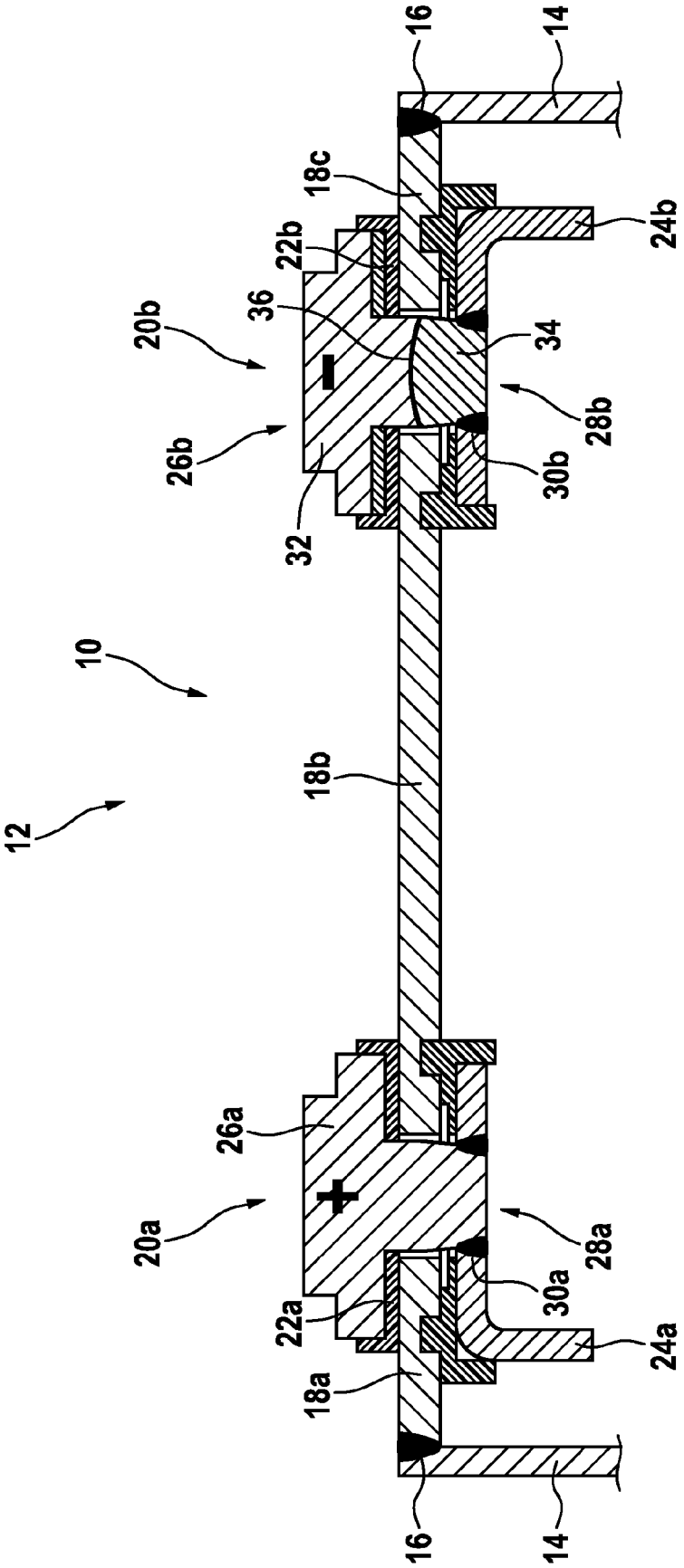


FIG. 1

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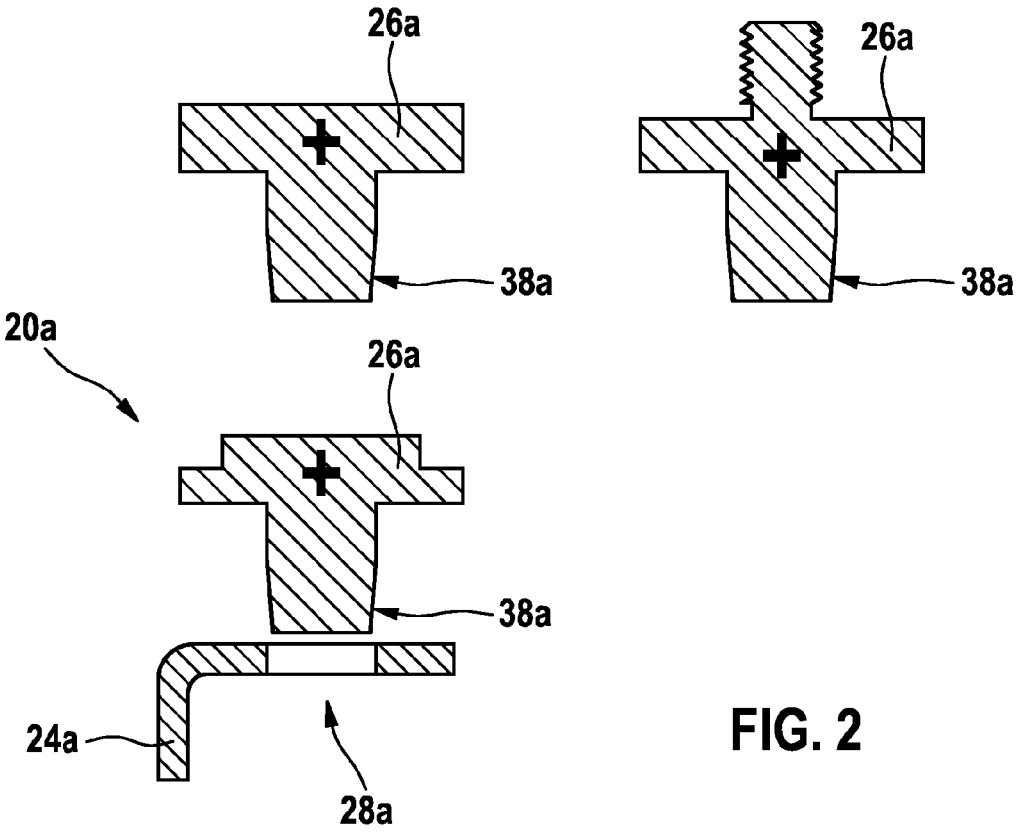


FIG. 2

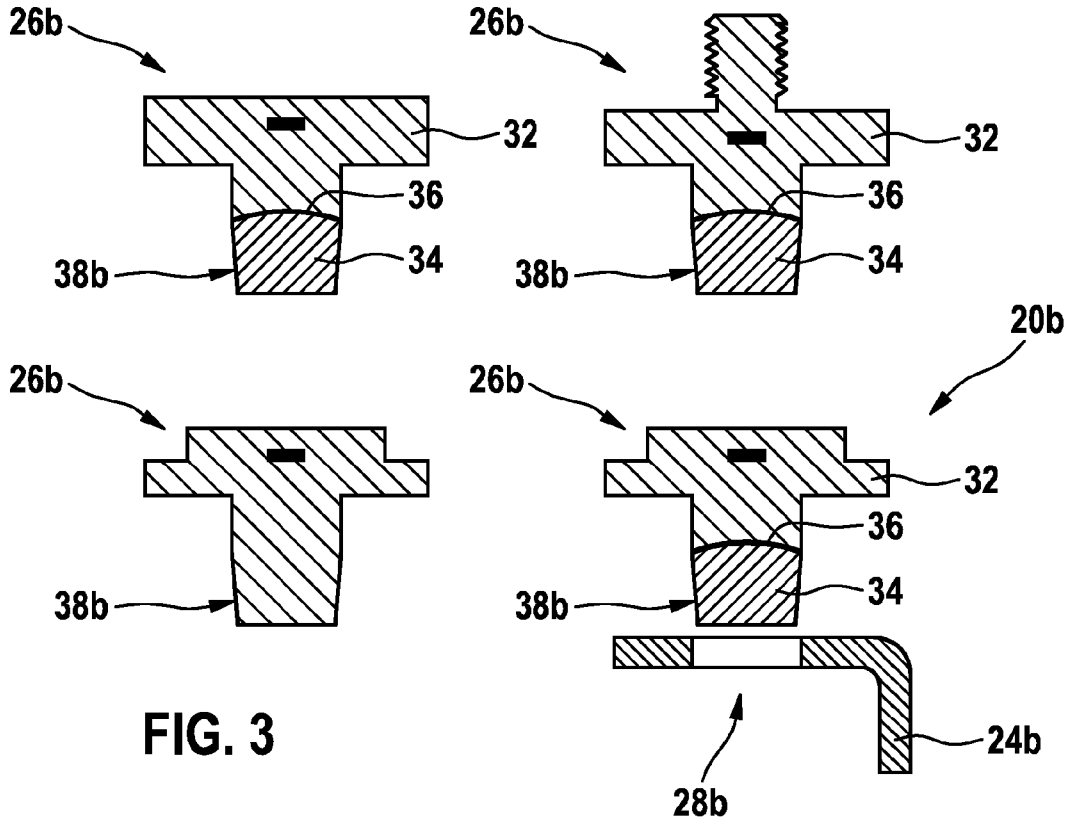


FIG. 3

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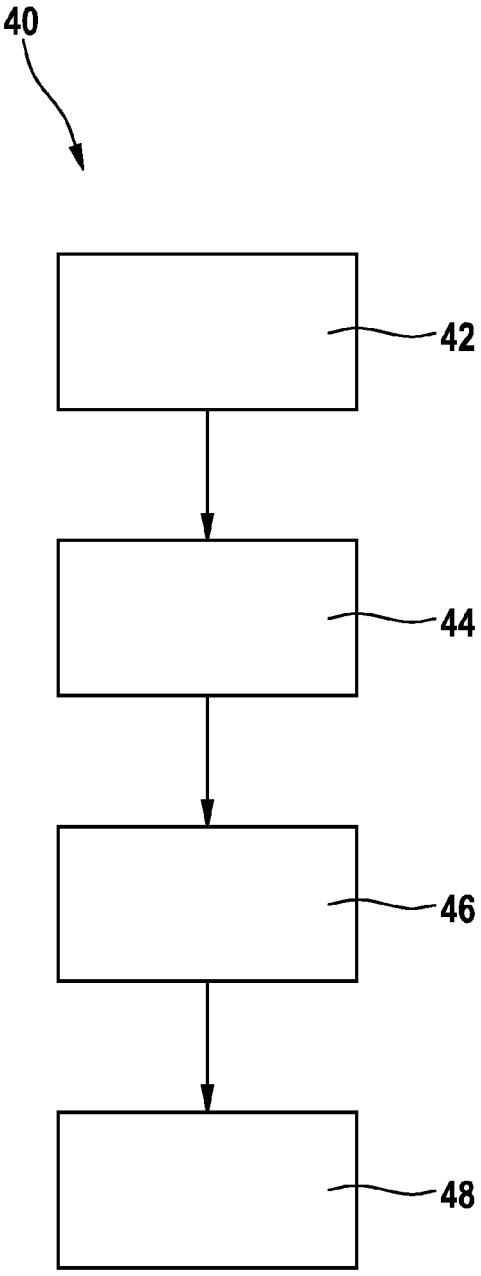


FIG. 4

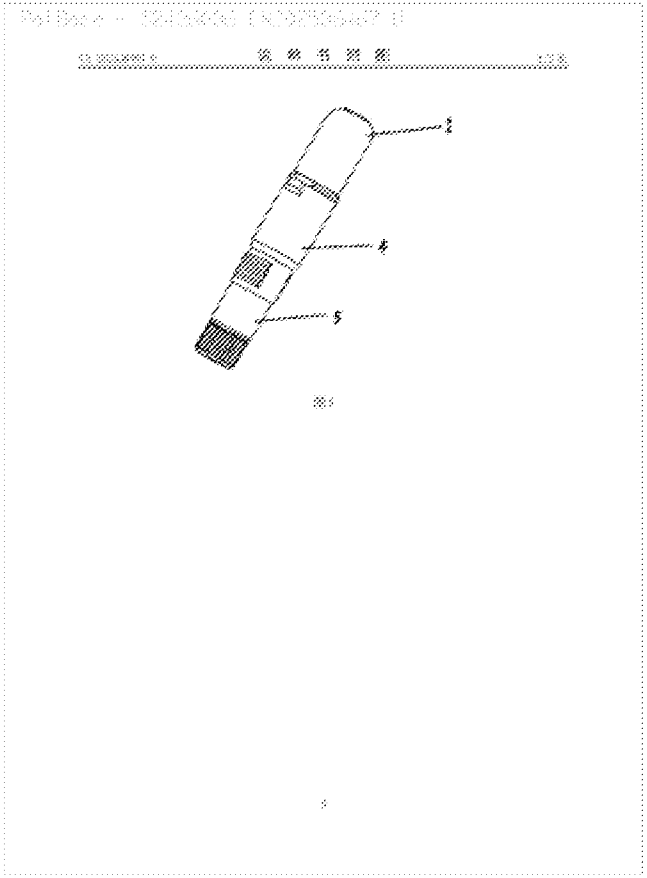
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Petitioner Therabody Ex-1004, 2139

CN202536467 U Patbase number: EP426036

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Title: Vibrating wrinkle removing beautifying pen



Abstract:
Source: CN202536467 U The utility model relates to a vibrating wrinkle removing beautifying pen. The collagen protein in skin dermis gradually decays and drains as the years go by, and the eye skin is sagged, so that the wrinkle generates. The vibrating wrinkle removing beautifying pen comprises a dustproof cover, a vibrating head, a vibrating head fixing housing, an intermediate housing and a battery housing, wherein the intermediate housing is cylinder-shaped, and provided with an operating switch on the surface; the battery housing is fixedly arranged at the bottom of the intermediate housing, and the vibrating head fixing housing and the vibrating head are arranged on the top of the intermediate housing; the dustproof cover is sleeved outside the intermediate housing; and balls are arranged on top of the vibrating head. When the pen is in use, a battery is arranged in the battery housing, and the balls on the top of the vibrating head are drawn and replaced via toner essential oil and eye essence and the like for vibrating and massaging so as to beautify the face. The vibrating wrinkle removing beautifying pen can activate the cells of the skins of the eyes and the face; the skin care products can be quickly permeated into the deep skin so as to achieve the effects of smoothening the wrinkle around the eyes, diluting the black rim of the eyes, reducing the punch, relaying the elasticity of the eyes, relieving the fatigue, reducing the wrinkles on the face, refining the skin, beautifying, whitening, massaging and lifting the face.

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Priority: CN201220165865U 20120418

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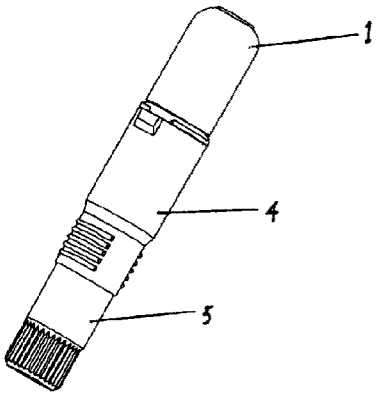
权利要求书 1 页 说明书 2 页 附图 2 页

(54)实用新型名称

振动去皱美颜笔

(57)摘要

本实用新型涉及一种振动去皱美颜笔。随着岁月的流逝，皮肤真皮层胶原蛋白质逐渐衰减与流失，眼部肌肤会变得松弛下垂，产生皱纹。本实用新型由防尘盖、震动头、震动头固定壳、中壳和电池壳构成，中壳为圆柱状，其表面设置有操作开关，中壳的底部固定设置有电池壳，中壳顶部设置有震动头固定壳和震动头，其外部套接有防尘盖，震动头顶部设置有滚珠。使用时，在电池壳内装入电池，拔下震动头顶部的滚珠，装入爽肤水、精油、眼部精华液等，进行振动按摩美颜。活化眼部、脸部肌肤细胞，将保养品快速渗透至肌肤深层，达到抚平眼纹、淡化黑眼圈、改善眼袋、恢复眼部弹性、缓解疲劳、减少脸部皱纹，细化皮肤，美颜美白、按摩瘦脸之功效。



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1. 振动去皱美颜笔，其特征在于它由防尘盖 (1)、震动头 (2)、震动头固定壳 (3)、中壳 (4) 和电池壳 (5) 构成，中壳 (4) 为圆柱状，其表面设置有操作开关，中壳 (4) 的底部固定设置有电池壳 (5)，中壳 (4) 顶部设置有震动头固定壳 (3) 和震动头 (2)，其外部套接有防尘盖 (1)，震动头 (2) 顶部设置有滚珠 (6)。

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振动去皱美颜笔

技术领域

[0001] 本实用新型涉及美容保健领域，具体涉及一种振动去皱美颜笔。

背景技术

[0002] 爱美是女士的天性，现代的女士每天会花费大量的时间用于面部的化妆，随着岁月的流逝，皮肤真皮层胶原蛋白质逐渐衰减与流失，在重力的长期作用下，原本具有弹性的眼部肌肤会变得松弛下垂，产生皱纹。

实用新型内容

[0003] 本实用新型的目的在于提供一种集保健、美容、按摩、化妆功能于一身的振动去皱美颜笔。针对眼部衰老迹象，采用微波离子＋滚珠振动按摩技术，利用正负微波离子交叉适度刺激眼部、脸部皮肤真皮层组织，促使衰退的肌肤增生胶原蛋白，并通过滚珠振动按摩，活化眼部、脸部肌肤细胞，将保养品快速渗透至肌肤深层，达到抚平眼纹、淡化黑眼圈、改善眼袋、恢复眼部弹性、缓解疲劳、减少脸部皱纹，细化皮肤，美颜美白、按摩瘦脸之功效。

[0004] 本实用新型由防尘盖、震动头、震动头固定壳、中壳和电池壳构成，中壳为圆柱状，其表面设置有操作开关，中壳的底部固定设置有电池壳，中壳顶部设置有震动头固定壳和震动头，其外部套接有防尘盖，震动头顶部设置有滚珠。

[0005] 使用时，在电池壳内装入一只 5 号电池，拔下震动头顶部的滚珠，装入爽肤水、精油、眼部精华液等，打开开关，在眼部周围，脸部，额头，下巴进行振动按摩美颜，还可对颈部肩部进行振动按摩，方便快捷，达到保健、美容、化妆的目的。

[0006] 本实用新型的优点在于集保健、美容、按摩、化妆功能于一身，采用微波离了＋滚珠振动按摩技术，利用正负微波离子交叉适度刺激眼部、脸部皮肤真皮层组织，促使衰退的肌肤增生胶原蛋白，并通过滚珠振动按摩，活化眼部、脸部肌肤细胞，将保养品快速渗透至肌肤深层，达到抚平眼纹、淡化黑眼圈、改善眼袋、恢复眼部弹性、缓解疲劳、减少脸部皱纹，细化皮肤，美颜美白、按摩瘦脸之功效，操作使用方便灵活，利于推广。

附图说明

[0007] 图 1 是本实用新型的整体结构示意图；

[0008] 图 2 是本实用新型的各部件分解状态示意图。

[0009] 图中 1 是防尘盖，2 是震动头，3 是震动头固定壳，4 是中壳，5 是电池壳，6 是滚珠。

具体实施方式

[0010] 下面结合附图以最佳实施例对本实用新型做进一步详细说明：

[0011] 本实用新型由防尘盖 (1)、震动头 (2)、震动头固定壳 (3)、中壳 (4) 和电池壳 (5) 构成，中壳 (4) 为圆柱状，其表面设置有操作开关，中壳 (4) 的底部固定设置有电池壳 (5)，中壳 (4) 顶部设置有震动头固定壳 (3) 和震动头 (2)，其外部套接有防尘盖 (1)，震动头 (2)

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顶部设置有滚珠 (6)。

[0012] 使用时，在电池壳 (5) 内装入一只 5 号电池，拔下震动头 (2) 顶部的滚珠 (6)，装入爽肤水、精油、眼部精华液等，打开开关，在眼部周围，脸部，额头，下巴进行振动按摩美颜，还可对颈部肩部进行振动按摩，方便快捷，达到保健、美容、化妆的目的。

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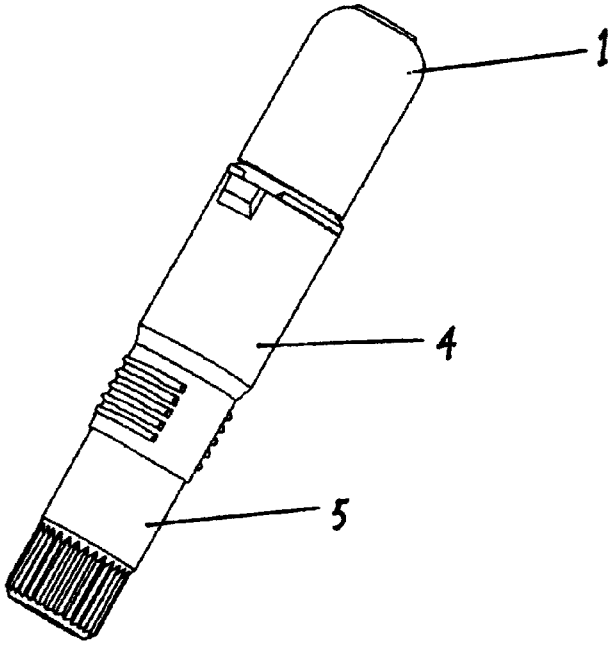


图 1

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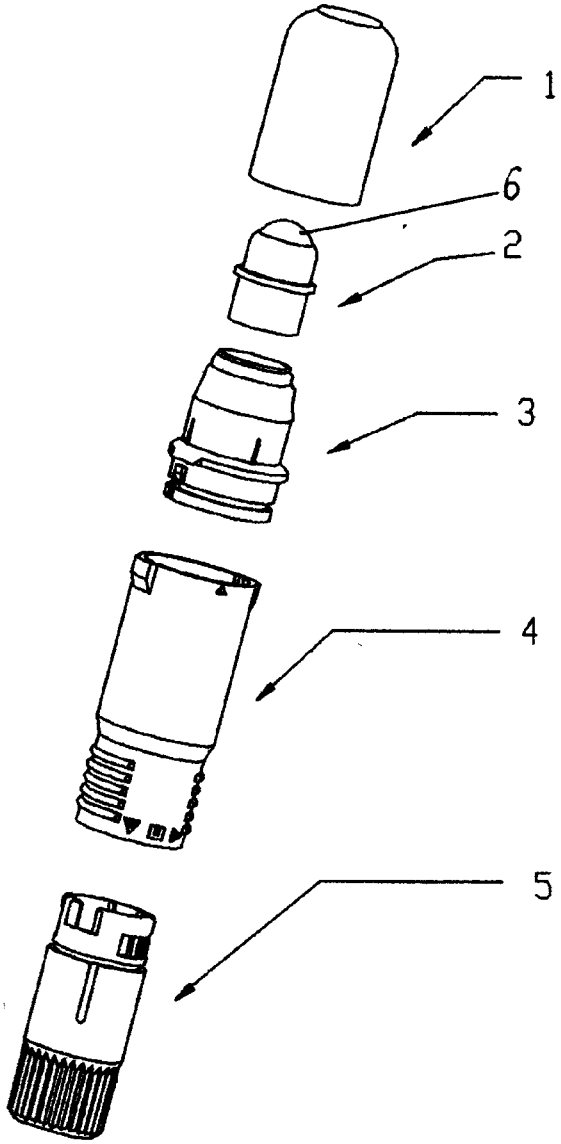


图 2

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KR200422971Y1 PORTABLE MASSAGE PACK MANUFACTURE DEVICE

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[0001] 1 is a perspective view of a portable massage pack maker formed as a preferred embodiment of the present invention;

[0002] 2 is an exploded perspective view of a portable massage pack maker formed as a preferred embodiment of the present invention;

[0003] Figures 3a and 3b are operational sectional views of a portable massage pack maker formed in a preferred embodiment of the present invention;

[0004] FIG. 4 is a perspective view of a front case of a portable massage pack maker formed as a preferred embodiment of the present invention; FIG.

[0005] ** Description of Reference Numerals to Main Parts of the Drawings

The present invention relates to a portable massage pack maker, and more particularly, to a portable massage pack maker which comprises a case in which vegetables and fruits such as cucumber and carrot are inserted into a front surface of a case in which a motor is intrinsically rotated so as to be portable and easy to use, The present invention relates to a portable massage pack maker capable of smoothly and resiliently massaging skin tissues by discharging vegetable or fruit juice to the outside by rotating the motor to scratch the skin. Generally, in order to improve skin elasticity or prevent skin aging Various kinds of vegetables and fruits are used in addition to functional cosmetics such as various cosmetics and massage creams, etc. As described above, the interest related to the skin is increasing not only for women but also for men, And a room where skin massage devices appear A. In the meantime, the skin massage method includes a method of applying cosmetics, massage cream, etc., or grinding with a blender using vegetables or fruits (hereinafter, referred to as materials). In this case, However, when the above-mentioned materials are used, the process of forming a massage pack is cumbersome and complicated, so that it is very inconvenient for a person to frequently make a massage. In order to solve the above problems, the present invention has been devised for the following purposes: (1) a front cover having a scratch portion on the front surface of a case in which a motor is housed, and The material is inserted into the inside of the front cover and is rotated by the motor so that the material (2) The structure for mixing the above materials is configured to be convenient to carry, so that a massage pack can be manufactured wherever it is desired, so that it can be massaged on the skin.

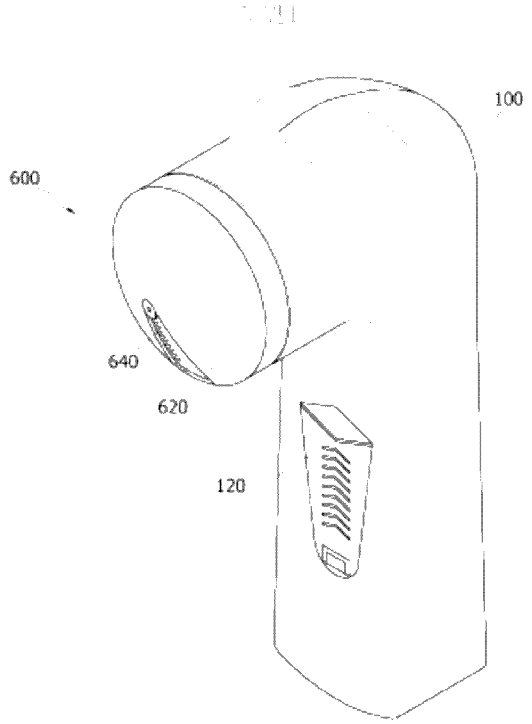
In order to achieve the above-mentioned object, the present invention is characterized in that a vegetable case in which a material such as cucumber, carrot or the like is inserted is formed in front of a body case in which a motor is inserted, and a rotating bushing, Wherein a front cover having a scratch portion at its front end is detachably coupled to the front end of the vegetable case and a compression spring is embedded in the motor housing of the rotary bushing and the motor, And the massage material is discharged from the massage pack while being rubbed against the scratch portion of the front cover by being rotated by the motor shaft. Hereinafter, a preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings. 1 to 3, a motor 180 is disposed in front of a body case 100 in which cucumber, carrot, etc. A rotating bushing 400 in which the material 500 is inserted is rotatably coupled to the motor case 180 so that the rotating bushing 400 is interlocked with the motor 180, A front cover 600 having a scratch portion 640 therein is detachably coupled to the front end of the vegetable case 300 and a compression spring is inserted between the rotary bushing 400 and the motor shaft 185 of the motor 180. [The vegetable case inserted into the vegetable case 300 is rotated by the motor shaft 185 to discharge the juice-shaped massage pack while rubbing against the scratch 640 of the front cover 600. The body case 100 is formed with a battery insertion portion (not shown) in which a battery is received at the lower end of the body case 100, and a power source A switch 120 for shielding the battery 1 is formed, and a motor 1 A mounting hole 140 is formed in front of the motor 180 to be coupled with the rear of the vegetable case 300. The body case 100 (Not shown) for inserting a battery into the battery inserting unit at the rear of the battery case 300. The vegetable case 300 is cylindrical and has a plurality of engaging projections 320 A plurality of holes 360 are formed in the rear of the latching jaws 360 so as to be coupled to the body case 100 by bolts. The flange 340 is formed on the inner surface of the vegetable

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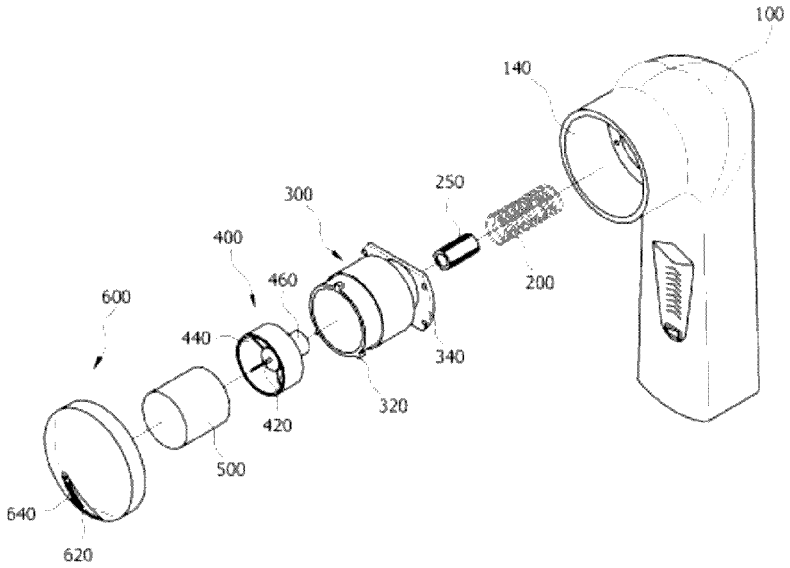
case 300. When the material 500 is inserted into the vegetable case 300, a large amount of the material 500 is inserted, To prevent the user from receiving excessive force. The rotary bushing 400 is formed by punching a material punch 420 protruding by a predetermined length from the center of the rotary bushing 400 and a plurality of fixed blades 440 And a fixing portion 460 having a fitting groove 480 coupled to the motor shaft 185 is protruded from the rear of the rotary bushing 400. The rotary bushing 400 is made of a material 500 is inserted into the interior of the vegetable case 300 so as to prevent the material 500 from slipping due to the fixed blade 440 when the rotating bushing 400 is rotated by the motor shaft 185, A shaft 250 coupled to the rotary bushing 400 and the motor shaft 185 of the motor 180 to transmit the driving force of the motor 180 to the rotary bushing 400 The front cover 600 is formed with a discharge port 620 cut out to a predetermined size on the front side thereof, A sharp shape scratch 640 is formed on one side of the air outlet 620 and a fastening groove 660 is formed in the rear of the scratch 640 so as to be fastened to the coupling protrusion 320 of the vegetable case 300. [A plurality of sharp protruding portions are formed in the inside of the scratch portion 640. The rotating bushing 400 in which the material is inserted due to the sharp protruding portion is rotated by the motor shaft 185 of the motor 180 A plurality of discharge holes 680 may be formed in the periphery of the front cover 600 as shown in FIG. 4, as shown in FIG. 4, The operation of the portable massaging pack manufacturing machine formed as an embodiment of the present invention will be described as follows. The rotating bushing 400 may be formed of a plate- Embedded Vegetable Case (300) The center surface of the material 500 is inserted into the material holder 420 of the rotating bushing 400 and the front cover 600 having the stagger part 640 is inserted When the coupling protrusion 320 of the vegetable case 300 is inserted and fastened to the coupling groove 660 of the rotary case 300, the compression spring 200 at the rear portion of the rotary bushing 400 is compressed and mounted. When the switch 120 for supplying power to the battery unit is turned on and power is applied to the motor 180, the motor 180 is operated and the rotating bushing 400 interlocked with the motor shaft 185 rotates The material 500 is deformed into a juice form by being scratched by the scratch portion 640 of the front cover 600 and the compression spring 200 Is pushed forward by the pivoting bushing 400 so that the material 500 is pushed to the end.

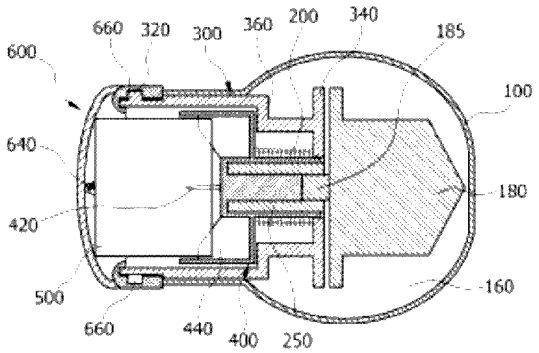
As described above, according to the present invention, the following effects are produced: (1) A front cover having a scratch portion is coupled to a front surface of a case in which a motor is housed, (2) It is possible to construct a structure for mixing vegetables and fruits with a convenient structure for carrying, so that it is possible to make Massage packs can be manufactured wherever they are, so you can massage your skin.

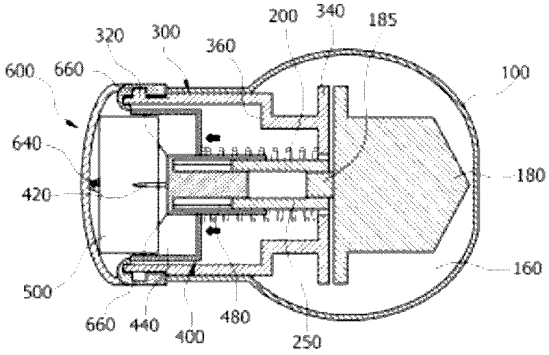
Drawings



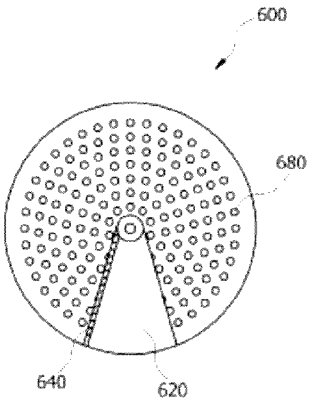
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기초적요건 심사관 : 나수언

(54)휴대용 마사지팩 제조기

요약

본 고안은 휴대용 마사지팩 제조기에 관한 것으로, 보다 상세하게는 휴대가 간편하고 사용이 편리하도록 모터가 내재되어 회동되는 케이스의 전면 내부에 오이, 당근 등(이하, 재료라 칭함.)을 삽입한 후, 상기 모터를 회동시켜 스크레치시킴으로써 재료의 즙이 외부로 배출되면서 피부조직을 부드럽고 탄력있게 마사지할 수 있도록 한 휴대용 마사지팩 제조기에 관한 것이다.

본 고안은 모터가 내부에 삽입된 몸체케이스의 전방으로 야채케이스가 형성되고, 상기 야채케이스 내부에는 회전부싱이 모터와 연동되도록 회전가능하게 결합되며, 야채케이스의 선단에는 스크래치부를 내부에 갖는 전면커버가 분리가능하게 결합되고, 상기 회전부싱과 모터의 모터축사이에는 압축스프링이 내재되어, 상기 야채케이스에 삽입된 야채류가 모터축에 의해 회동됨으로써 전면커버의 스크래치부와 마찰되면서 즙형태의 마사지팩이 배출될 수 있는 것을 특징으로 한다.

본 고안의 휴대용 마사지팩 제조기에 의하면, 재료가 스크래치되는 동시에 즙형태의 마사지팩이 피부에 바로 배출될 뿐만 아니라, 피부에 바로 마사지할 수 있을 뿐만 아니라, 휴대하기 편리할 수 있는 효과가 있다.

대표도

도 1

색인어

마사지팩, 휴대용, 야채류, 야채즙, 모터, 회전부싱, 스크래치

MassagerPriorArt0000396

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Petitioner Therabody Ex-1004, 2153

명세서

도면의 간단한 설명

도 1은 본 고안의 바람직한 실시예로 형성된 휴대용 마사지팩 제조기의 사시도.

도 2는 본 고안의 바람직한 실시예로 형성된 휴대용 마사지팩 제조기의 분리 사시도.

도 3a와 3b는 본 고안의 바람직한 실시예로 형성된 휴대용 마사지팩 제조기의 작동상태 단면도.

도 4는 본 고안의 바람직한 실시예로 형성된 휴대용 마사지팩 제조기의 전면케이스의 사시도.

<도면의 주요 부분에 대한 부호의 설명>

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 휴대용 마사지팩 제조기에 관한 것으로, 보다 상세하게는 휴대가 간편하고 사용이 편리하도록 모터가 내재되어 회동되는 케이스의 전면 내부에 오이, 당근 등의 야채류나 과일류 등을 삽입한 후, 상기 모터를 회동시켜 스크래치시킴으로써 야채 또는 과일즙이 외부로 배출되면서 피부조직을 부드럽고 탄력있게 마사지할 수 있도록 한 휴대용 마사지팩 제조기에 관한 것이다.

일반적으로 피부의 탄력을 향상시키거나 피부의 노화를 방지시키기 위하여 각종 화장품이나 마사지용 크림 등의 기능성 화장품 뿐만 아니라, 여러가지 야채류나 과일류를 사용하고 있다.

이렇듯, 상기 피부에 관련된 관심은 비단 여성들뿐만 아니라 남성들에게도 점점 커져만 가고 있고, 이를 전문으로 하는 마사지 전문업체와 피부마사지용 장치들이 등장하고 있는 실정이다. 한편, 상기 피부마사지하는 방법은 화장품이나 마사지용 크림 등을 바르거나 야채류나 과일류(이하, 재료라 칭함) 등을 사용하여 믹서기로 갈아서 바르는 방법이 있다.

이때, 상기 재료를 사용할 경우에는 상기 천연재료를 적당한 크기로 토막을 낸 후, 믹서기로 갈아서 마사지할 피부에 발라 사용하게 된다.

그러나, 상기 재료를 사용하게 되면, 마사지팩을 형성시키는 과정이 번잡스러고 복잡하여 개인직으로 자주 하는 것이 매우 불편할 뿐만 아니라, 믹서기가 있어야 하기 때문에 휴대할 수 없는 문제점이 있었다.

고안이 이루고자 하는 기술적 과제

상기한 문제점을 해결하기 위해서 본 고안은 다음과 같은 목적으로 고안되었다.

(1) 모터가 내재된 케이스의 전면에 스크래치부를 갖는 전면커버가 결합되어 상기 전면커버의 내부로 재료를 삽입하여 모터에 의해 회동시킴으로써 상기 재료가 즙형태로 간단하게 배출될 수 있다.

(2) 상기 재료를 믹싱하는 구조를 휴대하기 편리하도록 구성함으로써 원하는 곳이면 어디든지 마사지팩을 제조할 수 있어 피부에 마사지할 수 있다.

고안의 구성 및 작용

상기한 목적을 달성하기 위해서, 본 고안은 모터가 내부에 삽입된 몸체케이스의 전방으로 오이, 당근 등의 재료가 삽입되는 야채케이스가 형성되고, 상기 야채케이스 내부에는 재료가 끼워지는 회전부싱이 모터와 연동되도록 회전가능하게 결합

MassagerPriorArt0000397

Petitioner Therabody Ex-1004, 2154

되며, 야채케이스의 선단에는 스크래치부를 내부에 갖는 전면커버가 분리가능하게 결합되고, 상기 회전부싱과 모터의 모터축사이에는 압축스프링이 내재되어, 상기 야채케이스에 삽입된 재료가 모터축에 의해 회동됨으로써 전면커버의 스크래치부와 마찰되면서 즙형태의 마사지팩이 배출될 수 있는 것을 특징으로 한다.

이하, 본 고안의 바람직한 실시예로 첨부된 도면을 참조하여 상세하게 설명하면 다음과 같다.

도 1내지 도 3에서와 같이, 모터(180)가 내부에 삽입된 몸체케이스(100)의 전방으로 오이, 당근 등의 재료(500)가 삽입되는 야채케이스(300)가 형성되고, 상기 야채케이스(300) 내부에는 재료(500)가 끼워지는 회전부싱(400)이 모터(180)와 연동되도록 회전가능하게 결합되며, 야채케이스(300)의 선단에는 스크래치부(640)를 내부에 갖는 전면커버(600)가 분리가능하게 결합되고, 상기 회전부싱(400)과 모터(180)의 모터축(185)사이에는 압축스프링(200)이 내재되어, 상기 야채케이스(300)에 삽입된 야채류가 모터축(185)에 의해 회동됨으로써 전면커버(600)의 스크래치부(640)와 마찰되면서 즙형태의 마사지팩이 배출된다.

상기 몸체케이스(100)는 'ㄱ'자 형태로써 내부 하단에 밧데리가 수용되는 밧데리삽입부(미도시)가 형성되고, 상기 몸체케이스(100)의 전면에는 밧데리에서 모터(180)로 인가되는 전원을 차폐하는 스위치(120)가 형성되며, 상기 밧데리삽입부의 상측에는 모터(180)가 내장되는 모터부삽입홀(160)이 형성되고, 상기 모터(180)의 전방에는 야채케이스(300)의 후방과 결합되는 장착홀(140)이 형성된다.

또한, 상기 몸체케이스(100)의 후면에는 상기 밧데리삽입부로 밧데리를 삽입시킬 수 있도록 뚜껑(미도시)이 형성되어 밧데리를 교체할 수 있는 것이다.

상기 야채케이스(300)는 원통형으로써 전방부의 외주연에는 다수의 결합돌기(320)가 형성되고, 내부에는 회동부싱(400)의 후면이 걸리도록 걸림턱(360)이 형성되며, 상기 걸림턱(360)의 후방에는 상기 몸체케이스(100)와 볼트로 결합되도록 다수의 홀을 갖는 플랜지(340)가 형성되는데, 상기 걸림턱(360)은 야채케이스(300)의 내부로 재료(500)를 삽입시킬 때, 무리하게 많은 양의 재료(500)가 삽입됨으로써 압축스프링(200)에 무리한 힘을 받지 않하도록 제한하는 역할을 하는 것이다.

상기 회전부싱(400)은 내부중앙에 송곳형태의 재료꽂이(420)가 일정길이 돌출되어 형성되고, 상기 재료꽂이(420)를 중심으로 한 회전부싱(400)의 내주연에는 다수의 고정날개(440)가 형성되며, 상기 회전부싱(400)의 후방에는 모터축(185)과 연동되게 결합되는 끼움홈(480)을 갖는 고정부(460)가 돌출형성된다.

상기 회동부싱(400)은 재료(500)를 야채케이스(300)의 내부로 삽입하여 모터축(185)에 의해 회동부싱(400)이 회동될 때 상기 고정날개(440)로 인해 재료(500)가 미끄러지면서 헛돌지 않도록 하는 미끄럼방지역할을 하는 것이다.

또한, 상기 회전부싱(400)과 상기 모터(180)의 모터축(185)과 결합되어 상기 모터(180)의 구동력을 상기 회전부싱(400)으로 전달하는 샤프트(250)가 포함되어 구비될 수 있다.

상기 전면커버(600)는 전방일측으로 일정크기 절개된 배출구(620)가 형성되고, 상기 배출구(620)의 내부 일측으로 날카로운 형태의 스크래치부(640)가 형성되며, 상기 스크래치부(640)의 후방으로 야채케이스(300)의 결합돌기(320)와 체결될 수 있도록 체결홈(660)이 형성된다.

상기 스크래치부(640)는 내부방향으로 날카로운 돌출부가 다수개 형성되는데, 상기 날카로운 돌출부로 인해 재료가 꽂힌 회전부싱(400)이 모터(180)의 모터축(185)에 의해 회동될 때 압축스프링(200)에 의해 앞으로 밀리면서 스크래치되어 즙형태로 갈릴 수 있도록 형성된다.

또한, 도 4와 같이, 상기 전면커버(600)의 주연부에는 다수의 배출홀(680)이 관통되게 형성되어 야채즙이 상기 배출홀(680)의 외부로 배출되도록 형성될 수 있다.

이하, 본 고안의 실시예로 형성된 휴대용 맛사지팩 제조기의 작동방법을 설명하면 다음과 같다.

상기 회동부싱(400)이 내재된 야채케이스(300)의 내부에 적당하게 자른 재료(500)를 삽입하게 되는데, 상기 재료(500)의 중앙면을 상기 회동부싱(400)의 재료꽂이(420)에 꽂고, 스트래치부(640)를 갖는 전면커버(600)의 체결홈(660)에 상기 야채케이스(300)의 결합돌기(320)를 삽입하여 체결하면 상기 회동부싱(400)의 후방부에 있는 압축스프링(200)이 압축되면서 장착되게 된다.

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이후, 밧데리부의 전원을 공급하는 스위치(120)를 온(on)하여 모터(180)로 전원을 인가하면, 상기 모터(180)가 작동되면서 모터축(185)과 연동된 상기 회동부싱(400)이 회동되어 재료(500)와 함께 회동하게 되는 것이다.

이때, 상기 전면커버(600)의 스크래치부(640)에 의해 재료(500)는 스크래치되면서 즙형태로 변형되고, 상기 후방으로 압축된 압축스프링(200)은 회동부싱(400)을 전방으로 밀게 됨으로써 상기 재료(500)가 끝까지 밀어주게 되는 것이다.

고안의 효과

상기한 것과 같이, 본 고안의 휴대용 마사지팩 제조기에 의하면 다음과 같은 효과가 발생한다.

(1) 모터가 내재된 케이스의 전면에 스크래치부를 갖는 전면커버가 결합되어 상기 전면커버의 내부로 야채류나 과일류를 삽입하여 모터에 의해 회동시킴으로써 야채류나 과일류가 스크래치되는 동시에 즙형태의 마사지팩이 피부에 바로 배출될 수 있다.

(2) 야채류나 과일류를 믹싱하는 구조를 휴대하기 편리하도록 구성함으로써 원하는 곳이면 어디든지 마사지팩을 제조할 수 있어 피부에 마사지할 수 있다.

(57) 청구의 범위

청구항 1.

모터(180)가 내부에 삽입된 몸체케이스(100)의 전방으로 오이, 당근 등의 재료(500)가 삽입되는 야채케이스(300)가 형성되고, 상기 야채케이스(300) 내부에는 재료(500)가 끼워지는 회전부싱(400)이 모터(180)와 연동되도록 회전가능하게 결합되며, 야채케이스(300)의 선단에는 스크래치부(640)를 내부에 갖는 전면커버(600)가 분리가능하게 결합되고, 상기 회전부싱(400)과 모터(180)의 모터축(185)사이에는 압축스프링(200)이 내재되어, 상기 야채케이스(300)에 삽입된 재료(500)가 모터축(185)에 의해 회동됨으로써 전면커버(600)의 스크래치부(640)와 마찰되면서 즙형태의 마사지팩이 배출될 수 있는 것을 특징으로 하는 휴대용 마사지팩 제조기.

청구항 2.

제 1항에 있어서,

상기 몸체케이스(100)는 'ㄱ'자 형태로써 내부 하단에 밧데리가 수용되는 밧데리삽입부(미도시)가 형성되고, 상기 몸체케이스(100)의 전면에는 밧데리에서 모터(180)로 인가되는 전원을 차폐하는 스위치(120)가 형성되며, 상기 밧데리삽입부의 상측에는 모터(180)가 내장되는 모터부삽입홀(160)이 형성되고, 상기 모터(180)의 전방에는 야채케이스(300)의 후방과 결합되는 장착홀(140)이 형성된 것을 특징으로 하는 휴대용 마사지팩 제조기.

청구항 3.

제 1항에 있어서,

상기 야채케이스(300)는 원통형으로써 전방부의 외주연에는 다수의 결합돌기(320)가 형성되고, 내부에는 회전부싱(400)의 후면이 걸리도록 걸림턱(360)이 형성되며, 상기 걸림턱(360)의 후방에는 상기 몸체케이스(100)와 볼트로 결합되도록 다수의 홀을 갖는 플랜지(340)가 형성된 것을 특징으로 하는 휴대용 마사지팩 제조기.

청구항 4.

제 1항에 있어서,

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상기 회전부싱(300)은 내부중앙에 송곳형태의 재료꽂이(420) 가 일정길이 돌출되어 형성되고, 상기 재료꽂이(420)를 중심으로 한 회전부싱(300)의 내주연에는 다수의 고정날개(440)가 형성되며, 상기 회전부싱(300)의 후방에는 모터축(185)과 연동되게 결합되는 끼움홈(480)을 갖는 고정부(460)가 돌출형성된 것을 특징으로 하는 휴대용 마사지팩 제조기.

청구항 5.

제 1항에 있어서,

상기 전면커버(600)는 전방일측으로 일정크기 절개된 배출구(620)가 형성되고, 상기 배출구(620)의 내부 일측으로 날카로운 형태의 스크래치부(640)가 형성되며, 상기 스크래치부(640)의 후방으로 하채케이스(300)의 결합돌기(320)와 체결될 수 있도록 체결홈(660)이 형성된 것을 특징으로 하는 휴대용 마사지팩 제조기.

청구항 6.

제 1항에 있어서,

상기 회전부싱(300)과 상기 모터(180)의 모터축(185)과 결합되어 상기 모터(180)의 구동력을 상기 회전부싱(300)으로 전달하는 샤프트(250)가 포함되어 구비된 것을 특징으로 하는 휴대용 마사지팩 제조기.

청구항 7.

제 5항에 있어서,

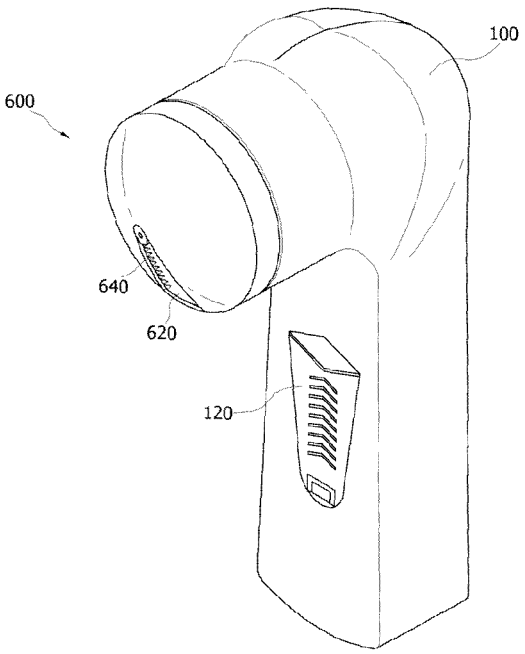
상기 전면커버(600)의 주연부에는 다수의 배출홀(680)이 관통되게 형성된 것을 특징으로 하는 휴대용 마사지팩 제조기.

도면

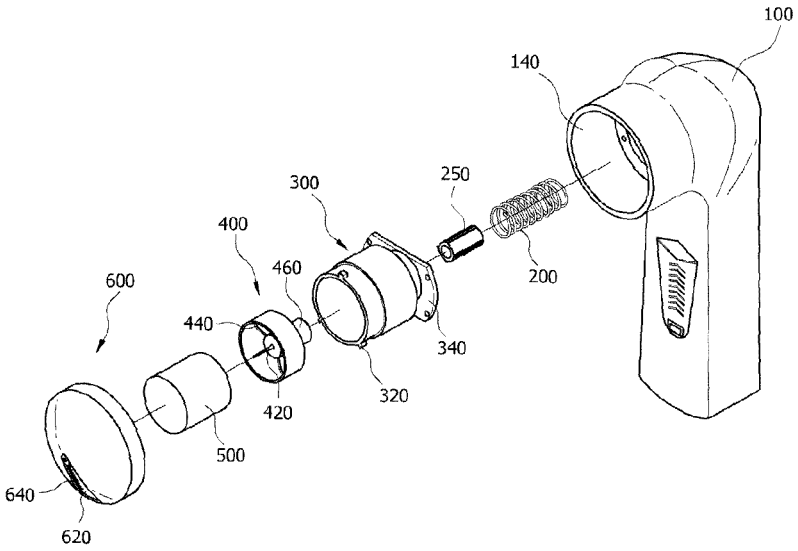
MassagerPriorArt0000400

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도면1



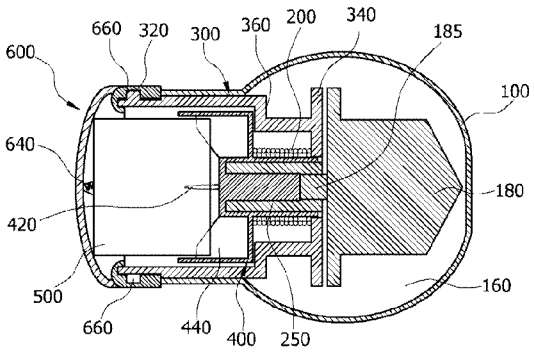
도면2



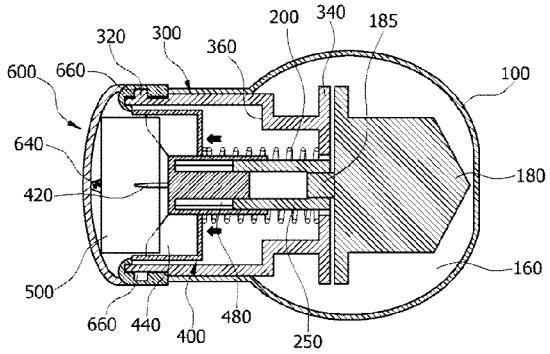
MassagerPriorArt0000401

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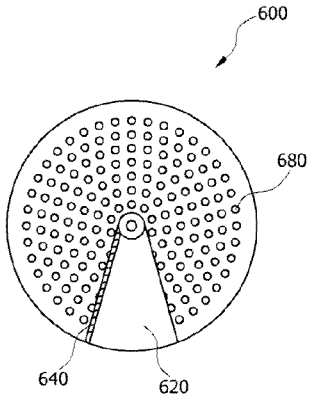
도면3a



도면3b



도면4



MassagerPriorArt0000402

Petitioner Therabody Ex-1004, 2158

JPH07153440A BATTERY CASE

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The wording below is an initial machine translation of the original publication. To apply more advanced translation technology, use Patent Translate.

[0001] [0001] The present invention is housed Ke of the battery - it relates to nest structure.

[0002] BACKGROUND ART In a battery to be used in a camera or the like, long-term cotton Tsute can use, Katsumo - those of high performance that can drive a large load as data is requested.

[0003] Based on such a request, a battery with a long performance of compact and large capacity self-discharge is low lifetime, for example Hutu graphite lithium battery, it has been developed, this battery up to 1 amperes strong since the current discharge is possible and summer, intentionally or rapidly heat is generated by Tsute battery to a large current flows and to short-circuit between the positive and negative electrode of the battery accidentally, danger of causing Continuous short circuit state of the fire and explosion accident there is.

[0004] On the other hand, many of them using the IC in the device such as a recent camera. Therefore, when loading the device with the positive and negative electrodes of the battery deliberately or accidentally reversed, not only the equipment is not working, the IC is at risk of being destroyed.

[0005] In addition, when loaded with if the electrode of the part of the battery to reverse in equipment that use multiple batteries, there is also a possibility that the accident of explosion is reverse charging is done occurs.

[0006] [Invention Problems to be Solved] For this reason, in the equipment that uses the battery as described above and as consumers of conventional general is not to replace the batteries, menu was produced equipment - mosquitoes - by the hand of such Tsute because you are to perform the exchange only, it has a summer thing very inconvenient on convex to the general consumer.

[0007] The present invention has been made to solve the inconveniences as described above, and an object, even a battery as described above as a consumer by Tsute loading errors that are handled is, fire and explosion accident, do not be such as destruction of the equipment takes place, a new battery compartment Ke - is to provide a scan.

[0008] Means for Solving the Problems The present invention is intended to solve the above problems, a holding portion for holding side by side cylindrical batteries connected in series to two parallel, external disposed on the outer wall surface of the holding portion positive and negative contact portion for contacting the device, battery housing to case and a connecting member for connecting each of the positive and negative electrodes of a battery that is accommodated in the holding portion and the positive and negative contact portion - in the scan, the holding portion contact portion arranged positive and negative on the outer wall surface, the battery housing hair - when rotated 180 degrees about the center line between the two cylindrical batteries aligned to scan in parallel, before the rotation the contact portion of the characterized in that it is arranged to come to not coincide with the position location.

[0009] [Action] positive and negative contact portion for connecting the external device and the battery, battery housing Ke - when brought into rotation to rotate 180 degrees of the center line between the two cylindrical batteries aligned to scan in parallel, before the rotation center a scan between the two cylindrical battery of - of because they are arranged so as to come to the position and does not match the position of the contact part, false Tsute battery compartment Ke - reverse direction a scan to an external device, namely a battery housing to case when loaded in a state of being rotated 180 degrees around the line, the position of the contact portion battery housing Ke - so deviated from the position of when loaded with scan in the normal direction, the positive and negative electrodes of the battery to an external device not be connected to the opposite polarity.

[0010] Example will be described below with reference to the accompanying drawings embodiments of the present invention. Battery in the present invention prior to sale battery housing to case according to the present invention - housed in the scan, the consumer is configured so as not directly addressed the cell. 1 to 3 show a first embodiment of the present invention.

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[0011] 1 is a battery of large capacity having the risk of by Tsute explosion shorted, arranged in two parallel to face opposite directions both the electrodes, one end of such which each other's electrodes conductive metal 2 so as to connect is welded, both batteries are connected in series.

[0012] 3 battery housing Ke - scan a and is vertically divided into two is configured to accommodate the battery 1. Battery housing Ke - scan 3 holds the battery, the top surface of the upper 3a of (outer wall), narrow opening 3b having different opening diameters at positions corresponding to the positive electrode and the negative electrode of the battery 1 to be accommodated, 3c There is formed so as to penetrate through the top surface.

[0013] Also, the battery housing to case - scan 3 is recessed portion which is along Tsute formation of the outer shape of the two cells arranged in parallel are formed on only one, the battery housed in the recess viewed portion Ke - scan 3 Camera step portion 3d to only be inserted in the correct orientation when loading the apparatus etc. 10 (hereinafter referred to as device) is formed.

[0014] To accommodate the battery 1 Atatsute is the battery 1 battery compartment Ke - one to first be fitted which is divided into top and bottom of the scan 3, it is sold to the general consumer after fixing impossible up and down separated by fitting the other that.

[0015] More battery 1 as the battery housing to case almost completely when the consumer handles - covered by the scan 3, the electrode unit 1a, 1b is to allow contact with the outside only through a narrow opening 3b, 3c, the top surface is located from (outer wall) on the inside, it will not be short-circuited carelessly. In addition, the battery housing Ke - Atatsute to sale of the scan 3 battery compartment Ke - narrow opening 3b of the top surface of the scan 3, made of paper or the like so as to cover the 3c label before use the battery if in hearts Handling but it is possible to prevent intrusion of dust become more secure.

[0016] Battery chamber 10a further battery connection pins 11, 12 by Tsute supported by the biasing springs 15 and 16 is disposed housed in the apparatus 10 Ke - contrary to the position fitted to the stepped portion 3d when the scan 3 is loaded if it is not the direction that have input prevention projection 10b is provided with a stepped portion 3d and the reverse input preventing projection 10b is facing a battery housing to case - can not be loaded with vinegar.

[0017] Connecting pins 11 and 12 are each a battery housing Ke - narrow opening 3b provided to the nest 3, in the opposite direction are formed as different ivy thickness corresponding to the aperture diameter of the 3c battery compartment Ke - loading a scan 3 relatively thick connection pin 12 is narrow opening 3b of the also the connection pins 11 and 12 in an attempt to, connected to the more narrow cell 1 of the electrode can not be fitted into the opening 3b of one of the 3c pin 11, 12 but not connected.

[0018] Follow Tsute battery housing to case - in an apparatus for use with a plurality of electrically connected in series a scan 3, one of the battery compartment to case - are arranged so as to face the scan - scan of the step portion 3d other battery storage Ke When the battery compartment to be loaded is constituted, the battery housing Ke - scan can not be performed loading direction regulated by the step portion and the reverse input prevention projection, but there can be being reversed loaded, such such If the current also does not flow, it is possible to prevent the current I Tsute heat generation, explosion accident that flows occur in a battery of'm Tsute low voltage to the potential difference between the battery.

[0019] Prevention stepped portion 3d of the scan 3 and the reverse input preventing projection 10b and the connection pins 11 and 12 with the narrow opening 3b, 3c is an accident due to the to function as a reverse entering prevention device loading errors to double - In this way the battery compartment Ke it can.

[0020] Battery storage Ke - One per To load a scan 3 in the battery chamber 10a of device 10 first step portion 3d and the reverse input preventing projection 10b battery housed in a direction in which the face-to-face Ke - When you insert a scan 3, a battery housing Ke - scan 3 is placed in the battery chamber 10a is guided while being direction regulation to reverse input preventing projection 10b. In addition the battery compartment Ke - scan 3 to when the thinner of the connection pin 11 is narrow and the narrow opening 3b of those who have been formed through contact with the positive electrode 1a of battery 1 closet, the thicker connection pin 12 is relatively wide narrow opening 3c formed by the through negative electrodes 1b abuts the cell 1, the biasing springs 15 and 16 is compressed.

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[0021] Fully battery storage Ke - When you close the battery lid 14 is loaded a scan 3 in the battery chamber 10a, the connecting pins 11 and 12 are pressed against the electrode 1a, 1b of by the biasing force Tsute battery 1 of the biasing spring 15 and 16 the connection is retained becomes state.

[0022] Battery storage Ke - by the biasing force of the biasing spring 15 and 16 and to open the Atatsute battery lid 14 to retrieve a scan 3 Tsute battery storage Ke - scan 3 is extremely is take-out for some projects from the battery chamber 10a it is easy.

[0023] Figure 4 shows a second embodiment of the present invention. Battery 1 and the battery housing to case in this embodiment - between the openings 3b of the scan 3, 3c, the connection portion is provided to connect housed battery 1 electrodes 1a, a connection pin provided on 1b and equipment with, diodes - which prevents the backflow of current using the de. 4,5 narrow opening 3b at the junction, contact with the connection pin provided on the device (not shown) via 3c.

[0024] Connection 5 is battery housing Ke - have been resilient contact piece 5a integrally formed provided in the battery chamber 3e of scan 3 is a negative electrode 1b and resiliently connected to the battery 1. Further, the connecting portion 4, the connecting member 6 and the diode are positive electrodes 1a and elastically connect the battery 1 with an elastic contact piece 6a - is connected via a de-7.

[0025] Electrodes 1a as in the first embodiment in this embodiment, short circuit 1b and battery housing to case - together with the loading errors can be prevented in the scan 3, a plurality of battery housing Ke - when used in parallel connection scan 3 it is possible to prevent the generation of heat, explosion of the battery to be by Tsute blocked by the de 7 - a potential difference is have Tsute between the battery also current to the battery of low voltage is possible to inflow of diode.

[0026] 5 to 8 show a third embodiment of the present invention. Battery housing Ke in the present embodiment - scan 3 same Ke provided with a contact projecting from - intermittent possible contacts in scan 3 is provided, the Ke - electrode of the battery 1 only when the scan 3 is loaded correctly connected contact piece and battery housing hair - are connected to the contact protruding from scan 3 contact piece is configured as a current flows connected.

[0027] 21 and 22 battery housing to case at the electrode contacts - has been installed so as to protrude the top of the scan 3, a battery housing to case, as shown in FIG. 5 - is provided at a position asymmetrical with respect to the center line of the scan 3 Therefore, never contacts 21 and 22 are connected contacts the opposite device side is reverse loaded.

[0028] Battery housing Ke - connected to the interior of the scan 3 is connected to the 7 and the negative electrode 1b and resiliently connected electrode contact 22 of the first battery 1 as shown in FIG. 8 members 27 and the elastic contact piece 6a, connecting member 6 is provided in which are positive electrodes 1a and resiliently connected to the battery 1.

[0029] The other end one end is fixed to the electrode contacts 21 from the bent end 28a to not make bent end 28a diodes - connections are connected de 7 to contacts 29 through a member 28 battery storage Ke - are fixed on the inner wall of the scan 3. In addition, the positive electrode 1a of battery 1 in contact with the second contact piece portion 25b of the other end to the first contact piece portion 25a is in contact with the contact piece 29 of the one end to the bent end 6b of the connecting member 6 battery storage Ke - conductor contact piece 25 mobile-like of the electrode contact 21 connected to state that because of the scan 3 is installed.

[0030] Conductor contact piece 25 have been fixed to the switching member 24, which is supported by the biasing spring 23, the battery housing to case - first contact conductor contact piece 25 by the biasing spring 23 in a state of not loading the scan 3 to the apparatus and between the bent end 6b of the strip portion 25a connecting member 6, in order to have been pulled apart between the second contact piece portion 25b and the contact piece 29, the connecting member 6 and the contact piece 29 is connected It not, is connected to electrode contacts 21, 22 short-circuited current is not caused short-circuit does not flow. The switching member 24 is battery housing to case - are arranged so as to be capable external contact through an opening 3f which is provided so as to penetrate the top surface of the scan 3.

[0031] Battery housing to case in the present embodiment - Atatsute to load the scan 3 to the apparatus (not shown), first battery housing Ke - mounting direction regulating pin which is fixed to the apparatus for inserting the scan 3 in the correct direction (not shown) of the battery housing to case - it pushes downward in the figure

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against the biasing force of the penetrating openings 3f provided on the top surface of the scan 3 biases the switching member 24 the spring 23. In addition, the battery housing to case - the mounting direction control pin is also an attempt to load in a scan 3 to Ayamatsu was direction is the same Ke - loaded to contact the upper surface of the scan 3 is impossible.

[0032] First and second contact piece portion 25a of the conductor contact piece 25 by Tsute conductor contact piece 25 to be switching member 24 is moved downward in the figure is whoa, 25b is bent end 6b and each connection member 6 in contact with the contact piece 29, and the positive electrode 1a and the electrode contact 21 of the battery 1 is connected. At this time, is pushed to the colored tail 24a is mounting direction regulating pin of the switching member 24 (not shown) battery storage Ke - protrude from the scan 3 of the step portion 3d, the positive electrode portion has decreased to the connection state indicate. Further battery housing Ke - electrode contacts 21 and 22 when pushed to scan 3 in the apparatus is brought into contact with contacts fixed to the device side, loaded conduction been is completed.

[0033] Battery storage Ke - scan 3 is taken out from the device and the mounting direction regulating pin and the switching member 24 and the switching member 24 and the conductor contact piece 25 on cowpea the biasing force of the contact is biasing spring 23 to be released on the upper side of Fig. moved, first and second contact piece portion 25a, 25b and the positive electrode 1a and the electrode contact 21 of the contact is solved cell 1 of the bent end 6b and the contact piece 29 of the connecting member 6 is connected It is not.

[0034] Foregoing as electrodes 1a, short circuit 1b is prevented in the present embodiment, together with the accident due to erroneous loading can be prevented, diodes - a plurality of battery housing as in the second embodiment due to the de 7 provided Ke - scan 3 it is possible to prevent the accidents that may occur when used in connected in parallel. Incidentally, diode - de 7 a voltage detection circuit is provided in place may be configured to a voltage of the battery 1 is cut off the connection Suitsuchingu circuit Control Act electrode contact 21 and the battery 1 electrodes 1a when drops below a predetermined level .

[0035] 9 to 12 show a fourth embodiment of the present invention. Providing a shielding member between the scan aperture of battery housing Ke - - electrodes and battery housing to case of the battery in the present embodiment the shielding member when loaded into scan of the device is configured so as to be capable loading retracted there.

[0036] 30 is a shielding member, integrally by the molding that have been pin 30a Tsute battery storage Ke - shielding the opening of the scan 3 3b, 3c - are bearing the opening 3g provided on the top surface of the scan 3 battery compartment Ke It is pivotally supported so that it can pivot between a position to release the cormorant position. Shielding member 30 is a battery housing to case - contact with the inner wall of the elastic member 30c of the scan 3 is brought, finger portion 30b is the same Ke - part forming the stepped portion 3d of the outer wall portion of the scan 3, that is housed in the camera 50, which will be described later battery housing Ke facing the opening 3h protrude from an opening 3h provided on the portion facing the direction regulating member 53 - has been stopped in contact with the outer wall portion to form a stepped portion 3d of the scan 3, in this state the shielding member 30 is battery housing to case as shown in FIG. 12 (a) - shields the opening 3b of the top surface of the scan 3, 3c.

[0037] Atatsute To load the scan 3 in the battery compartment 51 of the camera 50, after opening the battery cover 52 of the camera 50 shown in FIG. 9, battery housing Ke - - battery housing Ke In the present embodiment stepped portion of the scan 3 3d is the insertion direction facing the accommodating direction regulating portion 53 provided inside the battery chamber 51, i.e. the step portion 3d figure below, the battery chamber 51 toward the top surface to the left in FIG. In addition, the battery housing to case - by scan 3 is housed direction regulating member 53, will not be loaded in the wrong direction.

[0038] Battery storage Ke - when the scan 3 is placed is guided to the battery chamber 51 in the direction of housing regulation member 53, the protruding portion of the finger portion 30b of'm Tsute shielding member 30 on the slopes 53a of the housing direction regulating member 53 is pressed shielding member 30 is rotated in the clockwise direction against the biasing force of the elastic piece portion 30c, FIG. 12 (b) in the battery housing as shown to case - the top surface of the opening 3b of the scan 3, to open the 3c. In addition followed by a battery housing to case - scan 3 connecting pins 11 and 12 which are installed in when you pushed the battery chamber 51 each opening 3b, electrode 1a of battery 1 fitted to 3c, is 1b and the contact with the connection. Connecting pins 11 and 12 electrode 1a by the urging force of the first embodiment by closing the battery cover 52 as well as the biasing spring (not shown), the connection becomes a state of being pressed against the 1b is maintained.

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[0039] Battery storage Ke - and also the first example that a part of the scan 3 is projected from the battery chamber 51 - by the biasing force of the biasing spring and to open the Atatsute battery lid 52 to take out a scan 3 Tsute battery compartment Ke it is similar, in this embodiment the finger addressed it is possible to draw Tsute in the recessed portion 3i so recess 3i for taking out is provided, which facilitates further extraction summer. Battery housing Ke - shielding member 30 and taking out the scan 3 is rotated Control Act counterclockwise biasing force by the elastic force of the elastic piece portion 30c, abuts against the outer wall portion of the finger portion 30b faces the opening 30h stop shields the opening 3b, and 3c as shown in FIG. 12 (a). Follow shall be applied to any electrode 1a in this embodiment, 1b short circuit, the battery housing to case - it is possible to prevent accidents due to erroneous loading of the scan 3.

[0040] 13 to 16 show a modification in which assumes different shapes and operation of the shielding member of the fourth embodiment. Shielding member is a portion similar to the fourth embodiment battery housing to case - it is stopped to protrude from the opening 3h of the part forming the stepped portion 3d of the outer wall portion of the scan 3, provided inside the battery compartment and I Tsute projecting portion storing direction regulating member is pressed shielding member is retracted, the battery housing to case - is configured to open the opening of the scan 3 top face.

[0041] Shielding members 31 and 32 in the example shown in FIG. 13 is a pair, member 32 having one end portion is by Tsute pivotally supported on pin 32a at a position of the negative electrode near the positive electrode 1a, one end positive electrode member 31 which is by Tsute pivotally supported on pin 31a at a position deviation is shields the negative electrode 1 b, each of the shielding portion and the pin 31a, the intersection difference portion intersect each other at the middle of the 32a than the opening 3h battery housing Ke - scan 3 protrudes to the outside by signal portion 31b, to form a 32 b (see FIG. 13 (a)).

[0042] By the storing direction regulating member 53 Tsute signal section 31b, when 32b is pressed, shown in FIG. 13 (b) and the shielding member 31, 32 pivot pin 31a, to the respective counter-clockwise direction and the clockwise direction about the 32a open cell 1 of the electrode 1a, and 1b so. Those and contact is released shielding member 31, 32 battery housing the storing direction regulating member 53 to case - the elastic piece portion 31c which on the inner wall of scan 3 abuts, 32c by Tsute clockwise and anti-clockwise respectively the biasing force of the electrode 1b returns to the initial position by turning in the direction, to shield the 1a.

[0043] In the example shown in Figure 14 without the shielding members 33 and 34 pairs, each of one end the electrodes 1a, shields the 1 b, the pin 33a in the middle, is by Tsute axially supported to 34a, the other end portion It is projected to the outside. While the fixing pin 34d of the end portion protruding to the outside, fixing pins 34d and bifurcated cam face 33d is bifurcated cam surface 33d is formed is engaged on the other.

[0044] Storage direction regulating member 53 by the signal portion 33b is when the fixing pin 34 is pushed to the bifurcated cam surface 33d is rotated pressed of the shielding member 33 shielding members 33 and 34 is rotated clockwise and counterclockwise, respectively electrode 1a, and 1b to open on. When the contact is released to the storage direction regulating member 53 elastic piece portion 31c, shielding member 33 by the urging force of the 32c is moved backward to return to the original position, pushing that the employer fixing pin 34d into two cam surface 33d the shielding member 34 to return to.

[0045] Each end portion 35b are coaxially journalled, 36b are protruded stop together as a signal portion in the shield member 35, 36 common axis 37 of the pair in the example shown in FIG 15. Storage direction regulating member 53 by the signal section 35b, 36b is rotated to the shielding member 35 and 36 counter-clockwise direction and the clockwise direction respectively pressed electrode 1b, to open a 1a. When the contact is released to the storage direction regulating member 53 elastic piece portion 35c, I Tsute shielding member 35 and 36 to the biasing force of the 36c is moved backward to return to the original position, the signal section 35b, 36b is in contact with Stop.

[0046] Each electrode 1a by the shielding member 38 at both ends in the example illustrated in FIG. 16, 1 b front end of the arm portion arm portion is provided to protrude form the signal portion 38b in the central portion is shielded, and the arm portion Tsute arm portion protruding to have an opening 3h of the pair of pins 39, 40 and a signal portion 38b which are arranged so as to sandwich is configured to slide while being regulated.

[0047] Storage direction regulating member 53 Control Act signal portion 38b is a shielding member 38 is pressed at both ends to slide while being regulated by the pin 39, 40 is opened and saved from the electrodes 1a,

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1b. Abutment is a shielding member 38 is out pursuant backward biasing force of the formed elastic piece portion 38c at both ends is by contact stopped by the pair of pins 39, 40 solved first and the receiving direction regulating member 53 to return to the position.

[0048] 17 to 19 show a fifth embodiment of the present invention. To scan the battery 1 electrodes 1a, but installing the shielding member 41 between the 1 b, unlike the fourth embodiment (not shown) - above fourth embodiment similar to the battery housing to case in this embodiment is O Tsute shielding member 41 in the installed connection pins 11, 12 are configured to retract.

[0049] Shielding member 41 as shown in FIG. 17 both end portions are connected by a central portion is forms a bifurcated shape, the opening 41a is provided between the connecting portion and the end portions, 41b are formed. In addition, the battery 1 and the battery compartment hair of the pair of pins 41c at both ends, 41d is the pin 41c is fixed, the two 41d are housed connecting portion of the shielding member 41 - formed between the scan 3 is Tsute shielding member 41 due to be fitted in the space is the cell 1 of the electrode 1a, 1b and the battery housing to case - the opening of the scan 3 3b, it is disposed at a position to shield the 3c.

[0050] Two surface contacting the connecting pins 11 and 12 of the split end portions is forms a V-shaped groove, have ceased to be divided into two at the bottom of the V-shaped groove, two divided respectively part is the reverse direction of the slope 41e, 41f and 41g, and forms a 41h.

[0051] When loaded into the device scan 3 (not shown), first 19 connecting pins 11 and 12 equal to case of the apparatus as shown in (a) - - the battery housing to case of the present embodiment the opening of the scan 3 3b, and 3c through to abut the two divided end portions of the shielding member 41. Then slope forms the tip V-shaped groove of the connecting pins 11 and 12, as shown in Figure 19 (b) 41e, 41f and 41g, is retracted to both sides push the 41h, the connection pins 11 and 12 are divided portions fitted to the battery 1 electrodes 1a, and connected abuts causes made 1b.

[0052] The battery housing to case - and the connecting pin 11 and 12 taking out a scan 3 is retracted, the shielding member 41 to close the contact with wedges each other to return is by Tsute divided into two portions in the elastic force, again V-shaped groove forming a, but in the present embodiment accommodating the battery as shown in FIG. 19 Ke - opening of scan 3 3b, Doke to 3c - the folding for folding part facing the inside of scan 3 is provided slope to the curved portion 41e, 41f and 41g, 41h is stopped in contact with, to shield electrode 1a of battery 1, a 1b. Also in the present embodiment as described above Dekiru preventing a short circuit of the fourth embodiment same electrode.

[0053] 20 to 21 show an example in which a different shape and operation of the shielding member of the aforementioned fifth embodiment. Shielding member 43 has a pin 43a is provided in the center portion, the pin 43a is battery housing Ke - opening 3b of the top surface of the scan 3, are bearing at the center of the 3c, further, each of the opposite ends of the shield member 43 slope 43b inclined in the opposite direction, 43c are being formed the slant surface 43b, respectively 43c opening 3b, it faces the 3c.

[0054] Connecting pins 11 and 12 opening 3b, 3c through to slope 43b, and comes into contact with the 43c, slope 43b, both ends of the shielding member 43 is pushed in the opposite direction each of which forms a 43c is about the pin 43a in the clockwise direction rotating the electrodes 1a, retracted from 1b, the connection pins 11 and 12 as shown in FIG. 21 (b) is the electrode 1a, the connection 1b abuts is made.

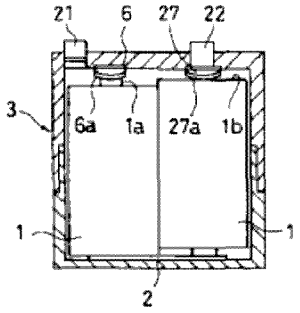
[0055] Shielding member 43 and the connection pin 11, 12 is retracted in a battery housing Ke - rotates to by the biasing force of the elastic piece portion 43b which on the inner wall of the scan 3 abuts Tsute counterclockwise shown in FIG. 21 (a) battery housing Ke as - top-face opening 3b of the scan 3, comes into contact with the bent portion provided in 3c is stopped, and the shielding electrode 1a of battery 1, the 1b.

[0056] As described above, according to the present invention, the battery housing to case of the present invention - vinegar, is a have high performance and large capacity of the accident of the destruction of'm Tsute explosion and equipment to reverse loading of the short circuit and the battery of the electrode shall apply as to accommodate the battery at risk, the battery compartment to case - by handling and storage to the nest, when used in loading the battery in the camera or other device, to loading errors, such as mistaking a loading direction Yotsute there is no possibility that the reverse connection of the electrodes occurs. Follow Tsute, the battery this battery storage Ke - when handling is housed in vinegar, without paying special attention to the handling, rather than the risk of accident occurrence of destruction of explosion and equipment, general consumers with peace of mind it can be handled.

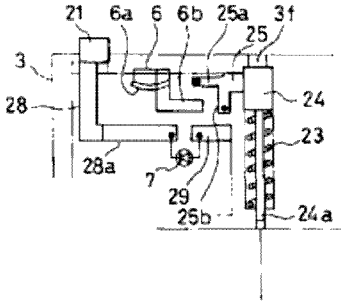
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Drawings

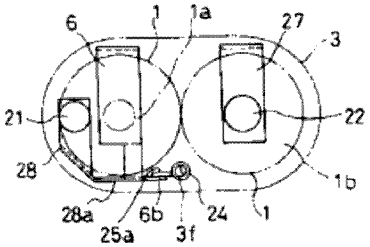
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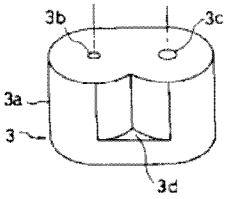
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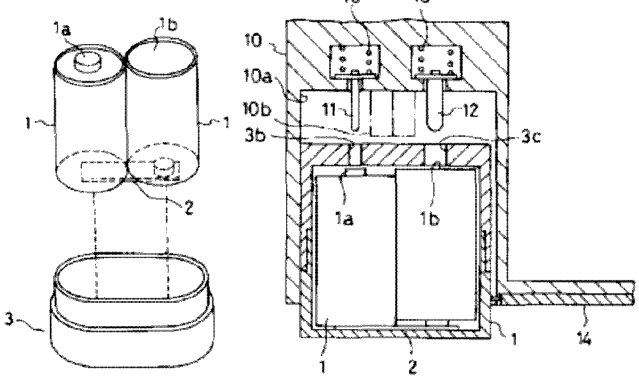
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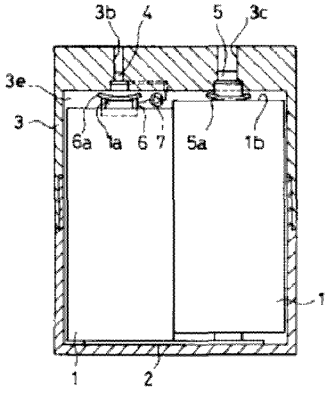
【図１】



【図２】



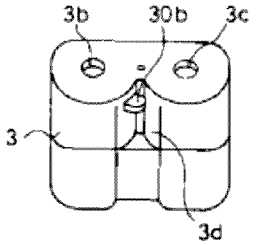
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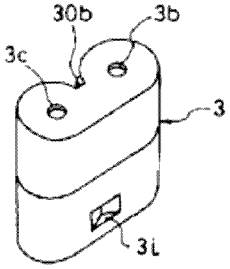
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【図１０】

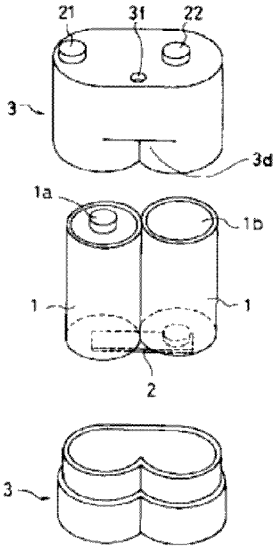
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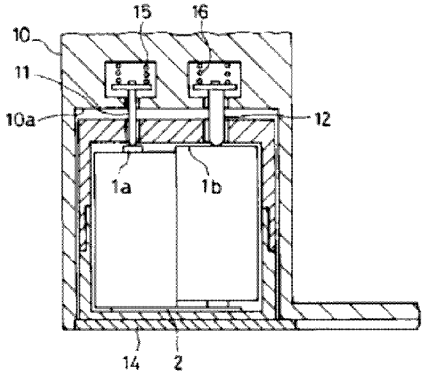
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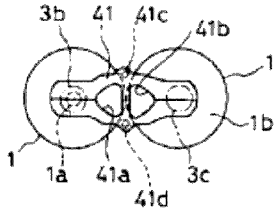
【図５】



【図３】

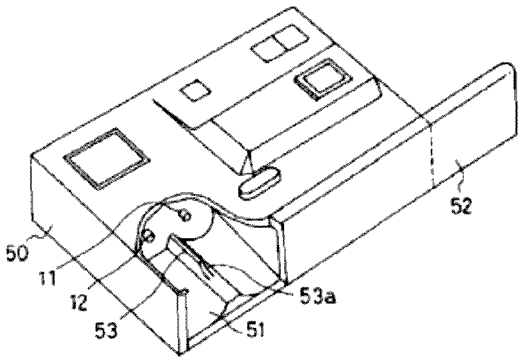


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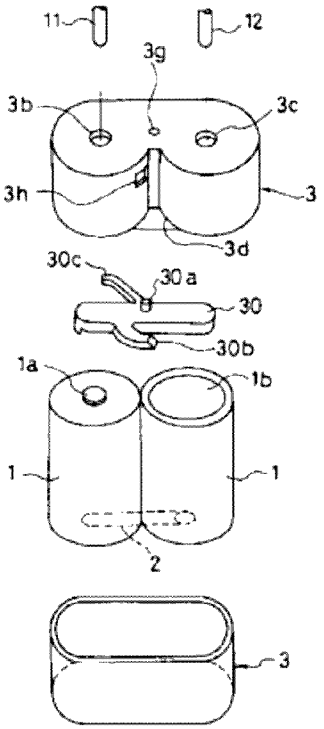


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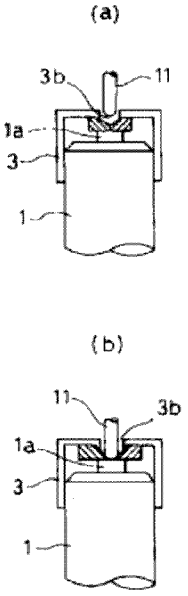
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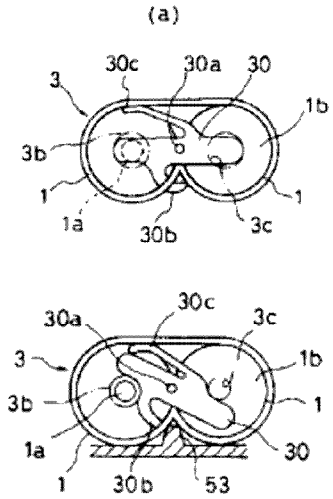
【図１１】

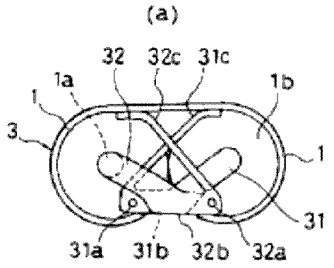


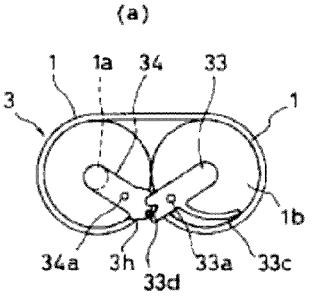
【図１９】



【図１２】



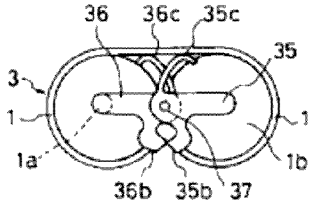




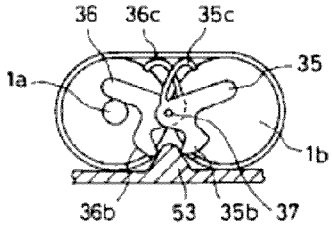
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【図１５】

(a)

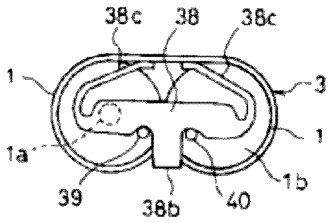


(b)

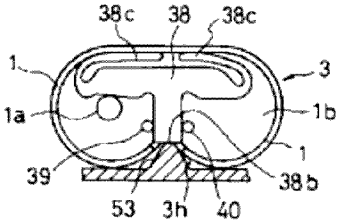


【図１６】

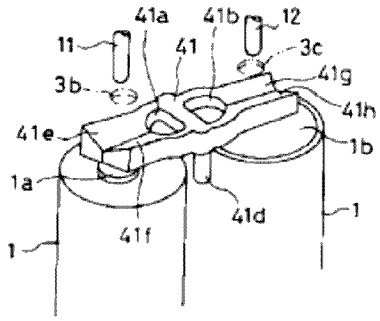
(a)



(b)

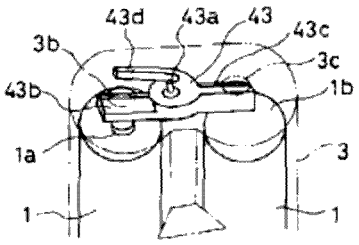


【図１７】

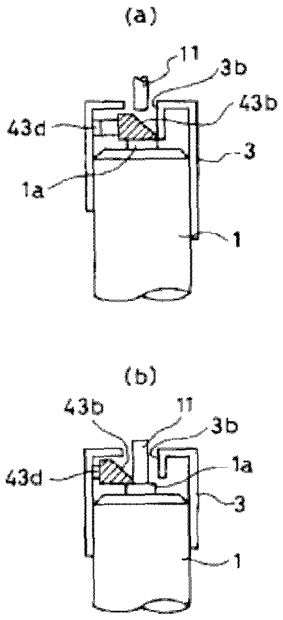


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【図２０】



【図２１】



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特開平7－153440

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(51)Int.Cl.[6]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｈ０１Ｍ　2/10		Ｎ		

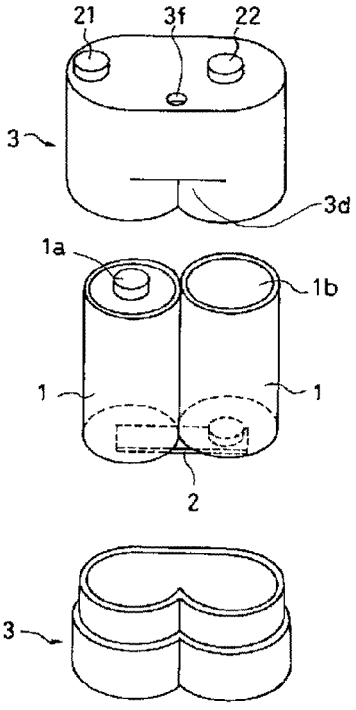
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(54)【発明の名称】　電池収納ケース

(57)【要約】
【目的】　電池の逆装填による爆発や機器の破壊等の事故を防ぐ電池収納ケースを提供する。
【構成】　円筒型電池１、１を収納する電池収納ケース３の頂面には、電極用接点２１、２２が配置されており、ケース３内部に収納され直列接続された円筒型電池１、１の正負の電極と接続されている。電極用接点２１、２２は電池収納ケース３を並列に並んだ円筒型電池の間の中心線の回りに１８０度回転したとき、電極用接点２１の位置と２２の位置は、回転前の電極用接点の位置と一致しない位置に配置されている。これにより電池収納ケース３をカメラなどの装置に逆方向に装填したとき電極用接点２１、２２は装置の接続端子に接触せず、爆発や装置の破壊等の事故を防ぐことができる。



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【特許請求の範囲】
【請求項１】　直列接続される円筒形電池を２本並列に並べて保持する保持部と、
上記保持部の外壁面に配置された外部機器に接触する正負の接触部と、
保持部の内部に収納される電池の正負の電極と前記正負の接触部とをそれぞれ接続する接続部材とを備えた電池収納ケースにおいて、
上記保持部の外壁面に配置された正負の接触部は、電池収納ケースを並列に並んだ２本の円筒形電池の間の中心線の回りに１８０度回転させたとき、回転前の接触部の位置と一致しない位置に来るように配置されていることを特徴とする電池収納ケース。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】この発明は電池の収納ケースの構造に関するものである。
【０００２】
【従来の技術】カメラ等に使用する電池においては、長期にわたつて使用でき、かつモータのように大きな負荷を駆動できるような高性能のものが要請される。
【０００３】そのような要請に基づき、小型で大容量であり自己放電性が低く寿命の長い高性能を持つ電池、例えばフツ化黒鉛リチウム電池、が開発されているが、この電池は最大１アンペア以上の強電流放電が可能となつているため、故意もしくは偶然に電池の正負電極間を短絡させると急激に大電流が流れることによつて電池が発熱し、短絡状態を続けると火災や爆発事故を起こす危険がある。
【０００４】一方、最近のカメラ等の機器にはＩＣを使用したものが多い。このため、故意もしくは偶然に電池の正負の電極を逆にして機器に装填すると、単に機器が作動しないだけではなく、ＩＣが破壊される危険がある。
【０００５】また、電池を複数使用する機器においてもし一部の電池の電極を逆にして装填すると、逆充電が行われて爆発等の事故が生じる恐れもある。
【０００６】
【発明が解決しようとする課題】このため、上記のような電池を使用する機器では従来一般の消費者が電池交換を行わないようにし、機器を製造したメーカー等の手によつてのみ交換を行うようにしているため、一般消費者にとつて大変不便なものとなつている。
【０００７】本発明は、上記のような不便を解消するためになされたもので、その目的とするところは、上記のような電池を一般消費者が取り扱うことによつて誤装填がされたとしても、火災や爆発事故、機器の破壊などが起こることのない、新たな電池収納ケースを提供することにある。
【０００８】
【課題を解決するための手段】本発明は上記課題を解決するもので、直列接続される円筒形電池を２本並列に並べて保持する保持部と、上記保持部の外壁面に配置された外部機器に接触する正負の接触部と、保持部の内部に収納される電池の正負の電極と前記正負の接触部とをそれぞれ接続する接続部材とを備えた電池収納ケースにおいて、上記保持部の外壁面に配置された正負の接触部は、電池収納ケースを並列に並んだ２本の円筒形電池の間の中心線の回りに１８０度回転させたとき、回転前の接触部の位置と一致しない位置に来るように配置されていることを特徴とする。
【０００９】
【作用】外部機器と電池とを接続する正負の接触部は、電池収納ケースを並列に並んだ２本の円筒形電池の間の中心線の回りに１８０度回転させたとき、回転前の接触部の位置と一致しない位置に来るように配置されているから、誤つて電池収納ケースを外部機器に逆方向、即ち電池収納ケースを２本の円筒形電池の間の中心線の回りに１８０度回転させた状態で装填したときは、接触部の位置が電池収納ケースを正規の方向に装填した場合の位置からずれるので、電池の正負の電極が外部機器に対し逆極性に接続されることがない。
【００１０】
【実施例】以下、本発明の実施例について図面を参照して説明する。本発明において電池は販売前にこの発明の電池収納ケースに収納され、消費者は電池を直接扱わぬよう構成されている。図１乃至図３は本発明の第１の実施例を示す。
【００１１】１は短絡によつて爆発の危険性をもつ大容量の電池であり、双方の電極が互いに逆方向を向くように２個並列して並べられ、それ等の一方の端部は互いの電極を連結するように導体金属２が溶接され、両電池が直列に接続されている。
【００１２】３は電池収納ケースであり上下に二分割されて電池１を収納するよう構成されている。電池収納ケース３は電池を保持するとともに、上部３ａの頂面（外壁部）の、収納される電池１の正電極と負電極に対応する位置に開口径の異なる狭い開口部３ｂ、３ｃが頂面を貫通するように形成されている。
【００１３】また、電池収納ケース３は並列に並べた２本の電池の外形の沿つて形成される凹み部が一方にのみ形成されており、該凹み部には該電池収納ケース３をカメラ等の装置１０（以下装置という）に装填する時に正しい方向にのみ挿入可能とするための段部３ｄが形成されている。
【００１４】電池１を収納するにあたつては電池１を電池収納ケース３の上下に分割された一方にまず嵌入させ、他方を嵌入させて上下分離不可能に固着した後一般消費者に販売される。
【００１５】以上のように電池１は消費者が扱う時には

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ぼ完全に電池収納ケース３に覆われ、電極部１ａ、１ｂは狭い開口部３ｂ、３ｃを介してのみ外部と接触可能なように、前記頂面（外壁部）より内側に位置しており、不用意に短絡することはない。尚、電池収納ケース３の販売にあたつて電池収納ケース３の頂面の狭い開口部３ｂ、３ｃを覆うように紙等でできたラベルを貼つておけば電池使用前の取扱いがより安全となりゴミの侵入も防止できる。

【００１６】装置１０の電池室１０ａには付勢バネ１５、１６によつて支持された接続ピン１１、１２が設置され更に電池収納ケース３が装填されたときに段部３ｄに嵌入する位置に逆入防止突起１０ｂが設けられていて段部３ｄと逆入防止突起１０ｂが対面する方向でなければ電池収納ケースを装填することはできない。

【００１７】接続ピン１１、１２はそれぞれ電池収納ケース３に設けられた狭い開口部３ｂ、３ｃの開口径に対応するよう異なつた太さに形成されており逆方向に電池収納ケース３を装填しようとしても接続ピン１１、１２のうちの比較的太い接続ピン１２が狭い開口部３ｂ、３ｃのうちのより狭い方の開口３ｂに嵌入することはできず電池１の電極と接続ピン１１、１２が接続されない。

【００１８】従つて電池収納ケース３を複数個電気的に直列接続して使用する装置において、１つの電池収納ケースの段部３ｄが他の電池収納ケースと対面するように並べられて装填されるよう電池室が構成されていると、その電池収納ケースは段部と逆入防止突起による装填方向規制を行うことができず、逆装填されることが有り得るが、この様な場合にも電流は流れず、電池間の電位差によつて低電圧の電池に電流が流入することによつて発熱・爆発事故が起きることを防止できる。

【００１９】このように電池収納ケース３の段部３ｄと逆入防止突起１０ｂ及び接続ピン１１、１２と狭い開口部３ｂ、３ｃが二重に逆入防止装置として機能するので誤装填による事故を防止できる。

【００２０】電池収納ケース３を装置１０の電池室１０ａに装填するにあたつてまず段部３ｄと逆入防止突起１０ｂが対面する方向に電池収納ケース３を挿入すると、電池収納ケース３は逆入防止突起１０ｂに方向規制されながら案内されて電池室１０ａに入れられる。更に電池収納ケース３を押入すると細い方の接続ピン１１が狭く形成された方の狭い開口部３ｂを貫通して電池１の正電極１ａと当接し、太い方の接続ピン１２が比較的広く形成された狭い開口３ｃを貫通して電池１の負電極１ｂと当接し、付勢バネ１５、１６は圧縮される。

【００２１】完全に電池収納ケース３を電池室１０ａに装填し電池蓋１４を閉じると、接続ピン１１、１２は付勢バネ１５、１６の付勢力によつて電池１の電極１ａ、１ｂに押しつけられた状態になり接続が保持される。

【００２２】電池収納ケース３を取出すにあたつて電池蓋１４を開放すると付勢バネ１５、１６の付勢力によつて電池収納ケース３は電池室１０ａから一部が突出するため取出はきわめて容易である。

【００２３】図４は本発明の第２の実施例を示す。本実施例においては電池１と電池収納ケース３の開口部３ｂ、３ｃの間に、収納された電池１の電極１ａ、１ｂと装置に設けられた接続ピンを接続する接続部が設けられるとともに、ダイオードを使用して電流の逆流を防いでいる。４、５は接続部で狭い開口３ｂ、３ｃを介して装置（図示せず）に設けられた接続ピンと当接する。

【００２４】接続部５は電池収納ケース３の電池収納室３ｅに設けられている弾性接片５ａと一体的に形成されていて、電池１の負電極１ｂと弾性的に接続されている。又、接続部４は、弾性接片６ａで電池１の正電極１ａと弾性的に接続されている接続部材６とダイオード７を介して接続されている。

【００２５】本実施例においては第１実施例と同様に電極１ａ、１ｂの短絡及び電池収納ケース３の誤装填が防止できるとともに、複数の電池収納ケース３を並列接続して使用する場合に電池間に電位差が有つても低電圧の電池に電流が流入することがダイオード７によつて阻止されるため電池の発熱・爆発事故を防止できる。

【００２６】図５乃至図８は本発明の第３の実施例を示す。本実施例においては電池収納ケース３から突出した接点を設けるとともに同ケース３内に断続可能な接片を設け、同ケース３が正しく装填された場合にのみ電池１の電極に接続された接片と電池収納ケース３から突出した接点に接続された接片が接続して電流が流れるよう構成されている。

【００２７】２１、２２は電極用接点で電池収納ケース３の頂部に突出するよう設置されているが、図５に示すように電池収納ケース３の中央線に関して非対称の位置に設けられているため、逆装填されても接点２１、２２が装置側の接点と逆接続されることはない。

【００２８】電池収納ケース３の内部には図７及び図８に示すようにまず電池１の負電極１ｂと弾性的に接続され電極用接点２２と接続されている接続部材２７、及び弾性接片６ａで電池１の正電極１ａと弾性的に接続されている接続部材６が設けられている。

【００２９】また、電極用接点２１にその一端が固着され他端部が折曲端部２８ａを成していて同折曲端部２８ａからダイオード７を介して接片２９に接続されている接続部材２８が電池収納ケース３の内壁に固設されている。更に、接続部材６の折曲端部６ｂにその一端部の第一接片部２５ａが接触し接片２９にその他端部の第二接片部２５ｂが接触して電池１の正電極１ａと電池収納ケース３の電極用接点２１を接続状態とするための可動状の導体接片２５が設置されている。

【００３０】導体接片２５は付勢バネ２３に支持されている切換部材２４に固設されていて、電池収納ケース３を装置に装填しない状態では付勢バネ２３により導体接

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片２５の第一接片部２５ａと接続部材６の折曲端部６ｂの間と、第二接片部２５ｂと接片２９との間が引き離されているために、接続部材６及び接片２９とは接続されていず、電極用接点２１、２２を短絡状態に接続しても電流は流れず短絡は生じない。切換部材２４は電池収納ケース３の頂面を貫通するよう設けられた開口３ｆを介して外部接触可能となるよう配設されている。

【００３１】本実施例において電池収納ケース３を装置（図示せず）に装填するにあたつては、まず電池収納ケース３を正しい方向に挿入すると装置に固設されている装着方向規制ピン（図示せず）が電池収納ケース３の頂面に設けられた開口３ｆを貫通し切換部材２４を付勢バネ２３の付勢力に抗して図の下方へ押動する。尚、電池収納ケース３を誤つた方向にに装填しようとしても装着方向規制ピンが同ケース３の上面部に当接するため装填は不可能である。

【００３２】切換部材２４が図の下方に移動することによつて導体接片２５が同動し導体接片２５の第一・第二接片部２５ａ、２５ｂがそれぞれ接続部材６の折曲端部６ｂおよび接片２９と接触して、電池１の正電極１ａと電極用接点２１とが接続される。この時切換部材２４の着色された尾部２４ａが装着方向規制ピン（図示せず）に押動されて電池収納ケース３の段部３ｄから突出し、正電極部が接続状態になつたことを表示する。更に電池収納ケース３を装置に押入すると電極用接点２１、２２が装置側に固設された接点と接触し、導通がなされて装填が完了する。

【００３３】電池収納ケース３を装置から取り出すと装着方向規制ピンと切換部材２４との当接が解除されるため付勢バネ２３の付勢力によつて切換部材２４及び導体接片２５が図の上方に移動し、第一・第二接片部２５ａ、２５ｂと接続部材６のの折曲端部６ｂおよび接片２９の当接が解かれて電池１の正電極１ａと電極用接点２１とが接続されなくなる。

【００３４】本実施例においては前述のとおり電極１ａ、１ｂの短絡が防止され、誤装填による事故が防止されるとともに、ダイオード７を設けたため第２実施例と同様に複数の電池収納ケース３を並列接続して使用した場合に起り得る事故を防止できる。尚、ダイオード７にかえて電圧検出回路を設け、電池１の電圧が所定レベル以下に低下した時スイツチング回路によつて電極用接点２１と電池１の電極１ａの接続を絶つ構成としてもよい。

【００３５】図９乃至図１２は本発明の第４の実施例を示す。本実施例においては電池の電極と電池収納ケースの開口との間に遮蔽部材を設け、電池収納ケースの装置への装填時に遮蔽部材が退避して装填可能となるよう構成されている。

【００３６】３０は遮蔽部材で、一体的に成型されているピン３０ａによつて電池収納ケース３の頂面に設けられた開口３ｇに軸受けされて電池収納ケース３の開口３ｂ、３ｃを遮う位置と解放する位置の間を回動可能なよう軸支されている。遮蔽部材３０は電池収納ケース３の内壁に弾性部材３０ｃが当接し、指部３０ｂが同ケース３の外側壁部のうち段部３ｄを形成する部分、即ち後述するカメラ５０の収納方向規制部材５３と対面する部分に設けられた開口３ｈから突出して開口３ｈに対面する電池収納ケース３の段部３ｄを形成する外側壁部に当接して停止しており、この状態で同遮蔽部材３０は図１２（ａ）の如く電池収納ケース３の頂面の開口３ｂ、３ｃを遮蔽している。

【００３７】本実施例において電池収納ケース３をカメラ５０の電池室５１に装填するにあたつては、図９に示すカメラ５０の電池蓋５２を開放した後、電池収納ケース３の段部３ｄが電池室５１内部に設けられた収納方向規制部材５３に対面する方向、即ち段部３ｄを図の下方、頂面を図の左方に向けて電池室５１に挿入する。尚、電池収納ケース３は収納方向規制部材５３により、誤方向に装填されることはない。

【００３８】電池収納ケース３が収納方向規制部材５３に案内されて電池室５１に入れられる際、収納方向規制部材５３の斜面５３ａによつて遮蔽部材３０の指部３０ｂの突出部分が押され遮蔽部材３０は弾性片部３０ｃの付勢力に抗して時計方向に回動し、図１２（ｂ）に示す如く電池収納ケース３の頂面の開口３ｂ、３ｃを開放する。更に続けて電池収納ケース３を押入すると電池室５１内に設置された接続ピン１１、１２がそれぞれ開口３ｂ、３ｃに嵌入して電池１の電極１ａ、１ｂと当接し接続される。電池蓋５２を閉じることにより第１実施例と同様に付勢バネ（図示せず）の付勢力により接続ピン１１、１２が電極１ａ、１ｂに押しつけられた状態となり接続が維持される。

【００３９】電池収納ケース３を取り出すにあたつて電池蓋５２を開放すると付勢バネの付勢力によつて電池収納ケース３の一部が電池室５１より突出することも第１実施例と同様であるが、本実施例においては取出用凹陥部３ｉが設けられているので該凹陥部３ｉに指をあてがつて引き出すことができ、更に取出しが容易になつている。電池収納ケース３を取り出すと遮蔽部材３０は弾性片部３０ｃの弾性力による付勢力によつて反時計方向に回動し、指部３０ｂが開口３０ｈに対面する外側壁部に当接して停止し、図１２（ａ）に示すように開口３ｂ、３ｃを遮蔽する。従つて、本実施例においても電極１ａ、１ｂの短絡、電池収納ケース３の誤装填による事故を防止することができる。

【００４０】図１３乃至図１６は上記第４実施例の遮蔽部材の形状及び動作を異なるものとした変形例を示す。遮蔽部材は第４実施例と同様にその一部が電池収納ケース３の外側壁部のうち段部３ｄを形成する部分の開口３ｈより突出して停止しており、電池室内部に設けられた

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収納方向規制部材によつて突出部分が押されて遮蔽部材が退避し、電池収納ケース３頂面の開口を開放するよう構成されている。

【００４１】図１３に示す例において遮蔽部材３１、３２は対をなしており、一端部が負電極寄りの位置でピン３２ａによつて軸支されている部材３２が正電極１ａを、一端部が正電極寄りの位置でピン３１ａによつて軸支されている部材３１が負電極１ｂを遮蔽し、各々の遮蔽部分とピン３１ａ、３２ａとの中程で互いに交差しており該交差部分が開口３ｈより電池収納ケース３外へ突出して信号部３１ｂ、３２ｂを形成している（図１３（ａ）参照）。

【００４２】収納方向規制部材５３によつて信号部３１ｂ、３２ｂが押されると、遮蔽部材３１、３２はピン３１ａ、３２ａを中心としてそれぞれ反時計方向・時計方向へ回動して図１３（ｂ）に示すように電池１の電極１ａ、１ｂを開放する。収納方向規制部材５３との当接が解かれると遮蔽部材３１、３２は電池収納ケース３の内壁に当接している弾性片部３１ｃ、３２ｃの付勢力によつてそれぞれ時計方向・反時計方向に回動して当初位置に復帰し電極１ｂ、１ａを遮蔽する。

【００４３】図１４に示す例においては遮蔽部材３３、３４が対をなしており、それぞれの一端部が電極１ａ、１ｂを遮蔽し、中程においてピン３３ａ、３４ａによつて軸支され、他端部が外部へ突出している。外部へ突出した端部の一方に固定ピン３４ｄ、他方には二股カム面３３ｄが形成されており固定ピン３４ｄと二股カム面３３ｄが係合している。

【００４４】収納方向規制部材５３により遮蔽部材３３の信号部３３ｂが押されると二股カム面３３ｄに押動されて固定ピン３４が回動し遮蔽部材３３、３４がそれぞれ時計方向・反時計方向へ回動して電極１ａ、１ｂを開放する。収納方向規制部材５３との当接が解かれると弾性片部３１ｃ、３２ｃの付勢力により遮蔽部材３３が復動して当初位置に復帰し、二股カム面３３ｄによつて固定ピン３４ｄを押動して遮蔽部材３４が復帰する。

【００４５】図１５に示す例においては対をなす遮蔽部材３５、３６は共通軸３７において同軸的に軸支されておりそれぞれの一端部３５ｂ、３６ｂが信号部として突出し互いに停止している。収納方向規制部材５３により信号部３５ｂ、３６ｂが押されると遮蔽部材３５、３６がそれぞれ反時計方向・時計方向へ回動して電極１ｂ、１ａを開放する。収納方向規制部材５３との当接が解かれると弾性片部３５ｃ、３６ｃの付勢力によつて遮蔽部材３５、３６が復動して当初位置に復帰し、信号部３５ｂ、３６ｂが当接して停止する。

【００４６】図１６に示す例においては遮蔽部材３８は両端部でそれぞれ電極１ａ、１ｂを遮蔽しており中央部に腕部が設けられ該腕部の先端が突出して信号部３８ｂを成し、腕部を挟むように配設されている一対のピン３９、４０及び信号部３８ｂの突出している開口３ｈによつて腕部が規制されながら摺動するよう構成されている。

【００４７】収納方向規制部材５３によつて信号部３８ｂが押されると遮蔽部材３８はピン３９、４０に規制されながら摺動し両端部が電極１ａ、１ｂから退避して開放する。収納方向規制部材５３との当接が解かれると遮蔽部材３８はその両端部に形成された弾性片部３８ｃの付勢力によつて復動し一対のピン３９、４０によつて停止されて初位置に復帰する。

【００４８】図１７乃至図１９は本発明の第５実施例を示す。本実施例においては前述第４実施例と同様電池収納ケースと電池１の電極１ａ、１ｂとの間に遮蔽部材４１を設置するが、第４実施例と異なり装置（図示せず）に設置された接続ピン１１、１２によつて遮蔽部材４１が退避するように構成されている。

【００４９】図１７に示すように遮蔽部材４１は中央部で連結され両端部が二分割された形状を成しており、連結部分と両端部の間には開口４１ａ、４１ｂが形成されている。また、同遮蔽部材４１の連結部分の両端には一対のピン４１ｃ、４１ｄが固設され該ピン４１ｃ、４１ｄが収納されている二個の電池１と電池収納ケース３との間に形成される空間に嵌入することによつて遮蔽部材４１は電池１の電極１ａ、１ｂと電池収納ケース３の開口３ｂ、３ｃを遮蔽する位置に配設される。

【００５０】二分割された両端部の接続ピン１１、１２に当接する面はＶ字状溝を成しており、該Ｖ字状溝の底部で二分割されるようになつていて、二分割されたそれぞれの部分が逆方向の斜面４１ｅ、４１ｆ及び４１ｇ、４１ｈを成している。

【００５１】本実施例の電池収納ケース３を装置（図示せず）に装填すると、まず図１９（ａ）に示すように装置の接続ピン１１、１２が同ケース３の開口３ｂ、３ｃを貫通して遮蔽部材４１の二分割された両端部に当接する。次に図１９（ｂ）に示すように接続ピン１１、１２の先端Ｖ字状溝を成す斜面４１ｅ、４１ｆ及び４１ｇ、４１ｈを押しひろげて両側へ退避させ、接続ピン１１、１２が分割部分に嵌入し電池１の電極１ａ、１ｂに当接して接続がなさせてる。

【００５２】電池収納ケース３を取出すと接続ピン１１、１２が退避し、遮蔽部材４１は弾性力によつて二分割された部分が復帰して互いに当接して分割部分を閉じ、再度Ｖ字状溝を形成するが、本実施例に於いては図１９に示すように電池収納ケース３の開口３ｂ、３ｃに同ケース３の内側に臨む折曲部が設けられているためこの折曲部に斜面４１ｅ、４１ｆ及び４１ｇ、４１ｈが当接して停止し、電池１の電極１ａ、１ｂを遮蔽する。以上のように本実施例に於いても第４実施例同様電極の短絡を防止しできる。

【００５３】図２０乃至図２１は、前述第５実施例のう

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ち遮蔽部材の形状及び動作を異なるものとした例を示す。遮蔽部材４３は中央部にピン４３ａが設けられ、このピン４３ａが電池収納ケース３の頂面の開口３ｂ、３ｃの中央部で軸受けされており、更に、遮蔽部材４３の両端にはそれぞれ反対方向に傾斜した斜面４３ｂ、４３ｃが形成されていて該斜面４３ｂ、４３ｃはそれぞれ開口３ｂ、３ｃに対面している。

【００５４】接続ピン１１、１２が開口３ｂ、３ｃを貫通して斜面４３ｂ、４３ｃに当接すると、斜面４３ｂ、４３ｃをなす両端部がそれぞれ反対方向に押され遮蔽部材４３はピン４３ａを中心として時計方向に回動し電極１ａ、１ｂから退避し、図２１（ｂ）に示すように接続ピン１１、１２が電極１ａ、１ｂ当接して接続がなされる。

【００５５】接続ピン１１、１２が退避すると遮蔽部材４３は電池収納ケース３の内壁に当接している弾性片部４３ｂの付勢力によつて反時計方向へ回動し、図２１（ａ）に示すように電池収納ケース３の頂面開口３ｂ、３ｃに設けられた折曲部に当接して停止し、電池１の電極１ａ、１ｂを遮蔽する。

【００５６】

【発明の効果】以上説明したように、本発明の電池収納ケースは、大容量をもち高性能であるが電極の短絡や電池の逆装填によつて爆発や装置の破壊等の事故の危険性のある電池を収納するものであつて、電池を収納ケースに収納して取り扱うことにより、電池をカメラその他の装置に装填して使用するとき、装填方向を間違えるなどの誤装填によつては電極の逆接続が起きるおそれがない。従つて、電池をこの電池収納ケースに収納して取り扱うときは、取り扱いに格別の注意を払わなくとも、爆発や装置の破壊等の事故発生の危険性はなく、一般消費者が安心して取り扱うことができる。

【図面の簡単な説明】

【図１】本発明の第１の実施例を示す分解斜視図。

【図２】同上実施例を装置の電池室に挿入する状態を示す縦断面図。

【図３】同上実施例の装填完了状態を示す縦断面図。

【図４】本発明の第２の実施例を示す縦断面図。

【図５】本発明の第３の実施例を示す分解斜視図。

【図６】同上実施例の縦断面図。

【図７】同上実施例の接片の配設状態を示す説明図。

【図８】同上実施例の接片の配設状態を示す説明図。

【図９】本発明の第４の実施例を使用する装置の電池室を示す部分切欠斜視図。

【図１０】同上実施例の外観斜視図。

【図１１】同上実施例の分解斜視図。

【図１２】同上実施例の横断面図。

【図１３】同上実施例の変形例を示す横断面図。

【図１４】同上実施例の別の変形例を示す横断面図。

【図１５】同上実施例の別の変形例を示す横断面図。

【図１６】同上実施例の別の変形例を示す横断面図。

【図１７】本発明の第５の実施例の内部を示す要部斜視図。

【図１８】同上実施例の内部を示す横断面図。

【図１９】同上実施例の部分縦断面図。

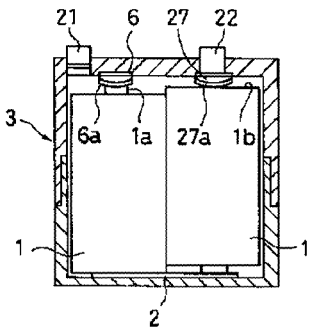
【図２０】同上実施例の変形例の内部を示す要部斜視図。

【図２１】同上実施例の変形例の部分縦断面図。

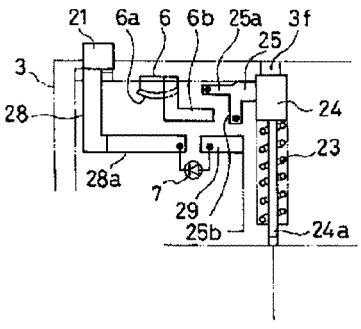
【符号の説明】

１　電池
１ａ、１ｂ　電極部
３　電池収納ケース
３ｂ、３ｃ　開口
３ｄ　段部
４、５　接続部
７　ダイオード
１０　装置
１０ｂ　逆入防止突起
１１、１２　接続ピン
２１、２２　電極用接点
３０、３１、３２、３３、３４、３５、３６、３８、４１、４３　遮蔽部材
５３　収納方向規制部材

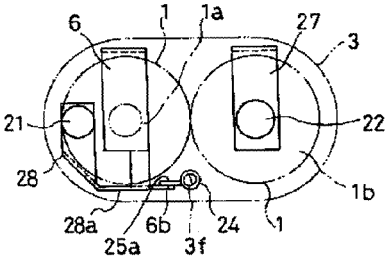
【図６】



【図７】



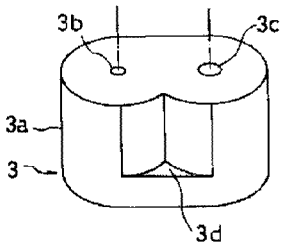
【図８】



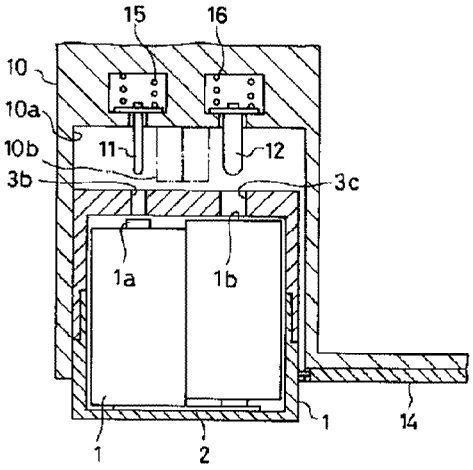
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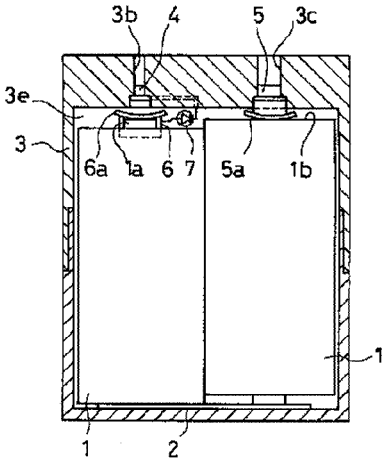
【図1】

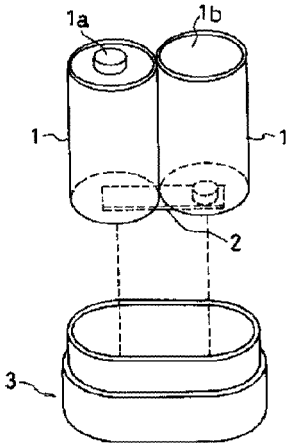


【図2】

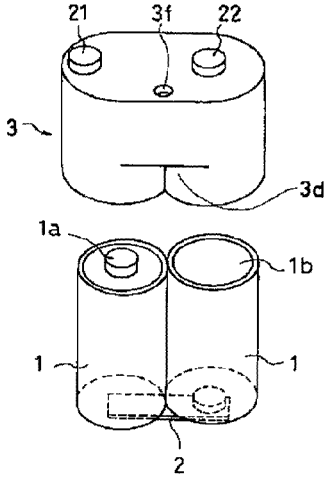


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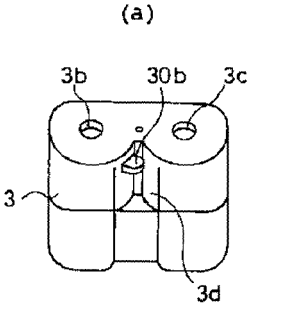




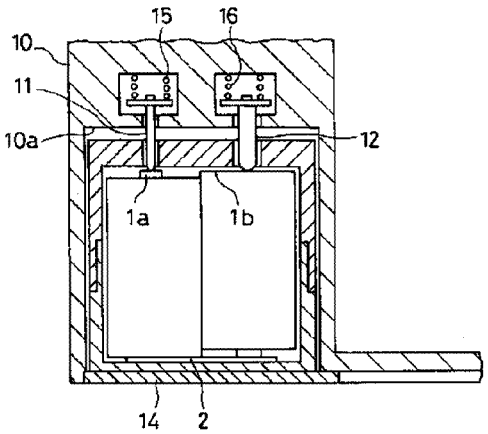
【図5】



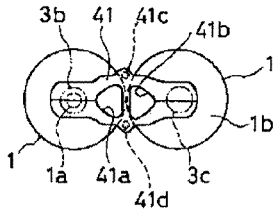
【図10】



【図3】



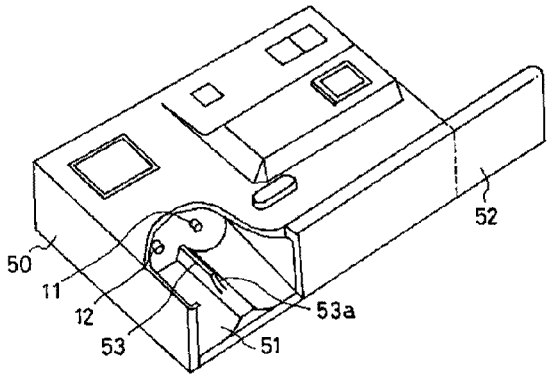
【図18】



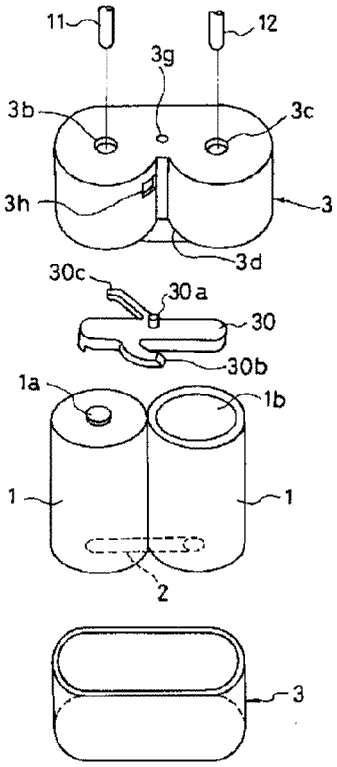
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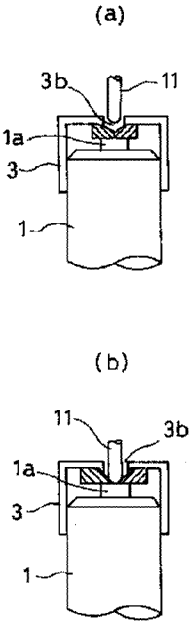
【図9】



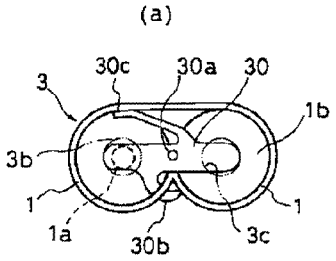
【図11】



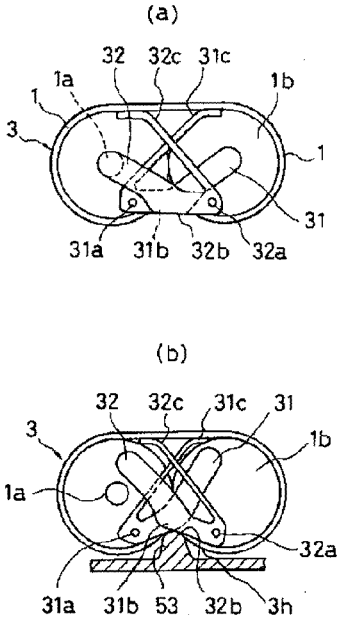
【図19】



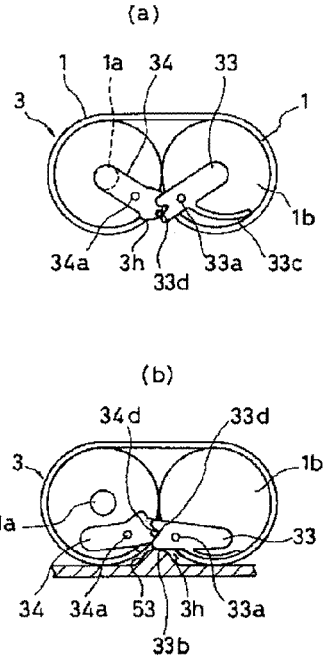
【図12】



【図13】

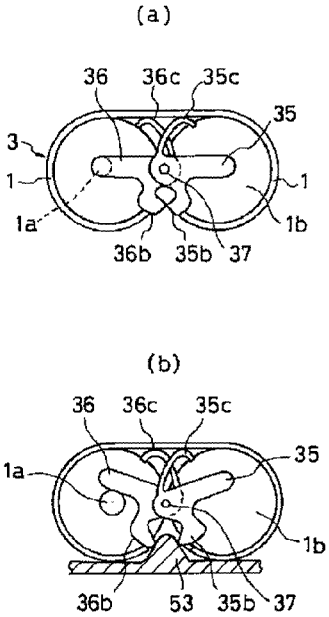


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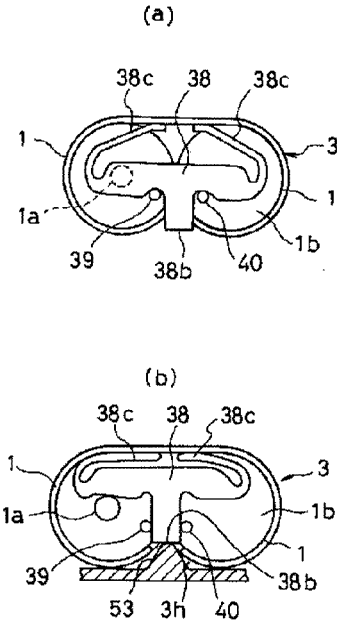


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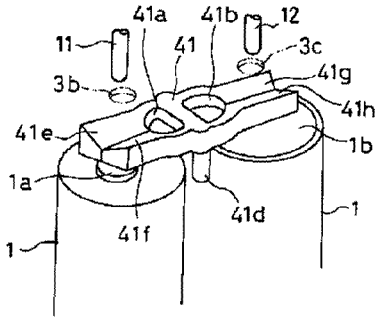
【図15】



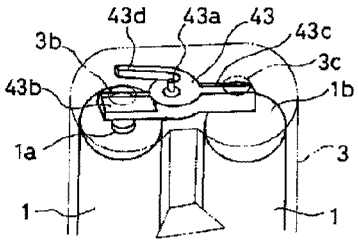
【図16】



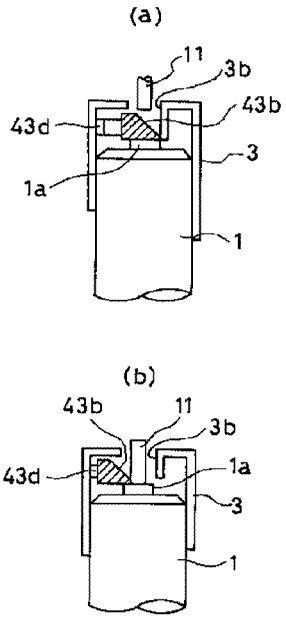
【図17】



【図20】



【図21】



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Cylindrical battery structure

Abstract

The utility model discloses a cylindrical battery structure which is applicable to a cylindrical storage battery and comprises a metal shell which is internally provided with filler and an inner electrode; the upper end part of the shell is provided with an electrode I and an electrode II in an abreast way, and the electrode I and the electrode II are insulated with each other; and the electrode I is conducted with the inner electrode, and the electrode II is conducted with the shell. A positive pole post and a negative pole post of the cylindrical battery structure have outgoing lines on the top of the battery, so that the structure overcomes the defects of the traditional design, is convenient for installation, maintenance, implementation of the design assisting heat dissipation measures and check maintenance when in application period, and has remarkable advantages for a lithium battery with higher power.

Description

A kind of structure of cylindrical battery

Technical field

The utility model relates to a kind of battery structure, relates in particular to a kind of structure of cylindrical battery.

Background technology

Cylindrical battery is comparatively traditional a kind of accumulator structure, its have volume big, save the space, be beneficial to the advantage that assembling is used.Existing cylindrical battery, usually with battery container as anodal or at the bottom lead-out wire, negative pole at the top with the outlet of pole form, though electrode structure is fairly simple, but be unfavorable for installing in groups application, need especially be unfavorable for than the installation of high power battery and the design implementation of auxiliary heat dissipation measure in the outlet of two places, and check in being unfavorable for using and safeguard.

Summary of the invention

The utility model is separately positioned on two ends in order to solve existing cylinder type lithium battery two electrodes, be not easy to the defective of installation and maintenance, a kind of structure of cylindrical battery is provided, and it is by being arranged on battery container one end simultaneously with battery positive and

negative polarities post, thereby realizes being convenient to the purpose of installation and maintenance.

For solving the problems of the technologies described above, the utility model adopts following technical scheme: a kind of structure of cylindrical battery, comprise metal mass shell body, and in housing, be provided with filler and interior electrode; Described housing upper end is provided with the electrode one and the electrode two of mutually insulated side by side; Electrode one and interior electrode conduction, electrode two and housing conducting.

Described housing is the tank body that a upper end is opened wide, and its unlimited place connection is closed with a cap; Described electrode two is fixed on the cap; Electrode one is a T font body, and its lower end penetrates cap and is connected with interior electrode, between electrode one and cap, be equipped with insulation spacer between interior electrode and cap.

Described electrode one, electrode two and cap are metal material, cap and tight be connected adaptive with the shell nozzle shape; Leave the gap between described electrode one, the electrode two.

Also be provided with a liquid injection hole that penetrates its positive and negative on the described cap.

Insulation spacer top above the described cap and between the electrode one also is provided with a steel plate washer.

The utility model is by being arranged on the battery container upper end simultaneously with battery positive and negative polarities post, overcome the shortcoming of traditional design, be convenient to installation and maintenance, be convenient to the design implementation of auxiliary heat dissipation measure, and check during being convenient to use and safeguard, for the obvious advantage than the high power lithium battery.

Description of drawings

Below in conjunction with drawings and Examples the utility model is described further:

Fig. 1 is the utility model broken section structural representation;

Fig. 2 is the utility model perspective view.

Embodiment

A kind of structure of cylindrical battery comprises metal mass shell body 5 as shown in Figure 1 and Figure 2, and housing 5 is the tank body that a upper end is opened wide,

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and its unlimited place realizes sealing by connecting a cap 7.In housing 5, also be provided with filler and interior electrode 4.Described housing 5 upper ends are provided with the electrode 1 and the electrode 26 of mutually insulated side by side.Described electrode 1, electrode 26 and cap 7 are metal material.Electrode one is a T font body, and its lower end penetrates cap 7 and is connected conducting with interior electrode 4; Electrode 26 is fixed on the cap 7, and closely is connected the conducting that realizes between electrode 26 and the housing 5 by cap 7 with housing 5.Described electrode 1 and electrode 26 mutually insulateds are by the gap of leaving any between two electrodes is realized.And at electrode 1 and 7 of caps, interior electrode 4 and 7 of caps insulation spacer 3 is set all, thereby has guaranteed that interior electrode 4 and electrode 1 can be because of not touching short circuit with cap 7.Between insulation spacer 3 on cap 7 tops and electrode 1, be provided with a steel plate washer 2, reliable to guarantee pad 3 with being connected of electrode 1.Also be provided with a liquid injection hole 8 that penetrates its positive and negative on the described cap 7.Institute's electrode 1 and electrode 26 electric polarities are one positive one negative.

Certainly, described housing also can be the insulation material, and electrode two is established conductor by other and is connected conducting with housing.Described enclosure interior structure is with reference to prior art.

The utility model positive and negative polarities post is cabling on cable rack, has overcome the shortcoming of traditional design, is convenient to installation and maintenance, is convenient to the design implementation of auxiliary heat dissipation measure, and check during being convenient to use and safeguard, for the obvious advantage than the high power lithium battery.Above-mentioned only is the utility model preferred embodiment, and all structures of doing on this basis, member equivalence are replaced, and all surely belongs to fall into this patent protection range.

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Drawings

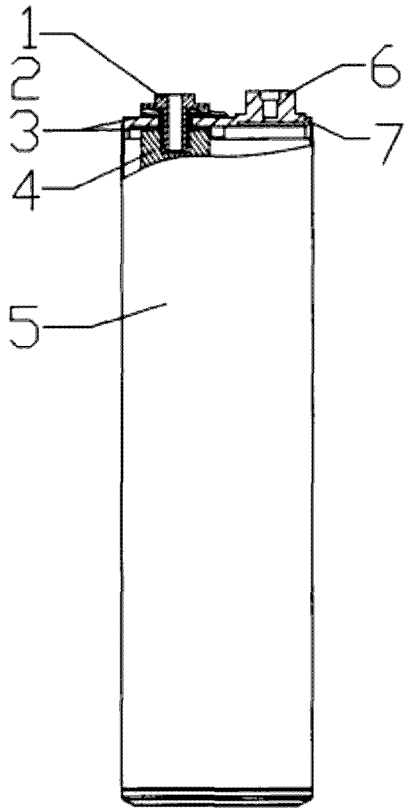


图 1

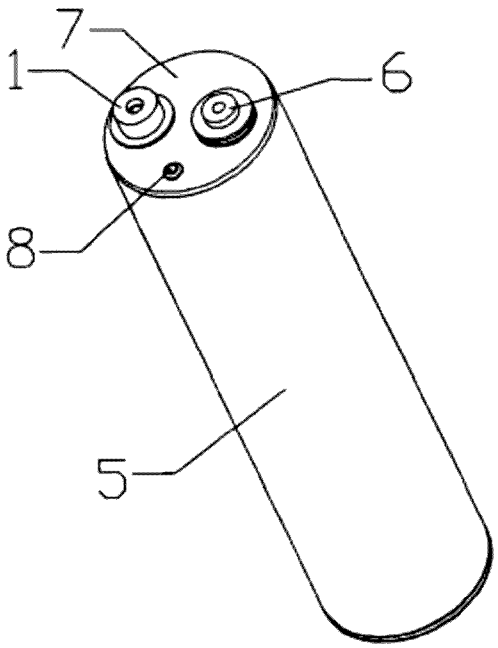


图 2

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(19)中华人民共和国国家知识产权局

(12)实用新型专利

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H01M 2/26(2006.01)
H01M 2/00(2006.01)
H01M 2/04(2006.01)

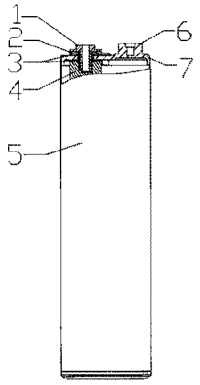
权利要求书 1 页 说明书 2 页 附图 1 页

(54)实用新型名称

一种圆柱形电池的结构

(57)摘要

本实用新型公开了一种圆柱形电池的结构，适用于圆柱形蓄电池，它包括金属质壳体，在壳体内设有填充物和内电极；所述壳体上端部，并排设有相互绝缘的电极一和电极二；电极一与内电极导通，电极二与壳体导通。本实用新型正负两极柱均为电池顶部出线，克服了传统设计的缺点，便于安装维护、便于辅助散热措施的设计实施，且便于应用期间检查维护，对于较大功率锂电池优势明显。



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1. 一种圆柱形电池的结构，包括金属质壳体 (5)，在壳体 (5) 内设有填充物和内电极 (4)，其特征在于：所述壳体 (5) 上端部，并排设有相互绝缘的电极一 (1) 和电极二 (6)；电极一 (1) 与内电极 (4) 导通，电极二 (6) 与壳体 (5) 导通。

2. 根据权利要求 1 所述的一种圆柱形电池的结构，其特征在于：所述壳体 (5) 为一上端敞开的罐体，且其敞开处连接封闭有一壳盖 (7)；所述电极二 (6) 固定在壳盖 (7) 上；电极一 (1) 为一 T 字形体，其下端穿透壳盖 (7) 与内电极 (4) 连接，在电极一 (1) 与壳盖 (7) 间、内电极 (4) 与壳盖 (7) 间均设有绝缘垫片 (3)。

3. 根据权利要求 2 所述的一种圆柱形电池的结构，其特征在于：所述电极一 (1)、电极二 (6) 及壳盖 (7) 均为金属材质，壳盖 (7) 与壳体 (5) 开口适配且紧密连接；所述电极一 (1)、电极二 (6) 之间留有间隙。

4. 根据权利要求 3 所述的一种圆柱形电池的结构，其特征在于：所述壳盖 (7) 上还设有一穿透其正反面的注液孔 (8)。

5. 根据权利要求 4 所述的一种圆柱形电池的结构，其特征在于：所述壳盖 (7) 上面与电极一 (1) 之间的绝缘垫片 (3) 上部还设有一钢垫片 (2)。

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一种圆柱形电池的结构

技术领域

[0001] 本实用新型涉及一种电池结构，尤其涉及一种圆柱形电池的结构。

背景技术

[0002] 圆柱形电池是较为传统的一种蓄电池结构，其具有容积大、节省空间、利于装配使用的优点。现有圆柱形电池，通常将电池壳体作为正极或在底部引出线，负极在顶部以极柱形式出线，电极结构虽然比较简单，但不利于成组安装应用，需要在两处出线，尤其不利于较大功率电池的安装和辅助散热措施的设计实施，且不利于应用中检查维护。

发明内容

[0003] 本实用新型为了解决现有圆柱形锂电池两电极分别设置在两端，不便于安装维护的缺陷，提供一种圆柱形电池的结构，它通过将电池正负两极柱同时设置在电池壳体一端部，从而实现方便于安装维护的目的。

[0004] 为解决上述技术问题，本实用新型采用如下技术方案：一种圆柱形电池的结构，包括金属质壳体，在壳体内设有填充物和内电极；所述壳体上端部，并排设有相互绝缘的电极一和电极二；电极一与内电极导通，电极二与壳体导通。

[0005] 所述壳体为一上端敞开的罐体，且其敞开处连接封闭有一壳盖；所述电极二固定在壳盖上；电极一为一T字形体，其下端穿透壳盖与内电极连接，在电极一与壳盖间、内电极与壳盖间均设有绝缘垫片。

[0006] 所述电极一、电极二及壳盖均为金属材质，壳盖与壳体开口形状适配且紧密连接；所述电极一、电极二之间留有间隙。

[0007] 所述壳盖上还设有一穿透其正反面的注液孔。

[0008] 所述壳盖上面与电极一之间的绝缘垫片上部还设有一钢垫片。

[0009] 本实用新型通过将电池正负两极柱同时设置在电池壳体上端部，克服了传统设计的缺点，便于安装维护、便于辅助散热措施的设计实施，且便于应用期间检查维护，对于较大功率锂电池优势明显。

附图说明

[0010] 下面结合附图和实施例对本实用新型做进一步的说明：

[0011] 图1为本实用新型局部剖视结构示意图；

[0012] 图2为本实用新型立体结构示意图。

具体实施方式

[0013] 如图1、图2所示一种圆柱形电池的结构，包括金属质壳体5，壳体5为一上端敞开的罐体，且其敞开处通过连接一壳盖7实现封闭。在壳体5内还设有填充物和内电极4。所述壳体5上端部，并排设有相互绝缘的电极一1和电极二6。所述电极一1、电极二6及壳

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盖 7 均为金属材质。电极一为一 T 字形体，其下端穿透壳盖 7 与内电极 4 连接导通；电极二 6 固定在壳盖 7 上，并通过壳盖 7 与壳体 5 紧密连接实现电极二 6 与壳体 5 之间的导通。所述电极一 1 与电极二 6 相互绝缘是通过使两电极间留有一点的间隙来实现的。并且在电极一 1 与壳盖 7 间、内电极 4 与壳盖 7 间均设置绝缘垫片 3，从而保证了内电极 4 及电极一 1 不会因与壳盖 7 碰触而短路。在壳盖 7 上部的一个绝缘垫片 3 与电极一 1 之间的设有一钢垫片 2，以保证垫片 3 与电极一 1 的连接可靠。所述壳盖 7 上还设有一穿透其正反面的注液孔 8。所电极一 1 和电极二 6 电极性为一正一负。

[0014] 当然，所述壳体也可以是绝缘材质，电极二通过另设导体与壳体连接导通。所述壳体内部结构参照现有技术。

[0015] 本实用新型正负两极柱均为顶部出线，克服了传统设计的缺点，便于安装维护、便于辅助散热措施的设计实施，且便于应用期间检查维护，对于较大功率锂电池优势明显。上述仅为本实用新型优选实施例，凡在此基础上做的结构、构件等效替换，均当属落入本专利保护范围。

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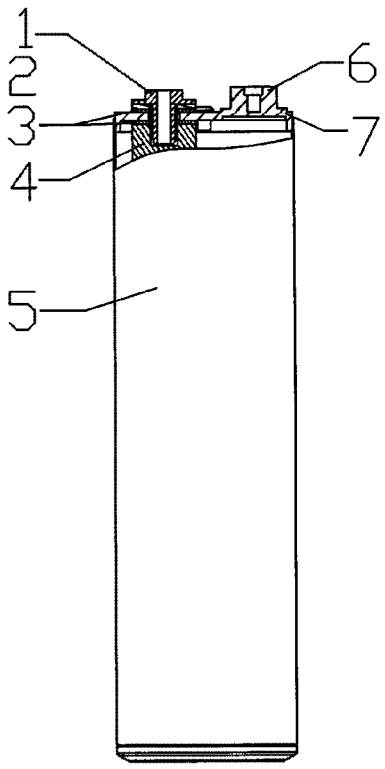


图 1

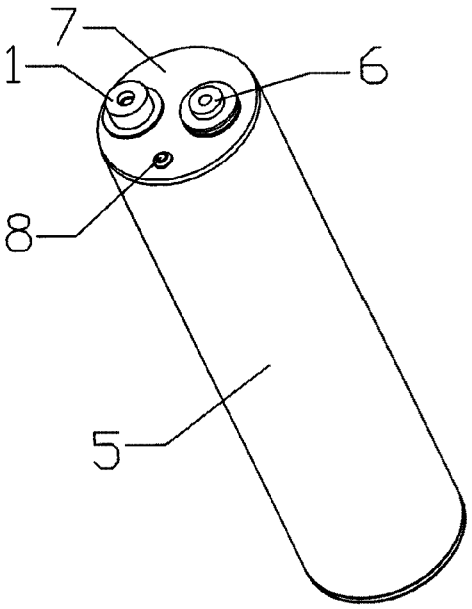


图 2

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KR101162978B1

Vibration massage apparatus for muscle

Abstract

The present invention relates to a muscle massage device that can deliver a mechanical vibration to the muscles to relax the muscles, and more particularly, to a muscle vibration massage device composed of a gun (GUN) type to be easy to use by hand. will be.
In the present invention, the muscle vibration massage device in the construction of the muscle stimulation vibration massage device, by allowing the rotational force of the motor, which is the vibration force providing means to act on the muscle stimulation member in the horizontal direction, the power transmission can be effectively balanced, A separate center of gravity is unnecessary, and the structure thereof is simplified to make the handle portion even slimmer, thereby providing a beautiful and easy-to-use muscle stimulation massage device.

Images (7)



Classifications

- A61H23/006 Percussion or tapping massage

View 5 more classifications

Other languages: Korean

Inventor: 최재민

Worldwide applications

2012 KR

Application KR1020120013068A events

2012-02-09 Application filed by 주식회사 에이티시스템

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Info: Patent citations (3), Cited by (4), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (6)

Hide Dependent

1. It is made of a main body 100 having a gun-shaped handle 110, the upper portion of the main body 100 is a horizontal reciprocating motion of the rotational force of the motor 200 and the motor 200 for generating vibration A space and a fixed part are formed for incorporating the vibration generating means for generating vibration by converting, and the motor for controlling the operation of the motor by supplying a driving voltage of the motor into the handle part 110 located below the main body 100. The control means is built and the fixing means thereof, the outside of the handle portion 110, where the finger is held by the hand where the gun switch 400 for providing a user operation command to the motor control means is formed,
The vibration generating means,
One side of the rotating shaft is coupled to the rotating shaft 210 of the motor 200 in a horizontal direction and rotates, and the horizontal movement displacement means having a horizontal movement displacement means having a horizontal movement displacement on the rotating shaft to form a horizontal movement formed on the cam 311 Vibration rotating part 310 for horizontal reciprocating movement of the vibration slide unit 320 in accordance with the displacement of the displacement means, combined with the horizontal movement displacement means formed on the vibration rotating unit 310, the horizontal movement according to the rotation of the vibration rotating unit 310 Vibration slide unit 320 for horizontal reciprocating motion with the displacement width of the displacement means, coupled to the front end of the vibration slide unit 320 and exposed to the outside of the main body 100 vibration slide unit 320 in contact with the user's muscles Vibration stimulation unit 330 to provide a vibration stimulation of the motor, and the motor 200, the vibration rotating unit 310, the vibration slide unit 320 is fixed to the vibration slide unit 320 in the horizontal reciprocating movement left and right Avoid being a guy Muscle vibration massage device characterized in that comprises a withdrawal prevention portion (340) for.

    2. The method of claim 1,
    The vibration rotating part 310 is formed with a disc 311b on a shaft 311a at a predetermined inclination so that a horizontal movement displacement occurs according to the rotation, and one side of the shaft 311a is rotated with the rotation shaft 210 of the motor 200. Rotating shaft coupling portion 311c to be coupled is formed and prevents the flow of the shaft 311a at a position spaced apart from the coupling position with the bearing 312 to the other side of the rotary shaft coupling portion 311c by the width of the bearing 312 A cam 311 with a fixing groove 311d therein, a bearing 312 coupled to the other side of the rotary shaft coupling part 311c so that the cam 311 can be stably rotated, and the shaft 311a. Shaft fixing means 313 for fixing the cam 311 coupled to the formed fixing groove 311d and the bearing 312 to the separation prevention portion 340, and the bearing 314 to the separation prevention portion 340 It comprises a bearing fixing means 314 for fixedly coupled to,
    The vibrating slide part 320 is formed on both sides of the disc 311b formed on the cam 311 of the vibrating rotating part 310 and rotates constantly in opposite directions with respect to the rotation of the disc 311b. Forward bearing 321, reverse bearing 322, the forward bearing 321, reverse bearing 322 and the slide for horizontally reciprocating the slide shaft 324 by the force applied in accordance with the horizontal displacement displacement A linker 323 connecting the shaft 324, a slide shaft 324 reciprocating horizontally by the linker 323, and a bush for coupling and fixing the front and rear ends of the slide shaft 324 to the release preventing part 340. Muscle vibrating massage device, characterized in that it comprises a ring (325).

    3. According to claim 2, The slide shaft 324 is each linker coupling portion 324a for coupling each linker 323 to the forward bearing 321, reverse bearing 322, and the separation prevention portion (A release preventing guide groove 324b for coupling the right angle fixing pin 342 configured in the 340, the release guide preventing groove 324b is a right angle fixed when the slide shaft 324 slides back and forth The pin 342 is formed to have a length greater than a distance moving in the direction of sliding back and forth so as not to be caught,
    The departure preventing part 340 is fixed to the motor 200, the vibration rotating part 310, the vibration slide part 320 to enable horizontal reciprocating movement of the slide shaft 324 and to prevent left and right departure during horizontal reciprocating movement Fixing bracket 341, and comprises a right angle fixing pin 342 for preventing left and right deviation during horizontal reciprocating movement,
    The fixing bracket 341 forms a rotary shaft through hole 341a for coupling the rotary shaft 210 of the motor 200 to the cam 311 at an upper end thereof, and a cam 311 is formed at the center thereof. On the opposite side of the 341a, a bearing coupling portion 341b to which a bearing 312 to which the shaft 311a of the cam 311 is coupled is formed is formed, and a slide shaft through hole into which the slide shaft 324 is fitted. 341c is formed, and the bushing ring which is

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coupled to the slide shaft 324 to the rear end of the slide shaft through hole 341c and which the bushing ring 325 is supported to support the horizontal reciprocating motion of the slide shaft 324. A coupling portion 341d is configured, and a right angle fixing pin coupling for coupling the right angle fixing pin 342 to the release guide preventing groove 324b of the slide shaft 324 fitted to one side of the slide shaft through hole 341c. Muscle jean characterized in that it comprises a portion (341e) East massage device.

4. According to claim 3, wherein the main body 100 is configured with a fixing hole 140 penetrating into the main body 100, the fixing bracket 341 is a fixing hole 341f in a position corresponding to the fixing hole 140) Is configured to be fixed to the bracket fixing portion 130 by a fastening means from the outside of the main body 100, characterized in that the muscle vibration massage device.

5. The muscle vibration massage device according to claim 3 or 4, wherein the fixing bracket (341) is manufactured integrally by aluminum extrusion processing or die casting.

6. The method of claim 1, wherein the fixing means of the main body 100 constitutes the motor support portion 120 to support the force acting from the slide shaft 324 to the rear end of the motor 200, the motor 200 The front end of the muscle vibration massage device, characterized in that it comprises a bracket fixing portion 130 for fixing the fixing bracket (341).

Description

Muscle Vibration Massage Device {VIBRATION MASSAGE APPARATUS FOR MUSCLE}

The present invention relates to a muscle massage device that can deliver a mechanical vibration to the muscles to relax the muscles, and more particularly, to a muscle vibration massage device composed of a gun (GUN) type to be easy to use by hand. will be.

Mechanical vibration massage therapy is commonly used to help muscle rehabilitation. Vibration massage treatment is the application of mechanical vibration for the purpose of treatment.It delivers vibration to the human body to create longitudinal wave flow, improve blood flow and relax the contracted muscle tissue, thereby rehabilitation of damaged muscle tissue. Will help.

In addition, the effects of muscle stimulation using vibration can be obtained, such as pain relief, lipolysis and cosmetic effects, increased blood circulation and congestion relief, muscle relaxation.

Previously, such a vibration massage device was available in a hospital or a rehabilitation center, but recently, due to the development of technology, various types of muscle vibration massage devices have been commercialized as well as being small enough to be portable and used at home.

1 shows Republic of Korea Patent No. 20-0311328 "Muscle Stimulators".

Conventional muscle stimulation massage device as shown in Figure 1 to the eccentric rotor having an eccentric rotation shaft formed to rotate in accordance with the rotation of the motor and the motor to the handle portion 1, the muscle stimulation as the rotor of the eccentric rotor rotates By allowing the slide shaft 3 to reciprocate back and forth while the eccentric rotation shaft strikes the inner surface of the slide shaft 3 of the member 2, the muscle stimulating member 2 is configured to stimulate the muscle.

Here, the conventional muscle stimulation massage device is composed of both the eccentric rotor and its supporting structure and the power circuit device that rotates in accordance with the rotation of the motor and the motor in the handle portion 1, so that the thickness can only be thickened, It is difficult to use on the body when the user is holding by hand.

In addition, the technical structure for the reciprocating of the slide member back and forth using the eccentric rotor for the rotational force of the motor is complicated, the manufacturing process is complicated and the manufacturing cost is high, as the power of the motor vertically slides the slide shaft (3), The center of gravity axis 4 must be constructed to balance it.

In the present invention to improve such a conventional problem in the construction of the muscle stimulation massage device, the rotational force of the motor as a vibration force providing means to act on the muscle stimulation member in the horizontal direction, the force transmission effectively balanced By making it possible, a separate center of gravity is unnecessary, and also to simplify the structure to further slimmer the handle portion to provide a muscle stimulation massage device that the user can easily hold and use.

The present invention muscle vibration massage device,

Consists of a main body having a gun-shaped handle portion, the upper portion of the main body to incorporate the vibration generating means for generating the vibration by converting the motor 200 and the rotational force of the motor to the horizontal and horizontal reciprocating motion to generate the vibration A space and a fixing part are formed, and a motor control means for controlling the operation of the motor by supplying a driving voltage of the motor is built into the handle part located at the lower part of the main body, and the fixing means thereof is configured. Where the finger is located, a gun switch for providing a user operation command to the motor control means is formed,

The vibration generating means,

One side of the rotating shaft is coupled to the rotating shaft of the motor in a horizontal direction and rotates, and the horizontal slide displacement means having a horizontal movement displacement according to the rotation on the rotating shaft to form a vibration slide unit according to the displacement of the horizontal movement displacement means formed on the cam Vibration slide unit for horizontal reciprocating motion, and a horizontal movement displacement means formed in the vibration rotation portion coupled to the horizontal slide movement of the horizontal displacement displacement of the horizontal movement displacement means according to the rotation of the vibration rotation portion, and the front end of the vibration slide portion Combined and exposed to the outside of the main body to provide vibration stimulation of the contact vibration slide unit to the user's muscles, the motor, the vibration rotating unit, the vibration slide unit is fixed and guided so that the vibration slide unit does not deviate from the left and right in the horizontal reciprocating motion Characterized in that comprises a departure prevention part for do.

In addition, the horizontal movement displacement means of the vibration rotating unit is composed of a disk with a rotation axis and a predetermined inclination to form a cam having a horizontal movement displacement as the rotation axis is rotated, the vibration slide portion of the disk configured in the cam of the vibration rotating part It is configured on both sides to rotate constantly in the opposite direction with respect to the rotation of the disc, characterized in that the forward and reverse bearings for moving the slide shaft horizontally by the force applied according to the horizontal displacement of the disc.

According to the present invention, by providing the rotational force of the motor for generating vibration in the horizontal direction, the structure is simple, it is possible to transmit a balanced force.

In addition, since the configuration for transmitting the rotational force transmission of the motor and the motor to the vertical shaft as in the prior art is not configured in the handle portion, the handle portion is made slim so that the user can easily hold and use the weight to balance the weight. No central axis is required and the design can be beautiful.

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In addition, the coupling process is formed by forming an integral fixed bracket manufactured by aluminum extrusion processing or die casting in order to couple the vibration rotating part for transmitting the rotational force of the motor and the horizontal movement conversion by the rotational force, and the vibration slide part. There is an advantage that it is simplified and the manufacturing cost is down.

In addition, in forming a cam for converting the rotational force into a horizontal movement force in accordance with the rotation of the motor, it constitutes a disc composed of a predetermined inclination on the axis and slides by a force applied from the disc in contact with both sides about the disc. By constructing the forward and reverse bearings so that the shaft can slide horizontally and horizontally, the forward and reverse bearings rotate only in a certain direction at their positions, thereby minimizing wear and damage of the bearings rotating in contact. can do.

1 is a perspective view showing a conventional muscle stimulation relaxer.
Figure 2 is a view showing the upper configuration in the body for showing the configuration of the present invention muscle vibration massage device.
Figure 3 is an exploded perspective view showing a fixed bracket coupling structure for explaining the coupling relationship and the horizontal movement operation of the vibration rotating unit and the vibration slide unit in the present invention.
4 is a view showing a fixed bracket coupling structure for explaining the coupling relationship and the horizontal movement operation of the vibration rotating unit and the vibration slide unit in the present invention.
5A and 5B illustrate a horizontal movement operation of the vibrating slide unit. FIG. 5A illustrates a forward movement and FIG. 5B illustrates a backward operation.
Figure 6 is a perspective view showing the appearance of the present invention muscle vibration massage device.

Referring to the embodiment of the present invention muscle vibration massage device attached to Figure 2 to 6 will be described the structure and operation as follows.

It is made of a main body 100 having a gun-shaped handle 110, the upper portion of the main body 100 is a horizontal reciprocating motion of the rotational force of the motor 200 and the motor 200 for generating vibration A space and a fixed part are formed for incorporating the vibration generating means for generating vibration by converting, and the motor for controlling the operation of the motor by supplying a driving voltage of the motor into the handle part 110 located below the main body 100. The control means is built and the fixing means thereof, the outside of the handle portion 110, where the finger is held by the hand where the gun switch 400 for providing a user operation command to the motor control means is formed,

The vibration generating means,

One side of the rotating shaft is coupled to the rotating shaft 210 of the motor 200 in a horizontal direction and rotates, and the horizontal displacement means having a horizontal movement displacement according to the rotation on the rotation axis by the displacement of the horizontal movement displacement means Vibration rotating part 310 for horizontal reciprocating motion of the vibration slide 320,

Vibration slide unit 320 coupled to the horizontal movement displacement means formed in the vibration rotation unit 310 to move horizontally reciprocating in the movement displacement width of the horizontal movement displacement means according to the rotation of the vibration rotation unit 310,

A vibration stimulator 330 coupled to the front end of the vibration slide 320 and exposed to the outside of the main body 100 to provide vibration stimulation of the contact vibration slide 320 to the muscles of the user;

Vibration slide unit 320 is configured to include a departure prevention unit 340 for guiding the left and right from moving in a horizontal reciprocating movement.

Such a present invention,

The main body 100 has a gun shape and a vibration generating means for converting the rotational force of the motor 200 and the motor 100 into the vibration in the horizontal direction is configured on the upper part, and the handle part 110 includes the motor. Motor control means for rotating the 200 is configured.

The vibration generating means is coupled to the front end of the motor 200 to provide a rotational force vibration to rotate the front and rear by the vibration rotation unit 310, the vibration rotation unit 310 to change the rotational force of the motor into a horizontal motion vibration to generate a vibration Vibration stimulation unit 330 for transmitting the vibration stimulation generated by the slide unit 320, the vibration slide unit 320 to the user, and the separation prevention unit 340 for preventing left and right separation of the vibration slide unit 320 It is configured to include.

The vibration generating means is coupled to the rotary shaft 210 of the motor 200, the vibration rotary unit 310 is coupled to the tip of the rotary shaft 210 of the motor 200 together with the rotation of the rotary shaft 210 of the motor 200 It consists of a rotating structure.

The vibration rotating part 310 is formed with a disc 311b on a shaft 311a at a predetermined inclination so that a horizontal movement displacement occurs according to the rotation, and one side of the shaft 311a is rotated with the rotation shaft 210 of the motor 200. Rotating shaft coupling portion 311c to be coupled is formed and prevents the flow of the shaft 311a at a position spaced apart from the coupling position with the bearing 312 to the other side of the rotary shaft coupling portion 311c by the width of the bearing 312 A cam 311 with a fixing groove 311d therein, a bearing 312 coupled to the other side of the rotary shaft coupling part 311c so that the cam 311 can be stably rotated, and the shaft 311a. Shaft fixing means 313 for fixing the cam 311 coupled to the formed fixing groove 311d and the bearing 312 to the separation prevention portion 340, and the bearing 314 to the separation prevention portion 340 Bearing fixing means 314 for fixedly engaging to the.

The disc 311b formed on the shaft 311a of the cam 311 is a horizontal displacement means for converting the rotational force of the motor 200 into a horizontal movement force, and has a predetermined inclination with respect to the axis 311a. When the shaft 311a is configured to be in an inclined state and rotates together as the shaft 311a rotates, the distal end of the disc 311b has a horizontal displacement.

That is, the horizontal movement width of the position which changes according to the inclination of the disc 311b becomes the horizontal movement range of the vibration slide part 320, and the vibration slide part 320 is caused by the disc 311b of the cam 311.) Consists of a horizontal reciprocating motion.

The rotary shaft coupling portion 311c is composed of a rotary shaft coupling groove so that the rotary shaft 210 of the motor 200 is fitted and coupled, and coupled to the rotary shaft 210 so that the rotary shaft 210 coupled into the rotary shaft coupling groove does not rotate while rotating. It includes structure that becomes.

The vibrating slide unit 320 is in contact with and rotates in accordance with the displacement of the disc 311b formed on the cam 311 of the vibrating rotating unit 310 to move forward and backward 321 to move the slide shaft 324 horizontally. A linker 323 connecting the reverse bearing 322, the forward bearing 321, the reverse bearing 322, and the slide shaft 324, a slide shaft 324 reciprocating horizontally by the linker 323; The front and rear ends of the slide shaft 324 is composed of a bushing ring 325 for fixing to the separation prevention portion 340.

The slide shaft 324 is a right angle formed in each of the linker coupling portion 324a and the separation prevention portion 340 for coupling the respective linker 323 to the forward bearing 321, reverse bearing 322. It constitutes a separation prevention guide groove 324b for coupling the fixing pin 342, and the release guide prevention groove 324b does not catch the right angle fixing pin 342 coupled when the slide shaft 324 slides back and forth. It is formed to have a length greater than the distance to move in the direction to be slid back and forth.

The vibration stimulator 330 is coupled to the distal end of the slide shaft 324 of the vibration slide 320 to be exposed to the outside through the inlet of the main body 100 to the user according to the vibration generated from the slide shaft 324 It is a means of transmitting vibration stimulation to muscles.

The vibration stimulator 330 is configured to be replaceable to the slide shaft 324, the shaft coupling groove is configured to couple to the slide shaft 324.

The vibrating stimulator 330 is made of raw rubber latex or silicone rubber to protect the user's skin, harmless to the human body, and do not cause discomfort.

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As in the present embodiment, by separately configuring the coupling adapter 331 for coupling and separation with the slide shaft 324 can be used to replace the vibration stimulator 330 as necessary.

The departure preventing part 340 is fixed to the motor 200, the vibration rotating part 310, the vibration slide part 320 to enable horizontal reciprocating movement of the slide shaft 324 and to prevent left and right departure during horizontal reciprocating movement As a means for, the fixing bracket 341, includes a right angle fixing pin 342.

The fixing bracket 341 is integrally manufactured by aluminum extrusion processing or die casting. In the present embodiment is made of an extrusion process form, in the case of precision casting follows the form according to the manufacturing method.

The fixing bracket 341 forms a rotary shaft through hole 341a for coupling the rotary shaft 210 of the motor 200 to the cam 311 at an upper end thereof, and a cam 311 is formed at the center thereof. On the opposite side of the 341a, a bearing coupling portion 341b to which a bearing 312 to which the shaft 311a of the cam 311 is coupled is formed is formed, and a slide shaft through hole into which the slide shaft 324 is fitted. 341c is formed, and the bushing ring which is coupled to the slide shaft 324 to the rear end of the slide shaft through hole 341c and which the bushing ring 325 is supported to support the horizontal reciprocating motion of the slide shaft 324. A coupling portion 341d is configured, and a right angle fixing pin coupling for coupling the right angle fixing pin 342 to the release guide preventing groove 324b of the slide shaft 324 fitted to one side of the slide shaft through hole 341c. A part 341e and a fixing hole 341f for fixing to the main body 100 are included. The.

The right angle fixing pin 342 is inserted into the release preventing guide hole 324b of the slide shaft 324 through the right angle fixing pin coupling portion 341e of the fixing bracket 341 so that the slide shaft 324 is horizontally reciprocated. It is a means to prevent departure.

4 is a view illustrating a coupling structure of the fixing bracket 341 for explaining the coupling relationship between the vibration rotating unit 310 and the vibration slide unit 320 and the horizontal movement operation.

The main body 100 has a motor 200 is disposed in the upper portion of the gun (gun), and constitutes a motor support portion 120 at the rear end and both ends of the motor 200.

In addition, a bracket fixing part 130 is configured to fix the fixing bracket 341 to the main body 100, and a fixing hole 140 penetrating into the bracket fixing part 130 is configured, and the fixing bracket 341 is A fixing hole 341f is formed at a position corresponding to the fixing hole 140, and is fixed to the bracket fixing unit 130 by a fastening means from the outside of the main body 100.

The motor support unit 120 is for preventing the motor 200 from being pushed back or flowed when the vibration occurs while the force is applied to the rear end by the elastic force acting from the slide shaft 324. Means.

The inlet of the main body 100 has a through-hole structure so that the slide shaft 324 to which the vibrating magnetic pole part 330 is coupled can be led to the outside.

A motor control means for controlling the motor 200 is configured in the handle part 110, and a gun switch for providing a control signal to the motor control means at a position where a user's finger is placed on the handle part 110. 400).

The gun switch 400 is configured so that the internal operation switch is pressed when the user presses with a finger, the elastic means for providing an elastic force to the gun switch 400 to be restored to its original position when the user releases the pressing force It consists of a general switch structure constituting the, can be configured in various forms of switch structure.

Here, the gun switch 400 is configured as a switch in the form of a gun for the user's convenience, it may be configured as a switch of the general form.

The motor control means includes a power supply means, circuit means for the control means for driving the motor by providing the power provided from the power supply means to the motor 200 in accordance with the switching of the gun switch 400.

The power supply means may be configured as a charging type including a battery and a charging and discharging means of the battery, or may be configured as a plug type using a power plug to connect a power plug to an outlet.

Unexplained reference numeral 150 denotes a heat sink, 500 denotes a fuse, and 600 denotes a speed control volume.

Referring to the coupling process and operation of the present invention muscle vibration massage device made in such a configuration as follows.

The rotating shaft 210 of the motor 200 enters the inside of the fixing bracket 341 through the rotation shaft through hole 341a of the fixing bracket 341, and the cam 311 is rotated to the inside of the fixing bracket 341. After 311c is positioned in the direction of the rotation shaft 210, the rotation shaft 210 of the motor 200 is coupled to the rotation shaft coupling portion 311c.

Then, after the bearing fixing means 313 is coupled to the fixing groove 311d formed on the opposite side of the rotating shaft coupling portion 311c of the cam 311 to engage the bearing 312, the bearing 312 is connected to the bearing fixing means 314. Fix the coupling to the bearing coupling portion 341b of the fixing bracket 341.

Meanwhile, the slide shaft 324 is inserted into the slide shaft through hole 341c of the fixed bracket 341 and coupled to the shaft through hole 341c by the bushing 325, and a bush formed at the rear end of the fixed bracket 341. A bushing 325 is fitted to the ring coupling portion 341d to support the rear end of the slide shaft 324.

Then, from the lower portion of the slide shaft 324, the linker 323 is coupled to the linker coupling portion 324a, and the forward bearing 321 and the backward bearing 322 are coupled to the linker 323 to the disc of the cam 311. Positioning both sides of the 311b, the forward bearing 321 and the reverse bearing 322 is in contact with the disc 311b is coupled to the rotatable structure.

At this time, the forward bearing 321 and the reverse bearing 322 is rotated constantly in the opposite direction as each other is configured around the disc 311b.

In addition, the right angle fixing pin 342 is fixed to the right angle fixing pin coupling portion 341e of the fixing bracket 341 using the right angle fixing pin fixing means 343.

The vibration stimulator 330 couples and couples the coupling adapter 331 to the slide shaft 324.

After mounting the fixed bracket 341 is completed in accordance with the motor support portion 120 and the bracket fixing portion 130 in the main body 100 and the bolt from the outside to the fixing hole 120 of the fixing bracket 341 The assembly is completed by fastening to the fixing hole 341f.

The operation of the present invention muscle vibration massage device is made as follows.

When the user pulls the gun switch 400, the switch of the motor control means configured in the handle 110 is touched and the power is supplied to the motor 200 so that the motor 200 rotates.

When the motor 200 rotates, the cam 311 coupled to the rotating shaft 210 of the motor 200 rotates.

A disc 311b inclined at a predetermined inclination angle is formed on the shaft 311a of the cam 311 of the vibration rotating unit 310. When the cam 311 rotates as described above, the cam 311 is formed on the cam 311. The original plate 311b is rotated.

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At this time, the disc 311b is formed with the shaft 311a at a predetermined inclination, so that the circumferential surface of the disc 311b has a constant displacement width according to the inclined angle.

Therefore, the forward and reverse bearings 321 and the reverse bearings 322 formed on the left and right sides of the disc 311b rotate in contact with the disc 311b and move to the disc 311b of the cam 311 according to the rotation period of the cam 311. Power is received from.

As the linker 323 moves left and right according to the displacement width of the disc 311b according to the force transmitted from the disc 311b, the slide shaft 324 to which the linker 323 is connected is horizontally moved from side to side.

As the cam 311 rotates as described above, as the circumferential surface of the disc 311b formed on the shaft 311a of the cam 311 moves left and right, the forward bearing 321 rotates in contact with both sides of the disc 311b.), As the reverse bearing 322 is moved left and right, the slide shaft 324 slides left and right, and the vibration is generated while repeating the above process.

As shown in FIG. 5A, when the disc 311b transmits a force to the forward bearing 321, the forward bearing 321 is pushed toward the vibration stimulator 330 according to the force transmitted from the disc 311b. When the linker 323 connected to the forward bearing 321 pushes the slide shaft 324, the slide shaft 324 is advanced, and the disc 311b transmits the force to the reverse bearing 322. 5B, the reverse bearing 322 is pushed to the rear end of the vibration stimulator 330, and the linker 323 connected to the reverse bearing 322 pushes the slide shaft 324 to the rear end. The slide shaft 324 is reversed.

At this time, the right angle fixing pin 342 fixedly supported by the fixing bracket 341 is prevented from moving left and right of the slide shaft 324 during horizontal movement in a state where the right angle fixing pin 342 is inserted into the release preventing guide groove 324b of the slide shaft 324.

5A and 5B are diagrams illustrating only a coupling state of the separation prevention part in order to explain the horizontal movement operation of the vibration rotating part and the vibration slide part.

The vibration generated in this way is transmitted to the muscles in the skin through the vibration stimulator 330 in contact with the user's skin.

At this time, the vibrating magnetic pole part 330 is coupled to the coupling adapter 331 is configured to be replaced from the slide shaft 324, it can be used to replace as necessary.

Patent Citations (3)

Publication number	Priority date	Publication date	Assignee	Title
KR200311328Y1	2003-01-14	2003-05-01	박종태	Muscle-slackening stimulator
JP2005204777A	2004-01-21	2005-08-04	Omron Healthcare Co Ltd	Massage device
JP2010534110A	2007-07-24	2010-11-04	アクティヴェイター メソッズ インターナショナル リミテッド	Portable acupressure corrector

Family To Family Citations

* Cited by examiner, † Cited by third party

Cited By (4)

Publication number	Priority date	Publication date	Assignee	Title
KR20160088686A	2015-01-16	2016-07-26	연세대학교 원주산학협력단	Vibration device for preventing and treating muscle atrophy
KR101646755B1 *	2015-08-10	2016-08-08	심수용	Face massage apparatus
CN107252388A *	2017-05-03	2017-10-17	郑州飞龙医疗设备有限公司	Muscle arthrosis viberation therapeutic instrument
KR102016279B1 *	2019-01-28	2019-08-29	오수현	portable massage device

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

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Publication	Publication Date	Title
KR20190000098U	2019-01-09	Vibration massage device
US20200046600A1	2020-02-13	Electro mechanical sexual stimulation device
US20190321253A1	2019-10-24	Personal massager with undulating arm
KR20150086512A	2015-07-28	Massaging appliance equipped with interchangeable and distinguishable massaging heads
CN105563469A	2016-05-11	Adjustable six-freedom-degree human body head massaging health care robot
CA2940672A1	2014-09-04	Methods and devices for flexural adult devices
CN102274107B	2013-03-27	Fixed exoskeleton rehabilitation training manipulator
KR20060110740A	2006-10-25	Massage belt
ES2753302T3	2020-04-08	Manual device for repeated puncture of human or animal skin

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Petitioner Therabody Ex-1004, 2192

EP2892493B1	2017-05-24	Stimulation device
JP2016533224A	2016-10-27	Massage device with massage head equipped with tapping fingers
CN105748192B	2018-11-06	A kind of eye nursing device
EP2537504B1	2014-01-15	Resonance massage device and method for massaging the acupuncture points on the wrist
US20060287620A1	2006-12-21	Power massager
KR101018728B1	2011-03-04	Chair massage equipment
CN107822843B	2020-05-05	Massage device
CN202568773U	2012-12-05	Multifunctional massage cushion with neck heating function
CN104771298B	2017-01-11	leg massager
KR101345771B1	2013-12-27	Massage
CN1292717A	2001-04-25	Portable therapeutic device
WO2008003204A1	2008-01-10	Medication head-massaging healthcare and therapy apparatus
CN203107603U	2013-08-07	Massaging machine core capable of achieving swinging massaging
TW398974B	2000-07-21	Portable massager
JP2016533226A	2016-10-27	Massage device comprising at least one massage head with eccentric rotation
CN104771299B	2017-01-04	Lower limb rehabilitation physiotherapy table

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR1020120013068A	2012-02-09	2012-02-09	Vibration massage apparatus for muscle

Applications Claiming Priority (1)

Application	Filing date	Title
KR1020120013068A	2012-02-09	Vibration massage apparatus for muscle

Legal Events

Date	Code	Title	Description
2012-02-09	A201	Request for examination	
2012-03-09	A302	Request for accelerated examination	
2012-05-22	E902	Notification of reason for refusal	
2012-06-22	E701	Decision to grant or registration of patent right	
2012-06-29	GRNT	Written decision to grant	
2015-04-23	FPAY	Annual fee payment	**Payment date**: 20150423 **Year of fee payment**: 4
2016-05-17	FPAY	Annual fee payment	**Payment date**: 20160517 **Year of fee payment**: 5
2017-06-05	FPAY	Annual fee payment	**Payment date**: 20170605 **Year of fee payment**: 6
2018-06-27	FPAY	Annual fee payment	**Payment date**: 20180627 **Year of fee payment**: 7
2019-06-19	FPAY	Annual fee payment	**Payment date**: 20190619 **Year of fee payment**: 8

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Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
Muscles		title,claims,abstract,description	47	0.000
stimulation		claims,abstract,description	20	0.000
coupling process		claims,description	50	0.000
coupling		claims,description	48	0.000
coupling reaction		claims,description	48	0.000
displacement		claims,description	35	0.000
prevention		claims,description	14	0.000
separation method		claims,description	12	0.000
controlling effects		claims,description	4	0.000
extrusion		claims,description	4	0.000
aluminium		claims,description	3	0.000
aluminum		claims,description	3	0.000
die casting		claims,description	3	0.000
corresponding		claims,description	2	0.000
penetrating		claims,description	2	0.000
construction		abstract,description	2	0.000

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KR200311328 Y1
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전체 청구항 수 : 총 6 항 심사관 : 오창석

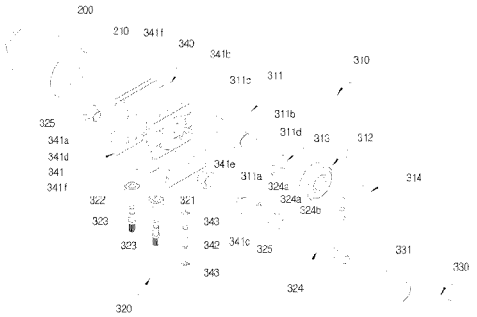
(54) 발명의 명칭 **근육 진동 마사지 장치**

(57) 요 약

본 발명은 기계적인 진동을 근육에 전달하여 근육을 이완시켜 줄 수 있도록 하는 근육마사지 장치에 관한 것으로, 더 상세하게는 손으로 잡아 사용이 편리하도록 건(GUN)타입으로 구성된 근육 진동 마사지 장치에 관한 것이다.

본 발명 근육 진동 마사지 장치는 근육자극 진동 마사지장치를 구성함에 있어서, 진동력 제공수단인 모터의 회전력이 수평방향으로 근육자극부재에 작용할 수 있도록 하여, 힘의 전달이 밸런스있게 효과적으로 이루어질 수 있도록 함으로써, 별도의 무게중심축이 불필요하며, 또한 그 구조를 단순화시켜 손잡이부를 더욱 더 슬림화시켜 디자인이 미려하고 사용자가 손쉽게 잡고 사용가능한 근육 자극 마사지장치를 제공하고자 한다.

대 표 도 - 도3



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Petitioner Therabody Ex-1004, 2195

특허청구의 범위

청구항 1

건(gun) 형상의 손잡이부(110)를 갖는 본체(100)로 이루어지고, 본체(100)의 상부는 진동을 발생시키기 위한 모터(200)와 모터(200)의 회전력을 전후 수평 왕복운동으로 변환하여 진동을 발생하기 위한 진동발생수단을 내장하기 위한 공간 및 고정부가 형성되고, 본체(100)의 하부에 위치한 손잡이부(110) 내로는 모터의 구동전압을 공급하여 모터를 동작제어하기 위한 모터제어수단이 내장되고 이의 고정수단이 구성되며, 손잡이부(110)의 외측, 손으로 잡아 손가락이 위치하는 곳에는 모터제어수단으로 사용자 동작지령을 제공하기 위한 건 스위치(400)가 형성되며,

상기 진동발생수단은,

회전축의 일 측이 모터(200)의 회전축(210)에 수평방향으로 결합되어 회전하며, 회전에 따라서 좌우 수평이동변위를 갖는 수평이동변위수단을 회전축 상에 구성하여 캠(311)에 형성된 수평이동변위수단의 변위에 따라서 진동슬라이드부(320)를 수평 왕복 운동시키기 위한 진동회전부(310)와, 진동회전부(310)에 형성된 수평이동변위수단과 결합되어 진동회전부(310)의 회전에 따른 수평이동변위수단의 이동변위 폭으로 수평왕복 운동하는 진동슬라이드부(320)와, 진동슬라이드부(320)의 전단부에 결합되고 본체(100)의 외부로 노출되어 사용자의 근육에 접촉 진동슬라이드부(320)의 진동자극을 제공하는 진동자극부(330)와, 모터(200), 진동회전부(310), 진동슬라이드부(320)를 결합 고정하며 진동슬라이드부(320)가 수평왕복 운동함에 있어서 좌우 이탈되지 않도록 가이드하기위한 이탈방지부(340)를 포함하여 구성되는 것을 특징으로 하는 근육 진동 마사지 장치.

청구항 2

제 1항에 있어서,

상기 진동회전부(310)는 회전에 따라서 수평 이동 변위가 발생되도록 소정의 경사도로 축(311a) 상에 원판(311b)이 형성되고 축(311a)의 일 측은 모터(200)의 회전축(210)과 결합되는 회전축결합부(311c)가 형성되고 회전축결합부(311c)의 그 타측으로 베어링(312)과의 결합위치로 부터 베어링(312)의 폭만큼 이격된 위치에 축(311a)의 유동을 방지하기 위한 고정홈(311d)이 형성된 캠(311)과, 캠(311)이 안정적으로 회전할 수 있도록 회전축결합부(311c)의 그 타측에 결합되는 베어링(312)과, 상기 축(311a)에 형성된 고정홈(311d)에 결합되어 베어링(312)에 결합된 캠(311)을 이탈방지부(340)에 고정시키기 위한 축고정수단(313)과, 베어링(314)을 이탈방지부(340)에 고정 결합시키기 위한 베어링고정수단(314)를 포함하여 구성되며,

상기 진동슬라이드부(320)는 상기 진동회전부(310)의 캠(311)에 구성된 원판(311b)의 양 측에 구성되어 원판(311b)의 회전에 대하여 서로 반대방향으로 일정하게 회전하며 원판(311b)의 수평이동변위에 따라서 가해지는 힘에 의해 슬라이드 샤프트(324)를 수평 왕복 이동시키기 위한 전진베어링(321), 후진베어링(322)과, 상기 전진베어링(321), 후진베어링(322)과 슬라이드 샤프트(324)를 연결하는 링커(323)와, 링커(323)에 의해 수평왕복 운동하는 슬라이드 샤프트(324)와, 슬라이드 샤프트(324)의 전 후단을 이탈방지부(340)에 결합 고정시키는 부시링(325)을 포함하여 구성되는 것을 특징으로 하는 근육 진동 마사지 장치.

청구항 3

제 2항에 있어서, 상기 슬라이드 샤프트(324)는 상기 전진베이링(321),후진베이링(322)에 대한 각 링키(323)를 결합하기 위한 각각의 링커결합부(324a)와, 이탈방지부(340)에 구성되는 직각고정편(342)을 결합하기 위한 이탈방지가이드홈(324b)를 구성하며, 이탈가이드방지홈(324b)은 슬라이드 샤프트(324)가 전 후 슬라이드 동작할 때 결합된 직각고정편(342)이 걸리지 않도록 전후 슬라이드 되는 방향으로 이동하는 거리이상의 길이를 갖도록 형성되며,

상기 이탈방지부(340)는 모터(200), 진동회전부(310), 진동슬라이드부(320)를 결합 고정시켜 슬라이드 샤프트(324)의 수평 왕복운동이 가능하도록 하며 수평 왕복 운동 시 좌우 이탈을 방지하기 위한 고정브라켓트(341), 수평 왕복 운동시 좌우 이탈을 방지하기 위한 직각고정편(342)을 포함하여 구성되며,

상기 고정브라켓트(341)는 상단으로 모터(200)의 회전축(210)을 캠(311)에 결합하기 위한 회전축통과공(341a)을 형성하고 중앙으로 캠(311)이 구성되며 상기 회전축통과공(341a)의 그 반대편으로 캠(311)의 축(311a)이

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결합되는 베어링(312)이 결합되는 베어링결합부(341b)가 형성되며, 그 하부로 슬라이드 샤프트(324)가 끼워지는 슬라이드샤프트통과공(341c)이 형성되고, 슬라이드 샤프트통과공(341c)의 선상으로 후단으로는 슬라이드 샤프트(324)와 결합되어 슬라이드 샤프트(324)의 수평왕복운동을 지지하는 부시링(325)이 끼워지는 부시링결합부(341d)가 구성되며, 상기 슬라이드 샤프트통과공(341c)의 그 일측으로 끼워진 슬라이드 샤프트(324)의 이탈가이드방지홈(324b)에 직각고정핀(342)을 결합하기 위한 직각고정핀결합부(341e)를 포함하여 구성된 것을 특징으로 하는 근육 진동 마사지 장치.

청구항 4

제 3항에 있어서, 상기 본체(100)는 본체(100)내로 관통되는 고정홀(140)이 구성되고, 상기 고정브라켓트(341)는 상기 고정홀(140)과 대응하는 위치에 고정홀(341f)이 구성되어 본체(100)의 외부로 부터 체결수단에 의해 브라켓트고정부(130)에 고정되는 구조로 이루어지는 것을 특징으로 하는 근육 진동 마사지 장치.

청구항 5

제 3항 또는 제 4항에 있어서, 상기 고정브라켓트(341)는 알루미늄 압출가공 또는 정밀주조(die casting)로 일체형으로 제작되는 것을 특징으로 하는 근육 진동 마사지 장치.

청구항 6

제 1항에 있어서, 상기 본체(100)의 고정수단은 상기 모터(200)의 후단으로 슬라이드 샤프트(324)로부터 작용하는 힘을 받쳐주기 위하여 모터받침부(120)를 구성하고, 모터(200)의 전단으로는 고정브라켓트(341)를 고정하기 위한 브라켓트고정부(130)를 포함하는 것을 특징으로 하는 근육 진동 마사지 장치.

명 세 서

기 술 분 야

[0001] 본 발명은 기계적인 진동을 근육에 전달하여 근육을 이완시켜 줄 수 있도록 하는 근육마사지 장치에 관한 것으로, 더 상세하게는 손으로 잡아 사용이 편리하도록 건(GUN)타입으로 구성된 근육 진동 마사지 장치에 관한 것이다.

배 경 기 술

[0002] 근육의 재활을 돕기 위하여 기계적인 진동마사지 치료가 일반적으로 이용되고 있다. 진동 마사지 치료란 기계적인 진동을 치료 목적으로 적용한 것으로, 진동을 인체에 전달하여 세로방향의 파형의 흐름을 만들면서, 혈류를 개선시켜, 수축된 근육조직을 이완시켜 줌으로써, 손상된 근육조직의 재활을 돕게 된다.

[0003] 이외에도 진동을 이용한 근육자극에 의한 효과로는 동통완화, 지방분해 및 미용효과, 혈액순환 증대와 충혈경감, 근육의 긴장완화 등을 얻을 수 있다.

[0004] 이전에는 상기와 같은 진동마사지장치를 병원 또는 재활센터에서나 이용가능했지만, 근래에는 기술개발로 인하여 가정에서 사용함은 물론 휴대이동 가능할 정도로 소형화되면서도 성능은 향상된 다양한 형태의 근육 진동 마사지 장치가 상용화되고 있다.

[0005] 도 1은 대한민국 등록특허 20-0311328호 " 근육자극이완기"를 나타낸다.

[0006] 도 1에서와 같이 종래 근육 자극 마사지장치는 손잡이부(1)에 모터 및 모터의 회전에 따라 회전하도록 형성된 편심회전축을 갖는 편심회전자를 내장하도록 하고, 편심회전자의 회전자가 회전함에 따라서 근육자극부재(2)의 슬라이드축(3)의 내면을 편심회전축이 쳐주면서 슬라이드축(3)이 전후 왕복운동을 하도록 함으로써, 근육자극부재(2)가 근육을 자극시킬 있도록 구성된다.

[0007] 여기서, 종래 근육 자극 마사지장치는 손잡이부(1) 내에 모터 및 모터의 회전에 따라 회전하는 상기 편심회전자 및 이의 지지구조물과 전원회로장치들이 모두 구성되어 있어서, 그 두께가 두꺼워질 수 밖에 없어서, 사용자가 손으로 쥐고 치료할 때 몸에 사용하기에는 어려움이 있다.

[0008] 또한, 모터의 회전하는 힘을 편심회전자를 이용하여 슬라이드 부재를 전후 왕복시키도록 하는 기술적 구조가 복잡하여 제조공정이 복잡하고 제조비용이 상하며, 이와 같이 모터의 힘이 수직으로 슬라이드축(3)에 작용함

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으로써, 이의 밸런스를 잡아주기 위해서 무게중심축(4)을 구성하여야만 한다.

발명의 내용

해결하려는 과제

[0009] 본 발명에서는 이와 같은 종래의 문제점을 개선하기 위한 것으로 근육자극 마사지장치를 구성함에 있어서, 진동력 제공수단인 모터의 회전력이 수평방향으로 근육자극부재에 작용할 수 있도록 하여, 힘의 전달이 밸런스 있게 효과적으로 이루어질 수 있도록 함으로써, 별도의 무게중심축이 불필요하며, 또한 그 구조를 단순화시켜 손잡이부를 더욱 더 슬림화시켜 사용자가 손쉽게 잡고 사용가능한 근육 자극 마사지장치를 제공하고자 한 것이다.

과제의 해결 수단

[0010] 본 발명 근육 진동 마사지 장치는,

[0011] 건(gun) 형상의 손잡이부를 갖는 본체로 이루어지고, 본체의 상부는 진동을 발생시키기 위한 모터(200)와 모터의 회전력을 전후 수평 왕복운동으로 변환하여 진동을 발생하기 위한 진동발생수단을 내장하기 위한 공간 및 고정부가 형성되고, 본체의 하부에 위치한 손잡이부 내로는 모터의 구동전압을 공급하여 모터를 동작제어하기 위한 모터제어수단이 내장되고 이의 고정수단이 구성되며, 손잡이부의 외측, 손으로 잡아 손가락이 위치하는 곳에는 모터제어수단으로 사용자 동작지령을 제공하기 위한 건 스위치기 형성되며,

[0012] 상기 진동발생수단은,

[0013] 회전축의 일 측이 모터의 회전축에 수평방향으로 결합되어 회전하며, 회전에 따라서 좌우 수평이동 변위를 갖는 수평이동변위수단을 회전축 상에 구성하여 캠에 형성된 수평이동변위수단의 변위에 따라서 진동슬라이드부를 수평 왕복 운동시키기 위한 진동회전부와, 진동회전부에 형성된 수평이동변위수단과 결합되어 진동회전부의 회전에 따른 수평이동변위수단의 이동변위 폭으로 수평왕복 운동하는 진동슬라이드부와, 진동슬라이드부의 선단부에 결합되고 본체의 외부로 노출되어 사용자의 근육에 접촉 진동슬라이드부의 진동자극을 제공하는 진동자극부와, 모터, 진동회전부, 진동슬라이드부를 결합 고정하며 진동슬라이드부가 수평왕복 운동함에 있어서 좌우 이탈되지 않도록 가이드하기 위한 이탈방지부를 포함하여 구성되는 것을 특징으로 한다.

[0014] 또한, 상기 진동회전부의 수평이동변위수단은 회전축과 소정의 기울기로 원판으로 구성하여 회전축이 회전하게 됨에 따라서 수평이동 변위를 갖는 캠을 구성하고, 상기 진동슬라이드부는 상기 진동회전부의 캠에 구성된 원판의 양 측에 구성되어 원판의 회전에 대하여 서로 반대방향으로 일정하게 회전하며 원판의 수평이동변위에 따라서 가해지는 힘에 의해 슬라이드 샤프트를 수평 왕복 이동시키기 위한 전진베어링, 후진베어링을 구성한 것을 특징으로 한다.

발명의 효과

[0015] 본 발명에 따르면 진동을 발생시키기 위한 모터의 회전력을 수평방향으로 제공하도록 함으로써, 그 구조가 간단하고 밸런스 있는 힘의 전달이 가능하다.

[0016] 또한 종래에서와 같이 모터 및 모터의 회전력 전달을 수직상의 축에 전달하기 위한 구성이 손잡이부에 구성되지 않음으로써, 손잡이부를 슬림하게 구성하여 사용자가 쉽게 잡고 사용이 가능하며 무게 밸런스를 잡아주기 위한 무게중심축이 필요없고 디자인 또한 미려해질 수 있다.

[0017] 또한 모터의 회전력 전달 및 회전력에 의한 수평이동 변환을 위한 진동회전부, 진동슬라이드부를 결합하기 위하여 알루미늄 압출가공, 또는 정밀주조(die casting)를 통해 제작되는 일체형의 고정브라켓트를 구성함으로써, 그 결합공정이 단순화되고, 제조비용이 다운되는 장점이 있다.

[0018] 또한 모터의 회전에 따라서 그 회전력을 수평이동력으로 변환하기 위한 캠을 구성함에 있어서, 축 상에 소정의 기울기로 구성된 원판을 구성하고 원판을 중심으로 양측에 접촉하여 원판에서 가해지는 힘에 의해 슬라이드 샤프트를 좌우 수평으로 슬라이드 될 수 있도록 전진베어링과 후진베어링을 각각 구성함으로써, 전진베어링과 후진베어링이 자신의 위치에서 일정한 방향으로만 회전하도록 함으로써, 접촉된 상태에서 회전하는 베어링의 마모 및 손상을 최소화할 수 있다.

도면의 간단한 설명

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[0019] 도 1은 종래 근육자극이완기를 나타낸 사시도.

도 2는 본 발명 근육 진동 마사지 장치의 구성을 나타내기 위한 본체 내 상부 구성을 나타낸 도면.

도 3은 본 발명에 있어서, 진동회전부와 진동슬라이드부의 결합관계 및 수평이동 동작을 설명하기 위한 고정 브라켓트 결합구조를 나타낸 분리사시도.

도 4는 본 발명에 있어서, 진동회전부와 진동슬라이드부의 결합관계 및 수평이동 동작을 설명하기 위한 고정 브라켓트 결합구조를 나타낸 도면.

도 5a,도 5b는 진동슬라이드부의 수평이동 동작을 나타낸 도면으로, 도 5a는 전진, 도 5b는 후진 동작을 나타낸다.

도 6은 본 발명 근육 진동 마사지 장치의 외관을 보인 사시도.

발명을 실시하기 위한 구체적인 내용

[0020] 본 발명 근육 진동 마사지 장치를 첨부된 도면 도 2 내지 도 6에 도시된 그 실시 예를 참조하여 그 구조 및 작용을 설명하면 다음과 같다.

[0021] 건(gun) 형상의 손잡이부(110)를 갖는 본체(100)로 이루어지고, 본체(100)의 상부는 진동을 발생시키기 위한 모터(200)와 모터(200)의 회전력을 전후 수평 왕복운동으로 변환하여 진동을 발생하기 위한 진동발생수단을 내장하기 위한 공간 및 고정부기 형성되고, 본체(100)의 하부에 위치한 손잡이부(110) 내로는 모터의 구동전압을 공급하여 모터를 동작제어하기 위한 모터제어수단이 내장되고 이의 고정수단이 구성되며, 손잡이부(110)의 외측, 손으로 잡아 손가락이 위치하는 곳에는 모터제어수단으로 사용자 동작지령을 제공하기 위한 건 스위치(400)가 형성되며,

[0022] 상기 진동발생수단은,

[0023] 회전축의 일 측이 모터(200)의 회전축(210)에 수평방향으로 결합되어 회전하며, 회전에 따라서 좌우 수평이동 변위를 갖는 수평이동변위수단을 회전축 상에 구성하여 수평이동변위수단의 변위에 따라서 진동슬라이드부(320)를 수평 왕복 운동시키기 위한 진동회전부(310)와,

[0024] 진동회전부(310)에 형성된 수평이동변위수단과 결합되어 진동회전부(310)의 회전에 따른 수평이동변위수단의 이동변위 폭으로 수평왕복 운동하는 진동슬라이드부(320)와,

[0025] 진동슬라이드부(320)의 선단부에 결합되고 본체(100)의 외부로 노출되어 사용자의 근육에 접촉 진동슬라이드부(320)의 진동자극을 제공하는 진동자극부(330)와,

[0026] 진동슬라이드부(320)가 수평왕복 운동함에 있어서 좌우 이탈되지 않도록 가이드하기위한 이탈방지부(340)를 포함하여 구성된다.

[0027] 이와 같은 본 발명은,

[0028] 본체(100)는 건(gun)형상으로 이루어지고 상부에는 모터(200), 모터(100)의 회전력을 수평방향의 진동으로 전환하기 위한 진동발생수단이 구성되고, 손잡이부(110)로는 상기 모터(200)를 회전시키기 위한 모터제어수단이 구성된다.

[0029] 상기 진동발생수단은, 회전력을 제공하기 위한 모터(200)의 전단에 결합되어 모터의 회전력을 수평운동으로 변화시키는 진동회전부(310), 진동회전부(310)에 의해 전후 슬라이드 되면서 진동을 발생시키는 진동슬라이드부(320), 진동슬라이드부(320)에 의해 발생되는 진동자극을 사용자에게 전달하는 진동자극부(330)와, 진동슬라이드부(320)의 좌우 이탈을 방지하기 위한 이탈방지부(340)를 포함하여 구성된다.

[0030] 상기 진동발생수단은 모터(200)의 회전축(210)에 결합되고, 모터(200)의 회전축(210) 선단으로 진동회전부(310)가 결합되어 모터(200)의 회전축(210) 회전에 따라서 함께 회전하는 구조로 이루어진다.

[0031] 상기 진동회전부(310)는 회전에 따라서 수평 이동 변위가 발생되도록 소정의 경사도로 축(311a) 상에 원판(311b)이 형성되고 축(311a)의 일 측은 모터(200)의 회전축(210)과 결합되는 회전축결합부(311c)가 형성되고 회전축결합부(311c)의 그 타측으로 베어링(312)과의 결합위치로 부터 베어링(312)의 폭만큼 이격된 위치에 축(311a)의 유동을 방지하기 위한 고정홈(311d)이 형성된 캡(311)과, 캡(311)이 안정적으로 회전할 수 있도록 회전축결합부(311c)의 그 타측에 결합되는 베어링(312)과, 상기 축(311a)에 형성된 고정홈(311d)에 결합되어

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베어링(312)에 결합된 캠(311)을 이탈방지부(340)에 고정시키기 위한 축고정수단(313)과, 베어링(314)을 이탈방지부(340)에 고정 결합시키기 위한 베어링고정수단(314)를 포함한다.

[0032] 상기 캠(311)의 축(311a) 상에 형성된 원판(311b)은 모터(200)의 회전력을 수평이동력으로 변환하여 주기 위한 수평이동변위수단으로, 축(311a)을 기준으로 소정의 경사도로 기울어진 상태로 구성되어 축(311a)이 회전하게 됨에 따라서 함께 회전하게 될 때, 원판(311b)의 선단이 수평상에서 변위를 갖는다.

[0033] 즉, 상기 원판(311b)의 기울기에 따라서 변화되는 위치의 수평이동폭이 진동슬라이드부(320)의 수평이동 범위가 되는 것으로, 상기 캠(311)의 원판(311b)에 의해 진동슬라이드부(320)가 수평왕복운동하는 구조로 이루어진다.

[0034] 상기 회전축결합부(311c)는 모터(200)의 회전축(210)이 끼워져 결합되도록 회전축결합홈이 구성되며, 회전축결합홈 내로 결합된 회전축(210)이 회전하면서 겉돌지 않도록 회전축(210)에 결합되는 구조를 포함한다.

[0035] 상기 진동슬라이드부(320)는 상기 진동회전부(310)의 캠(311)에 구성된 원판(311b)의 변위에 따라서 접촉하여 회전하여 슬라이드 샤프트(324)를 수평 왕복이동시키기 위한 전진베어링(321), 후진베어링(322)과, 상기 전진베어링(321), 후진베어링(322)과 슬라이드 샤프트(324)를 연결하는 링커(323)와, 링커(323)에 의해 수평왕복운동하는 슬라이드 샤프트(324)와, 슬라이드 샤프트(324)의 전 후단을 이탈방지부(340)에 결합 고정시키는 부시링(325)으로 구성된다.

[0036] 상기 슬라이드 샤프트(324)는 상기 전진베어링(321),후진베어링(322)에 대한 각 링커(323)를 결합하기 위한 각각의 링커결합부(324a)와, 이탈방지부(340)에 구성되는 직각고정핀(342)을 결합하기 위한 이탈방지가이드홈(324b)를 구성하며, 이탈가이드방지홈(324b)은 슬라이드 샤프트(324)가 전 후 슬라이드 동작할 때 결합된 직각고정핀(342)이 걸리지 않도록 전후 슬라이드 되는 방향으로 이동하는 거리이상의 길이를 갖도록 형성된다.

[0037] 상기 진동자극부(330)는 진동슬라이드부(320)의 슬라이드 샤프트(324)의 선단에 결합되어 본체(100)의 입구를 통해 외부로 노출되어 슬라이드 샤프트(324)로부터 발생되는 진동에 따라 사용자의 근육에 진동자극을 전달하는 수단이다.

[0038] 상기 진동자극부(330)는 슬라이드 샤프트(324)에 교체 가능한 구조로 이루어지는 것으로, 슬라이드 샤프트(324)에 결합하기 위하여 샤프트결합홈이 구성된다.

[0039] 상기 진동자극부(330)는 사용자의 피부를 보호하고 인체에 무해하며 불쾌감을 주지 않도록 생고무 라텍스 또는 실리콘 고무로 제작된다.

[0040] 본 실시 예에서와 같이, 별도로 슬라이드 샤프트(324)와의 결합, 분리를 위한 결합어댑터(331)를 더 구성하여 필요에 따라서 진동자극부(330)를 교체하여 사용할 수 있다.

[0041] 상기 이탈방지부(340)는 모터(200), 진동회전부(310), 진동슬라이드부(320)를 결합 고정시켜 슬라이드 샤프트(324)의 수평 왕복운동이 가능하도록 하며 수평 왕복 운동 시 좌우 이탈을 방지하기 위한 수단으로, 고정브라켓트(341), 직각고정핀(342)을 포함한다.

[0042] 상기 고정브라켓트(341)는 알루미늄 압출가공 또는 정밀주조(die casting)로 일체형으로 제작된다. 본 실시 예에는 압출가공형태로 이루어진 것이며, 정밀주조인 경우에는 그 제작공법에 따른 형태를 따른다.

[0043] 상기 고정브라켓트(341)는 상단으로 모터(200)의 회전축(210)을 캠(311)에 결합하기 위한 회전축통과공(341a)을 형성하고 중앙으로 캠(311)이 구성되며 상기 회전축통과공(341a)의 그 반대편으로 캠(311)의 축(311a)이 결합되는 베어링(312)이 결합되는 베어링결합부(341b)가 형성되며, 그 하부로 슬라이드 샤프트(324)가 끼워지는 슬라이드샤프트통과공(341c)이 형성되고, 슬라이드 샤프트통과공(341c)의 선상으로 후단으로는 슬라이드 샤프트(324)와 결합되어 슬라이드 샤프트(324)의 수평왕복운동을 지지하는 부시링(325)이 끼워지는 부시링결합부(341d)가 구성되며, 상기 슬라이드 샤프트통과공(341c)의 그 일측으로 끼워진 슬라이드 샤프트(324)의 이탈가이드방지홈(324b)에 직각고정핀(342)을 결합하기 위한 직각고정핀결합부(341e)과, 본체(100)에 고정하기 위한 고정홀(341f)을 포함한다.

[0044] 상기 직각고정핀(342)은 고정브라켓트(341)의 직각고정핀결합부(341e)를 통해 슬라이드 샤프트(324)의 이탈방지가이드홀(324b)에 끼워져 슬라이드 샤프트(324)의 수평 왕복 운동시 좌우 이탈을 방지하기 위한 수단이다.

[0045] 도 4는 진동회전부(310)와 진동슬라이드부(320)의 결합관계 및 수평이동 동작을 설명하기 위한 고정브라켓트

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(341) 결합구조를 나타낸 도면이다.

[0046] 상기 본체(100)는 건(gun) 모양의 상부에 모터(200)가 배치되고, 상기 모터(200)의 후단 및 양단으로 모터받침부(120)를 구성한다.

[0047] 또한 고정브라켓트(341)를 본체(100)에 고정하기 위하여 브라켓트고정부(130)가 구성되고, 브라켓트고정부(130) 내로 관통되는 고정홀(140)이 구성되어, 상기 고정브라켓트(341)는 상기 고정홀(140)과 대응하는 위치에 고정홀(341f)이 구성되어 본체(100)의 외부로 부터 체결수단에 의해 브라켓트고정부(130)에 고정된다.

[0048] 상기 모터받침부(120)는 모터(200)가 슬라이드 샤프트(324)로부터 작용하는 탄성력에 의해 후단으로 힘이 작용하면서 진동이 발생될 때, 모터(200)가 뒤로 밀리거나 유동되어짐을 방지하기 위한 수단이다.

[0049] 본체(100)의 입구는 상기 진동자극부(330)가 결합된 슬라이드 샤프트(324)가 외부로 도출될 수 있도록 통공된 구조로 이루어진다.

[0050] 손잡이부(110) 내에는 상기 모터(200)를 제어하기 위한 모터제어수단이 구성되며, 손잡이부(110)에서 사용자의 손가락이 놓여지는 위치에 모터제어수단에 제어신호를 제공하기 위한 건 스위치(400)가 구성된다.

[0051] 상기 건 스위치(400)는 사용자가 손가락으로 눌렀을 때 내부의 동작스위치가 눌려질 수 있도록 구성되며, 사용자가 누르는 힘을 해제할 때 다시 원위치로 복구되도록 건 스위치(400)에 탄성력을 제공하는 탄성수단을 구성하는 일반적인 스위치 구조로 이루어지며, 다양한 형태의 스위치구조로 구성할 수 있다.

[0052] 여기서 상기 건 스위치(400)는 사용자의 편의를 위하여 총을 쏘는 형태의 스위치로 구성한 것이며, 일반 형태의 스위치로 구성할 수 있다.

[0053] 상기 모터제어수단은 전원공급수단, 전원공급수단으로부터 제공된 전원을 건스위치(400)의 스위칭에 따라 모터(200)에 제공하여 모터를 구동시키기 위한 제어수단에 대한 회로수단을 포함한다.

[0054] 상기 전원공급수단은 충전지(battery) 및 충전지의 충방전수단을 포함하여 구성하는 충전형으로 구성되거나, 전원플러그를 구성하여 콘센트에 전원플러그를 연결하여 사용하는 플러그 타입으로 구성할 수 있다.

[0055] 설명되지 않은 부호 150은 방열구, 500은 퓨즈, 600은 속도조절용 볼륨이다.

[0056] 이와 같은 구성으로 이루어지는 본 발명 근육 진동 마사지 장치의 결합과정 및 동작을 상세히 설명하면 다음과 같다.

[0057] 고정브라켓트(341)의 회전축통과공(341a)을 통하여 고정브라켓트(341)의 내측으로 모터(200)의 회전축(210)을 진입시키고 고정브라켓트(341)의 내측으로 캠(311)을 회전축결합부(311c)이 회전축(210)의 방향으로 위치하도록 한 후, 회전축 결합부(311c)에 모터(200)의 회전축(210)을 결합시킨다.

[0058] 그리고 캠(311)의 회전축결합부(311c)의 그 반대편에 형성된 고정홈(311d)에 베어링고정수단(313)을 결합시켜 베어링(312)을 결합한 후, 베어링(312)을 베어링고정수단(314)을 이용하여 고정브라켓트(341)의 베어링결합부(341b)에 결합고정시킨다.

[0059] 한편 슬라이드 샤프트(324)를 고정브라켓트(341)의 슬라이드 샤프트통과공(341c)에 끼우고 부시링(325)으로 샤프트통과공(341c)에 결합시키고, 고정브라켓트(341)의 그 후단에 형성된 부시링결합부(341d)에 부시링(325)을 끼워 슬라이드 샤프트(324)의 후단을 지지한다.

[0060] 이후 슬라이드 샤프트(324)의 하부로 부터 링키(323)를 링키결합부(324a)에 결합하고 전진베어링(321)과 후진베어링(322)을 상기 링커(323)에 결합시켜 캠(311)의 원판(311b)을 중심으로 양 측으로 위치시키면 전진베어링(321)과 후진베어링(322)이 원판(311b)에 접촉되어 회전 가능한 구조로 결합된다.

[0061] 이때 전진베어링(321)과 후진베어링(322)은 원판(311b)을 중심으로 구성됨에 따라서 서로 반대방향으로 일정하게 회전한다.

[0062] 또한 직각고정핀(342)을 직각고정핀고정수단(343)을 이용하여 고정브라켓트(341)의 직각고정핀결합부(341e)에 결합 고정시킨다.

[0063] 진동자극부(330)는 슬라이드 샤프트(324)에 결합어댑터(331)를 결합하고 결합시킨다.

[0064] 이후 결합 완료된 고정브라켓트(341)를 본체(100)내 모터받침부(120) 및 브라케트 고정부(130)에 맞추어 실장하고 외부로 부터 볼트를 고정홀(120)에 끼워 고정브라켓트(341)의 고정홀(341f)에 체결하여 조립을

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완료한다.

[0065] 이와 같은 본 발명 근육 진동 마사지 장치의 동작은 다음과 같이 이루어진다.

[0066] 사용자가 건 스위치(400)를 당기게 되면 손잡이부(110) 내에 구성된 모터제어수단의 스위치가 터치되면서 모터(200)에 전원이 공급되어 모터(200)가 회전하게 된다.

[0067] 모터(200)가 회전하면 모터(200)의 회전축(210)에 결합된 캠(311)이 회전하게 된다.

[0068] 진동회전부(310)의 캠(311)의 축(311a)에는 소정의 경사각도로 기울어진 원판(311b)이 형성되어 있는 데, 상기와 같이 캠(311)이 회전하게 되면, 캠(311)에 형성된 원판(311b)이 회전하게 된다.

[0069] 이때 원판(311b)은 축(311a)과 소정의 기울기로 형성되어 있음으로써, 기울어진 각도에 따라서 원판(311b)의 원주면은 일정한 변위 폭을 갖게 된다.

[0070] 따라서 원판(311b)의 좌우에 구성된 전진베어링(321)과 후진베어링(322)은 원판(311b)에 접촉하여 회전하며, 캠(311)의 회전주기에 따라서 캠(311)의 원판(311b)으로 부터 힘을 전달받게 된다.

[0071] 이와 같이 원판(311b)으로 부터 전달되는 힘에 따라서 링커(323)가 원판(311b)의 변위 폭에 따라서 좌우 이동하면서 링커(323)가 연결된 슬라이드 샤프트(324)가 좌우로 수평이동하게 된다.

[0072] 상기와 같이 캠(311)이 회전하면서 캠(311)의 축(311a)에 형성된 원판(311b)의 원주면이 좌우 이동하게 됨에 따라서 원판(311b)의 양 측면에 접촉되어 회전하는 전진베어링(321), 후진베어링(322)이 좌우로 이동되면서 슬라이드 샤프트(324)가 좌우 슬라이드하게 되며, 상기와 같은 과정을 반복하면서 진동이 발생하게 된다

[0073] 도 5a에 도시된 바와 같이, 원판(311b)이 전진베어링(321) 측으로 힘을 전달하게 되면 전진베어링(321)은 원판(311b)으로 부터 전달되는 힘에 따라 진동자극부(330) 방향으로 밀려나가게 되고, 전진베어링(321)에 연결된 링커(323)가 슬라이드 샤프트(324)를 밀어내게 됨으로써, 슬라이드 샤프트(324)가 전진하게 되고, 원판(311b)이 후진베어링(322) 측으로 힘을 전달하게 되면 도 5b에 도시된 바와 같이, 후진베어링(322)은 진동자극부(330)의 후단으로 밀려나가게 되고, 후진베어링(322)에 연결된 링커(323)가 슬라이드 샤프트(324)를 후단으로 밀어내어 슬라이드 샤프트(324)가 후진하게 된다.

[0074] 이때 고정브라켓트(341)에 고정 지지된 직각고정핀(342)이 슬라이드 샤프트(324)의 이탈방지가이드홈(324b)에 끼워진 상태에서 수평이동시 슬라이드 샤프트(324)의 좌우 이탈을 방지하게 된다.

[0075] 도 5a, 도 5b는 진동회전부, 진동슬라이드부의 수평이동 동작을 설명하기 위하여 이탈방지부의 결합상태만을 나타낸 도면이다.

[0076] 이와 같이 발생되는 진동은 사용자의 피부에 접촉된 진동자극부(330)를 통해 피부내 근육에 전달된다.

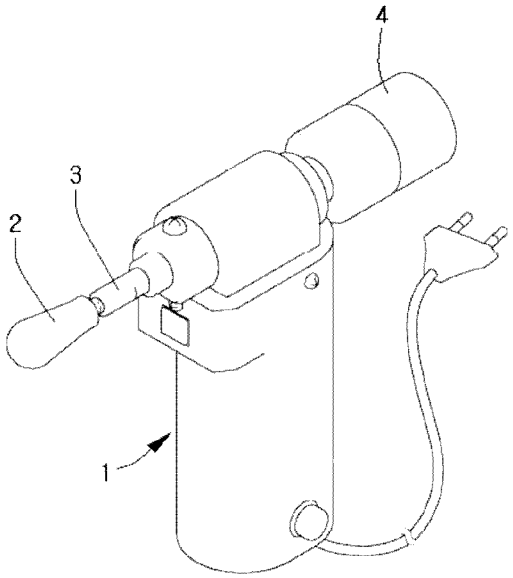
[0077] 이때 진동자극부(330)는 슬라이드 샤프트(324)로 부터 교체 가능하도록 결합어댑터(331)가 구성되어 있음으로, 필요에 따라서 교체하여 사용가능 하다.

MassagerPriorArt0001600

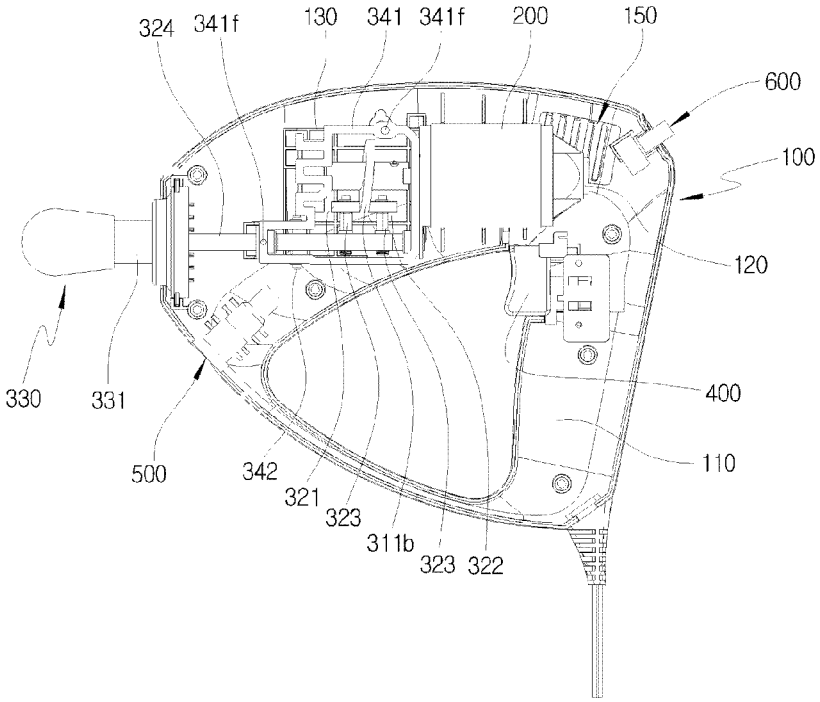
Petitioner Therabody Ex-1004, 2202

도면

도면1

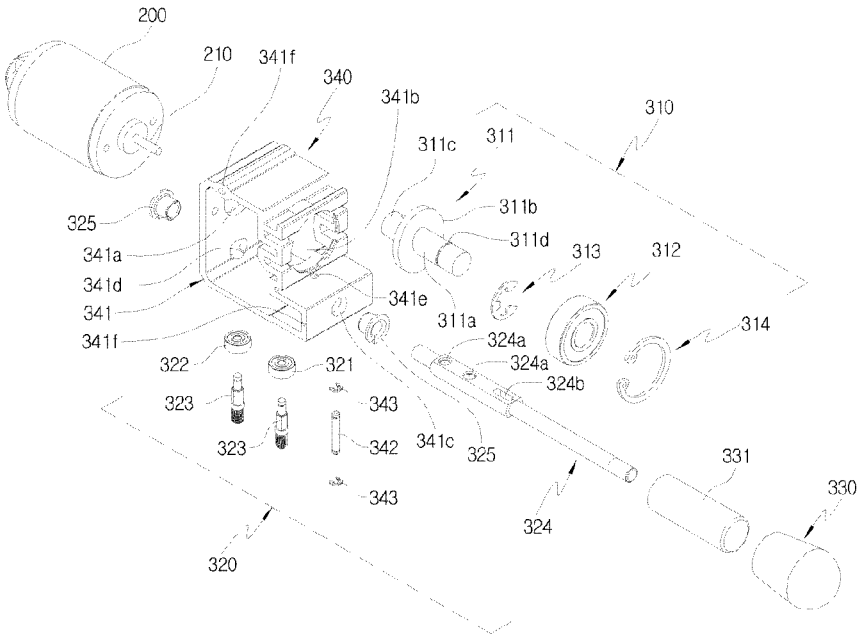


도면2

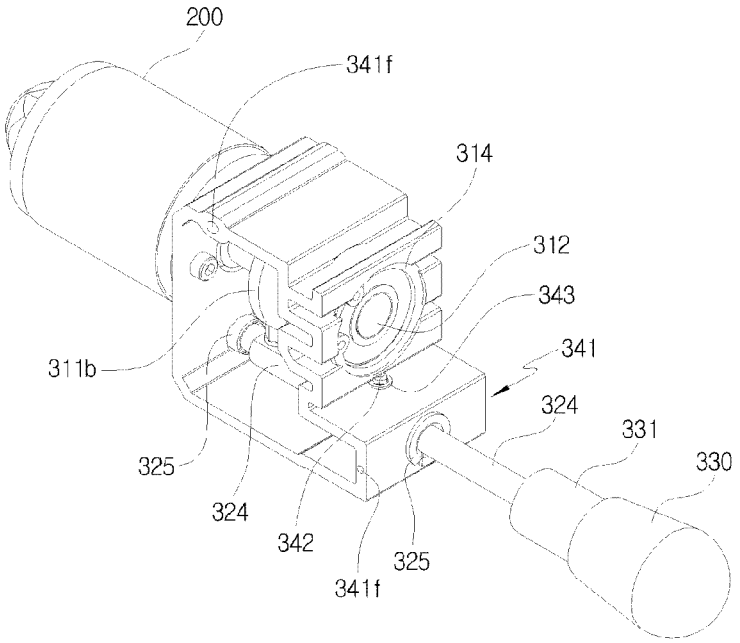


Petitioner Therabody Ex-1004, 2203

도면3



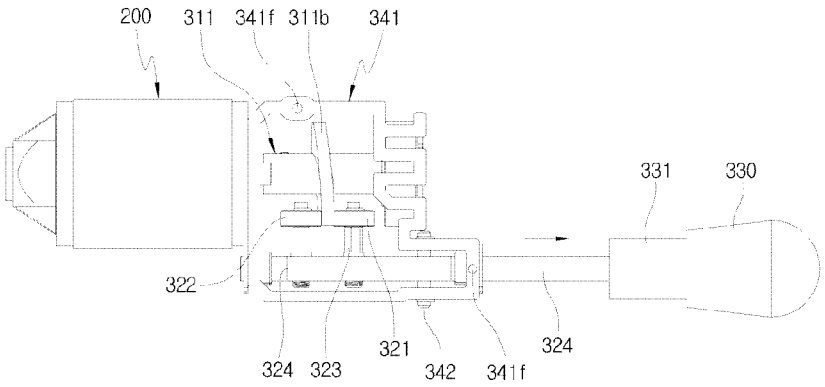
도면4



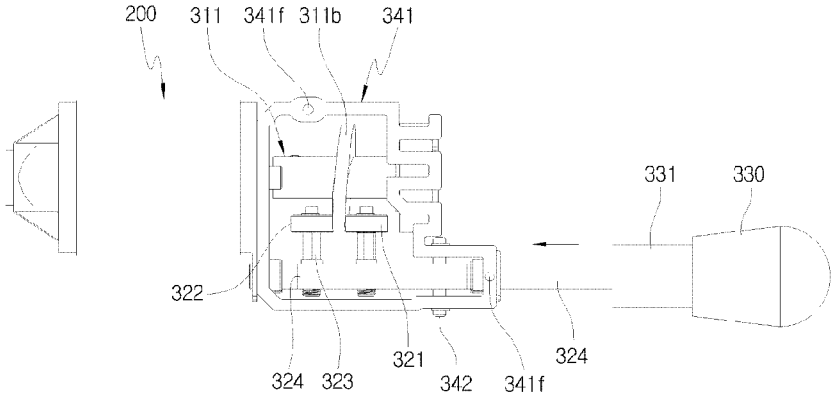
MassagerPriorArt0001602

Petitioner Therabody Ex-1004, 2204

도면5a



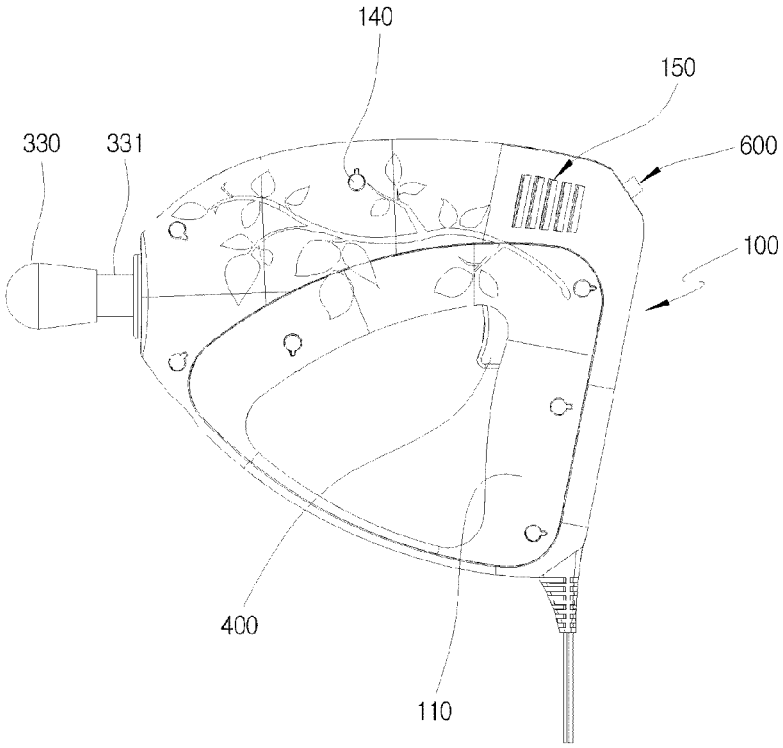
도면5b



MassagerPriorArt0001603

Petitioner Therabody Ex-1004, 2205

도면6



MassagerPriorArt0001604

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 18

Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

U. S. PATENT DOCUMENTS

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	A1	US-784024	03-07-1905	Barrett et al.	
	A2	US-799881	09-19-1905	Wells	
	A3	US-873123	12-10-1907	Gardy	
	A4	US-1,339,179	05-04-1920	Elmen	
	A5	US-1,594,636	08-03-1926	Smith	
	A6	US-1,612,981	01-04-1927	Mraula	
	A7	US-1,657,765	01-31-1928	Pasque	
	A8	US-1,784,301	12-09-1930	Mekler	
	A9	US-1,978,223	10-23-1934	Parker	
	A10	US-3,030,647	04-24-1962	Peyron	
	A11	US-3,494,353	02-10-1970	Marich	
	A12	US-3,626,934	12-14-1971	Andis	
	A13	US-3,699,952	10-24-1972	Waters et al.	
	A14	US-3,705,578	12-12-1972	Cutler et al.	
	A15	US-3,710,785	01-16-1973	Hilger	
	A16	US-3,841,321	10-15-1974	Albach et al.	
	A17	US-3,845,758	11-05-1974	Anderson	
	A18	US-3,920,291	11-18-1975	Wendel et al.	
	A19	US-3,968,789	07-13-1976	Simoncini	

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/T.A.S/	B1**	CA-1042745-A	11-21-1978	Kovach, Leslie J		
/T.A.S/	B2	CA-2440783-A1	03-13-2004	Conair		
/T.A.S/	B3	CN-101958410-B	01-16-2013	Li, Jun		√
/T.A.S/	B4	CN-106806103-A	06-09-2017	Guangdong Tanjin Electronic Tech Co Ltd		√
/T.A.S/	B5	CN-107157741-A	09-15-2017	Ji, Qingshuai		√
/T.A.S/	B6**	CN-1149446-A	05-14-1997	Feifan Science And Technology Co., Ltd.		√

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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Sheet	2	of	18

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First Named Inventor	Philip C. Danby
Art Unit	3785
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Attorney Docket Number	HYP-034C3

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	A20	US-3,993,052	11-23-1976	Miyahara	
	A21	US-4,088,128	05-09-1978	Mabuchi	
	A22	US-4,149,530	04-17-1979	Gow	
	A23	US-4,150,668	04-24-1979	Johnston	
	A24	US-4,162,675	07-31-1979	Kawada	
	A25	US-4,173,217	11-06-1979	Johnston	
	A26	US-4,412,535	11-01-1983	Teren	
	A27	US-4,505,267	03-19-1985	Inada	
	A28	US-4,513,737	04-30-1985	Mabuchi	
	A29	US-4,523,580	06-18-1985	Tureaud	
	A30	US-4,549,535	10-29-1985	Wing	
	A31	US-4,566,442	01-28-1986	Mabuchi et al.	
	A32	US-4,691,693	09-08-1987	Sato	
	A33	US-4,709,201	11-24-1987	Schaefer et al.	
	A34	US-4,730,605	03-15-1988	Noble et al.	
	A35	US-4,751,452	06-14-1988	Kilmer et al.	
	A36	US-4,790,296	12-13-1988	Segal	
	A37	US-4,827,914	05-09-1989	Kamazawa	
	A38	US-4,841,955	06-27-1989	Evans et al.	

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/T.A.S/	B7**	CN-1228299-A	09-15-1999	Zhang, Shuxin		√
/T.A.S/	B8	CN-201478387-U	05-19-2010	Hua Xue		√
/T.A.S/	B9	CN-202478137-U	10-10-2012	Univ Pla 3rd Military Medical		√
/T.A.S/	B10	CN-202536467-U	11-21-2012	Xiaolin, Guo		√
/T.A.S/	B11	CN-203195947-U	09-18-2013	Lin, Zongyao		√
/T.A.S/	B12	CN-204208018-U	03-18-2015	Wu, Zaimin		√

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First Named Inventor	Philip C. Danby
Art Unit	3785
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Attorney Docket Number	HYP-034C3

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	A39	US-4,858,600	08-22-1989	Gross et al.	
	A40	US-4,880,713	11-14-1989	Levine	
	A41	US-4,989,613	02-05-1991	Finkenberg	
	A42	US-5,063,911	11-12-1991	Teranishi	
	A43	US-5,065,743	11-19-1991	Sutherland	
	A44	US-5,085,207	02-04-1992	Fiore	
	A45	US-5,140,979	08-25-1992	Nakagawa	
	A46	US-5,159,922	11-03-1992	Mabuchi et al.	
	A47	US-5,215,078	06-01-1993	Fulop	
	A48	US-5,305,738	04-26-1994	Shimizu	
	A49	US-5,311,860	05-17-1994	Doria	
	A50	US-5,364,223	11-15-1994	Bissex	
	A51	US-5,415,621	05-16-1995	Campbell	
	A52	US-5,417,644	05-23-1995	Lee	
	A53	US-5,447,491	09-05-1995	Bellandi et al.	
	A54	US-5,469,860	11-28-1995	De Santis	
	A55	US-5,489,280	02-06-1996	Russell	
	A56	US-5,569,168	10-29-1996	Hartwig	
	A57	US-5,573,500	11-12-1996	Katsunuma et al.	

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/T.A.S/	B13	CN-204246459-U	04-08-2015	Chen, Jingwen		√
/T.A.S/	B14	CN-204814773-U	12-02-2015	Guangzhou Longest Science & Technology Co., Ltd		√
/T.A.S/	B15	CN-2049126-U	12-13-1989	Wan Renquan		√
/T.A.S/	B16	CN-205251993-U	05-25-2016	Shaanxi Dongfang Aviation Instrument Co., Ltd		√
/T.A.S/	B17	CN-205458346-U	08-17-2016	Guangzhou Keying Cosmetic Co Ltd		√
/T.A.S/	B18	CN-206183628-U	05-24-2017	Shandong Jialin Electronic Tech Co Ltd		√

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First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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	A58	US-5,602,432	02-11-1997	Mizutani	
	A59	US-5,632,720	05-27-1997	Kleitz	
	A60	US-5,656,017	08-12-1997	Keller et al.	
	A61	US-5,656,018	08-12-1997	Tseng	
	A62	US-5,725,483	03-10-1998	Podolsky	
	A63	US-5,733,029	03-31-1998	Monroe	
	A64	US-5,797,462	08-25-1998	Rahm	
	A65	US-5,803,916	09-08-1998	Kuznets et al.	
	A66	US-5,843,006	12-01-1998	Phillips et al.	
	A67	US-5,925,002	07-20-1999	Wollman	
	A68	US-5,951,501	09-14-1999	Griner	
	A69	US-6,051,957	04-18-2000	Klein	
	A70	US-6,102,875	08-15-2000	Jones	
	A71	US-6,123,657	09-26-2000	Ishikawa et al.	
	A72	US-6,165,145	12-26-2000	Noble	
	A73	US-6,170,108	01-09-2001	Knight	
	A74	US-6,228,042	05-08-2001	Dungan	
	A75	US-6,231,497	05-15-2001	Souder	
	A76	US-6,375,609	04-23-2002	Hastings et al.	

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/T.A.S/	B19	CN-206333979-U	07-18-2017	Guangzhou Coretech Electric Products Ltd		√
/T.A.S/	B20	CN-206381373-U	08-08-2017	Zhao, Jinfang		√
/T.A.S/	B21	CN-206675699-U	11-28-2017	Esino Tech Co Ltd		√
/T.A.S/	B22	CN-208130157-U	11-23-2018	Dongguan Esino Electronic Tech Co Ltd		√
/T.A.S/	B23	CN-210872953-U	06-30-2020	Chen, Ke		√
/T.A.S/	B24	CN-2207816-Y	09-20-1995	Lin Jiechang		√

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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	A77	US-6,401,289	06-11-2002	Herbert	
	A78	US-6,402,710	06-11-2002	Hsu	
	A79	US-6,432,072	08-13-2002	Harris et al.	
	A80	US-6,440,091	08-27-2002	Hirosawa	
	A81	US-6,461,377	10-08-2002	An	
	A82	US-6,478,755	11-12-2002	Young	
	A83	US-6,494,849	12-17-2002	Kuo	
	A84	US-6,503,211	01-07-2003	Frye	
	A85	US-6,537,236	03-25-2003	Tucek et al.	
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	A87	US-6,581,596	06-24-2003	Truitt et al.	
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	A90	US-6,656,140	12-02-2003	Oguma et al.	
	A91	US-6,663,657	12-16-2003	Miller	
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	A93	US-6,758,826	07-06-2004	Luettgen et al.	
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/T.A.S/	B26	CN-2540948-Y	03-26-2003	Dong, Jun		√
/T.A.S/	B27	CN-2694966-Y	04-27-2005	Zhang, Lu		√
/T.A.S/	B28	CN-304486625	02-02-2018	Ningbo Gemay Ind CO LTD		√
/T.A.S/	B29	DE-102012212256-A1	01-16-2014	Bosch GmbH Robert		√
/T.A.S/	B30	DE-202013012621-U1	12-19-2017	Novoluto, Gmbh		√

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 6 of 18

Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

U. S. PATENT DOCUMENTS

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	A97	US-6,979,300	12-27-2005	Julian et al.	
	A98	US-6,994,679	02-07-2006	Lee	
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	A101	US-7,083,581	08-01-2006	Tsai	
	A102	US-7,125,390	10-24-2006	Ferber et al.	
	A103	US-7,128,722	10-31-2006	Lev et al.	
	A104	US-7,211,057	05-01-2007	Gleason et al.	
	A105	US-7,229,424	06-12-2007	Jones et al.	
	A106	US-7,238,162	07-03-2007	Dehli	
	A107	US-7,264,598	09-04-2007	Shin	
	A108	US-7,270,641	09-18-2007	Glucksman et al.	
	A109	US-7,282,036	10-16-2007	Masuda	
	A110	US-7,282,037	10-16-2007	Cho	
	A111	US-7,306,569	12-11-2007	LaJoie et al.	
	A112	US-7,322,946	01-29-2008	Lev et al.	
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/T.A.S/	B31**	EP-0040053-A1	11-18-1981	Inoue Japax Res		
/T.A.S/	B32**	EP-0572506-B1	01-08-1997	Jacobi, Jacob		
/T.A.S/	B33**	EP-0666071-A1	08-09-1995	Seb SA		√
/T.A.S/	B34	EP-1620233-B1	02-21-2007	Bosch GmbH Robert		√
/T.A.S/	B35	EP-2510891-B1	06-01-2016	Covidien AG		
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Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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	A116	US-7,507,198	03-24-2009	Ardizzone et al.	
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	A128	US-8,317,733	11-27-2012	Chen et al.	
	A129	US-8,342,187	01-01-2013	Kalman et al.	
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/T.A.S/	B38**	FI-903376-A	12-31-1991	Mirfakhraei, Kaveh	Engl. Abstract	
	B39	GB-1293876-A	10-25-1972	Sunbeam, Corporation		
/T.A.S/	B40**	GB-188946-A	11-23-1922	James, Charles Hillman		
/T.A.S/	B41**	GB-191209026-A	03-06-1913	Johansen, Johannes Christian		
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Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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/T.A.S/	B45**	JP-2003230613-A	08-19-2003	Og Giken Co Ltd	Engl. Abstract	
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Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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	A158	US-2005/0096682-A1	05-05-2005	Daffer	
	A159	US-2005/0192519-A1	09-01-2005	Crunick	
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	A163	US-2006/0074360-A1	04-06-2006	Yu	
	A164	US-2006/0178040-A1	08-10-2006	Kurosawa	
	A165	US-2006/0178715-A1	08-10-2006	Ahn et al.	
	A166	US-2007/0144310-A1	06-28-2007	Pozgay et al.	
	A167	US-2007/0150004-A1	06-28-2007	Colloca et al.	
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/T.A.S/	B50**	JP-2010075288-A	04-08-2010	Panasonic Elec Works Co Ltd	Engl. Abstract	
/T.A.S/	B51	JP-5859905-B2	02-16-2016	Covidien AG	Engl. Abstract	
/T.A.S/	B52**	JP-H04250161-A	09-07-1992	Matsushita Electric Works Ltd	Engl. Abstract	
/T.A.S/	B53**	JP-H053903-A	01-14-1993	Sanyo Electric Co	Engl. Abstract	
/T.A.S/	B54	JP-H07153440-A	06-16-1995	Minolta Co Ltd	Engl. Abstract	

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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	A188	US-2011/0087141-A1	04-14-2011	Wagy et al.	
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	A190	US-2011/0169481-A1	07-14-2011	Nguyen et al.	

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/T.A.S/	B55**	JP-H0751393-A	02-28-1995	Hitachi Metals Ltd	Engl. Abstract	
/T.A.S/	B56**	JP-H08131500-A	05-28-1996	Brother Ind Ltd	Engl. Abstract	
/T.A.S/	B57**	JP-H0866448-A	03-12-1996	Koei Tsusho KK	Engl. Abstract	
/T.A.S/	B58	JP-H0992246-A	04-04-1997	Fujitsu Denso	Engl. Abstract	
/T.A.S/	B59**	JP-S54110058-A	08-29-1979	Matsushita Electric Works Ltd	Engl. Abstract	
/T.A.S/	B60	JP-S6389158-A	04-20-1988	Anmin KK	Engl. Abstract	

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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	A193	US-2012/0253245-A1	10-04-2012	Stanbridge	
	A194	US-2012/0259255-A1	10-11-2012	TOMLINSON et al.	
	A195	US-2012/0281392-A1	11-08-2012	Workman et al.	
	A196	US-2013/0006040-A1	01-03-2013	Lee	
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/T.A.S/	B61**	KR-100785097-B1	12-12-2007	Korea Ind Tech Inst	Engl. Abstract	
/T.A.S/	B62**	KR-101007827-B1	01-13-2011	Shin, In Sung	Engl. Abstract	
/T.A.S/	B63	KR-101162978-B1	07-09-2012	At System Co., Ltd	Engl. Abstract	
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Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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	A210	US-2016/0354277-A1	12-08-2016	Fima	
	A211	US-2016/0367425-A1	12-22-2016	Wersland	
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/T.A.S/	B67**	KR-20000043488-A	07-15-2000	Maxstar Industrial Co., Ltd	Engl. Abstract	
/T.A.S/	B68**	KR-20030008342-A	01-25-2003	Kim, Sa Ung	Engl. Abstract	
/T.A.S/	B69	KR-200311328-Y1	05-01-2003	Jong Tae Park	Engl. Abstract	
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Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

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/T.A.S/	B73	KR-2010-0023508-A	03-04-2010	Lg Innotek Co., Ltd	Engl. Abstract	
/T.A.S/	B74**	RU-2053754-C1	02-10-1996	Solomin, Vladimir A		√
/T.A.S/	B75**	RU-2464005-C1	10-20-2012	Potapov, Nikolaj Antonovich		√
/T.A.S/	B76	TW-M272528-U	08-11-2005	Chiun Jung Co., Ltd		√
/T.A.S/	B77	TW-M379178-U	04-21-2010	Phoenix Silicon Int Corp		√
/T.A.S/	B78	TW-M402573-U	04-21-2011	Taiwan Electric Voice Co., Ltd		√

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	A249	US-D703337	04-22-2014	Fuhr et al.	
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/T.A.S/	B80	TW-M493379-U	01-11-2015	Chen, Jing-wen		√
/T.A.S/	B81	TW-M543692-U	06-21-2017	Wang, Gui-yuan		√
/T.A.S/	B82**	WO-03006102-A2	01-23-2003	Phymag Ltd		
/T.A.S/	B83	WO-2008/113139-A1	09-25-2008	Cypro Ssage Pty Ltd		
/T.A.S/	B84	WO-2009/014727-A1	01-29-2009	Activator Methods International, Limited		

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

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/T.A.S/	B85**	WO-2011122812-A2	10-06-2011	Small'lab Co., Ltd	Engl. Abstract	
/T.A.S/	B86	WO-2012/134469-A1	10-04-2012	Ingersoll Rand Co		
/T.A.S/	B87	WO-2013/141359-A1	09-26-2013	Lion Corporation		√
/T.A.S/	B88**	WO-2014118596-A1	08-07-2014	Telefield Ltd		
/T.A.S/	B89**	WO-2015038005-A2	03-19-2015	Nevroflex As		
/T.A.S/	B90	WO-2017/123841-A2	07-20-2017	Ethicon LLC		

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/T.A.S/	B91	WO-2017/184505-A2	10-26-2017	Ethicon LLC		
/T.A.S/	B92**	WO-9214435-A1	09-03-1992	Jacobi, Jacob		
/T.A.S/	B93**	WO-9625908-A1	08-29-1996	Niagara Manufacturing Ltd		

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/T.A.S/	C2	Centech 4 in 1 Portable Power Pack Owner's Manual & Safety Instructions, 2014, 12 pages.	
/T.A.S/	C3	Christiana, A., "Porter-Cable PCL212ICC-2 12V Compact Lithium Two Tool Kit," December 5, 2014, 5 pages.	
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/31/2023								
	1	✓								
	2	✓								
	3	✓								
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	29	✓								
	30	✓								

Petitioner Therabody Ex-1004, 2225

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

CPC - Searched*		
Symbol	Date	Examiner
A61H23/0254	01/31/2023	TS
A61H2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097	01/31/2023	TS

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor Search in PE2E and PALM	01/31/2023	TS
See attached PE2E search	01/31/2023	TS

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2226

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 02/07/2023

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EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
02/07/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
TFRANKLIN@GOODWINLAW.COM
US-PatentBos@goodwinlaw.com

Petitioner Therabody Ex-1004, 2227

Office Action Summary	Application No. 17/681,367	Applicant(s) Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 2/25/2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-30 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-30 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 2/25/2022 is/are: a)☐ accepted or b)☑ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Petitioner Therabody Ex-1004, 2228

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. This office action is in response to the filing of the application on 2/25/2022. Since the initial filing, no claims have been amended, added, or canceled. Thus, claims 1-30 are pending in the application.

Information Disclosure Statement

2. The information disclosure statement filed on 6/9/2022 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. The following references have been placed in the application file, but the information referred to therein has not been considered:

- GB-1293876-A
- KR-200422971-Y1

Drawing Objections

3. The drawings are objected to for the following informalities:

- The reference character "602" (Fig. 6A) appears as though it should read --620--. Reference character "602" refers to a piston, while reference character "620" refers to a massaging head.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Interpretation- 35 USC § 112 – Sixth Paragraph/35 USC § 112(f)

4. The following is a quotation of 35 U.S.C. 112(f):

> (f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claims in this application are given their broadest reasonable interpretation using the plain meaning of the claim language in light of the specification as it would be understood by one of ordinary skill in the art. The broadest reasonable interpretation of a claim element (also commonly referred to as a claim limitation) is limited by the description in the specification when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is invoked.

As explained in MPEP § 2181, subsection I, claim limitations that meet the following three-prong test will be interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph:

(A) the claim limitation uses the term "means" or "step" or a term used as a substitute for "means" that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;

(B) the term "means" or "step" or the generic placeholder is modified by functional language, typically, but not always linked by the transition word "for" (e.g., "means for") or another linking word or phrase, such as "configured to" or "so that"; and

(C) the term "means" or "step" or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

Use of the word "means" (or "step") in a claim with functional language creates a rebuttable presumption that the claim limitation is to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites sufficient structure, material, or acts to entirely perform the recited function.

Absence of the word "means" (or "step") in a claim creates a rebuttable presumption that the claim limitation is not to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is not interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth

paragraph, is rebutted when the claim limitation recites function without reciting sufficient structure, material or acts to entirely perform the recited function.

Claim limitations in this application that use the word "means" (or "step") are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action. Conversely, claim limitations in this application that do not use the word "means" (or "step") are not being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action.

6. This application includes one or more claim limitations that do not use the word "means," but are nonetheless being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, because the claim limitation(s) uses a generic placeholder that is coupled with functional language without reciting sufficient structure to perform the recited function and the generic placeholder is not preceded by a structural modifier. Such claim limitation(s) is/are:

- "a connection mechanism" in claim 1 (twice, ln. 14 and 16), claim 3 (ln. 3), and claim 27 (twice, ln. 12 and 14)

Because this/these claim limitation(s) is/are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, it/they is/are being interpreted to cover the corresponding structure described in the specification as performing the claimed function, and equivalents thereof.

If applicant does not intend to have this/these limitation(s) interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, applicant may: (1) amend the claim limitation(s) to avoid it/them being interpreted under 35 U.S.C. 112(f) or pre-AIA

35 U.S.C. 112, sixth paragraph (e.g., by reciting sufficient structure to perform the claimed function); or (2) present a sufficient showing that the claim limitation(s) recite(s) sufficient structure to perform the claimed function so as to avoid it/them being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph.

The term "a connection mechanism" in claim 4 (ln. 1) and claim 30 (ln. 1) is **not** interpreted under 35 USC 112(f) because claims 4 and 30 provide sufficient structure to perform the "connecting" function (i.e. a "quick release connector").

Claim Rejections - 35 USC § 112

7. The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 27-30 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Regarding claim 27, the limitation "wherein a first massaging head is configured to releasably couple to the distal end of the piston via the connection mechanism" (ln. 13-14) is unclear whether the claim positively requires the "first massaging head," or if the connection mechanism is only configured to be releasably coupled to a massaging head. For the purposes of examination, method claim 27 will be interpreted as requiring

a step of providing a first massaging head that is configured to releasably couple to the distal end of the piston.

Any remaining claims are rejected as being dependent upon a rejected base claim.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

11. Claims 1-2, 23, and 26-28 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer et al (5,134,777) in view of Instructables.com (Non-Patent Literature, hereby referred to as "Instructables").

Regarding claim 1, Meyer discloses an apparatus (Fig. 2, tool 10) comprising: a housing (Fig. 2, housing 12); a handle on the housing (Fig. 2, handle 14); a piston

having a proximal end and a distal end (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with formation 44a. Fig. 2 depicts a distal end of ram 44 at its connection to blade holder 16); a motor within the housing operatively connected to the proximal end of the piston (Col. 2, ln. 67 discloses an electric motor not shown in the drawings. This electric motor is connected to the ram 44 via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the "minimum reciprocation stroke length" configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the "maximum reciprocation stroke length" configuration. See col. 4, ln. 23-58. The motor would be running at some speed); a cam (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam) having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6b depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7b depict the actuator plate 50 and actuator lever 50c in a second rotational position for a maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths); and a connection mechanism at the distal end of the piston (Fig. 2 blade holder 16).

Meyer does not disclose a first massaging head releasably coupled to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have lying around. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

Regarding claim 2, the modified apparatus of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7b depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 23, the modified apparatus of Meyer has the housing comprising a cavity, wherein the motor and the cam are positioned within the cavity (Meyer, Fig. 2, the housing 12 forms a cavity for holding the (non-depicted) motor and cam mechanism for adjusting the stroke length of the ram 44).

Regarding claim 26, the modified apparatus of Meyer has the motor positioned within the housing opposite the handle (Fig. 2, the housing portion 12a that contains the motor is located opposite from the handle 14, as the housing portion 12a is located on the left side of the housing and the handle 14 is located on the right side of the housing, as depicted).

Regarding claim 27, Meyer discloses a method of assembling an apparatus (Fig. 2, tool 10 is assembled), the method comprising: positioning a motor within a housing (Fig. 2, housing 12 has a motor within in section 12a), wherein a handle on the housing (Fig. 2, handle 14); operatively connecting the motor to a proximal end of a piston (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with formation 44a that is connected to the motor via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the “minimum reciprocation stroke length” configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the “maximum reciprocation stroke length” configuration. See col. 4, ln. 23-58. The motor would be running at some speed); positioning a cam within the housing (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam that is located within housing 12), wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6b depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7b depict the actuator plate 50 and

actuator lever 50c in a second rotational position for a maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths), wherein a distal end of the piston has a connection mechanism (Fig. 2 blade holder 16 is at a distal end of ram 44).

Meyer does not disclose a first massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have lying around. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

Regarding claim 28, the modified method of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7b depict the maximum reciprocation stroke

length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

12. Claims 3-4 and 29-30 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, as applied to claims 1 and 27 above, and further in view of Miller (2003/0195443).

Regarding claim 3, the modified apparatus of Meyer does not have a second massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.

However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller to allow a user to select different types of massage heads as dictated by the user's therapy needs.

Regarding claim 4, the modified device of Meyer (as modified in the rejection of claim 3) has the connection mechanism as a quick release connector (Miller, Fig. 1, the collar pin 66 and pin notches 68 for connecting the impact heads 70 to the collar 62 of the piston is considered a "quick release connector").

Regarding claim 29, the modified method of Meyer does not have a second massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.

However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the device of the modified method of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller to allow a user to select different types of massage heads as dictated by the user's therapy needs.

Regarding claim 30, the modified method of Meyer has the connection mechanism as a quick release connector (Miller, Fig. 1, the collar pin 66 and pin notches 68 for connecting the impact heads 70 to the collar 62 of the piston is considered a "quick release connector").

13. Claims 5 and 9-15 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, as applied to claim 1 above, and further in view of Harris et al (6,432,072).

Regarding claim 5, the modified apparatus of Meyer has the motor as configured to cause the piston to reciprocated between the minimum reciprocation length and the maximum reciprocation length (Meyer, col. 4, ln. 44-58).

The modified apparatus of Meyer does not have the motor and piston operating at a second speed.

However, Harris teaches a hand-held percussive massager (Fig. 1, massager 50) comprising a control panel (Fig. 1, control panel 5) comprising a speed setting control button that allows the user to percuss the massager at different speeds (Fig. 1, speed control button 5b; see col. 2, ln. 49-57).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel with a speed control button and other control settings as taught by Harris to allow the user to select a desired speed of massage while using the device.

Regarding claim 9, the modified apparatus of Meyer (as modified in the rejection of claim 5) has a control panel positioned on an exterior of the housing (Harris, Figs. 1-2, control panel 5).

Regarding claim 10, the modified apparatus of Meyer has the control panel as configured to display one or more visual indicators (Harris, Figs. 1-2, LED speed indicator 5C).

Regarding claim 11, the modified apparatus of Meyer has the control panel having a display device (Harris, Figs. 1-2, LED speed indicator 5C is a type of display device).

Regarding claim 12, the modified apparatus of Meyer has the control panel having one or more inputs (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 13, the modified apparatus of Meyer has the one or more inputs comprising a button (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 14, the modified apparatus of Meyer has the first speed and the second speed as each selectable via the one or more inputs (Harris, Figs. 1-2, speed setting control button 5b would allow for selection of the first speed, second speed, and other speeds).

Regarding claim 15, the modified apparatus of Meyer has a first selection of the one or more inputs configured to cause the apparatus to power on and a second selection of the one or more inputs configured to cause the apparatus to power off (Figs. 1-2, power control button 5a allows for "power on" upon a first pressing of the button and a "power off" upon a second pressing of the button).

14. Claims 6-8 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Harris, as applied to claim 5 above, and further in view of Pivaroff (6,682,496).

Regarding claims 6-8, the modified apparatus of Meyer does not disclose the first and second speeds.

However, Pivaroff teaches that an appropriate motor speed for a deep muscle stimulator device is between 2000 to 3600 per minute (Col. 3, ln. 44-46).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the speed(s) of the modified apparatus of Meyer to be between 2000 and 3600 as taught by Pivaroff, as such a stroke speed is appropriate for deep muscle tissue stimulation.

15. Claims 16 and 24-25 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, as applied to claims 1 and 23 above, and further in view of Tsai et al (2009/0270915).

Regarding claim 16, the modified apparatus of Meyer does not have an audible feedback device configured to generate one or more audible signals.

However, Tsai teaches a handheld reciprocating massager (Fig. 1, adjuster instrument 100) comprising an audible feedback device to alert a user to the settings of the device, such as impulse speed ([0048] discloses an "annunciation structure" that provides feedback to the operator about device settings, such as "impulse frequency and amplitude." [0048] states that the annunciation structure may be an LCD display or an audio annunciator).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel that allows the user to changes operational settings of the device while also receiving audible feedback about device settings as taught by Tsai to allow a user to confirm the device's operational settings in a convenient manner (i.e. audibly).

Regarding claim 24, the modified apparatus of Meyer does not have a thermally conductive motor housing positioned within the cavity proximal to the motor.

However, Tsai additionally teaches the handheld reciprocating massager comprising a motor surrounded by a housing and located within a cavity of the massager housing (Fig. 10, DC motor 114 has its components surrounded by some type of housing. DC motor 114 is located within a cavity of the device housing 110),

wherein the housing is thermally conductive ([0038] discloses that the massager may have a heat dissipation structure 136 for dissipating heat within the instrument 100. For heat dissipation structure 136 to dissipate heat from the DC motor 114, the motor housing must be made from thermally conductive material).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the motor of the modified apparatus of Meyer to be located within a thermally conductive motor housing and located near a heat dissipating structure as taught by Tsai to help prevent the motor from overheating and the device from becoming hot to hold by the user.

Regarding claim 25, the modified apparatus of Meyer has a heat sink positioned proximal to the thermally conductive motor housing (Tsai, [0038], heat dissipation structure 136 is located proximal to the motor and motor housing 114).

16. Claims 17-22 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, as applied to claims 1 and 23 above, and further in view of Ehrenreich et al (2013/0102937).

Regarding claim 17, the modified apparatus of Meyer does not have a controller having a processor, a memory, and a data connection.

However, Ehrenreich teaches a massaging device (Figs. 1 and 5) comprising a controller (Fig. 5, circuit boards 500 and 550 serve as a controller for the massaging device) having a processor, a memory, and a data connection ([0100] discloses the controller having a processor 551, a memory 552, and a communication port 554).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer

to have a controller with a processor, a memory, and a data connection as taught by Ehrenreich to allow the device to store massaging programs, update the massaging programs, and send/receive data from an outside source to track and usage of the device and update the programs of the device.

Regarding claim 18, the modified apparatus of Meyer has the data connection as a wireless data connection (Ehrenreich, [0101], discloses that the second circuit board 550 may include a variety of different wireless communication protocols).

Regarding claim 19, the modified apparatus of Meyer has the controller as configured to send, by the data connection, first data to an external computing device (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is on. [0111] discloses transmitting data to a remote computer for analyzing patient compliance)

Regarding claim 20, the modified apparatus of Meyer has the first data as indicative of usage of the apparatus for providing a massage (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is operating).

Regarding claim 21, the modified apparatus of Meyer has the controller configured to receive, by the data connection, second data from an external computing device (Ehrenreich, [0156], discloses that a personal computer, smartphone, or table could be used to remotely program the massage device).

Regarding claim 22, the modified apparatus of Meyer has the second data indicative of a massage program having a massage duration (Ehrenreich, [0156], discloses that the customization in programming can including the duration of therapy).

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Rix (7,927,259), Cilea et al (2013/0261516), and Stanbridge et al (2012/0253245) disclose percussive massagers;
- Miller (7,503,923) discloses a percussive massager with an interchangeable head;
- Ahn et al (2006/0178715) discloses a heat dissipating component within a massaging device;
- Feldmann et al (6,357,125) discloses a power tool with an adjustable stroke length using a cam mechanism;
- Dungan (6,228,042) discloses a percussive massager with a stroke length adjustment mechanism

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A STANIS whose telephone number is (571)272-5139. The examiner can normally be reached on Mon - Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	39	(Philip WITH Danby OR John WITH Danby).in.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 12:56 PM
L2	466	a61h2201/1418.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 12:57 PM
L3	98	a61h2201/1418.cpc. AND ((length OR stroke) WITH (adjust$4))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 12:58 PM
L4	4	(massag$3 WITH gun) AND (stroke WITH length)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 01:23 PM
L5	250	("0784024" OR "0799881" OR "0873123" OR "10162106" OR "10245033" OR "10314762" OR "10357425" OR "10743650" OR "1339179" OR "1594636" OR "1612981" OR "1657765" OR "1784301" OR "1978223" OR "20020058892" OR "20020161315" OR "20030060741" OR "20030114781" OR "20030130602" OR "20030144615" OR "20030195438" OR "20030195443" OR "20030218045" OR "20040010268" OR "20040144553" OR "20050015030" OR "20050096571" OR "20050096682" OR "20050192519" OR "20050203448" OR "20060025710" OR "20060058714" OR "20060074360" OR "20060178040" OR "20060178715" OR "20070144310" OR "20070150004" OR "20070154783" OR "20070179414" OR "20080196553" OR "20080214968" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 02:31 PM

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		"20080234611" OR "20080262397" OR "20080306417" OR "20090000039" OR "20090005812" OR "20090182249" OR "20090270915" OR "20090286145" OR "20090306577" OR "20100116517" OR "20100164434" OR "20100185127" OR "20100228168" OR "20100252294" OR "20100274162" OR "20100331745" OR "20110087141" OR "20110106067" OR "20110169481" OR "20120038483" OR "20120120573" OR "20120253245" OR "20120259255" OR "20120281392" OR "20130006040" OR "20130076271" OR "20130112451" OR "20130138023" OR "20130261516" OR "20130281897" OR "20130294019" OR "20140014384" OR "20140094724" OR "20140159507" OR "20150005682" OR "20150148592" OR "20160151238" OR "20160271009" OR "20160354277" OR "20160367425" OR "20170012257" OR "20170027798" OR "20170028160" OR "20170304145" OR "20180008512" OR "20180200141" OR "20190125972" OR "20190198828" OR "20200093945" OR "20200128935" OR "20200261306" OR "20200261307" OR "20200329858" OR "3030647" OR "3494353" OR "3626934" OR "3699952" OR "3705578" OR					

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		"3710785" OR "3841321" OR "3845758" OR "3920291" OR "3968789" OR "3993052" OR "4088128" OR "4149530" OR "4150668" OR "4162675" OR "4173217" OR "4412535" OR "4505267" OR "4513737" OR "4523580" OR "4549535" OR "4566442" OR "4691693" OR "4709201" OR "4730605" OR "4751452" OR "4790296" OR "4827914" OR "4841955" OR "4858600" OR "4880713" OR "4989613" OR "5063911" OR "5065743" OR "5085207" OR "5140979" OR "5159922" OR "5215078" OR "5305738" OR "5311860" OR "5364223" OR "5415621" OR "5417644" OR "5447491" OR "5469860" OR "5489280" OR "5569168" OR "5573500" OR "5602432" OR "5632720" OR "5656017" OR "5656018" OR "5725483" OR "5733029" OR "5797462" OR "5803916" OR "5843006" OR "5925002" OR "5951501" OR "6051957" OR "6102875" OR "6123657" OR "6165145" OR					

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		"6170108" OR "6228042" OR "6231497" OR "6375609" OR "6401289" OR "6402710" OR "6432072" OR "6440091" OR "6461377" OR "6478755" OR "6494849" OR "6503211" OR "6537236" OR "6577287" OR "6581596" OR "6585667" OR "6616621" OR "6656140" OR "6663657" OR "6682496" OR "6758826" OR "6805700" OR "6832991" OR "6866776" OR "6979300" OR "6994679" OR "7033329" OR "7041072" OR "7083581" OR "7125390" OR "7128722" OR "7211057" OR "7229424" OR "7238162" OR "7264598" OR "7270641" OR "7282036" OR "7282037" OR "7306569" OR "7322946" OR "7335170" OR "7354408" OR "7470242" OR "7507198" OR "7517327" OR "7597669" OR "7629766" OR "7634314" OR "7927294" OR "7976485" OR "8052625" OR "8083699" OR "8092407" OR "8192379" OR "8282583" OR "8317733" OR "8342187" OR "8475362" OR					

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		"8632525" OR "8673487" OR "8951216" OR "9017355" OR "9107690" OR "9272141" OR "9333371" OR "9756402" OR "9889066" OR "D323034" OR "D323606" OR "D329292" OR "D331467" OR "D335073" OR "D367712" OR "D373640" OR "D378338" OR "D388175" OR "D403220" OR "D407498" OR "D408241" OR "D437713" OR "D438309" OR "D455837" OR "D460675" OR "D467148" OR "D474089" OR "D487219" OR "D498128" OR "D536591" OR "D544102" OR "D555255" OR "D625164" OR "D703337" OR "D706433").pn.					
L8	14	("D725978" OR "D738516" OR "D752936" OR "D757953" OR "D759831" OR "D823478" OR "D825073" OR "D827842" OR "D827843" OR "D840032" OR "D842491" OR "D869928" OR "D879290" OR "RE30500").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 02:32 PM
L9	31	L5 AND ((stroke OR length) WITH (chang$5 OR adjust$4))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 02:45 PM
L10	1118	A61H23/00-06.cpc. AND ((stroke OR length) WITH (chang$5 OR adjust$6))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:14 PM
L11	150	A61H23/00-06.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26

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		AND ((stroke OR length) WITH (chang$5 OR adjust$6)) AND percussion					03:14 PM
L12	177	A61H23/00-06.cpc. AND ((stroke OR length) WITH (chang$5 OR adjust$6)) AND percuss$4	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:15 PM
L13	760	A61H23/00-06.cpc. AND ((stroke OR length) near3 (chang$5 OR adjust$6))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:15 PM
L14	447	A61H23/00-06.cpc. AND ((stroke OR length) near3 (chang$5 OR adjust$6)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:16 PM
L15	11	A61H23/00-06.cpc. AND (stroke near3 length near3 (chang$5 OR adjust$6)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:17 PM
L16	117	A61H23/00-06.cpc. AND "stroke length"	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:30 PM
L17	78	A61H23/00-06.cpc. AND "stroke length" AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:31 PM
L18	57	((US-20100185127-A1 OR US-20140194790-A1 OR US-20140114220-A1 OR US-20110118638-A1 OR US-20070270727-A1 OR US-20060293711-A1 OR US-20060047315-A1 OR US-20020072693-A1 OR US-20020082536-A1 OR US-20080306417-A1 OR US-20160367425-A1 OR US-20130261516-A1 OR US-20130138023-A1 OR US-20070150004-A1 OR US-20070144310-A1 OR US-20150305972-A1 OR US-20130281897-	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:48 PM

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		A1 OR US-20100312155-A1 OR US-20060155197-A1 OR US-20180200141-A1 OR US-20140094724-A1 OR US-20100274162-A1 OR US-20060178715-A1 OR US-20030195443-A1).did. AND PGPB.dbnm.) OR ((US-5140979-A OR US-4858600-A OR US-4841955-A OR US-4827914-A OR US-4566442-A OR US-4549535-A OR US-4513737-A OR US-3710785-A OR US-3626934-A OR US-1657765-A OR US-1339179-A OR US-5447491-A OR US-7927259-B1 OR US-7503923-B2 OR US-6723060-B2 OR US-6616621-B1 OR US-6379375-B1 OR US-4088128-A OR US-2078025-A OR US-1269803-A OR US-4858599-A OR US-5327887-A OR US-5085207-A OR US-4716890-A OR US-7927294-B2 OR US-6682496-B1 OR US-6663657-B1 OR US-6537236-B2 OR US-6503211-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5803916-A).did. AND USPT.dbnm.) OR ((US-3512522-A OR US-3425409-A).did. AND USOC.dbnm.)					
L19	12	L18 AND ((stroke OR amplitude) near3 (adjust$4 OR chang$5))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:48 PM
L21	92	CPR AND cam AND a61h$.cpc. AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 03:51 PM
L22	1	"1,657,765".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26

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							04:14 PM
L23	38	("10314762" OR "10357425" OR "10492984" OR "10561574" OR "10702448" OR "10993874" OR "20060293711" OR "20090270915" OR "20140031866" OR "20150005682" OR "20150107383" OR "20150182415" OR "20160354277" OR "20180008512" OR "20180168913" OR "20180263845" OR "20190209424" OR "20190254921" OR "20200261307" OR "20200261310" OR "20200276079" OR "20200289365" OR "20200330321" OR "20200352820" OR "20200352821" OR "20200405574" OR "4088128" OR "4513737" OR "4549535" OR "4726430" OR "4790296" OR "4841955" OR "5656017" OR "6228042" OR "6616621" OR "6682496" OR "8826547" OR "9889066").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 04:31 PM
L24	1	"6228042".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 04:37 PM
L25	1	"6357125".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 04:42 PM
L26	1	"20150005682".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/26 04:43 PM
L27	2449	"scotch yoke"	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/27 08:40 AM
L28	394	"scotch yoke" AND (stroke WITH length)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/27 08:40 AM
L29	257	"scotch yoke" AND (stroke near2 length)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/27 08:41 AM
L30	98	"scotch yoke" AND a61h$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/27 08:41 AM
L31	50	"scotch yoke" AND ((stroke near2 length)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/27 08:42 AM

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		SAME cam)					
L32	37	"scotch yoke" AND (("stroke length") SAME cam)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/27 08:43 AM
L33	52	("2704941" | "2764188" | "3188873" | "3398588" | "4031763" | "4236874" | "4245966" | "4261228" | "4272996" | "4494447" | "4580460" | "5134777" | "5212887" | "5581896" | "5644846" | "5988994" | "6092993" | "6138364" | "6190137").pn. OR ("6357125").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 08:49 AM
L34	28	a61h$.cpc. AND jigsaw AND massag$3	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 09:37 AM
L35	1	"20130261516".pn.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 09:38 AM
L36	31	a61h$.cpc. AND jigsaw	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 09:44 AM
L37	1	a61h$.cpc. AND jig$1saw AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 09:45 AM
L38	67	a61h$.cpc. AND ("power tool" OR (power near2 saw) OR jig$1saw) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 09:45 AM
L39	2	a61h$.cpc. AND (sabre near2 saw) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 09:46 AM
L40	51	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/01/27 10:42 AM

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		5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A).did. AND USOC.dbnm.)	IBM_TDB)				
L41	22	L40 AND (stroke WITH length)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2023/01/27 10:42 AM

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			IBM_TDB)				
L42	5	"5134777".pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/27 10:54 AM
L43	5	"6228042".pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/27 10:59 AM
L44	1	"5134777".pn.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/27 04:17 PM
L45	51	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 01:11 PM

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		3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A).did. AND USOC.dbnm.)				
L46	0	L45 AND speed AND display	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 01:12 PM
L47	22	L45 AND speed	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/01/30 01:12 PM

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			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L48	21	(massag$3 WITH gun) AND display AND speed AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:15 PM
L49	636	a61h$.cpc. AND ((display OR interface) WITH (speed OR rpm)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:16 PM
L50	89	a61h$.cpc. AND (recip$7 OR percus$5) AND ((display OR interface) WITH (speed OR rpm)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:16 PM
L51	37	a61h23/0254.cpc. AND ((display OR interface) SAME (speed OR rpm)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:22 PM
L52	1024	a61h23/0254.cpc. AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:22 PM
L53	155	a61h23/0254.cpc. AND (display OR interface) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:23 PM
L54	259	a61h23/0254.cpc. AND (speed SAME control$4) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:28 PM
L55	305	a61h$.cpc. AND massag$3 AND (percus$5 OR	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/30 01:31 PM

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		reciprocat$4) AND (speed WITH (dial OR control OR display OR setting)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"					
L56	59	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2 OR US-6616621-B1 OR US-6432072-B1 OR US-5935089-A).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 05:17 PM

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		OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1 OR US-20140194900-A1 OR US-20160151238-A1 OR US-20120253245-A1 OR US-20020183668-A1 OR US-20020115947-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A).did. AND USOC.dbnm.)					
L57	5	L56 AND ("strokes per minute" OR rpm)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 05:17 PM
L58	2	"20030195443".pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 05:24 PM
L60	1	"20060178715".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/30 05:26 PM
L61	59	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/01/30 05:27 PM

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		4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2 OR US-6616621-B1 OR US-6432072-B1 OR US-5935089-A).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1 OR US-20140194900-A1 OR US-20160151238-A1 OR US-20120253245-A1 OR US-20020183668-A1 OR US-20020115947-A1).did. AND	HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

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		PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A).did. AND USOC.dbnm.)					
L62	2	L61 AND wireless	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 05:27 PM
L63	2	L61 AND remote	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/30 05:28 PM
L64	109	a61h$.cpc. AND percussion AND ((bluetooth OR wireless) near3 communication)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 10:01 AM
L65	6	L61 AND program	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 10:07 AM
L66	21	(john WITH crunick).in.	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 10:08 AM
L67	2	(john WITH crunick).in. AND wireless	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 10:09 AM
L68	874	a61h$.cpc. AND (massag$3 OR percus$4 OR vibrat$4) AND (communication near3 wireless) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/31 10:14 AM

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L69	585	a61h$.cpc. AND (massag$3 OR percus$4 OR vibrat$4) AND (communication near3 wireless) AND program AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/31 10:14 AM
L70	0	L61 AND ((audible OR sound) near3 (signal OR feedback))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 11:39 AM
L71	7	L61 AND (feedback)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 11:39 AM
L72	2	L61 AND (heat WITH (sink OR dissipat$3))	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/31 11:47 AM
L73	957	(a61h23/0254.cpc. OR a61h2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097.cpc.) AND (reciprocat$4 OR percuss$4) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/01/31 12:01 PM
L74	2602	(a61h23/0254.cpc. OR a61h2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097.cpc.) AND (reciprocat$4 OR percuss$4) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/31 12:01 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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Notice of References Cited	Application/Control No. 17/681,367	Applicant(s)/Patent Under Reexamination Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-5134777-A	08-1992	Meyer; Dieter B.	B23D49/167	30/392
*	B	US-6228042-B1	05-2001	Dungan; Thomas E.	A61H1/008	601/107
*	C	US-6357125-B1	03-2002	Feldmann; Martin	B23D51/16	30/277.4
*	D	US-6432072-B1	08-2002	Harris; David	A61H23/0254	601/111
*	E	US-6682496-B1	01-2004	Pivaroff; Jake W.	A61H7/005	601/107
*	F	US-7503923-B2	03-2009	Miller; Edward W.	A61H1/008	173/90
*	G	US-7927259-B1	04-2011	Rix; Paul B.	A61H23/02	601/41
*	H	US-20030195443-A1	10-2003	Miller, Edward W.	A61H23/02	601/108
*	I	US-20060178715-A1	08-2006	Ahn; Moon-Hwi	A61H39/06	607/96
*	J	US-20090270915-A1	10-2009	Tsai; Stephen C.	A61H1/008	606/238
*	K	US-20120253245-A1	10-2012	Stanbridge; Stanley R.	A61H23/006	601/101
*	L	US-20130102937-A1	04-2013	Ehrenreich; Kevin Joe	A61B5/6833	601/47
*	M	US-20130261516-A1	10-2013	Cilea; Joseph J.	A61H23/006	601/108

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	http://web.archive.org/web/20100418041422/http://www.instructables.com/id/Jigsaw-Massager/; April 18, 2010. (Year: 2010)
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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BIB DATA SHEET

CONFIRMATION NO. 8567

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
17/681,367	02/25/2022	601	3785	HYP-034C3

APPLICANTS
Hyper Ice, Inc., Irvine, CA;

INVENTORS
Philip C. Danby, Key Biscayne, FL;
John Charles Danby, Witham, UNITED KINGDOM;

**** CONTINUING DATA ***************************
This application is a CON of 15/892,665 02/09/2018 PAT 11285075
which is a CON of 14/317,573 06/27/2014 PAT 9889066
which claims benefit of 61/841,693 07/01/2013
Yes /TS/ 1/31/23

**** FOREIGN APPLICATIONS *************************** None /TS/ 1/31/23

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
03/02/2022

Foreign Priority claimed ❑ Yes ☑ No 35 USC 119(a-d) conditions met ❑ Yes ☑ No Verified and Acknowledged /TIMOTHY A STANIS/ Examiner's Signature	❑ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		FL	7	30	2

ADDRESS
GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210
UNITED STATES

TITLE
MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

FILING FEE RECEIVED		
2820	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

BIB (Rev. 05/07).

REMARKS

Administrative Overview

Prior to the Office Action of February 7, 2023 (the "Office Action"), claims 1-30 were pending. In the Office Action:

- the IDS filed on 6/9/2022 is indicated as failing to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document;
- the drawings are objected to due to informalities;
- claims 27-30 are rejected under 35 U.S.C. § 112(b), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor regards as the invention.;
- claims 1-2, 23, and 26-28 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer ("Meyer") in view of Instructables.com ("Instructables");
- claims 3-4 and 29-30 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, and further in view of U.S. Publication No. 2003/0195443 to Miller ("Miller");
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, and further in view of U.S. Patent No. 6,432,072 to Harris et al. ("Harris");
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai"); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich").

In the present Amendment, claims 1, 3, 27, and 29 are amended without prejudice or disclaimer. Claims 4 and 30 are cancelled. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

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Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

Drawing Objections

The Office Action objects to the drawings for the reference character "602" of FIG. 6A appearing as though it should read "620". Applicant respectfully submits a replacement drawing sheet to replace original sheet 5. In FIG. 6A of the replacement drawing sheet, the reference character "602" is replaced with the reference character "620".

Applicant submits that no new matter is added by replacement of the reference characters. Approval of the drawing changes and withdrawal of the objection to the drawings are respectfully requested.

Claim Rejections Under 35 U.S.C. § 112

The Office Action rejects claims 27-30 under 35 U.S.C. § 112(b), second paragraph, as purportedly being indefinite. Claim 27 has been amended. Reconsideration of claims 27-30 is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-2, 23, and 26-28 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables. The Office Action rejects claims 3-4 and 29-30 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and further in view of Miller. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Harris and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view

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of Instructables and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

> 1. An apparatus comprising:
> a housing;
> a handle on the housing;
> a piston having a proximal end and a distal end;
> a motor within the housing operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed;
> a cam having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length;
> a quick release connector at the distal end of the piston; and
> a first massaging head releasably coupled to the distal end of the piston via the quick release connector.

Meyer appears to be directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes "a blade holder 16 and an adjacent foot plate 18" and "[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16" (*Id.* at col. 1, lines 1-2 and 33-34).

Instructables appears to be directed to modifying a jigsaw to form a massager (Instructables at pages 1-2).

Miller appears to be directed to a chiropractic adjustment tool including a reciprocating rod with adjustable travel and impact force (Miller at Abstract). Miller further

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describes that "[d]isposed on one end of the reciprocating rod is a coupler to permit multiple impact heads to be attached to the tool" (*Id.*).

Independent claim 1 has been amended to include, in part, the subject matter of previously presented dependent claim 4, which is cancelled herein. With respect to the subject matter of claims 3 and 4, the Office Action at page 12 states (emphasis added):

> "Regarding claim 3, the modified apparatus of Meyer does not have a second massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.
>
> However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).
>
> Therefore, **it would have been obvious to one of ordinary skill in the art** before the effective filing date of the claimed invention **to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller** to allow a user to select different types of massage heads as dictated by the user's therapy needs.
>
> Regarding claim 4, **the modified device of Meyer (as modified in the rejection of claim 3) has the connection mechanism as a quick release connector (Miller, Fig. 1, the collar pin 66 and pin notches 68 for connecting the impact heads 70 to the collar 62 of the piston is considered a 'quick release connector')**."

Applicant respectfully submits that the Office Action fails to provide any evidence that a person of ordinary skill in the art (POSITA) would have combined the isolated pieces of Meyer, Instructables, and Miller in the manner taught by the present disclosure. More succinctly, the Office Action has not presented a *prima facie* case of unpatentability of the claims under 35 U.S.C. § 103 based on a proper combination of Meyer, Instructables, and Miller. There is neither a teaching in Miller nor a motivation to combine Meyer and Instructables with Miller in the manner provided in the Office Action. In fact, the Office Action supports the contrary.

Upon conceding that "the modified apparatus of Meyer does not have a second massaging head configured to releasably couple to the distal end of the piston via the connection mechanism", the Office Action references Miller in an attempt to reconstruct the present disclosure (*Id.*) However, "design[ing] the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller" as suggested by the Office Action would both (i)

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necessitate changing the principal of operation of Meyer's reciprocating saw; and (ii) render Meyer's reciprocating saw unsatisfactory for its intended purpose.

Meyer teaches a reciprocating saw including a "ram 44" that "is suitably mounted in the tool housing 12 for reciprocal movement" and "mounts the blade holder 16." (Meyer at col. 3, lines 28-29 and 34). Instructables describes "insert[ing] the key into the chuck [of the jigsaw] and tighten[ing] it down well" (Instructables at page 2). Replacing the blade holder of Meyer with the collar pin 66 and pin notches 68 of Miller as suggested by the Office Action at page 12 would necessarily eliminate Meyer's reciprocating saw's ability to hold a saw blade and "vary the stroke of a reciprocating saw blade" according to "the nature of the work being cut" (Meyer at col. 1, lines 36-38). Thus, the replacement of Meyer's blade holder would change its principal of operation from sawing to massaging.

As described in the Manual of Patent Examining Procedure (MPEP), "[o]bviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation to do so**." (*See* MPEP at 2143.01, emphasis added). Further, "[i]f the proposed modification or combination of the prior art would **change the principle of operation of the prior art invention being modified, then the teachings of the references <u>are not</u> sufficient to render the claims *prima facie* obvious**." (MPEP at 2143.01(VI); *see In re Ratti,* 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959), emphasis added). Thus, Applicant respectfully submits that a POSITA would not combine Meyer, Instructables, and Miller to achieve the present disclosure, as the proposed modification to the reciprocating saw described by Meyer using Miller's collar pin and pin notches would require both "substantial reconstruction and redesign of the elements shown in [Meyer] as well **as a change in the basic principle under which [Meyer's reciprocating saw] was designed to operate**." (*Id.,* emphasis added).

Further, replacing the blade holder of Meyer with the collar pin 66 and pin notches 68 of Miller as suggested by the Office Action at page 12 would necessarily eliminate Meyer's functionality as a saw. Thus, the replacement of Meyer's blade holder would render Meyer's reciprocating saw unsatisfactory for its intended purpose of sawing. As described in the Manual of Patent Examining Procedure (MPEP), "[i]f a proposed modification would **render the prior art invention** being modified **unsatisfactory for its intended purpose**, then **<u>there is no suggestion or motivation</u> to make the proposed modification**." (MPEP at 2143.01(V); *see In re Gordon,* 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), emphasis added). Applicant respectfully submits that a POSITA would not combine Meyer,

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Instructables, and Miller to achieve the present disclosure, as the proposed modification to the reciprocating saw described by Meyer using Miller's collar pin and pin notches would render Meyer's saw inoperable for sawing.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Miller to with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3 and 5-26 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1-3 and 5-26 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

> 27. A method of assembling an apparatus, the method comprising:
> positioning a motor within a housing, wherein a handle is on the housing;
> operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed, wherein a distal end of the piston has a quick release connector;
> positioning a cam within the housing, wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length; and
> providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

VI. Dependent Claims

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The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Miller) with respect to any of the independent claims, and the Office Action does not allege otherwise.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course.

If the Examiner believes that a telephone conversation with Applicant's agent would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: February 22, 2023

Respectfully submitted,

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1 293 876

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(54) POWER DRIVEN SKIN TREATING APPLIANCES

(71) We, SUNBEAM CORPORATION, a corporation organized and existing under the laws of the State of Delaware, United States of America, of 5400 West Roosevelt Road, Chicago, Illinois 60650, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to power driven skin treating appliances.

In our present affluent society, vast amount of money is spent on cosmetics and means for maintaining or preserving the beauty and the condition of a person's complexion. Although expensive creams and lotions have long been available for skin treatment, there have been no appliances which have been specifically developed for the skin or complexion care. Various types of pads and cloths have been used by women to apply soaps and lotions to their skin by hand. Because of the absence of any suitable equipment, many women simply apply soaps and lotions to their face and body using their hands or fingertips. Such an approach represents an unsatisfactory solution to the skin care problem since it is difficult for women of ordinary dexterity to apply soaps and lotions evenly und uniformly using the fingertips or some sort of pad or cloth.

With the development of small, efficient, permanent magnet motors, it has been possible to produce compact, portable appliances suitable for many purposes. Through the utilization of the recently developed nickel cadmium rechargeable batteries, it has been possible to provide such small appliances which may be used safely for personal grooming and under conditions in which they may be subjected to water or other liquids. An outstanding example of one such appliance is the rechargeable battery operated electrical toothbrush which is in widespread use at the present time. Even as the toothbrush permits the user to perform a quicker and better cleaning job on the teeth, so a similar appliance is required to enable women to perform a better and more complete cleaning and treatment of their skin.

According to one aspect of the invention there is provided a power driven skin treating appliance comprising an elongated housing which is tapered towards an implement mounting end, a skin treating implement adapted to be detachably supported with respect to said housing and having a shank arranged to overlap the implement mounting end of said housing, a motor mounted within said housing at the end remote from said implement mounting end, a drive lever pivotally mounted intermediate its ends within said housing with one end engageable with said implement within said shank and the other end drivingly connected to said motor, said lever being completely surrounded by said housing and said implement shank when the implement is engaged with said lever, and a power supply battery for said motor mounted in said housing between said motor and the pivotal mounting for said lever.

According to another aspect of the invention there is provided a power driven skin treating appliance comprising a housing, a skin treating implement adapted to be detachably supported with respect to said housing and having a shank arranged to overlap one end of said housing, a motor mounted within said housing, a drive lever pivotally mounted about a transverse axis intermediate its ends within said housing with one end engageable with said implement within said shank and the other end drivingly connected to said motor, said lever being completely surrounded by said housing and said implement shank when engaged with said lever, and means for mounting a power supply battery for said motor in said housing.

In one embodiment of the invention the switch for operating the motor may be arranged to be actuated when a lateral pressure is applied to the implement supporting lever. This actuation may be accomplished by means of supporting the lever bearing in a spring biased carrier which may be moved between a switch open and a switch closing

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position when the aforementioned lateral force is applied to the end of the implement supporting shaft.

As a means of avoiding actuation of the switch when skin treating implements are applied to or removed from the shaft, a simple button having a shaft restraining portion may be provided in the housing. This button permits the shaft to be restrained against displacement during the time in which brushes or massage heads are applied to the appliance. This button may be such that it may be displaced to the inoperative position simply by applying a substantial force to the skin treating implement or by moving the button by hand to a non-restraining position.

An object of the present invention is to provide an improved power operated skin treating appliance.

For a better understanding of the present invention reference may be made to the accompanying drawings in which:—

Figure 1 is a perspective view of a new and improved electrically operated skin treating appliance embodying the principles of the present invention;

Figure 2 is a vertical sectional view taken substantially through the vertical axis of the power handle of the appliance shown in Figure 1;

Figure 3 is an exploded perspective view of the internal mechanism of the appliance shown in Figures 1 and 2;

Figure 4 is an enlarged fragmentary sectional view of the drive mechanism which is also shown in Figure 2;

Figure 5 is a sectional view taken substantially on line 5-5 of Figure 4;

Figure 6 is an enlarged sectional view taken on line 6-6 of Figure 4;

Figure 7 is a fragmentary sectional view taken on line 7-7 of Figure 6;

Figure 8 is a fragmentary sectional view taken on line 8-8 of Figure 6;

Figure 9 is a fragmentary sectional view taken on line 9-9 of Figure 6;

Figure 10 is an enlarged sectional view taken substantially along line 10-10 of Figure 1;

Figure 11 is a sectional view similar to Figure 10 but with the control button shown in the off position;

Figure 12 is a fragmentary sectional view taken on line 12-12 of Figure 11;

Figure 13 is a fragmentary vertical elevational view of the appliance shown in Figure 1 with portions of the charging stand and the power handle shown in section for the purposes of illustration;

Figure 14 is a schematic diagram of the electrical circuit in the power handle and the charging stand;

Figure 15 is an enlarged fragmentary view taken on line 15-15 of Figure 3; and

Figure 16 is a sectional view of an alternative embodiment of the face and skin treating implement.

There is shown in Figure 1 of the drawings an electrically operated skin treating appliance designated generally by reference numeral 20. The appliance 20 includes a power handle 22, a charging stand 24, and at least one detachable skin treating implement 26. The skin treating implement 26 is provided with a brush back or bristle supporting head 28 from which a plurality of tufts or bristles 30 extend. The brush or implement 26 is designed to be moved in one plane in a substantially elliptical orbit by means of the mechanism to be described below which is included in the power handle 22. The bristles 30 are made of soft, synthetic fibres so that they may be safely used in connection with skin treating without the danger of any irritation. The brush 26 is made in a configuration having an elliptical outline with the long dimension being about twice the shorter dimension. It has been found that such a brush configuration provides the maximum convenience for cleaning the various areas and contours of the face, neck, etc. The brush is caused to move in an elliptical orbit in which the dimension of the orbit parallel to the long dimension of the brush is approximately $^3/_{16}$ of an inch while the size of the orbit parallel to the short dimension of the brush is approximately $^1/_8$ of an inch. Thus, the orbit through which the brush is moved is substantially similar to the elliptical shape of the brush itself. For the purpose of illustration, a dotted line showing of the shape of the orbit is included in Figure 1.

In order to provide a satisfactory power handle for producing the orbital motion of the treating implement 26, it is necessary to arrange the drive to the implement so that the power handle 22 will not be caused to oscillate rather than the implement 26. This requires a particular design to the power transmitting shaft and arrangement of the driving elements as will be more specifically described below.

The power handle 22 as best shown in Figure 2 includes an elongated housing 32 which is formed by a tapered member 34 having a substantially circular cross-section and a cup-shaped cap member 36. The housing member 34 is provided with a stepped flange *34a* which cooperates with a flange *36a* on the cap member 36 at their abutting edges to form an overlapping connection. A suitable cement or adhesive is applied in this area to seal the members 34 and 36 together in this area.

Within the sealed portion of the housing 32 is a rechargeable battery 38 and a low voltage direct current operated motor 40 which is adapted to operate from the battery 38. In

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order to visualize the manner in which the motor 40 and the battery 38 are interrelated, reference should be made to Figures 3, 4 and 5 of the drawings. The motor 40 includes a cup-shaped housing 42 which is closed by means of a gear supporting frame 44. Joined to the gear supporting frame 44 and extending outwardly therefrom is a channel-shaped battery support 46 which at its outer end is joined to a forward bearing support 48. Battery support 46 is generally semicylindrical in shape and partially encloses the battery 38 as is shown in Figures 3, 4 and 5. The portion of the support 46 extending from the battery enclosing area to the supporting frame 44 includes three legs or struts *46a*, *46b* and *46c*. The outer legs *46a* and *46b* are notched at *46d* and *46e* so that they may be hooked into engagement with projections *44a* provided on the frame 44. A third projection *44b* shown best in Figure 4 engages an opening in the center strut *46c* to provide a rigid connection between the battery support 46 and the gear supporting frame 44. The projections *44a* and *44c* are staked or deformed over the adjacent portions of battery support 46 to increase the rigidity of the assembly.

The gear supporting frame 44 is a die-cast member which is substantially U-shaped having a pair of upwardly extending legs *44c* and *44d* which support a transversely extending shaft 50. The purposes of the shaft 50 is to support for rotation thereon a gear member 52. The gear member 52 is provided to drivingly connect the output of the motor 40 with an elongated power transmission lever or shaft 54. The motor 40 includes an output shaft 56 on which a spur gear 58 is secured. The gear member 52 is formed with a face gear *52a* which is driven by the spur gear 58.

Positioned axially from the face gear *52a* on the gear member 52, there are provided two separate cylindrical cams *52b* and *52c*. These cams *52b* and *52c* determine the orbit through which the skin treating implement 26 will move when it is connected to the outer end of the power shaft 54.

In order to relate the power shaft 54 with the gear member 52, the end of the lever 54 is provided with a double cam follower 60 which is best shown in Figures 3, 4 and 5. The interior of the cam follower 60 is provided with a recess within which the cams *52b* and *52c* extend. Cam follower surfaces *60a* and *60b*, as best shown in Figure 15, are rounded, rectangular openings which control the movement of the follower 60 during the rotation of the gear member 52. The interengaging cam and follower portions *52b* and *60a* control the movement of the lever 54 lengthwise thereof, whereas the cam *52c* and follower surface *60b* control the lateral movement of the follower 60.

The outermost end of the follower 60 is formed with a guide portion *60c* which slides between the projection *44d* and a guide wall *44e*. The guide *60c* in its sliding engagement with the frame 44 assures adequate support for the inner end of the lever 54 as force or pressure is applied to the skin treating implement 26. The gear member 52 and the cooperating follower 60 are made of a suitable plastics material whch will have the necessary bearing qualities for such an application. In one constructed embodiment of the invention, an impregnated, nylon material was used.

The follower 60 is molded into the outer end of the shaft 54 with a clearance opening *60d* being provided for the gear shaft 50 to extend therethrough.

The power transmitting lever or shaft 54 is made up of a forwardly extending rod portion *54a* and a formed U-shaped portion *54b*. The U-shaped portion *54b* extends alongside of the battery 38 and serves to drivingly interconnect the gear member 52 with the rod portion *54a* which is axially disposed within the power handle 22. The rod portion *54a* is received in a bearing 62 which is positioned on the bearing support 48. In order to retain the bearing support 48 in assembled relationship with the battery support 46, the bearing support 48 is formed with integrally molded flanges *48a* and *48b* which snugly receive the forward end of the battery support 46 which is the end remote from the motor 40. A third projection *48c* on the bearing support 48 engages the interior of the semicylindrical battery support 46 to insure a rigid connection between the parts. The inward projections *48d* on the flanges *48a* and *48b* snap behind projections *46g* on the battery support to restrain the bearing support 48 against axial movement with respect to the battery support 46. The manner in which the projections *48a*, *48b* and *48c* interlock with the battery support 46 is best shown in Figures 3, 5 and 6. This provides a simple and inexpensive means of assembling the supports 46 and 48 relying simply on the resilience of the battery support 46 to retain the parts against disassembly.

The above described bearing 62 for the lever 54 is mounted on the bearing support 48 in such a way that it may slide a limited distance along a line generally parallel to the pivotal axis of the lever 54. This mounting is accomplished by means of a bearing carrier 64 which is provided with a plurality of resilient fingers *64a* which snap into retaining engagement with the spherical bearing 62, as is best shown in Figure 7. The carrier 64 on the side thereof away from the bearing 62 is formed with a pair of T-shaped extensions 65 and 66. These T-shaped extensions 65 and 66 extend through slots 67 and 68 in the bearing support 48. While the slots 67

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and 68 are shown in Figures 6 and 7, the sectional view of Figure 8 illustrates in detail the manner in which one of the T-shaped extensions, namely 66, is received and guided in the slot 68. In order to insert the ends of the T-shaped extensions 65 and 66 through the bearing support 48 so that the enlarged ends are on the opposite side of the support from the bearing 62, clearance openings 70 and 71 are provided. In assembling the carrier 64 to the bearing support 48, the T-shaped extensions 65 and 66 are inserted through the clearance openings 70 and 71, and the carrier 64 is then displaced laterally so that the extensions 65 and 66 are positioned within the slots 67 and 68 with the enlarged portions positioned behind the bearing support 48, as best shown in Figure 8.

So as to limit displacement of the carrier 64 in its sliding movement with respect to bearing support 48, a stop member 72 is assembled into obstructing relationship with respect to the lower clearance opening 71. Figures 6, 7 and 9 show clearly the manner in which the stop member 72 is positioned within the clearance opening 71. The hook-shaped resilient legs *72a* and *72b* on the stop member 72 are forced into retaining engagement with the edges of the clearance opening 71 as best shown in Figure 9. With the stop member 72 assembled to the bearing support 48, the carrier 64 is mounted for a small amount of sliding movement in a direction parallel to the slots 67 and 68.

The purpose of this limited movement is to actuate a switch 74 which is mounted on the inner face of the bearing support 48, as is clearly shown in Figures 6 and 7. The switch 74 consists of two L-shaped contact members 75 and 76 which are mounted on the bearing support 48 by means of rivets 77 with the free ends of the contact members 75 and 76 extending into an overlapping relationship, as is shown in Figure 6.

Under normal conditions, when the carrier 64 is in its disengaged position with respect to switch 74, the contact members 75 and 76 are formed and mounted so that their overlapping ends are spaced apart, as shown in Figure 4. The carrier 64 is biased to this disengaged position by means of a coil spring 78 which is positioned in the slot 67 and supported on axially extending protuberances formed on the bearing support 48 and the carrier 64. As shown in Figures 4, 6 and 7, the spring 78 biases the carrier 64 downwardly into engagement with the stop member 72. In this position, the contact members 75 and 76 are spaced apart, and the switch 74 is, therefore, in its open position even though the carrier 64 is engaged with the contact member 75. When a force is applied upwardly against the outer or exposed end of the lever 54, as shown in Figure 7 by an arrow, the carrier 64 is urged upwardly in the slots 67 and 68 overcoming the biasing force of the spring 78.

An actuating projection 79 on the T-shaped extension 66 of the carrier 64 is in continuous engagement with the contact member 75, and when the carrier 64 is urged upwardly, the projection 79 forces contact member 75 upwardly into engagement with the contact member 76. Although not shown in the drawings, suitable leads are provided to interconnect motor 40, battery 38, and switch 74. As shown in the schematic drawing of Figure 14, the closing of the switch 74 connects the motor 40 in series with the battery 38 causing the motor 40 to operate. It should be evident that the purpose of the switch 74 and the movable carrier 64 is to provide a means whereby the appliance 20 may be actuated by merely placing the skin treating implement 26 against the face or skin of the user thereby deflecting the shaft 54 as the carrier 64 moves in opposition to the biasing spring 78. The motor 40 will then continue to operate until such time as the appliance 20 is moved away from the skin and there is no longer any force applied to the implement 26. At this point, the biasing spring 78 will again return the carrier 64 to a position in which the contact members 75 and 76 are spaced apart thereby opening the circuit between the battery 38 and the motor 40.

In view of the fact that the appliance 20 is used in applying soaps, creams, and other liquids to the skin, it is important that the internal parts including the battery 38 and the motor 40 be sealed against the entrance of moisture. As was indicated above, the cap member 36 is sealed to the tapered cylindrical housing member 34 by a suitable adhesive or cement. The front or upper end of the housing 32 is formed with a clearance opening 80 which is sufficiently large to provide clearance for the oscillatory movement of the shaft 54 as well as the deflection permitted by the movement of carrier 64. Because of the amount of movement of the shaft 54 in the area of the opening 80, it would be difficult to provide a tight seal on the shaft 54 at that point. Accordingly, the interior mechanism of the appliance 20 is sealed against the entrance of moisture at a point close to the pivot point of lever 54 by a gasket 82 which is clamped between the bearing support 48 and an annular shoulder 83 formed on the interior of the tapered housing member 34.

The gasket is a molded rubber part having a thick outer rim *82a* which is gripped between the bearing support 48 and the housing member 34 at shoulder 83, an intermediate thin-walled connecting portion *82b*, and an axially elongated hub portion *82c* which engages the shaft *54a* and is received within a

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reduced diameter portion 84, as best shown in Figure 4. The gasket 82 is sufficiently resilient in the area of the intermediate connecting portion *82b* to permit limited axial and pivotal movement of the shaft 54 in the bearing 62. The gasket 82 thus forms with the lower two thirds of the cylindrical housing member 34 and the cap member 36 an enclosure for a sealed chamber 85 within which the motor 40 and the battery 38 are positioned.

The upper portion of the housing member 34 extending from the gasket 82 to the end opening 80 forms a protective shroud or covering for the otherwise exposed end of the shaft 54. In addition, the outermost end of the housing member 34 is formed with an upstanding flange 86 which extends into an opening 87 formed in supporting shank 88 of the skin treating implement 26. As is evident from the showings in Figures 2 and 12 of the drawings, the overlapping relationship between the shank 88 and the flange 86 provide an arrangement in which liquid is essentially prevented from entering into the opening 80 because of the tortuous path it must follow to accomplish such entry. Any liquid soap or cream which runs down the shank 88 of the implement 26 tends to run off the bottom of the shank onto the power handle 22 and has no tendency to move inwardly over the flange 86 and into the interior of the housing member 34. This provides a type of baffling which maintains the forward third of the housing 32 reasonably free of liquids thereby placing little demand on the sealing functions provided by the gasket 82.

The outer end of the shaft 54 is formed with a flattened portion 90 and circumferential groove 91. The flattened portion 90 cooperates with a correspondingly shaped opening or recess in the implement 26 to key the implement to a selected position when it is assembled to the power handle 22 whereby the bristles 30 face in a particular radial direction with respect to shaft 54. The circumferential groove 91 cooperates with deflectable nibs 92 formed on the implement 26 to detachably retain the implement 26 assembled to the shaft 54. This provides an arrangement where the implement 26 may be readily assembled to or disassembled from the shaft 54 and whereby it will always be assembled so that the bristles 30 will be facing in a proper direction so that forces on the shaft 54 will actuate the switch 74.

For the purpose of restraining the shaft 54 during the mounting or dismounting of implements 26, a shaft restraining member 95 is provided in the forward end of the housing 32. The tapered housing member 34 is formed with an opening 96 which is aligned with a larger opening 97 formed at the opposite walls thereof. The openings 96 and 97 are designed to receive and support the shaft restraining member 95, as is best shown in Figures 10 and 11. The member 95 is formed with an enlarged actuating button 98 which is exposed at the front of the handle 22 and a smaller holding button 99 exposed at the back of the handle 22. The central portion of the restraining member 95 is formed with a large clearance opening 100 through which the shaft 54 extends. In addition, there are detent projections 101 on the member 95 which cooperate with the walls of the housing member 34 to hold the button in either of the two positions shown in Figures 10 and 11.

When it is desired to apply or remove an implement 26 from the power handle 22, the holding button 99 is depressed forcing the restraining member 95 to the position shown in Figure 11. In this position, the shaft 54 abuts against the side of the clearance opening 100 and is restrained from moving in a direction which would close the switch 74 and energize the motor 40. Thus, implements may be applied to and removed from the shaft 54 without actuating the switch 74 as long as the restraining member 95 is in the position shown in Figure 11. When it is desired to use the appliance 20 in treating the skin, the actuating button 98 is pushed rearwardly displacing the member 95 to the position shown in Figure 10. In this position, the hole 100 provides sufficient clearance for the shaft 54 to be deflected to a position in which the switch 74 is closed thereby energizing the motor 40. In addition, the hole 100 provides sufficient lateral clearance so that the shaft portion *54a* may move in a plane perpendicular to the direction of movement of the member 95 so as to cause the implement 26 to move in its orbital path. It should also be noted that the member may be displaced from its holding position as shown in Figure 11 to the operating position as shown in Figure 10 by merely applying sufficient force on shaft 54 to overcome the action of detent projections 101. In some instances, this approach may be more convenient than displacing member 95 by pushing actuating button 98.

It should be readily appreciated that as the lever 54 moves axially and pivots about the bearing 62, the forward portion *54a* of the lever 54 pivots sufficiently to produce the three sixteenths lateral movement discussed above in connection with the orbit of the implement 26. The motor speed and reduction produced in the gear member 52 is such that the shaft 54 in one constructed embodiment oscillates or defines the orbital movement of the implement 26 at the rate of 1800 times per minute. Because of the speed and extent of this oscillation, it is desirable to have the forward portion *54a* of the lever 54 enclosed within the housing member 34 so

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that it will not be in a position to strike or bruise sensitive areas of the face and head when the bristles 30 of the implement 26 are being applied to the face, neck, etc. In addition, by having the housing 22 made in an elongated form and extending all the way to the shank portion 88 of the implement 26, the user is given more latitude and freedom in the manner in which the power handle 22 is gripped when applying the implement 26 to the skin of the body. This advantage is, of course, extremely important since there are some instances when reaching a remote portion of the back that one may desire to hold the power handle 22 adjacent the cap member 36 while when delicately cleaning a portion of the face, between the nose and eyes for instance, the handle 22 may be held closely adjacent the implement mounting end of the power handle 22 so as to more accurately direct and control the location of the bristles 30.

In Figure 16, there is shown an alternative embodiment of the skin treating or conditioning implement 26 designated as a massage implement 105. The implement 105 is similar to the implement 26 in that it has an eliptical back 106 and a shank 107 which is provided with means identical to those on implement 26 for receiving the end of shaft 54 and connecting the implement 105 thereto. The face of the implement 105 is formed with a recess 108 which occupies essentially the same area as the tufts or bristles 30 in the implement 26. Within the recess 108, there is mounted a hollow blow-molded polyethylene plastics container 109 which is filled with water or any other freezable liquid which would be liquid at room temperature and easily frozen in a household freezer. In enclosing relationship with the container 109 is a drawn aluminium cup 110 which is adhesively secured at its edges 111 to the walls of the recess 108. The other surface of the cup 110 is smooth and polished so that it may be applied to the face and skin without causing any scratching or irritation.

The implement 105 is intended to be placed in a freezing compartment prior to use so that the water enclosed in the polyethylene container 109 is completely frozen. Then, upon removing the implement 105 from the freezer and applying it to the face while driven by the power handle 22, the implement 105 provides a stimulating facial treatment by virtue of the heat transfer which occurs from the face through the aluminium cup 110 to the container 109 with its frozen contents. This type of treatment is recommended to close the skin pores during various types of beauty treatment. The elliptical, orbital movement of the massage implement 105 increases the effectiveness of the cold treatment or conditioning of the skin. For simple massaging without heat or cold treatment, a third implement has been provided having the same shape as implement 105 but having a rubber cup rather than aluminium cup 110.

To permit the power handle 22 to be completely sealed against the entrance of moisture, charging means for recharging the battery 85 have been employed which avoid the necessity for having any contacts or conductors extending through the walls of the power handle 22. These charging means involve the use of an induction coupling between an external charging circuit 113 enclosed in the charging stand 24 and an internal charging circuit 115 sealed within the power handle 22. The internal charging circuit 115 includes a secondary coil 116 of a charging transformer. The charging transformer also includes a primary coil 118 which is positioned in the charging stand 24. As is best shown in Figures 2 and 13, the secondary coil 116 is made up of a bobbin or core 119 of permeable material having its axis coextensive with the axis of the power handle 22 and having windings 120 positioned thereon. The core or bobbin 119 comprises a cup-shaped upper member *119a* which is formed of a magnetically permeable material and is secured to a lower circular wall *119b* of the bobbin by a magnetically permeable hub *119c*. The cup-shaped member *119a* is formed with side walls *119d* which are snugly received against the inside walls of the cap member 36. The upper edges of the side walls *119d* engage a plastic spider 122 which in turn engages a retainer 121 and the motor 40. Both the spider 122 and retainer 121, which are best shown in Figures 2 and 3, position the motor against lateral displacement and also retain the parts in their relative axial positions. The retainer 121 includes three upwardly projecting legs *121a* which are formed with barbs *121b*. These barbs *121b* dig into the side walls of housing member 34 and retain the motor and battery assembly therein during assembly of cap member 36. Between the spider member 122 and the upper wall 119a of the bobbin 119, there is located a rectifier 123 which is connected in circuit with the secondary coil 116 in the manner shown in the schematic drawing of Figure 14.

The external charging circuit 113 consists of a power cord 124 and the above mentioned primary coil 118 to which the cord is connected. The coil 118 is completely encapsulated in plastic to minimize shock hazards in connection with the use of the appliance 20. The encapsulated primary coil 118 is completely enclosed within a magnetic flux conducting enclosure 125 which is formed by two interfitting cup-shaped members 126 and 127 made of a magnetically permeable material, such as cold rolled steel. The lowermost of these two cup-shaped

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members, designated as by reference numeral 127, has a flat bottom wall *127a* and a narrow upstanding peripheral side wall *127b*. Received within the side walls *127b* in overlapping relationship are the downwardly extending side walls *126a* of the cup-shaped member 126. The member 126 is formed with a large opening *126b* at the centre thereof defined by upstanding flange *126c*. The flange *126c* is positioned to closely receive the cap member 36 on the power handle 22 as the power handle is rested in the charging stand 24. The primary coil 118 also has a central opening *118a* which receives the cap member 36, as is best shown in Figure 13.

When the power handle 22 is in the charging position in the stand 24, as shown in Figure 13, the cap member 36 rests within the enclosure 125 with the bottom thereof against the centre portion of the cup-shaped member 127. This places the primary coil 118 and the second coil 116 in a nested relationship to provide the maximum coupling of magnetic flux between the two coils of the transformer. The cap member 36 is made of minimum wall thickness in the area between the lower wall *119b* of the core 119 and the cup-shaped member 127 which makes up part of the enclosure for the primary coil 118. In addition, the wall thickness of the cap member 36 is at a minimum in the area of the upstanding wall *119d* of the core 119 and the adjacent wall *126c* on the upper cup-shaped member 126 of the coil enclosure 125. This arrangement minimizes the reluctance in the gaps between the metallic flux conducting members associated with the primary and secondary coils of the transformer 117. As a consequence, there is good coupling between the primary coil 118 and secondary coil 116. Thus, the charging of the battery 38 is accomplished by merely inserting the power handle 22 into the charging stand 24 where the primary and secondary coils 118 and 116 of the transformer will be inductively coupled to supply a charging current in the internal charging circuit 115. The rectifier 123 provides a half wave charging current to the battery 38.

The housing portion of the charging stand 24 consists merely of two plastics molded parts, an upper housing member *24a*, and a lower housing member *24b* which are suitably secured together by assembly screws. In the assembled position, the upper housing member *24a* has a downwardly directed wall *24c* which engages the coil enclosure 125 and clamps it against the lower housing member *24b*. This provides a structurally simple and attractive charging stand which supports and cradles the power handle 22 and positions it so that the internal charging circuit 115 is inductively coupled to the external charging circuit 113 in order that the battery 38 may be charged.

WHAT WE CLAIM IS:—

1. A power driven skin treating appliance comprising an elongated housing which is tapered toward an implement mounting end, a skin treating implement adapted to be detachably supported with respect to said housing and having a shank arranged to overlap the implement mounting end of said housing, a motor mounted within said housing at the end remote from said implement mounting end, a drive lever pivotally mounted intermediate its ends within said housing with one end engageable with said implement within said shank and the other end drivingly connected to said motor, said lever being completely surrounded by said housing and said implement shank when the implement is engaged with said lever, and a power supply battery for said motor mounted in said housing between said motor and the pivotal mounting for said lever.

2. An appliance according to claim 1 wherein said motor is arranged to drive said lever through a gear and cams which reciprocate said lever along its axis and oscillate said lever about the pivotal mounting thereof, said reciprocation and oscillation of said lever causing said implement, when engaged with said lever, to move through an elliptical orbit.

3. An appliance according to claim 1 or 2 wherein said implement includes a skin treating head carried on a short shank so that, when said implement is engaged with said lever, said head is supported closely adjacent the tapered end of said housing, said housing having a reduced diameter flange at the opening from which said lever extends out of said housing, said shank having a flange which when said implement is engaged with said lever, overlaps said housing flange but is spaced radially therefrom to permit said implement to move through an elliptical orbit.

4. An appliance according to claim 1, 2 or 3 including a sealing gasket embracing said lever adjacent its pivotal mounting and clamped at its periphery into sealing engagement with the interior of the housing, the end of said housing remote from said implement mounting end being sealed to provide a sealed enclosure for said battery and said motor.

5. An appliance according to any one of the preceding claims wherein said lever includes a rod portion which is axially disposed within said housing and extends through the pivotal mounting for connection with said implement, said lever also including a connecting portion which extends from said rod portion into driving connection with said motor, said connecting portion being U-shaped and straddling said battery.

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6. An appliance according to any one of the preceding claims wherein said battery is a rechargeable battery.

7. An appliance according to claim 6 including induction charging means for said battery, said charging means including a primary coil mounted within a charging stand and having a centre opening for receiving the end of said housing remote from the implement mounting end, a magnetically permeable enclosure surrounding said primary coil and having an opening surrounded by a flux coupling flange, said enclosure opening being coextensive with said coil opening, a secondary coil in said housing at said remote end remote from the implement mounting end connected in circuit with said battery, said secondary coil having a permeable core with a cup-shaped upper wall having side walls which are in closely spaced relationship with said enclosure flange when said housing is disposed in said charging stand.

8. An appliance according to anyone of the preceding claims wherein the lever is pivotally mounted within a bearing.

9. An appliance according to claim 8 wherein said motor is controlled by a switch positioned within said housing, a movable carrier supporting said bearing, said switch being positioned to be actuated by said carrier, a spring biasing said carrier to a position in which said switch is open, said carrier being movable to a switch closing position by the application of force to said implement, when engaged with said lever, so as to overcome said spring biasing force.

10. An appliance according to claim 9 wherein said carrier is arranged for limited rectilinear movement in a direction perpendicular to the plane of oscillation of said lever.

11. An appliance according to claim 9 or 10 including immobilizing means for holding said lever against deflecting said carrier to a switch closing position during the assembly and disassembly of said implement to and from said lever.

12. An appliance according to claim 11 wherein said immobilizing means comprises a member extending through said housing and providing exposed portions which may be utilized to push the member to either of two positions, said lever in one of said positions being unrestrained while in the other position said lever is restrained against deflecting said carrier to a switch closing position.

13. An appliance according to claim 12 wherein said member is provided with a detent to retain said member in either one or the other of said positions, said lever being operable to move said member from said other position to said one position when sufficient force is applied to said implement to overcome the resistance of said detent.

14. An appliance according to any one of claims 8 to 13 wherein said motor and said battery are both of cylindrical shape supported within said housing, and including a semicylindrical channel-shaped frame extending lengthwise in said housing and connected to said motor at one end and to a lever bearing support at the other end, said battery being received within said frame between said motor and said bearing support.

15. An appliance according to claim 14 together with claim 2 wherein said motor is provided with an integral support for said gear and cams, said frame being secured at one end to said integral support, and a guide on said integral support receiving one end of said lever and supporting it for movement in an elliptical orbit.

16. An appliance according to any one of the preceding claims wherein said implement comprises a brush having bristles the free ends of which lie when said implement is engaged with said lever, in a plane parallel to the axis of said lever and which define an orbital area similar in peripheral configuration to the path through which said brush is driven by said lever.

17. An appliance according to any one of claims 1 to 15 wherein the implement comprises a rigid molded plastics supporting head having a shank extending therefrom to couple the implement to said lever, said head having a recess therein defined by a flat bottom and side walls extending perpendicular to said bottom, a blow-molded polyethelene sealed container which is filled with a freezable liquid, said container being snugly received in said recess with a smooth rounded portion extending outwardly from said head, a drawn aluminium cup-shaped member fitting snugly around said container with its peripheral side walls received in said recess and cemented to side walls of said recess.

18. A power driven skin treating appliance comprising a housing, a skin treating implement adapted to be detachably supported with respect to said housing and having a shank arranged to overlap one end of said housing, a motor mounted within said housing, a drive lever pivotally mounted about a transverse axis intermediate its ends within said housing with one end engageable with said implement within said shank and the other end drivingly connected to said motor, said lever being completely surrounded by said housing and said implement shank when engaged with said lever, and means for

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mounting a power supply battery for said motor in said housing.

19. A power driven skin treating appliance substantially as shown in and as hereinbefore described in relation to the accompanying drawings.

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1293876 COMPLETE SPECIFICATION
5 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

Fig. 1.

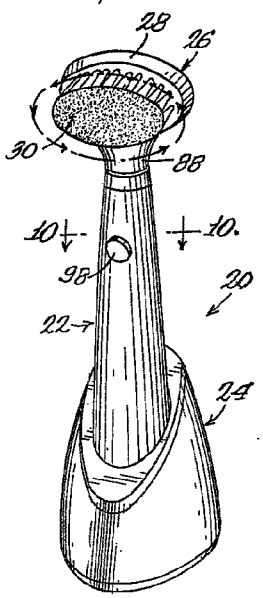


Fig. 2.

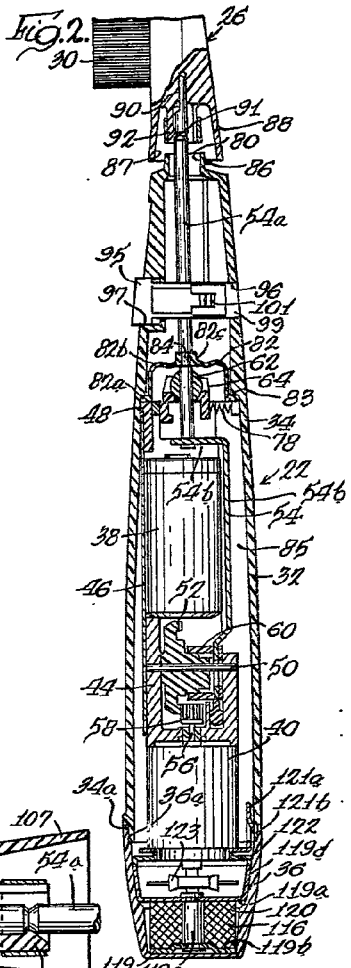
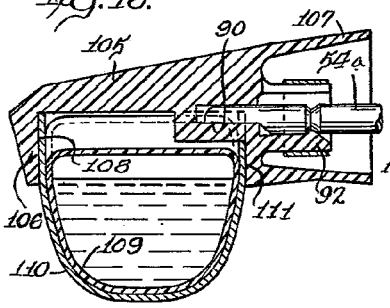


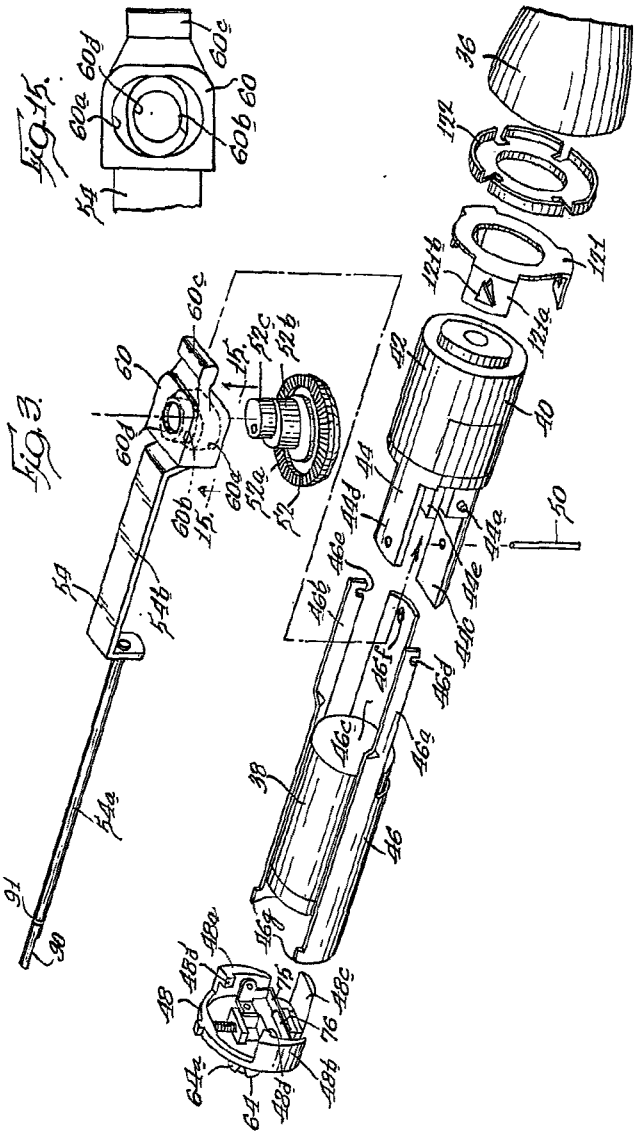
Fig. 1b.



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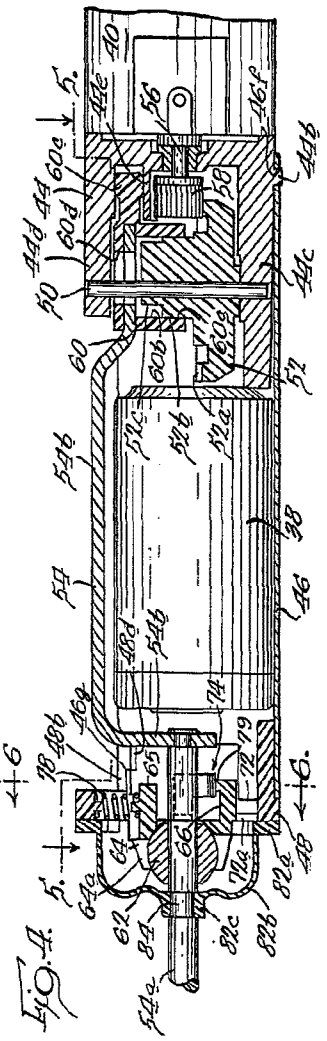


FIG. 4.

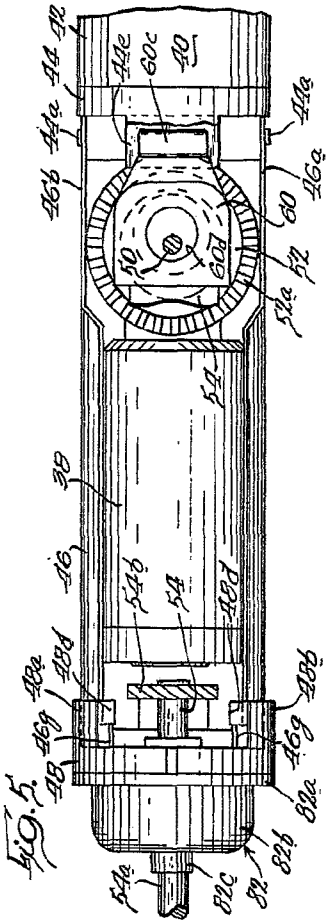


FIG. 5.

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Fig.6.

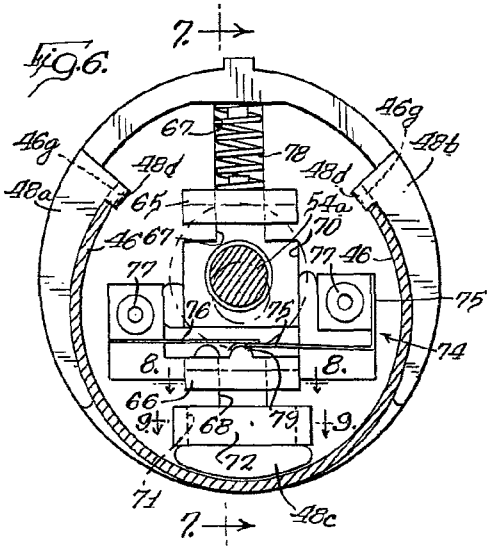


Fig.8.

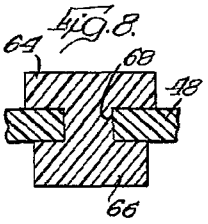


Fig.7.

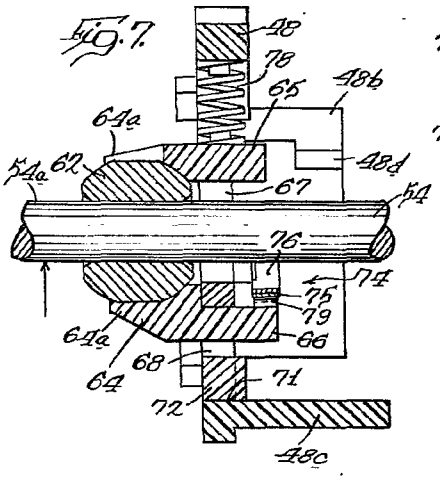
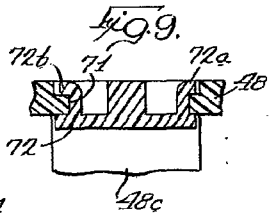


Fig.9.



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Fig. 10.

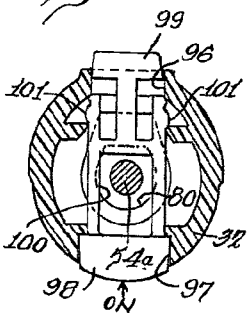


Fig. 11.

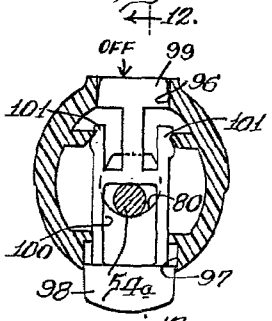


Fig. 12.

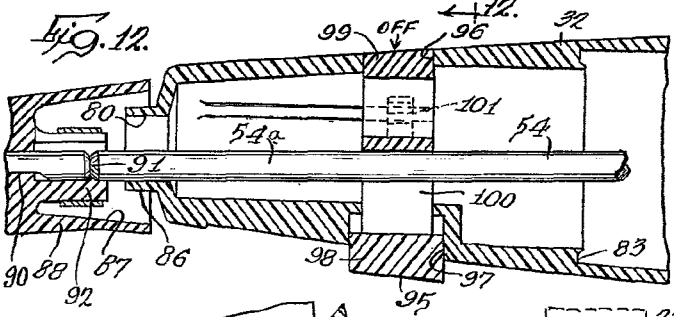


Fig. 13.

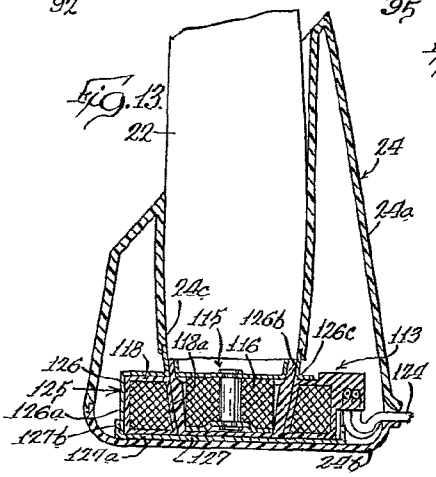
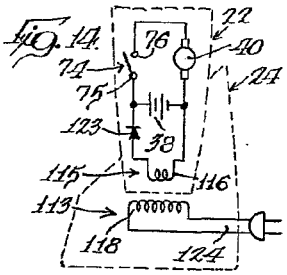


Fig. 14.



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AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a housing;

a handle on the housing;

a piston having a proximal end and a distal end;

a motor within the housing operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed;

a cam having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length;

a ~~connection mechanism~~ quick release connector at the distal end of the piston; and

a first massaging head releasably coupled to the distal end of the piston via the ~~connection mechanism~~ quick release connector.

2. (Original) The apparatus of claim 1, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

3. (Currently Amended) The apparatus of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the ~~connection mechanism~~ quick release connector.

4. (Cancelled)

5. (Original) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate between the minimum reciprocation stroke length and the maximum reciprocation stroke length at a second speed.

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6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of 600 strokes per minute to 3600 strokes per minute.

9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Original) The apparatus of claim 9, wherein the control panel has a display device.

12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.

13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

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17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Original) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the cam are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.

27. (Currently Amended) A method of assembling an apparatus, the method comprising:

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positioning a motor within a housing, wherein a handle is on the housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed, wherein a distal end of the piston has a quick release connector; ~~and~~

positioning a cam within the housing, wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length[[,]]; and

providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector

~~wherein a distal end of the piston has a connection mechanism,~~

~~wherein a first massaging head is configured to releasably couple to the distal end of the piston via the connection mechanism~~.

28. (Original) The method of claim 27, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

29. (Currently Amended) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the ~~connection mechanism~~ quick release connector.

30. (Cancelled)

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ABSTRACT KR200422971Y1

[ ]

14 The present invention relates to a portable massage pack maker, and more particularly, cucumbers, carrots, etc.) After inserting, it relates to a portable massage pack maker capable of massaging skin tissue softly and resiliently by rotating and scratching the motor so that the juice of the material is discharged to the outside. In the present invention, a vegetable case is formed in front of a body case into which a motor is inserted, a rotating bushing is rotatably coupled to interlock with the motor inside the vegetable case, and a front cover having a scratch portion inside the front end of the vegetable case. is detachably coupled, and a compression spring is embedded between the rotary bushing and the motor shaft of the motor, so that the vegetables inserted in the vegetable case are rotated by the motor shaft, rubbing against the scratch portion of the front cover, and a juice - type massage pack It is characterized in that it can be discharged. According to the portable massage pack maker of the present invention, at the same time as the material is scratched, the massage pack in the form of juice is directly discharged to the skin, and not only can be directly massaged on the skin, but also has the effect of being convenient to carry.

29 Massage pack, portable, vegetable, vegetable juice, motor, rotary bushing, scratch

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Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Submitted via Patent Center

INFORMATION DISCLOSURE STATEMENT (IDS)

Pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98, the attention of the United States Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of the above-identified application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed more than three months after the filing date of this application, OR more than three months after the date of entry of the national stage in the international application, AND after the mailing date of a first Office Action on the merits, but before the mailing date of any of a Final Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311 or an action that otherwise closes prosecution in this application (37 C.F.R. § 1.97(c)).

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), copies of U.S. patents and U.S. patent application publications are not submitted. Submitted herewith are copies of foreign patents in accordance with 37 C.F.R. § 1.98(a)(2).

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It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98, and the Examiner is respectfully requested to consider the listed references.

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Dated: February 22, 2023

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(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.111

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on February 7, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Petitioner Therabody Ex-1004, 2297

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	02/22/2023 06:07:12 PM ET	HYP-034C3

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Anna Beaulieu
PATENT CENTER #	61635798	AUTHORIZED BY	Sanjeet Dutta
CUSTOMER #	162143	FILING DATE	02/25/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Philip C. Danby

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1146	E20232LI08329929	Anna Beaulieu

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1806	SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT	260.00	1	260.00
			TOTAL AMOUNT:	$260.00

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

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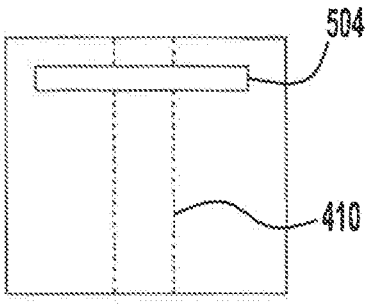


FIG. 5A

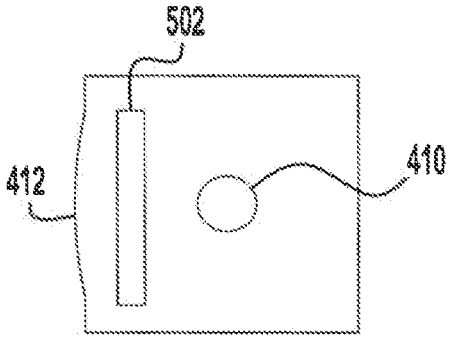


FIG. 5B

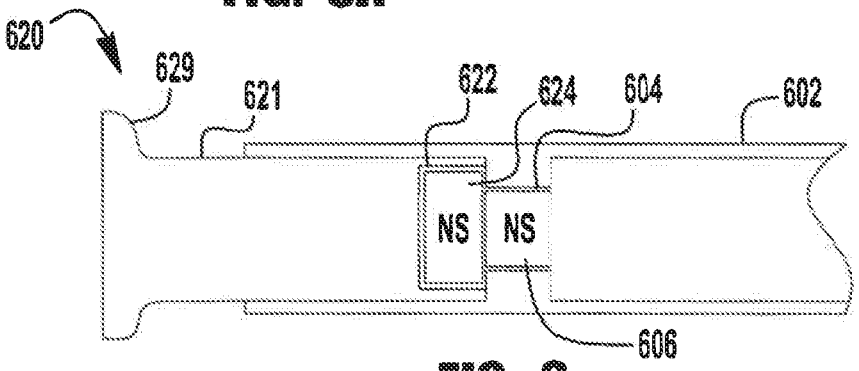


FIG. 6

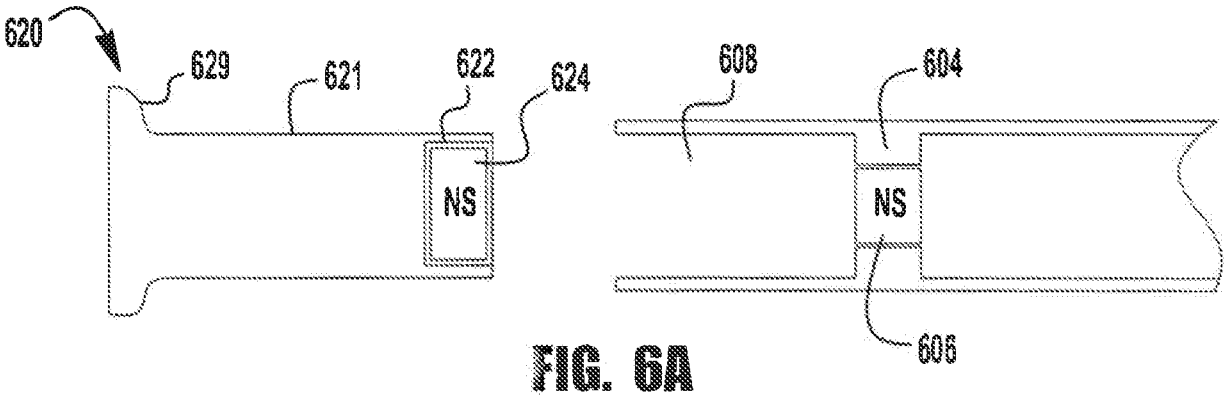


FIG. 6A

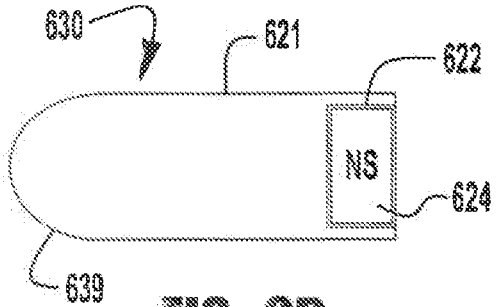


FIG. 6B

PTO/SB/08a (07-09)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	1	of	2

Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	B1	GB-1293876-A	10-25-1972	Sunbeam, Corporation		
	B2	KR-200422971-Y1	08-01-2006	Hye-jung Sun	Engl. Abstract	✓

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08b (07-09)
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Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached.

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CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Sanjeet Dutta

Documents

TOTAL DOCUMENTS: 8

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
GB 1293876 A.PDF		14	Foreign Reference	1205 KB
IDS.pdf		4	-	60 KB
IDS-TRAN.LET.pdf	(1-2)	2	Transmittal Letter	19 KB
IDS-IDS.pdf	(3-4)	2	Information Disclosure Statement (IDS) Form (SB08)	36 KB
RPLC_DRW.pdf		1	Drawings-only black and white line drawings	164 KB
KR_translate.pdf		1	Foreign Reference	88 KB

HYP_034C3_RNFOA.pdf		13	-	73 KB
HYP_034C3_RNFOA-A....pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	19 KB
HYP_034C3_RNFOA-CLM.pdf	(2-5)	4	Claims	28 KB
HYP_034C3_RNFOA-REM.pdf	(6-13)	8	Applicant Arguments/Remarks Made in an Amendment	55 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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HYP_034C3_RNFOA-A....pdf	664028459FEB15D976E7F204EB12F9FF6CDD31F8CBB1E6371CD76367AF31E03B20AABFD7A4F99C100E2D3F0721E79D9E4A5BC866A1974566C3ED5A358E489E22
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/681,367	Filing Date 02/25/2022	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	02/22/2023							
	Total (37 CFR 1.16(i))	* 28	Minus	** 30	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT								
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/LASHAWN R MORGAN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	**02/24/2023 10:54:32 AM ET**	**HYP-034C3**

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MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

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PATENT CENTER #	61645639	FILING DATE	02/25/2022
CUSTOMER #	162143	FIRST NAMED INVENTOR	Philip C. Danby
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Martin Gomez

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
HYP-034C3 - CADS.pdf	4	Application Data Sheet	56 KB
Warning: This is not a USPTO supplied ADS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
HYP-034C3 - POA.pdf	2	Power of Attorney	75 KB
HYP-034C3 - REQ CORR APPL.pdf	1	Request under 37CFR1.46(c) to correct, update, change applicant	63 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
HYP-034C3 - CADS.pdf	EDABF0B1A8D33BE16E0F9F7489ED6858B73A3757557556A0D7B3D9F073BBC9BEB11A3180EC8C393CD4926A46748ED0A248E515B07870EBC16ABFFE91518026EA
HYP-034C3 - POA.pdf	EB74AA877476BD401BA097FB1DC1664CF225C803ED4D26035A6DA4D459E7107230A37F79E28FABF6066ED5DC75E531FBD3167CB01FFD928534E0C6E690D00857
HYP-034C3 - REQ CORR APPL.pdf	E0C319AC18E474ED0C8C5E32E2A9937C892AF6A8C2989CC58CC27BCF104F2005FD9FA16E78A3189618E61244B2FBE2B893ED527E2E4AB6A0371D2E0C5875B901

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Doc Code: R46C.REQ
Document Description: Request under 37 CFR 1.46(c) to correct, update or change the applicant.

PTO/AIA/41 (04-15)
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REQUEST TO CORRECT OR UPDATE THE NAME OF THE APPLICANT UNDER 37 CFR 1.46(c)(1), OR CHANGE THE APPLICANT UNDER 37 CFR 1.46(c)(2) **(FOR USE ONLY IN APPLICATIONS FILED ON OR AFTER SEPTEMBER 16, 2012)**		
	Application Number	17/681,367-Conf. #8567
	Filing Date	February 25, 2022
	First Named Inventor	Philip C. Danby
	Art Unit	3785
	Examiner Name	T. A. Stanis
	Practitioner Docket Number	HYP-034C3

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Applicant hereby **requests that the name of the applicant be corrected or updated under 37 CFR 1.46(c)(1), or that the applicant be changed under 37 CFR 1.46(c)(2),** in the above-identified application. **Requests under 37 CFR 1.46(c)(1) or (c)(2) cannot be submitted after payment of the issue fee or if the application has been patented.**

Please check the applicable box(es) below.

[X] 1.This request is to **correct or update the name of the applicant** (**under 37 CFR 1.46(c)(1)**) and includes:

[X] An application data sheet (ADS) in accordance with 37 CFR 1.76(c) with the corrected or updated information shown with markings (*e.g.*, underlining for insertions, strikethrough for deletions). A Corrected Web-based ADS may be used.

Note: Requests under 37 CFR 1.46(c)(1) may be filed to correct typographical errors in the name of the § 1.46 applicant, or for updating the name of the § 1.46 applicant (*i.e.,* where there is no change in the applicant itself but just in the applicant's name). See the Manual of Patent Examining Procedure (MPEP) section 605.01.

[ ] 2. This request is to **change the applicant** (**under 37 CFR 1.46(c)(2)**) and includes:

[ ] An application data sheet (ADS) in accordance with 37 CFR 1.76(c) that identifies the changes with proper markings (underlining for insertions and strikethrough for deletions). A Corrected Web-based ADS may be used.

[ ] A Statement Under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent). See MPEP 325.

I am the

[ ] applicant* [X] attorney or agent of record Registration number 68,762 [ ] attorney or agent acting under 37 CFR 1.34 Registration number _____

Signature /Martin Gomez/

Typed or printed name Martin Gomez

Date February 24, 2023

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. *Juristic entities must be represented by a patent practitioner (See 37 CFR 1.31, applicable to any paper filed on or after September 16, 2012 that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below**.

[ ] ** Total of 1 forms are submitted.

Petitioner Therabody Ex-1004, 2309

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	17/681,367
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Title	MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

SIGNATURE of Applicant or Patent Practitioner

Signature	/Martin Gomez/	Date (Optional)	
Name	Martin Gomez	Registration Number	68,762
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of 1 forms are submitted.

DocuSign Envelope ID: 23036109-D5E9-4C4C-BA92-B7584BDD3187

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

[X] I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 162143

OR

[ ] I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

[X] The address associated with the above-mentioned Customer Number

OR

[ ] The address associated with Customer Number:

OR

[ ] Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

HYPERICE IP SUBCO, LLC

[ ] Inventor or Joint Inventor (title not required below)

[ ] Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

[X] Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

[ ] Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	Jon Howell 05620CF5418B14D8...	Date (Optional)	2/7/2023
Name	Jon Howell		
Title	General Counsel		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

[ ] Total of 1 forms are submitted.

Corrected Application Data Sheet

Inventor Information

Inventor Number::	1
Given Name::	Philip
Middle Name::	C.
Family Name::	Danby
City of Residence::	Key Biscayne
State or Province of Residence::	FL
Country of Residence::	US
Street of mailing address::	~~177 Ocean Lane Drive, Apt. 1200~~ 525 Technology Drive, Suite 100
City of mailing address::	~~Key Biscayne~~ Irvine
State or Province of mailing address::	~~FL~~ CA
Country of mailing address::	US
Postal or Zip Code of mailing address::	~~33149~~ 92618

Inventor Number::	2
Given Name::	John
Middle Name::	Charles
Family Name::	Danby
City of Residence::	Witham
Country of Residence::	United Kingdom
Street of mailing address::	~~15 Elgar Drive~~ 525 Technology Drive, Suite 100
City of mailing address::	~~Witham~~ Irvine

Petitioner Therabody Ex-1004, 2312

State or Province of mailing address::	CA
Country of mailing address::	~~United Kingdom~~ US
Postal or Zip Code of mailing address::	~~CM81DS~~ 92618

Correspondence Information

Correspondence Customer Number::	162143

Application Information

Application Number::	~~Not Yet Assigned~~ 17/681,367
Filing Date::	02/25/22
Application Type::	Nonprovisional
Subject Matter::	Utility
CD-ROM or CD-R?::	None
Sequence submission?::	None
Computer Readable Form (CRF)?::	No
Title::	MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH
Attorney Docket Number::	HYP-034C3
Request for Early Publication?::	No
Request for Non-Publication?::	~~No~~ Yes
Total Drawing Sheets::	7
Small Entity?::	No
Petition included?::	No
Portions or all of the application associated with this	No

Petitioner Therabody Ex-1004, 2313

Application Data Sheet may fall under a Secrecy
Order pursuant to 37 CFR 5.2::

Representative Information

Representative Customer Number:: 162143

Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::	Prior Appl Status::	Parent Patent::	Parent Issue Date::
This Application	Continuation of	15/892665	02/09/18	~~Pending~~ Patented	11,285,075	03/29/22
15/892665	Continuation of	14/317573	06/27/14	Patented	9,889,066	02/13/18
14/317573	Claims benefit of provisional	61/841,693	07/01/13	Expired		

Foreign Priority Information

Applicant Information

Applicant Number:: 1

Applicant Type:: Assignee

Organization Name:: ~~Hyper Ice, Inc.~~ HYPERICE IP SUBCO, LLC

Street of mailing address:: 525 Technology Drive, Suite 100

City of mailing address:: Irvine

State or Province of mailing address::	CA
Country of mailing address::	US
Postal or Zip Code of mailing address::	92618

Assignee Information Including Non-Applicant Assignee Information

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Martin Gomez/	Date (YYYY-MM-DD)	2023-02-24
Name	Martin Gomez	Registration Number	68,762

Petitioner Therabody Ex-1004, 2315

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/681,367	02/25/2022	3785	2820	HYP-034C3	30	2

CONFIRMATION NO. 8567

CORRECTED FILING RECEIPT

162143
GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

OC000000137477402

Date Mailed: 03/01/2023

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Philip C. Danby, Key Biscayne, FL;
John Charles Danby, Witham, UNITED KINGDOM;

Applicant(s)

HYPERICE IP SUBCO, LLC, Irvine, CA;

Power of Attorney: The patent practitioners associated with Customer Number 162143

Domestic Priority data as claimed by applicant

This application is a CON of 15/892,665 02/09/2018 PAT 11285075
which is a CON of 14/317,573 06/27/2014 PAT 9889066
which claims benefit of 61/841,693 07/01/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Petitioner Therabody Ex-1004, 2316

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 03/02/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/681,367**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

Title

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Preliminary Class

601

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

Petitioner Therabody Ex-1004, 2317

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

Petitioner Therabody Ex-1004, 2318

technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

Petitioner Therabody Ex-1004, 2319

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3

CONFIRMATION NO. 8567

POA ACCEPTANCE LETTER

162143
GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

OC000000137477399

Date Mailed: 03/01/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/24/2023.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/tnguyen/

Petitioner Therabody Ex-1004, 2320

PTO/SB/08a (07-09)
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/T.A.S/	B1	GB-1293876-A	10-25-1972	Sunbeam, Corporation		
/T.A.S/	B2	KR-200422971-Y1	08-01-2006	Hye-jung Sun	Engl. Abstract	✓

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	02/28/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08b (07-09)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	2	of	2

Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	02/28/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 03/07/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
03/07/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
TFRANKLIN@GOODWINLAW.COM
US-PatentBos@goodwinlaw.com

Petitioner Therabody Ex-1004, 2323

Office Action Summary	Application No. 17/681,367	Applicant(s) Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 2/22/2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-3 and 5-29 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-3 and 5-29 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 2/22/2023 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. This office action is in response to the amendment and arguments filed on 2/22/2023. As directed by the amendment, claims 1, 3, 27, and 29 have been amended, claims 4 and 30 have been canceled, and no claims have been added. Thus, claims 1-3 and 5-29 are pending in the application.

Claim Interpretation- 35 USC § 112 – Sixth Paragraph/35 USC § 112(f)

2. The following is a quotation of 35 U.S.C. 112(f):

> (f) Element in Claim for a Combination. – An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The following is a quotation of pre-AIA 35 U.S.C. 112, sixth paragraph:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

The claims in this application are given their broadest reasonable interpretation using the plain meaning of the claim language in light of the specification as it would be understood by one of ordinary skill in the art. The broadest reasonable interpretation of a claim element (also commonly referred to as a claim limitation) is limited by the description in the specification when 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is invoked.

As explained in MPEP § 2181, subsection I, claim limitations that meet the following three-prong test will be interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph:

(A) the claim limitation uses the term "means" or "step" or a term used as a substitute for "means" that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function;

(B) the term "means" or "step" or the generic placeholder is modified by functional language, typically, but not always linked by the transition word "for" (e.g., "means for") or another linking word or phrase, such as "configured to" or "so that"; and

(C) the term "means" or "step" or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.

Use of the word "means" (or "step") in a claim with functional language creates a rebuttable presumption that the claim limitation is to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, is rebutted when the claim limitation recites sufficient structure, material, or acts to entirely perform the recited function.

Absence of the word "means" (or "step") in a claim creates a rebuttable presumption that the claim limitation is not to be treated in accordance with 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph. The presumption that the claim limitation is not interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth

paragraph, is rebutted when the claim limitation recites function without reciting sufficient structure, material or acts to entirely perform the recited function.

Claim limitations in this application that use the word "means" (or "step") are being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action. Conversely, claim limitations in this application that do not use the word "means" (or "step") are not being interpreted under 35 U.S.C. 112(f) or pre-AIA 35 U.S.C. 112, sixth paragraph, except as otherwise indicated in an Office action.

At present, no claims are interpreted under 35 USC 112(f).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

5. Claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer et al (5,134,777) in view of Instructables.com (Non-Patent Literature, hereby referred to as "Instructables"), and further in view of Miller (2003/0195443).

Regarding claim 1, Meyer discloses an apparatus (Fig. 2, tool 10) comprising: a housing (Fig. 2, housing 12); a handle on the housing (Fig. 2, handle 14); a piston having a proximal end and a distal end (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with formation 44a. Fig. 2 depicts a distal end of ram 44 at its connection to blade holder 16); a motor within the housing operatively connected to the proximal end of the piston (Col. 2, ln. 67 discloses an electric motor not shown in the drawings. This electric motor is connected to the ram 44 via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the "minimum reciprocation stroke length" configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the "maximum reciprocation stroke length" configuration. See col. 4, ln. 23-58. The motor would be running at some speed); a cam (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam) having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6b depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7b depict the actuator plate 50 and actuator lever 50c in a second rotational position for a

maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths); and a connection mechanism at the distal end of the piston (Fig. 2 blade holder 16).

Meyer does not disclose a first massaging head releasably coupled to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have lying around. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

The modified apparatus of Meyer does not have the connection mechanism as a "quick release connector."

However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the

distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller to allow a user to select different types of massage heads as dictated by the user's therapy needs.

Regarding claim 2, the modified apparatus of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7b depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 3, the modified device of Meyer has a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector (Miller, Fig. 1, multiple impact heads 70 would be releasable via a quick release connector in the modified device).

Regarding claim 23, the modified apparatus of Meyer has the housing comprising a cavity, wherein the motor and the cam are positioned within the cavity (Meyer, Fig. 2, the housing 12 forms a cavity for holding the (non-depicted) motor and cam mechanism for adjusting the stroke length of the ram 44).

Regarding claim 26, the modified apparatus of Meyer has the motor positioned within the housing opposite the handle (Fig. 2, the housing portion 12a that contains the motor is located opposite from the handle 14, as the housing portion 12a is located on

the left side of the housing and the handle 14 is located on the right side of the housing, as depicted).

Regarding claim 27, Meyer discloses a method of assembling an apparatus (Fig. 2, tool 10 is assembled), the method comprising: positioning a motor within a housing (Fig. 2, housing 12 has a motor within in section 12a), wherein a handle on the housing (Fig. 2, handle 14); operatively connecting the motor to a proximal end of a piston (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with formation 44a that is connected to the motor via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the "minimum reciprocation stroke length" configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the "maximum reciprocation stroke length" configuration. See col. 4, ln. 23-58. The motor would be running at some speed), wherein a distal end of the piston has a connection mechanism (Fig. 2 blade holder 16); positioning a cam within the housing (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam that is located within housing 12), wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6b depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7b depict the actuator plate 50 and actuator lever 50c in a second rotational position for a maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length

of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths), wherein a distal end of the piston has a connection mechanism (Fig. 2 blade holder 16 is at a distal end of ram 44).

Meyer does not disclose providing a first massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have lying around. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

The modified method of Meyer does not have the connection mechanism as a "quick release connector."

However, Miller teaches a percussive therapeutic device (Fig. 1) comprising a plurality of massage heads (Fig. 1, impact heads 70) that are releasably coupled to the

distal end of a piston via a quick release connector ([0026] discloses a quick release connector using a collar pin 66 and pin notches 68 as shown in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified method of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Miller to allow a user to select different types of massage heads as dictated by the user's therapy needs.

Regarding claim 28, the modified method of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7b depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 29, the modified method of Meyer has a second massaging head as configured to releasably couple to the distal end of the piston via the quick release connector (Miller, Fig. 1, multiple impact heads 70 would be releasable via a quick release connector in the modified device)

6. Claims 5 and 9-15 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Miller, as applied to claim 1 above, and further in view of Harris et al (6,432,072).

Regarding claim 5, the modified apparatus of Meyer has the motor as configured to cause the piston to reciprocated between the minimum reciprocation length and the maximum reciprocation length (Meyer, col. 4, ln. 44-58).

The modified apparatus of Meyer does not have the motor and piston operating at a second speed.

However, Harris teaches a hand-held percussive massager (Fig. 1, massager 50) comprising a control panel (Fig. 1, control panel 5) comprising a speed setting control button that allows the user to percuss the massager at different speeds (Fig. 1, speed control button 5b; see col. 2, ln. 49-57).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel with a speed control button and other control settings as taught by Harris to allow the user to select a desired speed of massage while using the device.

Regarding claim 9, the modified apparatus of Meyer (as modified in the rejection of claim 5) has a control panel positioned on an exterior of the housing (Harris, Figs. 1-2, control panel 5).

Regarding claim 10, the modified apparatus of Meyer has the control panel as configured to display one or more visual indicators (Harris, Figs. 1-2, LED speed indicator 5C).

Regarding claim 11, the modified apparatus of Meyer has the control panel having a display device (Harris, Figs. 1-2, LED speed indicator 5C is a type of display device).

Regarding claim 12, the modified apparatus of Meyer has the control panel having one or more inputs (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 13, the modified apparatus of Meyer has the one or more inputs comprising a button (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 14, the modified apparatus of Meyer has the first speed and the second speed as each selectable via the one or more inputs (Harris, Figs. 1-2, speed setting control button 5b would allow for selection of the first speed, second speed, and other speeds).

Regarding claim 15, the modified apparatus of Meyer has a first selection of the one or more inputs configured to cause the apparatus to power on and a second selection of the one or more inputs configured to cause the apparatus to power off (Figs. 1-2, power control button 5a allows for "power on" upon a first pressing of the button and a "power off" upon a second pressing of the button).

7. Claims 6-8 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, Miller, and Harris, as applied to claim 5 above, and further in view of Pivaroff (6,682,496).

Regarding claims 6-8, the modified apparatus of Meyer does not disclose the first and second speeds.

However, Pivaroff teaches that an appropriate motor speed for a deep muscle stimulator device is between 2000 to 3600 per minute (Col. 3, ln. 44-46).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the speed(s) of the modified apparatus of Meyer to be between 2000 and 3600 as taught by Pivaroff, as such a stroke speed is appropriate for deep muscle tissue stimulation.

8. Claims 16 and 24-25 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Miller, as applied to claims 1 and 23 above, and further in view of Tsai et al (2009/0270915).

Regarding claim 16, the modified apparatus of Meyer does not have an audible feedback device configured to generate one or more audible signals.

However, Tsai teaches a handheld reciprocating massager (Fig. 1, adjuster instrument 100) comprising an audible feedback device to alert a user to the settings of the device, such as impulse speed ([0048] discloses an "annunciation structure" that provides feedback to the operator about device settings, such as "impulse frequency and amplitude." [0048] states that the annunciation structure may be an LCD display or an audio annunciator).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel that allows the user to changes operational settings of the device while also receiving audible feedback about device settings as taught by Tsai to allow a user to confirm the device's operational settings in a convenient manner (i.e. audibly).

Regarding claim 24, the modified apparatus of Meyer does not have a thermally conductive motor housing positioned within the cavity proximal to the motor.

However, Tsai additionally teaches the handheld reciprocating massager comprising a motor surrounded by a housing and located within a cavity of the massager housing (Fig. 10, DC motor 114 has its components surrounded by some type of housing. DC motor 114 is located within a cavity of the device housing 110),

wherein the housing is thermally conductive ([0038] discloses that the massager may have a heat dissipation structure 136 for dissipating heat within the instrument 100. For heat dissipation structure 136 to dissipate heat from the DC motor 114, the motor housing must be made from thermally conductive material).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the motor of the modified apparatus of Meyer to be located within a thermally conductive motor housing and located near a heat dissipating structure as taught by Tsai to help prevent the motor from overheating and the device from becoming hot to hold by the user.

Regarding claim 25, the modified apparatus of Meyer has a heat sink positioned proximal to the thermally conductive motor housing (Tsai, [0038], heat dissipation structure 136 is located proximal to the motor and motor housing 114).

9. Claims 17-22 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Miller, as applied to claim 1 above, and further in view of Ehrenreich et al (2013/0102937).

Regarding claim 17, the modified apparatus of Meyer does not have a controller having a processor, a memory, and a data connection.

However, Ehrenreich teaches a massaging device (Figs. 1 and 5) comprising a controller (Fig. 5, circuit boards 500 and 550 serve as a controller for the massaging device) having a processor, a memory, and a data connection ([0100] discloses the controller having a processor 551, a memory 552, and a communication port 554).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer

to have a controller with a processor, a memory, and a data connection as taught by Ehrenreich to allow the device to store massaging programs, update the massaging programs, and send/receive data from an outside source to track and usage of the device and update the programs of the device.

Regarding claim 18, the modified apparatus of Meyer has the data connection as a wireless data connection (Ehrenreich, [0101], discloses that the second circuit board 550 may include a variety of different wireless communication protocols).

Regarding claim 19, the modified apparatus of Meyer has the controller as configured to send, by the data connection, first data to an external computing device (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is on. [0111] discloses transmitting data to a remote computer for analyzing patient compliance)

Regarding claim 20, the modified apparatus of Meyer has the first data as indicative of usage of the apparatus for providing a massage (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is operating).

Regarding claim 21, the modified apparatus of Meyer has the controller configured to receive, by the data connection, second data from an external computing device (Ehrenreich, [0156], discloses that a personal computer, smartphone, or table could be used to remotely program the massage device).

Regarding claim 22, the modified apparatus of Meyer has the second data indicative of a massage program having a massage duration (Ehrenreich, [0156], discloses that the customization in programming can including the duration of therapy).

Response to Arguments

10. Applicant's arguments filed on 2/22/2023 on Pages 9-10 with respect to claim 1 and regarding the combination of the modified device of Meyer with the interchangeable heads of Miller (i) changing the principle operation of Meyer's reciprocating saw and (ii) rendering Meyer's reciprocating saw unsatisfactory for its intended purposes have been considered, but are not persuasive.

The applicant argues that replacing the blade holder of Meyer with the collar pin 66 and pin notches 68 of Miller would eliminate Meyer's saw's ability to hold a say blade, thereby changing its principal of operation from sawing to massaging. However, the applicant appears to be ignoring the first step in the 103 rejection - combining Meyer with "Instructables." Instructables teaches repurposing a jigsaw as a reciprocating massager (see Instructables, Page 2). Therefore, the resulting Miller/Instructables combination would have its principal operation as *reciprocating massage*. The Miller/Instructables combination should be the starting point when evaluating the subsequent introduction of the interchangeable massage heads of Miller. The applicant appears to be comparing the Miller contribution (i.e. interchangeable heads) to the objective of *only* the Meyer device, as opposed to the objective of the Meyer/Instructables combined device.

Even if one were to require maintaining the "sawing" functionality of Meyer in the Miller/Instructables/Miller combination, it would have been obvious to one of ordinary skill in the art to have one of the interchangeable heads with Miller's "quick connection" be a saw blade. The Miller/Instructables combination has a saw blade and a massage head as interchangeable. The introduction of Miller's additional interchangeable

massage heads and a new mechanism for connecting the heads to the device would not prevent one of the heads from being a saw blade, thereby allowing dual use of the device as a saw and a massager.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A STANIS whose telephone number is (571)272-5139. The examiner can normally be reached on Mon - Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/31/2023	02/28/2023							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	-							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
	9	✓	✓							
	10	✓	✓							
	11	✓	✓							
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	26	✓	✓							
	27	✓	✓							
	28	✓	✓							
	29	✓	✓							
	30	✓	-							

Petitioner Therabody Ex-1004, 2342

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L82	2	("5134777" OR "20030195443").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/02/28 10:02 AM
L83	180	(a61h23/0254.cpc. OR a16h2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097.cpc.) AND ((adjust$4 OR modify$3 OR chang$4) WITH (length))	(US-PGPUB; USPAT)	OR	ON	ON	2023/02/28 10:23 AM
L84	66	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2 OR US-6616621-B1 OR US-6432072-B1 OR US-5935089-A).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/28 10:25 AM

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		US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1 OR US-20140194900-A1 OR US-20160151238-A1 OR US-20120253245-A1 OR US-20020183668-A1 OR US-20020115947-A1 OR US-20060178715-A1 OR US-20070167888-A1 OR US-20050113724-A1 OR US-20070179414-A1 OR US-20130102937-A1 OR US-20140135875-A1 OR US-20140180181-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A).did. AND USOC.dbnm.)					

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Petitioner Therabody Ex-1004, 2344

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61H23/0254	01/31/2023	TS
A61H2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097	01/31/2023	TS
Updated Above Search	02/28/2023	TS

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor Search in PE2E and PALM	01/31/2023	TS
See attached PE2E search	01/31/2023	TS
Updated Search; see attached PE2E search	02/28/2023	TS

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2345

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2346

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Program Request

PTO/SB/434 (3-22)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
HYP-034C3	17/681,367-Conf. #8567	February 25, 2022

First Named Inventor:	Title:
Philip C. Danby	MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).

2. The above-identified application contains an outstanding final rejection.

3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.

4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.

5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.

6. This certification and request is being filed electronically using the USPTO's patent electronic filing system.

7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]

8. By filing this certification and request, applicant acknowledges the following:

- Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
- The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
  - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
  - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
    - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
    - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date	Practitioner Registration No.
/Sanjeet K. Dutta/	March 21, 2023	46,145
Name (Print/Typed)	Telephone Number	
Sanjeet K. Dutta	(617) 570-1000	

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☐ * Total of 1 forms are submitted.

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	**03/21/2023 03:47:37 PM ET**	**HYP-034C3**

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Anna Beaulieu
PATENT CENTER #	61778258	FILING DATE	02/25/2022
CUSTOMER #	162143	FIRST NAMED INVENTOR	Philip C. Danby
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Sanjeet Dutta

Documents

TOTAL DOCUMENTS: 4

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
HYP-034C3 - RFOA.pdf		10	-	121 KB
HYP-034C3 - RFOA-A.NE.pdf	(1-1)	1	Response After Final Action	18 KB
HYP-034C3 - RFOA-CLM.pdf	(2-5)	4	Claims	28 KB
HYP-034C3 - RFOA-REM.pdf	(6-10)	5	Applicant Arguments/Remarks Made in an Amendment	103 KB
HYP-034C3 - AFCP 2.0.pdf		1	After Final Consideration Program Request	27 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
HYP-034C3 - RFOA.pdf	AFBFA42093740E230E8C721DE99ABD94049234C48E40F02496 D45C662B63704C42358EDD043043FE256F0EECDD1C2D5D37 3C833247C3CCDFA638FFD73207A4FF
HYP-034C3 - RFOA-A.NE.pdf	6E9F1AAE5E864F9B402D99C2DE17E5A8C1C623C3A4B824044 197BA7E0D3418916D549644F1090452BED1DA8DA08E9CA3AA 1D34AB9C7BBD55685F034643A68C3F
HYP-034C3 - RFOA-CLM.pdf	89CA3F4CCD1C53C674584AA62CADE1D1AF01C1E10D644C1 CF63255342DB66BE61019E597261B0C4134F619B4D90EE92C6 0CCFC01B3B36C0D904072BF4484964F
HYP-034C3 - RFOA-REM.pdf	1A35D55ED98EE590DA81E5B3F5F22C7BDA8E99247E3437D8F 24FF4A3B1EE3B310CB7C2CC066154ED69BA38DC7426F0AE2 72CAD8F46A3EC34A4D20B1904A38CC2
HYP-034C3 - AFCP 2.0.pdf	F3E570D98FEE23F6761436E153CF7117333F0F3A8CDDF09AE DE5009EE7E88EE9499FDB9A1815747619A81EECCE319B21F0 FC589EFD52ACB598D1FAE24F53C7BD

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a housing;

a handle on the housing;

a piston having a proximal end and a distal end;

a motor within the housing operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed;

a cam having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length;

a quick release connector at the distal end of the piston; and

a first massaging head releasably coupled to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

2. (Original) The apparatus of claim 1, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

3. (Previously Presented) The apparatus of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

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5. (Original) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate between the minimum reciprocation stroke length and the maximum reciprocation stroke length at a second speed.

6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of 600 strokes per minute to 3600 strokes per minute.

9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Original) The apparatus of claim 9, wherein the control panel has a display device.

12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.

13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

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15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Original) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the cam are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

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25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.

27. (Currently Amended) A method of assembling an apparatus, the method comprising:

positioning a motor within a housing, wherein a handle is on the housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed, wherein a distal end of the piston has a quick release connector;

positioning a cam within the housing, wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length; and

providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

28. (Original) The method of claim 27, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

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REMARKS

Administrative Overview

Prior to the Office Action of March 7, 2023 (the "Office Action"), claims 1-3 and 5-29 were pending. In the Office Action:

- claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer ("Meyer") in view of Instructables.com ("Instructables"), and further in view of U.S. Publication No. 2003/0195443 to Miller ("Miller");
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, Miller, Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai"); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich").

In the present Amendment, claims 1 and 27 are amended without prejudice or disclaimer. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

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Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, and 26-29 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Miller. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and Miller and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables, Miller, Harris, and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

> a first massaging head releasably coupled to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

Meyer is directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes "a blade holder 16 and an adjacent foot plate 18" and "[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16" (*Id.* at col. 1, lines 1-2 and 33-34). Instructables is directed to modifying a jigsaw to form a massager (Instructables at pages 1-2).

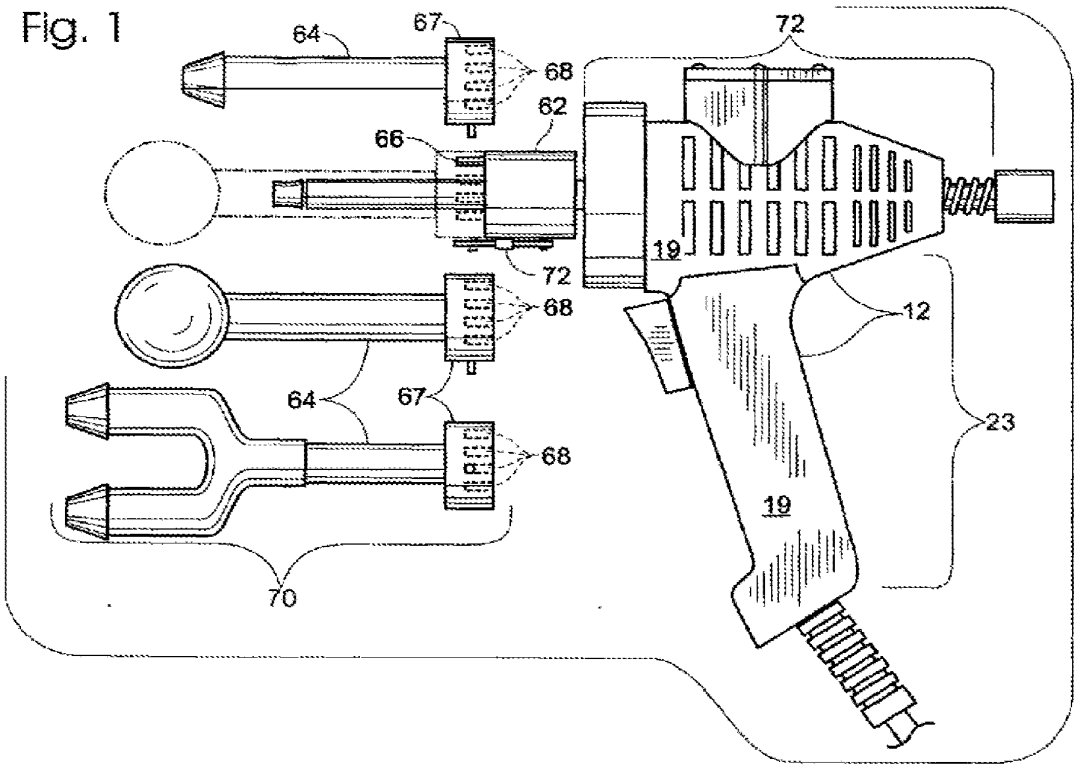
The Office Action at page 6 states that Meyer and Instructables fail to teach or suggest the "quick release connector" as recited in claim 1, instead relying on Miller as teaching this feature. Miller as referenced at [0026] describes (emphasis added):

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> **The coupler is comprised of a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64.** The collar 62 is mounted on the reciprocating rod 16 offset from the forward end 18 so as to permit the sleeve element 64 of the impact head to receive a portion of the forward end 18 of the reciprocating rod 16 for stability. **The sleeve base 67 abuts the collar 67 and the collar pin 66 is received into one of a number of defined pin notches 68 on the sleeve base 67 so as to prevent rotation of the impact head 70. A simple retaining hook or loop 72 or similar means retains the impact head 70.**

Miller's coupler includes "a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64." A Person of Ordinary Skill in the Art would understand that Miller's head must be aligned in one orientation, such that the pin on the bottom of the collar 62 mates with hook or loop 72 to retain the impact head 70, as shown in Figure 1 below. Furthermore, the horizontal pin must be aligned and inserted into a pin notch 68 in order to retain the impact head.

Fig. 1



However, Applicant respectfully submits that Miller fails to teach or suggest that "the quick release connector is configured to connect the first massaging head **while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation**

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stroke length at the first speed" as presently recited in amended claim 1. As recognized by Applicant, such a configuration of the quick release connector enables quick removal and replacement of a massaging head with the apparatus (Specification as-filed at [0050]-[0051]). Miller is silent regarding the ability for its impact heads to be connected to the coupler during reciprocation of the reciprocating rod.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Miller with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3 and 5-26 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1-3 and 5-26 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

> providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

VI. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, Tsai, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Miller) with respect to any of the independent claims, and the Office Action does not allege otherwise.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course.

If the Examiner believes that a telephone conversation with Applicant's agent would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: March 21, 2023

Respectfully submitted,

Electronic signature: /Sanjeet K. Dutta/
Sanjeet K. Dutta
Registration No.: 46,145
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Attorney For Applicant

Petitioner Therabody Ex-1004, 2358

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on March 7, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Petitioner Therabody Ex-1004, 2359

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/681,367	Filing Date 02/25/2022	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)			
FOR	NUMBER FILED	NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	03/21/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 28	Minus	** 30	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/LASHAWN R MORGAN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on March 7, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Petitioner Therabody Ex-1004, 2361

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 03/24/2023

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EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
03/24/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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US-PatentBos@goodwinlaw.com

Petitioner Therabody Ex-1004, 2362

Applicant-Initiated Interview Summary	**Application No.** 17/681,367	**Applicant(s)** Danby et al.		
	Examiner TIMOTHY A STANIS	**Art Unit** 3785	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
TIMOTHY A STANIS	Primary Examiner	Telephonic
Sanjeet Dutta	Attorney	

Date of Interview: 21 March 2023

Issues Discussed:

35 U.S.C. 103

Examiner Stanis agreed that the proposed amendment of "the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed" would overcome the prior art of record. Attorney Dutta stated that an After Final amendment would be submitted shortly.

☑ Attachment

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Petitioner Therabody Ex-1004, 2363

DO NOT ENTER - FOR DISCUSSION PURPOSES ONLY /TS/ 3/21/2023

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on March 7, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

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AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a housing;

a handle on the housing;

a piston having a proximal end and a distal end;

a motor within the housing operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed;

a cam having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length;

a quick release connector at the distal end of the piston; and

a first massaging head releasably coupled to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

2. (Original) The apparatus of claim 1, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

3. (Previously Presented) The apparatus of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

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5. (Original) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate between the minimum reciprocation stroke length and the maximum reciprocation stroke length at a second speed.

6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of 600 strokes per minute to 3600 strokes per minute.

9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Original) The apparatus of claim 9, wherein the control panel has a display device.

12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.

13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

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15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Original) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the cam are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

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25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.

27. (Currently Amended) A method of assembling an apparatus, the method comprising:

positioning a motor within a housing, wherein a handle is on the housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed, wherein a distal end of the piston has a quick release connector;

positioning a cam within the housing, wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length; and

providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

28. (Original) The method of claim 27, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

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30. (Cancelled)

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Petitioner Therabody Ex-1004, 2369

REMARKS

Administrative Overview

Prior to the Office Action of March 7, 2023 (the "Office Action"), claims 1-3 and 5-29 were pending. In the Office Action:

- claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer ("Meyer") in view of Instructables.com ("Instructables"), and further in view of U.S. Publication No. 2003/0195443 to Miller ("Miller");
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, Miller, Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai"); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich").

In the present Amendment, claims 1 and 27 are amended without prejudice or disclaimer. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

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Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, and 26-29 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Miller. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and Miller and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables, Miller, Harris, and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

> a first massaging head releasably coupled to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

Meyer is directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes "a blade holder 16 and an adjacent foot plate 18" and "[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16" (*Id.* at col. 1, lines 1-2 and 33-34). Instructables is directed to modifying a jigsaw to form a massager (Instructables at pages 1-2).

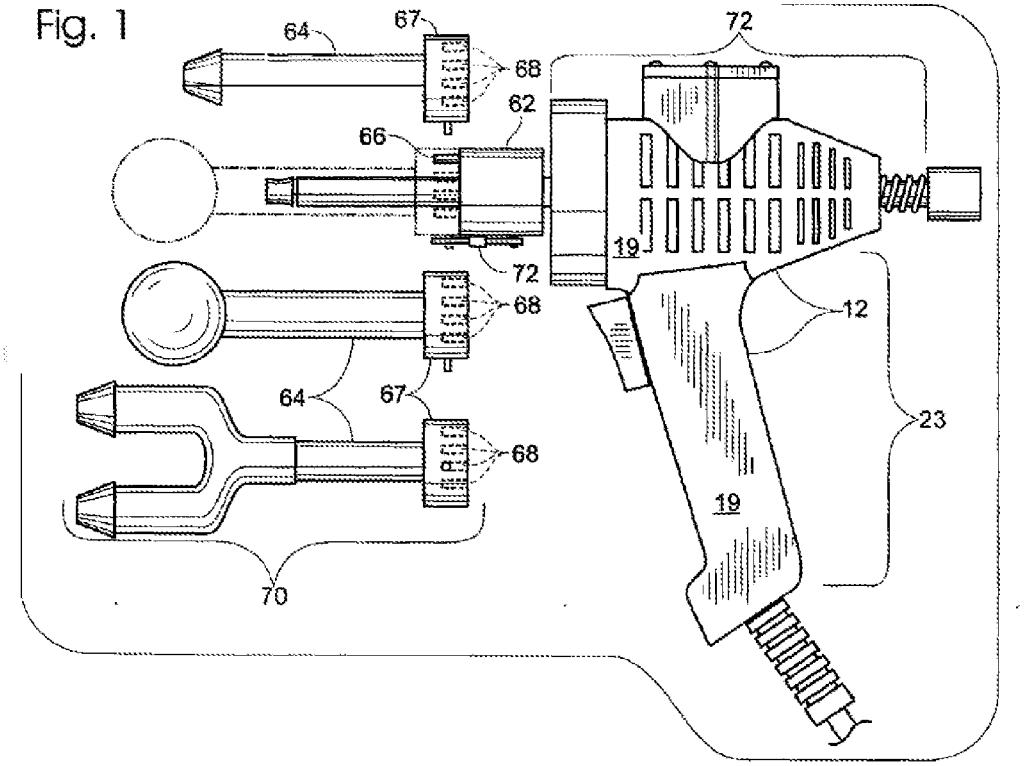
The Office Action at page 6 states that Meyer and Instructables fail to teach or suggest the "quick release connector" as recited in claim 1, instead relying on Miller as teaching this feature. Miller as referenced at [0026] describes (emphasis added):

Petitioner Therabody Ex-1004, 2371

> **The coupler is comprised of a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64.** The collar 62 is mounted on the reciprocating rod 16 offset from the forward end 18 so as to permit the sleeve element 64 of the impact head to receive a portion of the forward end 18 of the reciprocating rod 16 for stability. **The sleeve base 67 abuts the collar 67 and the collar pin 66 is received into one of a number of defined pin notches 68 on the sleeve base 67 so as to prevent rotation of the impact head 70. A simple retaining hook or loop 72 or similar means retains the impact head 70.**

Miller's coupler includes "a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64." A Person of Ordinary Skill in the Art would understand that Miller's head must be aligned in one orientation, such that the pin on the bottom of the collar 62 mates with hook or loop 72 to retain the impact head 70, as shown in Figure 1 below. Furthermore, the horizontal pin must be aligned and inserted into a pin notch 68 in order to retain the impact head.

Fig. 1



However, Applicant respectfully submits that Miller fails to teach or suggest that "the quick release connector is configured to connect the first massaging head **while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation**

Petitioner Therabody Ex-1004, 2372

stroke length at the first speed" as presently recited in amended claim 1. As recognized by Applicant, such a configuration of the quick release connector enables quick removal and replacement of a massaging head with the apparatus (Specification as-filed at [0050]-[0051]). Miller is silent regarding the ability for its impact heads to be connected to the coupler during reciprocation of the reciprocating rod.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Miller with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3 and 5-26 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1-3 and 5-26 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

> providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector, wherein the quick release connector is configured to connect the first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

VI. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, Tsai, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Miller) with respect to any of the independent claims, and the Office Action does not allege otherwise.

Petitioner Therabody Ex-1004, 2373

CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course.

If the Examiner believes that a telephone conversation with Applicant's agent would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated:

Respectfully submitted,

Electronic signature:
Sanjeet K. Dutta
Registration No.: 46,145
GOODWIN PROCTER LLP
100 Northern Avenue
IP DOCKETING DEPT./7TH FL
Boston, Massachusetts 02210
(617) 570-1000
Attorney For Applicant

DRAFT

Petitioner Therabody Ex-1004, 2374

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	**03/29/2023 02:38:54 PM ET**	**HYP-034C3**

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Tammy Franklin
PATENT CENTER #	61833494	FILING DATE	02/25/2022
CUSTOMER #	162143	FIRST NAMED INVENTOR	Philip C. Danby
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Sanjeet Dutta

Documents

TOTAL DOCUMENTS: 4

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
HYP_034C3_Response_to_Final_Office_Action.pdf		11	-	321 KB
HYP_034C3_Response_to_Final_Office_Action-A.NE.pdf	(1-1)	1	Response After Final Action	83 KB
HYP_034C3_Response_to_Final_Office_Action-CLM.pdf	(2-5)	4	Claims	90 KB
HYP_034C3_Response_to_Final_Office_Action-REM.pdf	(6-11)	6	Applicant Arguments/Remarks Made in an Amendment	306 KB

HYP_034C3_Request_for_Continued_Examination.pdf	3	Request for Continued Examination (RCE)	1628 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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HYP_034C3_Response_to_Final_Office_Action-A.NE.pdf	62C99CC4E74070E4A32FD4C57343EC01FD51F90279AED43AE5959DE3C6FAF1562299D5E19D3CDCD5C8E8B39691C6FE42460F817DD0A1C593B42F59C268167E90
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	17681367	Filing Date	2022-02-25	Docket Number (if applicable)	HYP-034C3	Art Unit	3785
First Named Inventor	Philip C. Danby			Examiner Name	T. A. Stanis		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 07-1700

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Sanjeet K. Dutta/	Date (YYYY-MM-DD)	2023-03-29
Name	Sanjeet K. Dutta	Registration Number	46145

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the informatio solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record ma be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

REMARKS

Administrative Overview

Prior to the Office Action of March 7, 2023 (the "Office Action"), claims 1-3 and 5-29 were pending. In the Office Action:

- claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer ("Meyer") in view of Instructables.com ("Instructables"), and further in view of U.S. Publication No. 2003/0195443 to Miller ("Miller");
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, Miller, Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai"); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Miller, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich").

In the present Amendment, claims 1 and 27 are amended without prejudice or disclaimer. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

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Interview Summary

Applicant thanks the Examiner for his time and courtesy during interviews conducted with the Applicant's representative on March 21, 2023 and March 27, 2023. The participants in the interviews were Examiner Stanis and Applicant's representative, Sanjeet K. Dutta (Reg. No. 46,145). During the interviews, the participants discussed the rejections of the claims under 35 U.S.C. § 103. The participants also discussed potential amendments to independent claims 1 and 27. Examiner Stanis indicated that the potential amendments overcome the rejection of record to independent claims 1 and 27. Accordingly, Applicant has amended independent claims 1 and 27 in the manner discussed during the interviews. The following remarks further summarize and reflect the points discussed during the interviews. Accordingly, this paper is intended to constitute a proper recordation of each of the interviews in accordance with MPEP § 713.04, and also to provide a full response to the Office Action.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, and 26-29 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Miller. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and Miller and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables, Miller, Harris, and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Miller and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

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> a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

Meyer is directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes "a blade holder 16 and an adjacent foot plate 18" and "[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16" (*Id.* at col. 1, lines 1-2 and 33-34). Instructables is directed to modifying a jigsaw to form a massager (Instructables at pages 1-2).

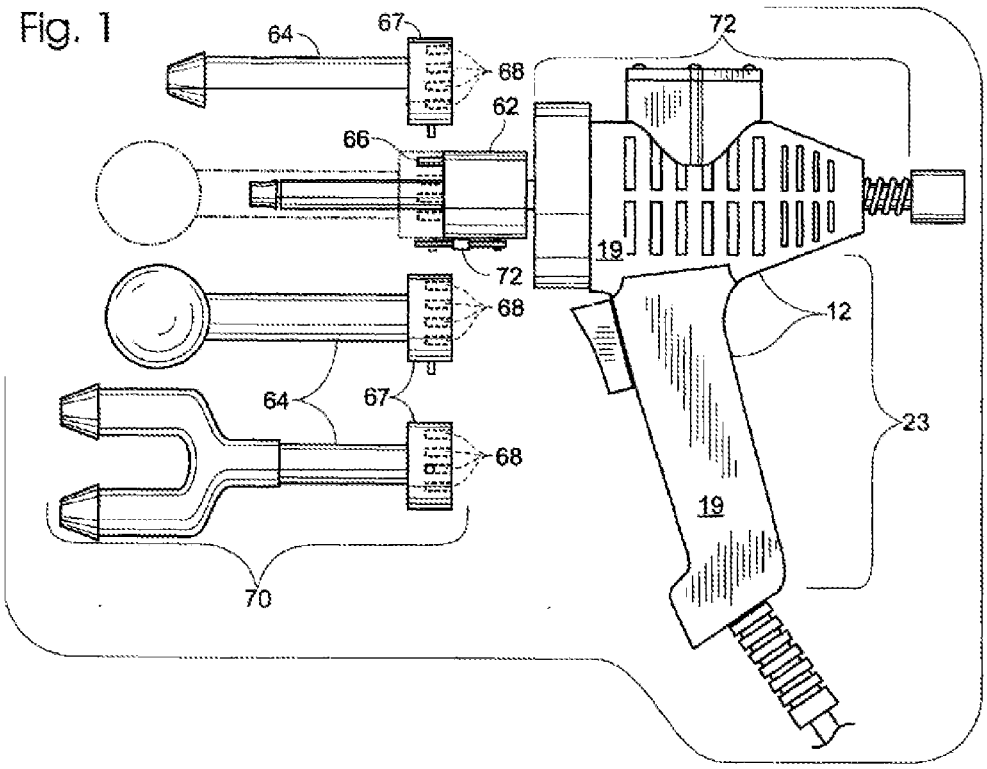
The Office Action at page 6 states that Meyer and Instructables fail to teach or suggest the "quick release connector" as recited in claim 1, instead relying on Miller as teaching this feature. Miller as referenced at [0026] describes (emphasis added):

> **The coupler is comprised of a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64.** The collar 62 is mounted on the reciprocating rod 16 offset from the forward end 18 so as to permit the sleeve element 64 of the impact head to receive a portion of the forward end 18 of the reciprocating rod 16 for stability. **The sleeve base 67 abuts the collar 67 and the collar pin 66 is received into one of a number of defined pin notches 68 on the sleeve base 67 so as to prevent rotation of the impact head 70. A simple retaining hook or loop 72 or similar means retains the impact head 70.**

Miller's coupler includes "a collar 62 affixed to the reciprocating rod 16, a collar pin 66 set on the collar 62 and pin notches 68 set in a sleeve base 67 of the sleeve element 64." A Person of Ordinary Skill in the Art would understand that Miller's head must be aligned in one orientation, such that the pin on the bottom of the collar 62 mates with hook or loop 72 to retain the impact head 70, as shown in Figure 1 below. Furthermore, the horizontal pin must be aligned and inserted into a pin notch 68 in order to retain the impact head.

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Fig. 1



However, Applicant respectfully submits that Miller fails to teach or suggest that "the quick release connector is configured to connect a first massaging head **while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed**" as presently recited in amended claim 1. As recognized by Applicant, such a configuration of the quick release connector enables quick removal and replacement of a massaging head with the apparatus (Specification as-filed at [0050]-[0051]). Miller is silent regarding the ability for its impact heads to be connected to the coupler during reciprocation of the reciprocating rod.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Miller with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3 and 5-26 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1-3 and 5-26 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

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Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

> wherein the quick release connector is configured to connect a first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

VI. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, Tsai, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Miller) with respect to any of the independent claims, and the Office Action does not allege otherwise.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course. Applicant submits herewith a Request for Continued Examination and the associated fees required for entry and consideration of this paper. Applicant believes that no additional fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

If the Examiner believes that a telephone conversation with Applicant's attorney would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: March 29, 2023

Respectfully submitted,

Electronic signature: /Sanjeet K. Dutta/
Sanjeet K. Dutta
Registration No.: 46,145
GOODWIN PROCTER LLP
100 Northern Avenue
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Boston, Massachusetts 02210
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Attorney For Applicant

Petitioner Therabody Ex-1004, 2386

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 Confirmation No.: 8567

Filed: February 25, 2022 Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on March 7, 2023. Please enter the Amendment and Response to Final Office Action filed on March 21, 2023, and then amend the above-identified U.S. patent application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

Petitioner Therabody Ex-1004, 2387

UNITED STATES
PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313 - 1450
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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	03/29/2023 02:38:54 PM ET	HYP-034C3

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Tammy Franklin
PATENT CENTER #	61833494	AUTHORIZED BY	Sanjeet Dutta
CUSTOMER #	162143	FILING DATE	02/25/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Philip C. Danby

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1146	E20233SE39428024	Tammy Franklin

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
071700	37 CFR 1.16 (National application filing, search, and examination fees); 37 CFR 1.17 (Patent application and reexamination processing fees); 37 CFR 1.19 (Document supply fees); 37 CFR 1.20 (Post Issuance fees); 37 CFR 1.21 (Miscellaneous fees and charges)

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1801	REQUEST FOR CONTINUED EXAMINATION (RCE) - 1ST REQUEST (SEE 37 CFR 1.114)	1360.00	1	1360.00

TOTAL AMOUNT:	$1,360.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a housing;

a handle on the housing;

a piston having a proximal end and a distal end;

a motor within the housing operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed;

a cam having a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length; and

a quick release connector at the distal end of the piston~~; and~~

~~a first massaging head releasably coupled to the distal end of the piston via the quick release connector~~, wherein the quick release connector is configured to connect [[the]] a first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

2. (Original) The apparatus of claim 1, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

3. (Previously Presented) The apparatus of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

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5. (Original) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate between the minimum reciprocation stroke length and the maximum reciprocation stroke length at a second speed.

6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of 600 strokes per minute to 3600 strokes per minute.

9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Original) The apparatus of claim 9, wherein the control panel has a display device.

12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.

13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

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15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Original) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the cam are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

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25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.

27. (Currently Amended) A method of assembling an apparatus, the method comprising:

positioning a motor within a housing, wherein a handle is on the housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed, wherein a distal end of the piston has a quick release connector; and

positioning a cam within the housing, wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length~~; and~~

~~providing a first massaging head configured to releasably couple to the distal end of the piston via the quick release connector~~, wherein the quick release connector is configured to connect [[the]] a first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

28. (Original) The method of claim 27, wherein the maximum reciprocation stroke length corresponds to the distal end of the piston being positioned furthest from the housing.

29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/681,367	Filing Date 02/25/2022	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	03/29/2023							
	Total (37 CFR 1.16(i))	* 28	Minus	** 28	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT								
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/VIOLA D ROGERS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Notice of References Cited	Application/Control No. 17/681,367	Applicant(s)/Patent Under Reexamination Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20070150004-A1	06-2007	Colloca; Christopher J.	A61H1/008	606/237
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Petitioner Therabody Ex-1004, 2395

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/31/2023	02/28/2023	05/09/2023						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	-	-						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	✓	✓						
	11	✓	✓	✓						
	12	✓	✓	✓						
	13	✓	✓	✓						
	14	✓	✓	✓						
	15	✓	✓	✓						
	16	✓	✓	✓						
	17	✓	✓	✓						
	18	✓	✓	✓						
	19	✓	✓	✓						
	20	✓	✓	✓						
	21	✓	✓	✓						
	22	✓	✓	✓						
	23	✓	✓	✓						
	24	✓	✓	✓						
	25	✓	✓	✓						
	26	✓	✓	✓						
	27	✓	✓	✓						
	28	✓	✓	✓						
	29	✓	✓	✓						
	30	✓	-	-						

Petitioner Therabody Ex-1004, 2396

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 05/15/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
05/15/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
TFRANKLIN@GOODWINLAW.COM
US-PatentBos@goodwinlaw.com

Petitioner Therabody Ex-1004, 2397

Office Action Summary	Application No. 17/681,367	Applicant(s) Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 3/29/2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-3 and 5-29 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-3 and 5-29 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. This office action is in response to the Request for Continued Examination (RCE) and amendment filed on 3/29/2023. As directed by the amendment, claims 1 and 27 have been amended, claims 4 and 30 have been canceled, and no claims have been added. Thus, claims 1-3 and 5-29 are pending in the application.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 3/21/2023 and 3/29/2023 have been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

4. Claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer et al (5,134,777) in view of Instructables.com (Non-Patent Literature, hereby referred to as "Instructables"), and further in view of Colloca et al (2007/0150004).

Regarding claim 1, Meyer discloses an apparatus (Fig. 2, tool 10) comprising: a housing (Fig. 2, housing 12); a handle on the housing (Fig. 2, handle 14); a piston having a proximal end and a distal end (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with end formation 44a. Fig. 2 depicts a distal end of ram 44 at its connection to blade holder 16); a motor within the housing operatively connected to the proximal end of the piston (Col. 2, ln. 67 discloses an electric motor not shown in the drawings. This electric motor is connected to the ram 44 via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the "minimum reciprocation stroke length" configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the "maximum reciprocation stroke length" configuration. See col. 4, ln. 23-58. The motor would be running at some "first" speed); a cam (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam) having a first rotational position that controls a

predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6c depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7c depict the actuator plate 50 and actuator lever 50c in a second rotational position for a maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths); and a connection mechanism at the distal end of the piston (Fig. 2 blade holder 16).

Meyer does not disclose a first massaging head releasably coupled to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a

power tool that a user may already have. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

The modified apparatus of Meyer does not have the connection mechanism as a "quick release connector," wherein the quick release connector is configured to connect a first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

However, Colloca teaches a reciprocating massage device comprising a reciprocating piston (Fig. 9, plunger rod 151) and interchangeable impact heads (Fig. 2, impact head 70 may be removed and replaced with a different impact head. Figs. 14A-14D depict different varieties of impact heads). The connection between the impact head and the massage device is a "quick connection" ([0056] discloses that the impact coupler 78 of the impact head 70 forms a "press fit" with the thrust nose piece 130 of the housing 12). This quick, press fit connection would allow the user to quickly swap out impact heads, even during reciprocation of the piston.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Colloca to allow a user to select different types of massage heads as dictated by the user's therapy needs. The modified device would allow the user to connect or remove a massaging head during movement of the piston. While the references do not explicitly teach a method step of connecting a massaging head during movement of the piston, claim 1 is a *device* claim in which the quick release connector "is configured" to connect a first massaging head while the

piston moves. The quick release connector of Colloca operates in a similar manner as the applicant's quick release connector (see Applicant's Figs. 6-6B), and would similarly be "configured" to allow connection of a massaging head during movement of the piston.

Regarding claim 2, the modified apparatus of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7c depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 3, the modified device of Meyer has a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector (Colloca, Figs. 14A-14D, depict different varieties of impact heads).

Regarding claim 23, the modified apparatus of Meyer has the housing comprising a cavity, wherein the motor and the cam are positioned within the cavity (Meyer, Fig. 2, the housing 12 forms a cavity for holding the (non-depicted) motor and cam mechanism for adjusting the stroke length of the ram 44).

Regarding claim 26, the modified apparatus of Meyer has the motor positioned within the housing opposite the handle (Fig. 2, the housing portion 12a that contains the motor is located opposite from the handle 14, as the housing portion 12a is located on the left side of the housing and the handle 14 is located on the right side of the housing, as depicted).

Regarding claim 27, Meyer discloses a method of assembling an apparatus (Fig. 2, tool 10 is assembled), the method comprising: positioning a motor within a housing

(Fig. 2, housing 12 has a motor within in section 12a), wherein a handle on the housing (Fig. 2, handle 14); operatively connecting the motor to a proximal end of a piston (Figs. 2-3, ram 44. Fig. 3 depicts a proximal end of ram 44 with end formation 44a that is connected to the motor via output shaft 20, drive shaft 26, and pin 40), wherein the motor is configured to cause the piston to reciprocate between a minimum reciprocation stroke length and a maximum reciprocation stroke length at a first speed (Figs. 6a-6c depict the drive mechanism of the ram 44 in the "minimum reciprocation stroke length" configuration. Figs. 7a-7c depict the drive mechanism of the ram 44 in the "maximum reciprocation stroke length" configuration. See col. 4, ln. 23-58. The motor would be running at some "first" speed), wherein a distal end of the piston has a connection mechanism (Fig. 2 blade holder 16); positioning a cam within the housing (Figs. 6a-7c, actuator plate 50, ring gear 42, and pin 40 form a cam that is located within housing 12), wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length (Figs. 6a-6c depict the actuator plate 50 and actuator lever 50c in a first rotational position for a minimum stroke length), a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length (Figs. 7a-7c depict the actuator plate 50 and actuator lever 50c in a second rotational position for a maximum stroke length), and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length (Col. 4, ln. 45-54, discloses positioning the arm 50c in different intermediate positions to cause the pin 40 to move through intermediate elliptical paths).

Meyer does not disclose providing a first massaging head configured to releasably couple to the distal end of the piston via the connection mechanism.

However, Instructables teaches a method of turning a power jigsaw into a reciprocating massager, wherein a first massaging head is releasably coupled to the distal end of a reciprocating piston of the jigsaw via a connection mechanism (Page 2 depicts a picture of a key and a rubber foot turned into a "massaging head," wherein the massaging head is inserted into the chuck of the jigsaw).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to turn the saw of Meyer into a percussive massager by placing a removable massaging head into the connection mechanism as taught by Instructables to create an inexpensive percussive massager based on a power tool that a user may already have. Instructables demonstrates that the same reciprocating structure of a power saw can be used as a massager.

The modified apparatus of Meyer does not have the connection mechanism as a "quick release connector," wherein the quick release connector is configured to connect a first massaging head while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length at the first speed.

However, Colloca teaches a reciprocating massage device comprising a reciprocating piston (Fig. 9, plunger rod 151) and interchangeable impact heads (Fig. 2, impact head 70 may be removed and replaced with a different impact head. Figs. 14A-14D depict different varieties of impact heads). The connection between the impact head and the massage device is a "quick connection" ([0056] discloses that the impact coupler 78 of the impact head 70 forms a "press fit" with the thrust nose piece 130 of the

housing 12). This quick, press fit connection would allow the user to quickly swap out impact heads, even during reciprocation of the piston.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Colloca to allow a user to select different types of massage heads as dictated by the user's therapy needs. The modified device would allow the user to connect or remove a massaging head during movement of the piston. While the references do not explicitly teach a method step of connecting a massaging head during movement of the piston, claim 1 is a *method of assembling an apparatus* claim in which the quick release connector "is configured" to connect a first massaging head while the piston moves. The quick release connector of Colloca operates in a similar manner as the applicant's quick release connector (see Applicant's Figs. 6-6B), and would similarly be "configured" to allow connection of a massaging head during movement of the piston.

Regarding claim 28, the modified method of Meyer has the maximum reciprocation stroke length corresponding to the distal end of the piston being positioned furthest from the housing (Meyer, Figs. 7a-7c depict the maximum reciprocation stroke length configuration. In this configuration, the ram 44 will be positioned at its furthest position from the housing when it reaches the furthest point in its stroke cycle).

Regarding claim 29, the modified method of Meyer has a second massaging head as configured to releasably couple to the distal end of the piston via the quick release connector (Colloca, Figs. 14A-14D, depict different varieties of impact heads).

5. Claims 5 and 9-15 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Colloca, as applied to claim 1 above, and further in view of Harris et al (6,432,072).

Regarding claim 5, the modified apparatus of Meyer has the motor as configured to cause the piston to reciprocated between the minimum reciprocation length and the maximum reciprocation length (Meyer, col. 4, ln. 44-58).

The modified apparatus of Meyer does not have the motor and piston operating at a second speed.

However, Harris teaches a hand-held percussive massager (Fig. 1, massager 50) comprising a control panel (Fig. 1, control panel 5) comprising a speed setting control button that allows the user to percuss the massager at different speeds (Fig. 1, speed control button 5b; see col. 2, ln. 49-57).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel with a speed control button and other control settings as taught by Harris to allow the user to select a desired speed of massage while using the device.

Regarding claim 9, the modified apparatus of Meyer (as modified in the rejection of claim 5) has a control panel positioned on an exterior of the housing (Harris, Figs. 1-2, control panel 5).

Regarding claim 10, the modified apparatus of Meyer has the control panel as configured to display one or more visual indicators (Harris, Figs. 1-2, LED speed indicator 5C).

Regarding claim 11, the modified apparatus of Meyer has the control panel having a display device (Harris, Figs. 1-2, LED speed indicator 5C is a type of display device).

Regarding claim 12, the modified apparatus of Meyer has the control panel having one or more inputs (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 13, the modified apparatus of Meyer has the one or more inputs comprising a button (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 14, the modified apparatus of Meyer has the first speed and the second speed as each selectable via the one or more inputs (Harris, Figs. 1-2, speed setting control button 5b would allow for selection of the first speed, second speed, and other speeds).

Regarding claim 15, the modified apparatus of Meyer has a first selection of the one or more inputs configured to cause the apparatus to power on and a second selection of the one or more inputs configured to cause the apparatus to power off (Figs. 1-2, power control button 5a allows for “power on” upon a first pressing of the button and a “power off” upon a second pressing of the button).

6. Claims 6-8 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables, Colloca, and Harris, as applied to claim 5 above, and further in view of Pivaroff (6,682,496).

Regarding claims 6-8, the modified apparatus of Meyer does not disclose the first and second speeds.

However, Pivaroff teaches that an appropriate motor speed for a deep muscle stimulator device is between 2000 to 3600 per minute (Col. 3, ln. 44-46).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the speed(s) of the modified apparatus of Meyer to be between 2000 and 3600 as taught by Pivaroff, as such a stroke speed is appropriate for deep muscle tissue stimulation.

7. Claims 16 and 24-25 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Colloca, as applied to claims 1 and 23 above, and further in view of Tsai et al (2009/0270915).

Regarding claim 16, the modified apparatus of Meyer does not have an audible feedback device configured to generate one or more audible signals.

However, Tsai teaches a handheld reciprocating massager (Fig. 1, adjuster instrument 100) comprising an audible feedback device to alert a user to the settings of the device, such as impulse speed ([0048] discloses an "annunciation structure" that provides feedback to the operator about device settings, such as "impulse frequency and amplitude." [0048] states that the annunciation structure may be an LCD display or an audio annunciator).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a control panel that allows the user to changes operational settings of the device while also receiving audible feedback about device settings as taught by Tsai to allow a user to confirm the device's operational settings in a convenient manner (i.e. audibly).

Regarding claim 24, the modified apparatus of Meyer does not have a thermally conductive motor housing positioned within the cavity proximal to the motor.

However, Tsai additionally teaches the handheld reciprocating massager comprising a motor surrounded by a housing and located within a cavity of the massager housing (Fig. 10, DC motor 114 has its components surrounded by some type of housing. DC motor 114 is located within a cavity of the device housing 110), wherein the housing is thermally conductive ([0038] discloses that the massager may have a heat dissipation structure 136 for dissipating heat within the instrument 100. For heat dissipation structure 136 to dissipate heat from the DC motor 114, the motor housing must be made from thermally conductive material).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the motor of the modified apparatus of Meyer to be located within a thermally conductive motor housing and located near a heat dissipating structure as taught by Tsai to help prevent the motor from overheating and the device from becoming hot to hold by the user.

Regarding claim 25, the modified apparatus of Meyer has a heat sink positioned proximal to the thermally conductive motor housing (Tsai, [0038], heat dissipation structure 136 is located proximal to the motor and motor housing 114).

8. Claims 17-22 are rejected under 35 U.S.C. 103 as being unpatentable over Meyer in view of Instructables and Colloca, as applied to claim 1 above, and further in view of Ehrenreich et al (2013/0102937).

Regarding claim 17, the modified apparatus of Meyer does not have a controller having a processor, a memory, and a data connection.

However, Ehrenreich teaches a massaging device (Figs. 1 and 5) comprising a controller (Fig. 5, circuit boards 500 and 550 serve as a controller for the massaging device) having a processor, a memory, and a data connection ([0100] discloses the controller having a processor 551, a memory 552, and a communication port 554).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Meyer to have a controller with a processor, a memory, and a data connection as taught by Ehrenreich to allow the device to store massaging programs, update the massaging programs, and send/receive data from an outside source to track and usage of the device and update the programs of the device.

Regarding claim 18, the modified apparatus of Meyer has the data connection as a wireless data connection (Ehrenreich, [0101], discloses that the second circuit board 550 may include a variety of different wireless communication protocols).

Regarding claim 19, the modified apparatus of Meyer has the controller as configured to send, by the data connection, first data to an external computing device (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is on. [0111] discloses transmitting data to a remote computer for analyzing patient compliance)

Regarding claim 20, the modified apparatus of Meyer has the first data as indicative of usage of the apparatus for providing a massage (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is operating).

Regarding claim 21, the modified apparatus of Meyer has the controller configured to receive, by the data connection, second data from an external computing

device (Ehrenreich, [0156], discloses that a personal computer, smartphone, or table could be used to remotely program the massage device).

Regarding claim 22, the modified apparatus of Meyer has the second data indicative of a massage program having a massage duration (Ehrenreich, [0156], discloses that the customization in programming can including the duration of therapy).

Response to Arguments

9. Applicant's arguments filed on 3/29/2023 on Pages 7-10 with respect to claims 1 and 27 and regarding Miller failing to teach that "the quick release connector is configured to connect a first massaging head **while the piston moves between the minimum reciprocation stroke length and the maximum reciprocation stroke length**" have been considered, but are moot in view of the new grounds of rejection presented above in this office action. While Miller may arguably have taught a connection mechanism that was too cumbersome to connect a massage head to a piston *during movement of the piston*, Colloca teaches a much simpler connection mechanism that is "configured to" connect a massaging head to a reciprocating piston during movement of the piston. The connection mechanism of Colloca is very similar to the connection mechanism of the applicant depicted in applicant's Figs. 6A-6B.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A STANIS whose telephone number is (571)272-5139. The examiner can normally be reached on Mon - Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L91	13	a61h$.cpc. AND ((exchang$3 OR interchang$4) SAME (during OR while) near3 (reciprocat$3 OR vibrat$3))	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/08 11:13 AM
L92	539	a61h$.cpc. AND ((connect$3 OR attach$3) SAME (during OR while) near3 (reciprocat$3 OR vibrat$3))	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/08 11:14 AM
L93	96	a61h$.cpc. AND reciprocat$ AND ((interchang$5 OR replac$5) near3 head)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 12:56 PM
L94	306	massag$3 AND reciprocat$ AND ((interchang$5 OR replac$5) near3 (applicator OR head))	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 01:19 PM
L95	89	a61h$.cpc. AND reciprocat$ AND ((interchang$5 OR replac$5) SAME magnet$6)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 01:29 PM
L96	40	a61h$.cpc. AND reciprocat$ AND ((interchang$5 OR replac$5) SAME magnet$6) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 01:29 PM
L97	83	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/09 01:54 PM

Petitioner Therabody Ex-1004, 2414

		4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2 OR US-6616621-B1 OR US-6432072-B1 OR US-5935089-A OR US-10314762-B1).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1 OR US-20140194900-A1 OR US-20160151238-A1 OR US-20120253245-A1 OR US-20020183668-A1 OR US-20020115947-A1 OR US-20060178715-A1 OR US-20070167888-A1 OR US-20050113724-A1 OR US-20070179414-A1 OR US-20130102937-A1 OR US-20140135875-A1 OR US-20140180181-A1 OR US-20080243039-A1 OR					

Petitioner Therabody Ex-1004, 2415

		US-20130060176-A1 OR US-20190262607-A1 OR US-20210077340-A1 OR US-20050113870-A1 OR US-20150305969-A1 OR US-20040049137-A1 OR US-20060135319-A1 OR US-20170304144-A1 OR US-20180280675-A1 OR US-20130158547-A1 OR US-20140371690-A1 OR US-20150005682-A1 OR US-20150182078-A1 OR US-20150182290-A1 OR US-20170172837-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A).did. AND USOC.dbnm.)					
L98	23	L97 AND magnet$7	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/05/09 01:54 PM
L99	3	("4549535" OR "5662122" OR "7144417").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 02:26 PM
L100	2	("20090270915" OR "20060270956").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 02:36 PM
L101	6	("5134777" OR "20030195443" OR "6432072" OR "6682496" OR "20090270915" OR "20130102937").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 02:45 PM
L102	775	a61h23/0254.cpc. AND (interchang$5 OR replace$4 OR remov$5)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 03:30 PM
L103	7947	a61h2201/0107,0153,0157,1215,1418,149,166	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 03:31 PM

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		4,5005,501,5015,5035,5038,5097.cpc. AND (interchang$5 OR replace$4 OR remov$5)					
L104	1244	a61h2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097.cpc. AND (interchang$5 OR replace$4 OR remov$5) AND (percuss$3 OR reciprocat$3)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/09 03:31 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61H23/0254	01/31/2023	TS
A61H2201/ 0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,509 7	01/31/2023	TS
Updated Above Search	02/28/2023	TS
Updated Above Search	05/09/2023	TS

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor Search in PE2E and PALM	01/31/2023	TS
See attached PE2E search	01/31/2023	TS
Updated Search; see attached PE2E search	02/28/2023	TS
Updated Search; see attached PE2E search	05/09/2023	TS

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2418

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2419

UNITED STATES
PATENT AND TRADEMARK OFFICE

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	**06/07/2023 06:29:05 PM ET**	**HYP-034C3**

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Tammy Franklin
PATENT CENTER #	62227513	FILING DATE	02/25/2022
CUSTOMER #	162143	FIRST NAMED INVENTOR	Philip C. Danby
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Sanjeet Dutta

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
HYP_034C3_Response_to_Non_Final_Office_Action.pdf		14	-	181 KB
HYP_034C3_Response_to_Non_Final_Office_Action-A...pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	86 KB
HYP_034C3_Response_to_Non_Final_Office_Action-CLM.pdf	(2-5)	4	Claims	93 KB
HYP_034C3_Response_to_Non_Final_Office_Action-REM.pdf	(6-14)	9	Applicant Arguments/Remarks Made in an Amendment	166 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
HYP_034C3_Response_to_Non_Final_Office_Action.pdf	6364F9DB0C7155F7B14582FCD0152997C3A379FAC77314AD92CCAB6A5F6E2BFE97DD94059CF7D47D6D1CED1964C5617C1E036CD9A695E06D19947D07FE0049AB
HYP_034C3_Response_to_Non_Final_Office_Action-A....pdf	E5D8E6BC055E7FAAE38D101413107E163DE2568CEFFCA6D0C3EBB72211311FEC78F0DDAAA98E26A28C5668EB55EBDC2E9A4B23D3D5C37B11B4973F1605A1D963
HYP_034C3_Response_to_Non_Final_Office_Action-CLM.pdf	45DDC35E8751D4547B045B63C4FEB814EDA9678B5512D1D3A51AF80F2D832CC7E688507DBF32D7FE377F78BD31F4839413F3080CD7D896A7238F65619E1E13B0
HYP_034C3_Response_to_Non_Final_Office_Action-REM.pdf	F7DCB815BD5FA74F6917B782248804518ACCB85BC41EA6E0EE197B911C35ABBFFF42B68663AECD8A318ED07EFFB1567A2A8A5FE56E2576522EC69B23145E042F

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 Confirmation No.: 8567

Filed: February 25, 2022 Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.111

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on May 15, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

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UNITED STATES
PATENT AND TRADEMARK OFFICE

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	06/07/2023 06:29:05 PM ET	HYP-034C3

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Tammy Franklin
PATENT CENTER #	62227513	AUTHORIZED BY	Sanjeet Dutta
CUSTOMER #	162143	FILING DATE	02/25/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Philip C. Danby

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1146	E202367I30169205	Tammy Franklin

PRE-AUTHORIZED ACCOUNT	PRE-AUTHORIZED CATEGORY
071700	37 CFR 1.16 (National application filing, search, and examination fees); 37 CFR 1.17 (Patent application and reexamination processing fees); 37 CFR 1.19 (Document supply fees); 37 CFR 1.20 (Post Issuance fees); 37 CFR 1.21 (Miscellaneous fees and charges)

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1202	EACH CLAIM IN EXCESS OF 20	100.00	4	400.00
			TOTAL AMOUNT:	$400.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d)

and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

32. (New) The apparatus of claim 31, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

33. (New) The apparatus of claim 32, wherein the motor is directly connected to the flywheel, and
wherein the crank pin is directly connected to the flywheel.

34. (New) The apparatus of claim 32, wherein the handle is on an opposite side of the piston with respect to the motor.

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REMARKS

Administrative Overview

Prior to the Office Action of May 15, 2023 (the "Office Action"), claims 1-3 and 5-29 were pending. In the Office Action:

- claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer ("Meyer") in view of Instructables.com ("Instructables"), and further in view of U.S. Publication No. 2007/0150004 to Colloca ("Colloca");
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Colloca, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, Colloca, Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Colloca, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai"); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Colloca, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich").

In the present Amendment, claims 1, 5, 23, and 27 are amended without prejudice or disclaimer. Claims 2 and 28 have been cancelled. New claims 31-34 have been added. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

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Interview Summary

Applicant thanks Examiner Stanis for his time and courtesy during the interview conducted with the Applicant's representative on June 7, 2023. The participants in the interviews were Examiner Stanis and Applicant's representative, Sanjeet K. Dutta (Reg. No. 46,145). During the interview, the participants discussed the rejections of the claims under 35 U.S.C. § 103. The participants also discussed potential amendments to independent claims 1 and 27. Examiner Stanis indicated that the potential amendments overcome the rejection of record to independent claims 1 and 27. Accordingly, Applicant has amended independent claims 1 and 27 in the manner discussed during the interviews. The following remarks further summarize and reflect the points discussed during the interviews. Accordingly, this paper is intended to constitute a proper recordation of each of the interviews in accordance with MPEP § 713.04, and also to provide a full response to the Office Action.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, and 26-29 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Colloca. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and Colloca and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables, Colloca, Harris, and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Colloca and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Colloca and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

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a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head while the piston moves the predetermined stroke length at the first speed.

Meyer is directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes "a blade holder 16 and an adjacent foot plate 18" and "[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16" (*Id.* at col. 1, lines 1-2 and 33-34). Instructables is directed to modifying a jigsaw to form a massager (Instructables at pages 1-2). Colloca is directed to a chiropractic adjusting instrument including a solenoid for imparting impulse energy to a thrust nose piece (Colloca at Abstract).

With respect to independent claim 1, the Office Action at page 5 states that Meyer and Instructables fail to teach or suggest the "quick release connector" as recited in claim 1, instead relying on Colloca as teaching this feature. Specifically, the Office Action at pages 5-6 states (emphasis added):

> However, Colloca teaches a reciprocating massage device comprising a reciprocating piston (Fig. 9, plunger rod 151) and interchangeable impact heads (Fig. 2, impact head 70 may be removed and replaced with a different impact head. Figs. 14A- 14D depict different varieties of impact heads). **The connection between the impact head and the massage device is a "quick connection" ([0056] discloses that the impact coupler 78 of the impact head 70 forms a "press fit" with the thrust nose piece 130 of the housing 12). This quick, press fit connection would allow the user to quickly swap out impact heads, even during reciprocation of the piston.**
>
> Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston **via a quick release connector as taught by Colloca** to allow a user to select different types of massage heads as dictated by the user's therapy needs. **The modified device would allow the user to connect or remove a massaging head during movement of the piston. While the references do not explicitly teach a method step of connecting a massaging head during movement of the piston, claim 1 is a *device* claim in which the quick release connector "is configured" to connect a first massaging head while the piston moves.** The quick release connector of Colloca operates in a similar manner as the applicant's quick release connector (see Applicant's Figs. 6-6B), and would similarly be "configured" to allow connection of a massaging head during movement of the piston.

Applicant respectfully submits that the Office Action fails to provide proper evidence that a person of ordinary skill in the art (POSITA) would have combined the isolated pieces of

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Meyer, Instructables, and Colloca in the manner taught by the present disclosure. Colloca does not disclose a quick release connector that could be used during movement of the piston as alleged by the Examiner. The Office Action has not presented a *prima facie* case of unpatentability of the claims under 35 U.S.C. § 103 based on a proper combination of Meyer, Instructables, and Colloca. There is neither a teaching in Colloca nor a motivation to combine Meyer and Instructables with Colloca in the manner provided in the Office Action. A POSITA would not understand from Colloca that "[t]he modified device would allow the user to connect or remove a massaging head during movement of the piston" as alleged in the Office Action.

Upon conceding that "the modified apparatus of Meyer does not have the connection mechanism as a 'quick release connector,'" the Office Action references Colloca in an attempt to reconstruct the present disclosure (*Id.*) However, to "design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Colloca" as suggested by the Office Action, a POSITA would be required to ignore Colloca's teachings away from a quick release connector configured to "connect a first massaging head while the piston moves to the predetermined stroke length at the first speed" as claimed. Rather, a POSITA would understand from a reading of Colloca as a whole that its impact heads should not and can not be connected during the pulsing of the chiropractic instrument. *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988) ("The full field of the invention must be considered … including that which might lead away from the claimed invention."); *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983) ("In its consideration of the prior art, however, the district court erred … in considering the references in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand.").

Colloca's device specifically requires "placing the impact head on a body or surface" for the chiropractic adjustment device to be active (Colloca at par. [0055]-[0056]). Colloca explains that the chiropractic adjusting instrument 10 can only be activated/triggered if an impact head is attached to the device and then electromechanically loaded such that it activates an internal safety switch. Colloca describes "a triggering system for triggering the pulse system 200", where "the trigger system includes a switch 310 activated by the preload switch plunger 150" (*Id.* at par. [0054]). The switch 310 described by Colloca "acts as an interlock or safety device **such that pulse system 200 can not be activated unless the switch 310 activated**" (*Id.*, emphasis added). To activate the switch:

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> there is a preload activation position such that the electromechanical drive mechanism 100 is compressed or preloaded (by placing the impact head on a body or surface, not shown) **so that the switch 310 is activated such that chiropractic adjusting instrument 10 may be fired by depressing the trigger 330**

(*Id.* at par. [0055], emphasis added). FIGs. 7 and 12 of Colloca further illustrate where the impact head must be connected and must be compressed to activate the switch 310 to allow the device to pulse.

A POSITA reading all of Colloca's disclosure would understand that it teaches that the impact head must be placed against a surface (thereby compressing the electromechanical drive mechanism) to activate and continue operating the chiropractic adjusting instrument. Colloca's impact head could not be connected to Colloca's thrust nose piece without stopping the chiropractic adjusting instrument 10 due to a lack of compression against the thrust nose piece. Accordingly, Colloca fails to teach or suggest and teaches away from a "quick release connector [that] is configured to connect a first massaging head **while the piston moves the predetermined stroke length at the first speed**" as presently recited in claim 1.

"Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation to do so**." (*See* MPEP at 2143.01, emphasis added). Further, "[i]t is improper to combine references where the references teach away from their combination." (*See* MPEP at 2145(X)(D)(2), *in re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). *In re Gurley* holds that "**[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant**." 27 F.3d 551, 553 (Fed. Cir. 1994). Here, a POSITA would understand from reading the entirety of Colloca that impact heads can not be replaced while the device is operating. Colloca's safety mechanism is divergent from the direction taken by the Applicant and recited in claim 1. *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) ("One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.").

Further, Colloca's device is chiropractic adjustment device that is not for massage heads, but uses a solenoid to create a pulse rate from 2 to 10 Hz for its *impact* heads. (Colloca at par. [0052].) A POSITA would understand that replacing an impact head while moving at that rate

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would risk the safety of the user. Thus, Applicant respectfully submits that a POSITA would not combine Colloca with Meyer and Instructables to achieve the apparatus of claim 1, as Colloca teaches away from the quick release connector recited in claim 1.

Applicant respectfully submits that the asserted combination of Meyer, Instructables, and Colloca alleged as teaching the limitations of independent claim 1 is a product of hindsight. A POSITA would not have understood Colloca to teach or suggest a quick release connector that is configured to connect a first massaging head **while the piston moves the predetermined stroke length at the first speed**. "Impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. "(*See* MPEP at 2142). Applicant respectfully submits that Meyer, Instructables, and Colloca, alone or in proper combination, fail to teach or suggest at least a "quick release connector [that] is configured to connect a first massaging head **while the piston moves the predetermined stroke length at the first speed**" as presently recited in claim 1.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Colloca to with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3, 5-26, and 31 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 2-3, 5-26, and 31 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

> wherein the quick release connector is configured to connect a first massaging head while the piston moves to the predetermined stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

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III. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, Tsai, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Colloca) with respect to any of the independent claims, and the Office Action does not allege otherwise.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course.

If the Examiner believes that a telephone conversation with Applicant's attorney would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: June 7, 2023

Respectfully submitted,

Electronic signature: /Sanjeet K. Dutta/
Sanjeet K. Dutta
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Attorney For Applicant

Petitioner Therabody Ex-1004, 2433

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a housing;

a handle ~~on the housing;~~

a piston having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate ~~between a minimum reciprocation stroke length and a maximum reciprocation stroke length~~ at a first speed;

a [[cam]] drive mechanism that controls ~~having a first rotational position that controls~~ a predetermined stroke length of the piston ~~to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length~~; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head while the piston moves ~~between the minimum reciprocation stroke length and the maximum reciprocation~~ the predetermined stroke length at the first speed.

2. (Cancelled)

3. (Previously Presented) The apparatus of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

5. (Currently Amended) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate ~~between the minimum reciprocation stroke length and~~ the ~~maximum reciprocation~~ the predetermined stroke length at a second speed.

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6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Original) The apparatus of claim 9, wherein the control panel has a display device.

12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.

13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

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17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Currently Amended) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism ~~cam~~ are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.

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27. (Currently Amended) A method of assembling an apparatus, the method comprising:

positioning a motor at least partially within a housing~~, wherein a handle is on the housing~~;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate ~~between a minimum reciprocation stroke length and a maximum reciprocation stroke length~~ at a first speed, wherein a distal end of the piston has a quick release connector; and

positioning a [[cam]] drive mechanism that controls a predetermined stroke length of the piston within the housing, ~~wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length~~ and, wherein the quick release connector is configured to connect a first massaging head while the piston moves ~~between the minimum reciprocation stroke length and~~ the ~~maximum reciprocation~~ the predetermined stroke length at the first speed.

28. (Cancelled)

29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

31. (New) The apparatus of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and

wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

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32. (New) The apparatus of claim 31, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

33. (New) The apparatus of claim 32, wherein the motor is directly connected to the flywheel, and
wherein the crank pin is directly connected to the flywheel.

34. (New) The apparatus of claim 32, wherein the handle is on an opposite side of the piston with respect to the motor.

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/681,367	Filing Date 02/25/2022	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/07/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 32	Minus	** 28	= 4		x $100 =	400
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	400

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/POLIN ANG/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 Confirmation No.: 8567

Filed: February 25, 2022 Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT IN RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.111

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on May 15, 2023. Applicant believes that no fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

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AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a housing;

a handle ~~on the housing;~~

a piston having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate ~~between a minimum reciprocation stroke length and a maximum reciprocation stroke length~~ at a first speed;

a [[cam]] drive mechanism that controls ~~having a first rotational position that controls~~ a predetermined stroke length of the piston ~~to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length~~; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head while the piston moves ~~between the minimum reciprocation stroke length and the maximum reciprocation~~ the predetermined stroke length at the first speed.

2. (Cancelled)

3. (Previously Presented) The apparatus of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

5. (Currently Amended) The apparatus of claim 1, wherein the motor is configured to cause the piston to reciprocate ~~between the minimum reciprocation stroke length and~~ the ~~maximum reciprocation~~ the predetermined stroke length at a second speed.

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6. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Original) The apparatus of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

9. (Original) The apparatus of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Original) The apparatus of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Original) The apparatus of claim 9, wherein the control panel has a display device.

12. (Original) The apparatus of claim 9, wherein the control panel has one or more inputs.

13. (Original) The apparatus of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Original) The apparatus of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Original) The apparatus of claim 12, wherein a first selection of the one or more inputs is configured to cause the apparatus to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

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16. (Original) The apparatus of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

17. (Original) The apparatus of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Original) The apparatus of claim 17, wherein the data connection is a wireless data connection.

19. (Original) The apparatus of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Original) The apparatus of claim 19, wherein the first data is indicative of usage of the apparatus for providing a massage.

21. (Original) The apparatus of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Original) The apparatus of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Currently Amended) The apparatus of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism ~~cam~~ are positioned within the cavity.

24. (Original) The apparatus of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Original) The apparatus of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

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26. (Original) The apparatus of claim 1, wherein the motor is positioned within the housing opposite the handle.

27. (Currently Amended) A method of assembling an apparatus, the method comprising:

positioning a motor at least partially within a housing~~, wherein a handle is on the housing~~;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate ~~between a minimum reciprocation stroke length and a maximum reciprocation stroke length~~ at a first speed, wherein a distal end of the piston has a quick release connector; and

positioning a [[cam]] drive mechanism that controls a predetermined stroke length of the piston within the housing, ~~wherein the cam has a first rotational position that controls a predetermined stroke length of the piston to the minimum reciprocation stroke length, a second rotational position that controls the predetermined stroke length of the piston to the maximum reciprocation stroke length, and a plurality of intermediate rotational positions that control the predetermined stroke length of the piston to a plurality of intermediate stroke lengths between the minimum reciprocation stroke length and the maximum reciprocation stroke length~~ and, wherein the quick release connector is configured to connect a first massaging head while the piston moves ~~between the minimum reciprocation stroke length and~~ the ~~maximum reciprocation~~ the predetermined stroke length at the first speed.

28. (Cancelled)

29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

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REMARKS

Administrative Overview

Prior to the Office Action of May 15, 2023 (the "Office Action"), claims 1-3 and 5-29 were pending. In the Office Action:

- claims 1-3, 23, and 26-29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,134,777 to Meyer ("Meyer") in view of Instructables.com ("Instructables"), and further in view of U.S. Publication No. 2007/0150004 to Colloca ("Colloca");
- claims 5 and 9-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Colloca, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 6-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables, Colloca, Harris, and further in view of U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Colloca, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai"); and
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Meyer in view of Instructables and Colloca, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich").

In the present Amendment, claims 1, 5, 23, and 27 are amended without prejudice or disclaimer. Claims 2 and 28 have been cancelled. No new matter is added. Thus, following entry of this Amendment, claims 1-3 and 5-29 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

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Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, and 26-29 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and further in view of Colloca. The Office Action rejects claims 5 and 9-15 under 35 U.S.C. § 103 as purportedly being obvious Meyer in view of Instructables and Colloca and further in view of Harris. The Office Action rejects claims 6-8 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables, Colloca, Harris, and further in view of Pivaroff. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Colloca and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Meyer in view of Instructables and Colloca and further in view of Ehrenreich. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites:

> a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head while the piston moves the predetermined stroke length at the first speed.

Meyer is directed to a reciprocating saw including a ram driven by a scotch yoke mechanism (Meyer at Abstract). Meyer further describes the reciprocating saw includes "a blade holder 16 and an adjacent foot plate 18" and "[t]he ram 44 is suitably supported for reciprocal movement and mounts the blade holder 16" (*Id.* at col. 1, lines 1-2 and 33-34). Instructables is directed to modifying a jigsaw to form a massager (Instructables at pages 1-2). Colloca is directed to a chiropractic adjusting instrument including a solenoid for imparting impulse energy to a thrust nose piece (Colloca at Abstract).

With respect to independent claim 1, the Office Action at page 5 states that Meyer and Instructables fail to teach or suggest the "quick release connector" as recited in claim 1, instead

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relying on Colloca as teaching this feature. Specifically, the Office Action at pages 5-6 states (emphasis added):

> However, Colloca teaches a reciprocating massage device comprising a reciprocating piston (Fig. 9, plunger rod 151) and interchangeable impact heads (Fig. 2, impact head 70 may be removed and replaced with a different impact head. Figs. 14A- 14D depict different varieties of impact heads). **The connection between the impact head and the massage device is a "quick connection" ([0056] discloses that the impact coupler 78 of the impact head 70 forms a "press fit" with the thrust nose piece 130 of the housing 12). This quick, press fit connection would allow the user to quickly swap out impact heads, even during reciprocation of the piston.**
>
> Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Meyer to have multiple interchangeable impact heads that can be coupled to the reciprocating piston **via a quick release connector as taught by Colloca** to allow a user to select different types of massage heads as dictated by the user's therapy needs. **The modified device would allow the user to connect or remove a massaging head during movement of the piston. While the references do not explicitly teach a method step of connecting a massaging head during movement of the piston, claim 1 is a *device* claim in which the quick release connector "is configured" to connect a first massaging head while the piston moves.** The quick release connector of Colloca operates in a similar manner as the applicant's quick release connector (see Applicant's Figs. 6-6B), and would similarly be "configured" to allow connection of a massaging head during movement of the piston.

Applicant respectfully submits that the Office Action fails to provide proper evidence that a person of ordinary skill in the art (POSITA) would have combined the isolated pieces of Meyer, Instructables, and Colloca in the manner taught by the present disclosure. Colloca does not disclose a quick release connector that could be used during movement of the piston as alleged by the Examiner. The Office Action has not presented a *prima facie* case of unpatentability of the claims under 35 U.S.C. § 103 based on a proper combination of Meyer, Instructables, and Colloca. There is neither a teaching in Colloca nor a motivation to combine Meyer and Instructables with Colloca in the manner provided in the Office Action. A POSITA would not understand from Colloca that "[t]he modified device would allow the user to connect or remove a massaging head during movement of the piston" as alleged in the Office Action.

Upon conceding that "the modified apparatus of Meyer does not have the connection mechanism as a 'quick release connector,'" the Office Action references Colloca in an attempt to reconstruct the present disclosure (*Id.*) However, to "design the modified device of Meyer to

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have multiple interchangeable impact heads that can be coupled to the reciprocating piston via a quick release connector as taught by Colloca" as suggested by the Office Action, a POSITA would be required to ignore Colloca's teachings away from a quick release connector configured to "connect a first massaging head while the piston moves to the predetermined stroke length at the first speed" as claimed. Rather, a POSITA would understand from a reading of Colloca as a whole that its impact heads should not and can not be connected during the pulsing of the chiropractic instrument. *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988) ("The full field of the invention must be considered … including that which might lead away from the claimed invention."); *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983) ("In its consideration of the prior art, however, the district court erred … in considering the references in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand.").

Colloca's device specifically requires "placing the impact head on a body or surface" for the chiropractic adjustment device to be active (Colloca at par. [0055]-[0056]). Colloca explains that the chiropractic adjusting instrument 10 can only be activated/triggered if an impact head is attached to the device and then electromechanically loaded such that it activates an internal safety switch. Colloca describes "a triggering system for triggering the pulse system 200", where "the trigger system includes a switch 310 activated by the preload switch plunger 150" (*Id.* at par. [0054]). The switch 310 described by Colloca "acts as an interlock or safety device **such that pulse system 200 can not be activated unless the switch 310 activated**" (*Id.*, emphasis added). To activate the switch:

> there is a preload activation position such that the electromechanical drive mechanism 100 is compressed or preloaded (by placing the impact head on a body or surface, not shown) **so that the switch 310 is activated such that chiropractic adjusting instrument 10 may be fired by depressing the trigger 330**

(*Id.* at par. [0055], emphasis added). FIGs. 7 and 12 of Colloca further illustrate where the impact head must be connected and must be compressed to activate the switch 310 to allow the device to pulse.

A POSITA reading all of Colloca's disclosure would understand that it teaches that the impact head must be placed against a surface (thereby compressing the electromechanical drive mechanism) to activate and continue operating the chiropractic adjusting instrument. Colloca's

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impact head could not be connected to Colloca's thrust nose piece without stopping the chiropractic adjusting instrument 10 due to a lack of compression against the thrust nose piece. Accordingly, Colloca fails to teach or suggest and teaches away from a "quick release connector [that] is configured to connect a first massaging head **while the piston moves the predetermined stroke length at the first speed**" as presently recited in claim 1.

"Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation to do so**." (*See* MPEP at 2143.01, emphasis added). Further, "[i]t is improper to combine references where the references teach away from their combination." (*See* MPEP at 2145(X)(D)(2), *in re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). *In re Gurley* holds that "**[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant**." 27 F.3d 551, 553 (Fed. Cir. 1994). Here, a POSITA would understand from reading the entirety of Colloca that impact heads can not be replaced while the device is operating. Colloca's safety mechanism is divergent from the direction taken by the Applicant and recited in claim 1. *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) ("One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.").

Further, Colloca's device is chiropractic adjustment device that is not for massage heads, but uses a solenoid to create a pulse rate from 2 to 10 Hz for its *impact* heads. (Colloca at par. [0052].) A POSITA would understand that replacing an impact head while moving at that rate would risk the safety of the user. Thus, Applicant respectfully submits that a POSITA would not combine Colloca with Meyer and Instructables to achieve the apparatus of claim 1, as Colloca teaches away from the quick release connector recited in claim 1.

Applicant respectfully submits that the asserted combination of Meyer, Instructables, and Colloca alleged as teaching the limitations of independent claim 1 is a product of hindsight. A POSITA would not have understood Colloca to teach or suggest a quick release connector that is configured to connect a first massaging head **while the piston moves the predetermined stroke length at the first speed**. "Impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. "(*See* MPEP at 2142).

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Applicant respectfully submits that Meyer, Instructables, and Colloca, alone or in proper combination, fail to teach or suggest at least a "quick release connector [that] is configured to connect a first massaging head **while the piston moves the predetermined stroke length at the first speed**" as presently recited in claim 1.

The other cited references do not cure the above-noted deficiencies of Meyer, Instructables, and Colloca to with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 2-3, 5-26, and 31 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 2-3, 5-26, and 31 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites:

> wherein the quick release connector is configured to connect a first massaging head while the piston moves to the predetermined stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claims 28-29 depend from claim 27 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27-29 under 35 U.S.C. § 103 is respectfully requested.

III. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Pivaroff, Tsai, and Ehrenreich) do not cure the deficiencies of the above-discussed references (Meyer, Instructables, and Colloca) with respect to any of the independent claims, and the Office Action does not allege otherwise.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course.

If the Examiner believes that a telephone conversation with Applicant's attorney would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated:

Respectfully submitted,

Electronic signature: /
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EXAMINER	
STANIS, TIMOTHY A	

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NOTIFICATION DATE	DELIVERY MODE
06/14/2023	ELECTRONIC

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Petitioner Therabody Ex-1004, 2452

Applicant-Initiated Interview Summary	**Application No.** 17/681,367	**Applicant(s)** Danby et al.		
	Examiner TIMOTHY A STANIS	**Art Unit** 3785	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
TIMOTHY A STANIS	Primary Examiner	Telephonic
Sanjeet Dutta	Attorney	

Date of Interview: 07 June 2023

Issues Discussed:

35 U.S.C. 103

Examiner Stanis and Attorney Dutta discussed proposed amendments. Examiner Stanis agreed that the proposed amendments would overcome the prior art of record because deletion of the adjustable cam mechanism limitations would remove the need to apply the references of Meyer and Instructables. The reference of Colloca on its own would not disclose a quick release connector configured to connect a first massaging head while the piston moves because of Colloca's safety switch mechanism. Examiner Stanis stated that further search and consideration would be performed upon receipt of an amendment.

☑ Attachment

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Petitioner Therabody Ex-1004, 2453

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/31/2023	02/28/2023	05/09/2023	06/29/2023					
	1	✓	✓	✓	✓					
	2	✓	✓	✓	-					
	3	✓	✓	✓	✓					
	4	✓	-	-	-					
	5	✓	✓	✓	✓					
	6	✓	✓	✓	✓					
	7	✓	✓	✓	✓					
	8	✓	✓	✓	✓					
	9	✓	✓	✓	✓					
	10	✓	✓	✓	✓					
	11	✓	✓	✓	✓					
	12	✓	✓	✓	✓					
	13	✓	✓	✓	✓					
	14	✓	✓	✓	✓					
	15	✓	✓	✓	✓					
	16	✓	✓	✓	✓					
	17	✓	✓	✓	✓					
	18	✓	✓	✓	✓					
	19	✓	✓	✓	✓					
	20	✓	✓	✓	✓					
	21	✓	✓	✓	✓					
	22	✓	✓	✓	✓					
	23	✓	✓	✓	✓					
	24	✓	✓	✓	✓					
	25	✓	✓	✓	✓					
	26	✓	✓	✓	✓					
	27	✓	✓	✓	✓					
	28	✓	✓	✓	-					
	29	✓	✓	✓	✓					
	30	✓	-	-	-					
	31				✓					
	32				✓					
	33				✓					
	34				✓					

Petitioner Therabody Ex-1004, 2454

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 07/06/2023

GOODWIN PROCTER LLP/SILICON VALLEY
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EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
07/06/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
TFRANKLIN@GOODWINLAW.COM
US-PatentBos@goodwinlaw.com

Petitioner Therabody Ex-1004, 2455

Office Action Summary	Application No. 17/681,367	Applicant(s) Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 6/7/2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1,3,5-27,29 and 31-34 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1,3,5-27,29 and 31-34 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Petitioner Therabody Ex-1004, 2456

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. This office action is in response to the amendment filed on 6/7/2023. As directed by the amendment, claims 1, 5, 23 and 27 have been amended, claims 2, 4, 28, and 30 have been canceled, and claims 31-34 have been added. Thus, claims 1, 3, 5-27, 29 and 31-34 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

4. Claims 1, 3, 23, 27, 29 are rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff (6,682,496) in view of Rhoades (2008/0243039).

Regarding claim 1, Pivaroff discloses an apparatus (Fig. 2, device 10) comprising: a housing (Fig. 2, body 12 and top element 16 form an overall "housing" for the device); a handle (Fig. 2, handle 14); a piston having a proximal end and a distal end (Figs. 3-5, link 34 and rod 38 form a "piston." Link 34 is located at the proximal end of the piston and rod 38 is located at the distal end of the piston); a motor at least partially within the housing and operatively connected to the proximal end of the piston (Fig. 6, electrical motor 24 is mounted within the handle portion of the housing. Motor 24 is connected to the link 34 via elements 26, 28, 30, and 32), wherein the motor is configured to cause the piston to reciprocate at a first speed (Col. 3, ln. 44-47, discloses speeds between 2000 to 3600 RPM); a drive mechanism that controls a predetermined stroke length of the piston (Figs. 3-5, cam element 30 with finger 32 forms a part of the drive mechanism that controls the stroke length of the piston 34/38. The amount of offset of the finger 32 from the central axis of the cam 30 determines the stroke length of the piston); and a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect to a first massaging head (Fig. 3, recessed opening 40 in rod 38 is threaded and forms a "quick release" connector for attaching a mating head 44).

Pivaroff does not explicitly disclose that the quick release connector is configured to connect a first massaging head "while the piston moves the predetermined stroke length at the first speed." While it may be *possible* that the head 44 may be unscrewed

from the rod 38 during reciprocation of the piston, the reference is not clear if this is the case.

However, Rhoades discloses a massaging device (Fig. 4A, device 100) comprising a housing (Fig. 4A, handle portion 130 and head portions 120, 140 form a housing) having a quick release connector for attaching removable massage heads (Figs. 4A-4B, attachment heads 200 may be connected to the head portions 120/140 of the housing via a quick release connector). Rhoades discloses that these quick release connectors can be threaded mating or **magnetic attractive force** ([0061]).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to replace the threaded connection between the massaging head and the piston of Pivaroff with a magnetic attractive force connection as taught by Rhoades because such a modification is the simple substitution for one known massage head connection mechanism for another known massage head connection mechanism to obtain the predictable result of securely fastening a removably massage head to the housing of a massage device. See MPEP 2143(I)(B). Use of a magnetic connection instead of a threaded connection provides the additional benefit of allowing for quicker removal and installation of the massage heads. While the resultant device does not *explicitly* state that the massage head can be connected to the piston during movement of the piston, the magnetic quick release connector is the same type of connection mechanism as found on the applicant's device (see Applicant's Figs. 6-6B, which depicts a magnetic quick release connector). Thus, the modified device of Pivaroff would have the quick release connector as "configured" to connect a first massaging head while the piston moves in the same manner as the Applicant.

Regarding claim 3, the modified device of Pivaroff does not disclose a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector. It is heavily implied, however, as Pivaroff lists a table of numerous types of massage of heads that could be used with the device (See table that spans columns 3-4).

However, Rhoades additionally teaches that its quick release connector between the housing of the device and the massage attachments allows for a plurality of different attachments to be attached to the device (Abstract discloses the use of "various suitable attachments").

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Pivaroff to be a system that has a plurality of different types of massage heads that can be selectively placed on the massage device housing as taught by Rhoades to provide the user with more massage therapy options.

Regarding claim 23, the modified device of Pivaroff has the housing comprising a cavity, wherein the motor and the drive mechanism cam are positioned within the cavity (Pivaroff, Fig. 6, motor 24 is located in the hollow handle 14 and cam 30 is located in the hollow top element 16).

Regarding claim 27, Pivaroff discloses a method of assembling an apparatus (Fig. 2, device 10 has been assembled by some method) comprising: positioning a motor at least partially within a housing (Fig. 2, body 12 and top element 16 form an overall "housing" for the device. Fig. 6, electrical motor 24 is mounted within the handle portion of the housing); operatively connecting the motor to a proximal end of a piston

(Motor 24 is connected to a link 34 via elements 26, 28, 30, and 32. Link 34 is the proximal end of a piston formed by the elements 34 and 38), wherein the motor is configured to cause the piston to reciprocate at a first speed (Col. 3, ln. 44-47, discloses motor speeds between 2000 to 3600 RPM), wherein a distal end of the piston has a quick release connector (Fig. 3, recessed opening 40 in rod 38 is threaded and forms a "quick release" connector for attaching a mating head 44); and positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing (Figs. 3-5, cam element 30 with finger 32 forms a part of the drive mechanism that controls the stroke length of the piston 34/38. The amount of offset of the finger 32 from the central axis of the cam 30 determines the stroke length of the piston), and wherein the quick release connector is configured to connect to a first massaging head (Fig. 3, recessed opening 40 in rod 38 is threaded and forms a "quick release" connector for attaching a mating head 44).

Pivaroff does not explicitly disclose that the quick release connector is configured to connect a first massaging head "while the piston moves the predetermined stroke length at the first speed." While it may be *possible* that the head 44 may be unscrewed from the rod 38 during reciprocation of the piston, the reference is not clear if this is the case.

However, Rhoades discloses a massaging device (Fig. 4A, device 100) comprising a housing (Fig. 4A, handle portion 130 and head portions 120, 140 form a housing) having a quick release connector for attaching removable massage heads (Figs. 4A-4B, attachment heads 200 may be connected to the head portions 120/140 of

the housing via a quick release connector). Rhoades discloses that these quick release connectors can be threaded mating or **magnetic attractive force** ([0061]).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to replace the threaded connection between the massaging head and the piston of Pivaroff with a magnetic attractive force connection as taught by Rhoades because such a modification is the simple substitution for one known massage head connection mechanism for another known massage head connection mechanism to obtain the predictable result of securely fastening a removably massage head to the housing of a massage device. See MPEP 2143(I)(B). Use of a magnetic connection instead of a threaded connection provides the additional benefit of allowing for quicker removal and installation of the massage heads. While the resultant device does not *explicitly* state that the massage head can be connected to the piston during movement of the piston, the magnetic quick release connector is the same type of connection mechanism as found on the applicant's device (see Applicant's Figs. 6-6B, which depicts a magnetic quick release connector). Thus, the modified device of Pivaroff would have the quick release connector as "configured" to connect a first massaging head while the piston moves in the same manner as the Applicant's device.

Regarding claim 29, the modified method of Pivaroff does not disclose a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector. It is heavily implied, however, as Pivaroff lists a table of numerous types of massage of heads that could be used with the device (See table that spans columns 3-4).

However, Rhoades additionally teaches that its quick release connector between the housing of the device and the massage attachments allows for a plurality of different attachments to be attached to the device (Abstract discloses the use of "various suitable attachments").

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified device of Pivaroff to be a system that has a plurality of different types of massage heads that can be selectively placed on the massage device housing as taught by Rhoades to provide the user with more massage therapy options.

5. Claims 5-15 are rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff in view of Rhoades, as applied to claim 1 above, and further in view of Harris et al (6,432,072).

Regarding claim 5, the modified apparatus of Pivaroff has the motor as configured to cause the piston to reciprocate a predetermined stroke length at a first speed (Pivaroff, Col. 3, ln. 44-47, discloses speeds between 2000 to 3600 RPM).

The modified apparatus of Pivaroff does not have the motor and piston operating at a second speed.

However, Harris teaches a hand-held percussive massager (Fig. 1, massager 50) comprising a control panel (Fig. 1, control panel 5) comprising a speed setting control button that allows the user to percuss the massager at different speeds (Fig. 1, speed control button 5b; see col. 2, ln. 49-57).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Pivaroff

to have a control panel with a speed control button and other control settings as taught by Harris to allow the user to select a desired speed of massage while using the device.

Regarding claim 6, the modified device of Pivaroff has the first speed and the second speed as less than or equal to 3600 strokes per minute (Pivaroff, col. 3, ln. 44-45, discloses a speed of 2000-3600 RPM).

Regarding claim 7, the modified device of Pivaroff has the first speed and the second speed as each greater than or equal to 600 strokes per minute (Pivaroff, col. 3, ln. 44-45, discloses a speed of 2000-3600 RPM).

Regarding claim 8, the modified device of Pivaroff does not have the first speed and the second speed as each selectable from a plurality of predetermined speeds exactly in a range of greater than 700 strokes per minute to less than 1800 strokes per minute (Pivaroff, col. 3, ln. 44-45, discloses a speed of 2000-3600 RPM). However, such a speed range is considered an obvious optimization of parameters. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05(II)(A).

Regarding claim 9, the modified apparatus of Pivaroff has a control panel positioned on an exterior of the housing (Harris, Figs. 1-2, control panel 5).

Regarding claim 10, the modified apparatus of Pivaroff has the control panel as configured to display one or more visual indicators (Harris, Figs. 1-2, LED speed indicator 5C).

Regarding claim 11, the modified apparatus of Pivaroff has the control panel having a display device (Harris, Figs. 1-2, LED speed indicator 5C is a type of display device).

Regarding claim 12, the modified apparatus of Pivaroff has the control panel having one or more inputs (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 13, the modified apparatus of Pivaroff has the one or more inputs comprising a button (Harris, Figs. 1-2, power control button 5a, speed control button 5b, and programs buttons 5d-5g).

Regarding claim 14, the modified apparatus of Pivaroff has the first speed and the second speed as each selectable via the one or more inputs (Harris, Figs. 1-2, speed setting control button 5b would allow for selection of the first speed, second speed, and other speeds).

Regarding claim 15, the modified apparatus of Pivaroff has a first selection of the one or more inputs configured to cause the apparatus to power on and a second selection of the one or more inputs configured to cause the apparatus to power off (Harris, Figs. 1-2, power control button 5a allows for "power on" upon a first pressing of the button and a "power off" upon a second pressing of the button).

6. Claims 16 and 24-25 are rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff in view of Rhoades, as applied to claims 1 and 23 above, and further in view of Tsai et al (2009/0270915).

Regarding claim 16, the modified apparatus of Pivaroff does not have an audible feedback device configured to generate one or more audible signals.

However, Tsai teaches a handheld reciprocating massager (Fig. 1, adjuster instrument 100) comprising an audible feedback device to alert a user to the settings of the device, such as impulse speed ([0048] discloses an "annunciation structure" that provides feedback to the operator about device settings, such as "impulse frequency and amplitude." [0048] states that the annunciation structure may be an LCD display or an audio annunciator).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Pivaroff to have a control panel that allows the user to changes operational settings of the device while also receiving audible feedback about device settings as taught by Tsai to allow a user to confirm the device's operational settings in a convenient manner (i.e. audibly).

Regarding claim 24, the modified apparatus of Pivaroff does not have a thermally conductive motor housing positioned within the cavity proximal to the motor.

However, Tsai additionally teaches the handheld reciprocating massager comprising a motor surrounded by a housing and located within a cavity of the massager housing (Fig. 10, DC motor 114 has its components surrounded by some type of housing. DC motor 114 is located within a cavity of the device housing 110), wherein the housing is thermally conductive ([0038] discloses that the massager may have a heat dissipation structure 136 for dissipating heat within the instrument 100. For heat dissipation structure 136 to dissipate heat from the DC motor 114, the motor housing must be made from thermally conductive material).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the motor of the modified apparatus of Pivaroff to be located within a thermally conductive motor housing and located near a heat dissipating structure as taught by Tsai to help prevent the motor from overheating and the device from becoming hot to hold by the user.

Regarding claim 25, the modified apparatus of Pivaroff has a heat sink positioned proximal to the thermally conductive motor housing (Tsai, [0038], heat dissipation structure 136 is located proximal to the motor and motor housing 114).

7. Claims 17-22 are rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff in view of Rhoades, as applied to claim 1 above, and further in view of Ehrenreich et al (2013/0102937).

Regarding claim 17, the modified apparatus of Plvaroff does not have a controller having a processor, a memory, and a data connection.

However, Ehrenreich teaches a massaging device (Figs. 1 and 5) comprising a controller (Fig. 5, circuit boards 500 and 550 serve as a controller for the massaging device) having a processor, a memory, and a data connection ([0100] discloses the controller having a processor 551, a memory 552, and a communication port 554).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the modified apparatus of Pivaroff to have a controller with a processor, a memory, and a data connection as taught by Ehrenreich to allow the device to store massaging programs, update the massaging

programs, and send/receive data from an outside source to track and usage of the device and update the programs of the device.

Regarding claim 18, the modified apparatus of Pivaroff has the data connection as a wireless data connection (Ehrenreich, [0101], discloses that the second circuit board 550 may include a variety of different wireless communication protocols).

Regarding claim 19, the modified apparatus of Pivaroff has the controller as configured to send, by the data connection, first data to an external computing device (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is on. [0111] discloses transmitting data to a remote computer for analyzing patient compliance)

Regarding claim 20, the modified apparatus of Pivaroff has the first data as indicative of usage of the apparatus for providing a massage (Ehrenreich, [0106], discloses transmitting data relating to the amount of time the device is operating).

Regarding claim 21, the modified apparatus of Pivaroff has the controller configured to receive, by the data connection, second data from an external computing device (Ehrenreich, [0156], discloses that a personal computer, smartphone, or table could be used to remotely program the massage device).

Regarding claim 22, the modified apparatus of Pivaroff has the second data indicative of a massage program having a massage duration (Ehrenreich, [0156], discloses that the customization in programming can including the duration of therapy).

8. Claim 26 is rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff in view of Rhoades, as applied to claim 1 above, and further in view of Noble et al (4,730,605).

Regarding claim 26, the modified device of Pivaroff does not have the motor as positioned opposite the handle.

However, Noble teaches a percussion massager (Fig. 5) comprising a housing (Fig. 5, casing 20) and two handles located on opposite sides of the housing (Fig. 5, handle 22 is located on an opposite side of the casing 20 from handle 24). Noble teaches that the arrangement of these two handles provides the advantage of allowing the operator to manipulate the massager in many ways (Col. 6, ln. 34-43).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design modified device of Pivaroff to have a second handle on the housing opposite the first handle as taught by Noble to provide the user with another grip or hand-hold that assist the user on manipulating the massager during use.

9. Claims 31-33 are rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff in view of Rhoades, as applied to claim 1 above, and further in view of Elmen (1,339,179).

Regarding claim 31, the modified device of Pivaroff has the motor having an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises: a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis; and a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

The modified device of Pivaroff does not have the output shaft extending into the flywheel along the flywheel axis.

However, Elmen teaches a percussion massage device (Fig. 2) comprising a motor having an output shaft (Fig. 2, casing 1 houses a motor; see Pg. 1, col. 2, ln. 65-67. Fig. 2 depicts a motor shaft 9 that would be connected to the motor. The shaft 9, disk 12, and disk pin 12a are all considered part of a single "output shaft" of the motor); and a drive mechanism comprising a flywheel operatively connected to the output shaft (Fig. 2, rotatable head block 7 is operatively connected to the shaft 9, disk 12, and disk pin 12a), wherein the output shaft extends into the flywheel along the flywheel axis (Fig. 2, disk pin 12a (considered part of the "output shaft" extends into the rotatable head block 7).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design the drive mechanism of the modified device of Pivaroff to have the output shaft from the motor extend into the cam (i.e. flywheel) along the cam axis as taught by Elmen. Having a more direct connection between the motor and the cam (flywheel) eliminates the need for extra parts and linkages within the drive train that could be susceptible breakdowns or malfunctions. Furthermore, having the output shaft of the motor extend *into* the cam would provide a strong connection between the output shaft and cam.

Regarding claim 32, the modified device of Pivaroff has an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston (Pivaroff, Fig. 6, depicts an offset between the central axis of the cam element 30 and the central axis of the finger 32).

Regarding claim 33, the modified device of Pivaroff has the motor directly connected to the flywheel (Elmen, Fig. 2, the electric motor is directly connected to the

flywheel 7 via the output shaft comprising shaft 9, disk 12, and disk pin 12a. The modified device would have this type of "direct" drive train connection between the motor and the cam (flywheel)), and wherein the crank pin is directly connected to the flywheel (Pivaroff, finger 32 is directly connected to the cam element 30).

10. Claim 34 is rejected under 35 U.S.C. 103 as being unpatentable over Pivaroff in view of Rhoades and Elmen, as applied to claim 32 above, and further in view of Noble.

Regarding claim 34, the modified device of Pivaroff does not have the motor as positioned opposite the handle.

However, Noble teaches a percussion massager (Fig. 5) comprising a housing (Fig. 5, casing 20) and two handles located on opposite sides of the housing (Fig. 5, handle 22 is located on an opposite side of the casing 20 from handle 24). Noble teaches that the arrangement of these two handles provides the advantage of allowing the operator to manipulate the massager in many ways (Col. 6, ln. 34-43).

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to design modified device of Pivaroff to have a second handle on the housing opposite the first handle as taught by Noble to provide the user with another grip or hand-hold that assist the user on manipulating the massager during use.

Response to Arguments

11. Applicant's arguments filed on 6/7/2023 on Pages 2-6 with respect to claims 1 and 27 and regarding Meyer, Instructables, and Colloca not disclosing the claimed "quick release connector" have been considered, but are moot in view of the new grounds of rejection presented in this office action. It is importantly noted that while the

applied references to not explicitly teach a method step of connecting a first massaging head to a piston while the piston is moving, claims 1 and 27 recited devices that are "configured to" perform such a function. The applicant appears to be relying on the magnetic structure of the quick release connector (see applicant's Figs. 6-6B), wherein the current rejection applies a similar magnetic structure that would allow for the function of connecting a massage head while the piston is moving.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A STANIS whose telephone number is (571)272-5139. The examiner can normally be reached on Mon - Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571-272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61H23/0254	01/31/2023	TS
A61H2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097	01/31/2023	TS
Updated Above Search	02/28/2023	TS
Updated Above Search	05/09/2023	TS
Updated Above Search	06/29/2023	TS

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor Search in PE2E and PALM	01/31/2023	TS
See attached PE2E search	01/31/2023	TS
Updated Search; see attached PE2E search	02/28/2023	TS
Updated Search; see attached PE2E search	05/09/2023	TS
Updated Search; see attached PE2E search	06/29/2023	TS

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

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Notice of References Cited	Application/Control No. 17/681,367	Applicant(s)/Patent Under Reexamination Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20080243039-A1	10-2008	Rhoades; Dean L.	A61N5/0616	601/72
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L106	1	"20070150004".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/07 12:03 PM
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L108	366	a61h$.cpc. AND ((exchang$4 OR interchang$4 OR swapp$4 OR switch$3) WITH (during near3 (use OR operation)))	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/27 01:14 PM
L109	550	a61h$.cpc. AND ((exchang$4 OR interchang$4 OR swapp$4 OR switch$3) SAME (magnet$6)) AND massag$3	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/27 02:00 PM
L110	105	a61h$.cpc. AND (piston) AND (head SAME magnet$9)	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/27 02:44 PM
L111	90	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/27 02:59 PM

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L112	1119	a61h$.cpc. AND percussion AND head	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/27 03:27 PM
L113	878	a61h$.cpc. AND percussion AND head AND (remov$4 OR replac$4 OR interchang$4)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/27 03:27 PM
L114	423	a61h$.cpc. AND percussion AND head AND (remov$4 OR replac$4 OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/27 03:29 PM

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		interchang$4)					
L115	33	("1811037" | "2605490" | "3081479" | "3172356" | "4098266" | "4102334" | "4595196" | "4757806" | "4910826" | "4919117" | "5001804" | "5123139" | "5187827" | "D367712" | "D373640" | "D437713" | "D438309" | "6478755" | "6735808" | "20040267170").pn. OR ("7354408").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/27 04:39 PM
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L117	1	"20070150004".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 10:22 AM
L118	160	("0784024" | "0799881" | "1339179" | "1612981" | "1657765" | "1978223" | "3030647" | "3494353" | "3710785" | "3841321" | "3845758" | "3920291" | "3968789" | "3993052" | "4088128" | "4162675" | "RE30500" | "4412535" | "4505267" | "4513737" | "4523580" | "4549535" | "4730605" | "4827914" | "4841955" | "4858600" | "5063911" | "5065743" | "5140979" | "5159922" | "5215078" | "5305738" | "5311860" | "5364223" | "5415621" | "5447491" | "5489280" | "D367712" | "D373640" | "5602432" | "5632720" | "5656018" | "5725483" | "5803916" | "5843006" | "5925002" | "5951501" | "6102875" | "6123657" | "6165145" | "6170108" | "D437713" | "D438309" | "6228042" | "6231497" | "D455837" | "6375609" | "6402710" | "6432072" | "6440091" | "6461377" | "6478755" | "6494849" | "6585667" | "6616621" | "6656140" | "6682496" | "6758826" | "6805700" | "6832991" | "6866776" | "6979300" | "6994679" | "7033329" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 10:25 AM

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L119	65	("1787211" | "4088128" | "4513737" | "4827914" | "4841955" | "4858600").pn. OR ("6682496").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/06/28 10:53 AM
L120	106	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2023/06/28 11:23 AM

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L121	33	L120 AND (magnet$6)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 11:23 AM
L122	52	(massag$3 SAME percuss$4) AND (head WITH magnetic$4)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 11:37 AM
L123	9	(victor WITH yang).in. AND massag$3	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 12:52 PM
L124	1280	(a61h23/00-06.cpc. AND magnetic$5) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 12:59 PM
L125	219	(a61h23/00-06.cpc. AND ((head OR attach$4) WITH magnetic$5)) AND	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 12:59 PM

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L126	1	"20080243039".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 01:20 PM
L127	9563	(percussion OR reciprocat$3) AND (((head OR attach$4) WITH magnetic$5)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 01:50 PM
L128	128	massag$3 AND (percussion OR reciprocat$3) AND (((head OR attach$4) WITH magnetic$5)) AND (@pd OR @ptad OR @prad OR @ad OR @rlad)<"20130701"	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 01:50 PM
L129	3	("6682496" OR "7354408" OR "20080243039").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 01:58 PM
L130	110	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/28 02:00 PM

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		4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2 OR US-6616621-B1 OR US-6432072-B1 OR US-5935089-A OR US-10314762-B1 OR US-7144417-B2 OR US-4730605-A OR US-6758826-B2 OR US-7354408-B2 OR US-10201470-B2 OR US-10653581-B2 OR US-10603208-B2).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1 OR US-20140194900-A1 OR US-20160151238-A1 OR US-20120253245-A1 OR US-20020183668-A1 OR US-20020115947-A1 OR US-20060178715-A1 OR US-20070167888-A1 OR US-20050113724-A1 OR US-20070179414-A1 OR US-20130102937-A1 OR US-20140135875-A1 OR US-20140180181-A1 OR US-20080243039-A1 OR US-20130060176-A1 OR US-20190262607-A1 OR US-20210077340-A1 OR US-20050113870-A1 OR US-20150305969-A1 OR US-20040049137-A1 OR US-20060135319-A1					

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		OR US-20170304144-A1 OR US-20180280675-A1 OR US-20130158547-A1 OR US-20140371690-A1 OR US-20150005682-A1 OR US-20150182078-A1 OR US-20150182290-A1 OR US-20170172837-A1 OR US-20220085628-A1 OR US-20060253051-A1 OR US-20080319357-A1 OR US-20140288364-A1 OR US-20200085684-A1 OR US-20170087041-A1 OR US-20030009116-A1 OR US-20030028134-A1 OR US-20030149381-A1 OR US-20050222525-A1 OR US-20100137760-A1 OR US-20150005679-A1 OR US-20170304145-A1 OR US-20200085675-A1 OR US-20100274162-A1 OR US-20200390644-A1 OR US-20060058714-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A OR US-1657765-A OR US-1339179-A).did. AND USOC.dbnm.) OR ((CN-109842256-A).did. AND FTDB.dbnm.)				
L131	4	("6682496" OR "7354408" OR "20080243039" OR "6432072").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 04:51 PM
L132	5	("6682496" OR "7354408" OR "20080243039" OR "6432072" OR "20090270915").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 04:56 PM
L133	6	("6682496" OR "7354408" OR "20080243039" OR "6432072" OR "20090270915" "20130102937").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 04:58 PM

Petitioner Therabody Ex-1004, 2487

L134	1	"5134777".pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/06/28 05:03 PM
L135	73	L130 AND handle	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/06/29 09:57 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Petitioner Therabody Ex-1004, 2488

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT8066660

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST

CONVEYING PARTY DATA

Name	Execution Date
HYPERICE IP SUBCO, LLC	12/30/2022

RECEIVING PARTY DATA

Name:	ACP POST OAK CREDIT I LLC
Street Address:	777 POST OAK BLVD
Internal Address:	SUITE 430
City:	HOUSTON
State/Country:	TEXAS
Postal Code:	77056

PROPERTY NUMBERS Total: 99

Property Type	Number
Application Number:	17372237
Application Number:	17083118
Application Number:	17383794
Application Number:	17402129
Application Number:	15818308
Application Number:	16525407
Application Number:	29757546
Application Number:	17308012
Application Number:	17307981
Application Number:	17733620
Application Number:	29787032
Application Number:	63248077
Application Number:	17727084
Application Number:	16785200
Application Number:	17384501
Application Number:	17930500
Application Number:	17943818
Application Number:	17935756
Application Number:	17490822

Property Type	Number
Application Number:	17494975
Application Number:	17494982
Application Number:	17494984
Application Number:	17494989
Application Number:	15590885
Application Number:	29813596
Application Number:	29813602
Application Number:	29813604
Application Number:	29813603
Application Number:	29813605
Application Number:	29814569
Application Number:	14317573
Application Number:	15892665
Application Number:	17681367
Application Number:	63339748
Application Number:	63326422
Application Number:	29649515
Application Number:	29770905
Application Number:	63330429
Application Number:	29838069
Application Number:	29835985
Application Number:	29847758
Application Number:	29847761
Application Number:	63421368
Application Number:	17972421
Application Number:	29694192
Application Number:	29694387
Application Number:	29695481
Application Number:	29750435
Application Number:	29803626
Application Number:	29803627
Application Number:	29803628
Application Number:	29578124
Application Number:	29578127
Application Number:	29674978
Application Number:	15902542
Application Number:	16107587
Application Number:	16656348

Property Type	Number
Application Number:	16865320
Application Number:	16931860
Application Number:	17136218
Application Number:	16201542
Application Number:	16887383
Application Number:	17402201
Application Number:	29599430
Application Number:	29605787
Application Number:	17206530
Application Number:	12987989
Application Number:	29771144
Application Number:	17090864
Application Number:	29637855
Application Number:	29690791
Application Number:	29716546
Application Number:	29744890
Application Number:	29744896
Application Number:	29744899
Application Number:	29776753
Application Number:	29744887
Application Number:	29744897
Application Number:	29744888
Application Number:	29744893
Application Number:	29744894
Application Number:	29744895
Application Number:	16864596
Application Number:	17121210
Application Number:	14628233
Application Number:	15949593
Application Number:	16914921
Application Number:	29777205
Application Number:	15252840
Application Number:	29576079
Application Number:	29610761
Application Number:	15650410
Application Number:	16741317
Application Number:	29771693
Application Number:	29771691

Property Type	Number
Application Number:	29771690
Application Number:	29771688
Application Number:	29771689
Application Number:	29771685

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2142261650
Email: kathryn.hoo@bakerbotts.com
Correspondent Name: KATHRYN HOO
Address Line 1: 2001 ROSS AVE
Address Line 2: SUITE 900
Address Line 4: DALLAS, TEXAS 75201

ATTORNEY DOCKET NUMBER:	092132.0103
NAME OF SUBMITTER:	KATHRYN HOO
SIGNATURE:	/Kathryn Hoo/
DATE SIGNED:	07/19/2023
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 9

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source=Hyper Ice - Patent Security Agreement (Executed)#page9.tif

PATENT SECURITY AGREEMENT

This PATENT SECURITY AGREEMENT (this "Agreement"), dated as of December 30, 2022, is made by Hyperice IP SubCo, LLC, a Delaware limited liability company (the "Grantor") in favor of ACP Post Oak Credit I LLC, as Collateral Agent (in such capacity, together with its successors and assigns in such capacity, the "Collateral Agent").

Recitals

The Collateral Agent, Hyper Ice, Inc. and the Lenders from time to time party thereto have entered into a Senior Secured Term Loan Credit Agreement, dated as of December 30, 2022 (as amended, restated, supplemented or otherwise modified from time to time, the "Credit Agreement").

Pursuant to the Credit Agreement and as a condition to the extension of credit by the Lenders under the Credit Agreement, the Grantor executed and delivered a Guarantee and Collateral Agreement, dated as of December 30, 2022 (the "Collateral Agreement"), in favor of the Collateral Agent for the ratable benefit of the Secured Parties.

The Grantor solely and exclusively owns the patents and patent applications listed on Schedule A attached hereto (the "Patents"), which Patents have been issued by or are pending applications in the United States Patent and Trademark Office.

This Agreement has been executed in conjunction with the security interest granted under the Collateral Agreement to the Collateral Agent for the ratable benefit of the Secured Parties. In the event that any provisions of this Agreement are deemed to conflict with the Collateral Agreement, the provisions of the Collateral Agreement shall govern.

Agreement

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, it is hereby agreed that:

1. Definitions. Unless otherwise indicated, all capitalized terms not defined herein shall have the respective meaning given to them in the Collateral Agreement.

2. The Security Interest. The Grantor hereby pledges, assigns and transfers to the Collateral Agent, and grants to the Collateral Agent, for the ratable benefit of the Secured Parties, a security interest in all of the following property, now owned or at any time hereafter acquired by the Grantor or in which the Grantor now has or at any time in the future may acquire any right, title or interests and whether now existing or hereafter coming into existence: (1) any and all patents and patent applications, including the Patents; (2) all inventions and improvements described and claimed therein; (3) all reissues, reexaminations, divisionals, continuations, renewals, extensions and continuations-in-part thereof; (4) all income, royalties, damages, claims and payments now or hereafter due or payable under and with respect thereto, including, without limitation, damages and payments for past and future infringements thereof; (5) all rights to sue for past, present and future infringements thereof; (6) all rights corresponding to any of the foregoing throughout the world; and (7) all Proceeds of the foregoing.

3. Governing Law. **THIS AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK.**

****

Petitioner Therabody Ex-1004, 2494

DocuSign Envelope ID: 61AFA27B-24F8-4F92-B36A-7A3DA442A5B1

IN WITNESS WHEREOF, the Grantor has executed this Agreement by its duly authorized representative as of the date first written above.

GRANTOR

Hyperice IP SubCo, LLC
a Delaware limited liability company

By: DocuSigned by:
C7859A30E1E1416...
Name: James Huether
Title: Chief Executive Officer

Petitioner Therabody Ex-1004, 2495

Acknowledged and Agreed:

ACP POST OAK CREDIT I LLC

as Collateral Agent

By: _____

Name: Matthew E. Laterza
Title: Chief Operating Officer

Petitioner Therabody Ex-1004, 2496

Schedule A

Patents

Title	Application No.	Date Filed	Patent No.	Date Issued
System, Application, And Process For Exercise Recovery	17/372237	7/9/2021		
System And Process For Determining Pressure Settings For A Percussive Massage Applicator	17/083118	10/28/2020		
System And Methods For Controlling A Smart Exercise Recovery Device And Mitigation Of Damage From Vibrations	17/383794	7/23/2021		
System, Mobile Application And Process For An Advanced Recovery Device	17/402129	8/13/2021		
Wearable Temperature Therapy System And Method	15/818308	11/20/2017	10406024	9/10/2019
Wearable Temperature Therapy System And Method	16/525407	7/29/2019		
Wearable Temperature Therapy System	29/757546	11/6/2020		
Temperature Modulation Assembly And A Multi-Layer Retention Mechanism For A Temperature Therapy Device	17/308012	5/4/2021		
System And Methods For Monitoring And/Or Controlling Temperature In A Therapy Device	17/307981	5/4/2021		
Wearable Therapeutic Device With Replaceable Pads, And Related Systems And Methods	17/733620	4/29/2022		
Air Bladder	29/787032	6/3/2021		
Pneumatic Compression Systems And Methods	63/248077	9/24/2021		
Pneumatic Compression Systems And Methods	17/727084	4/22/2022		
Light Therapy System	16/785200	2/7/2020		
System For Mounting Inelastic Components To A Flexible Material To Apply Compressive And Thermal Therapy	17/384501	7/23/2021		
Therapy Device With Smart Applicator	17/930500	9/8/2022		
System And Apparatus To Apply Vibration, Thermal And Compressive Therapy	17/943818	9/13/2022		
Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	17/935756	9/27/2022		

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Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	17/490822	9/30/2021		
Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	17/494975	10/6/2021		
Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	17/494982	10/6/2021		
Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	17/494984	10/6/2021		
Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	17/494989	10/6/2021		
Hand Stimulation Device To Facilitate The Invocation Of A Meditative State	15/590885	5/9/2017	10758451	9/1/2020
Module And Pad	29/813596	10/29/2021		
Module	29/813602	10/29/2021		
Module And Pad	29/813604	10/29/2021		
Pad	29/813603	10/29/2021		
Decorative Pattern	29/813605	10/29/2021		
Pneumatic Therapy System	29/814569	11/5/2021		
Massaging Device Having A Heat Sink	14/317573	6/27/2014	9889066	2/13/2018
Massage Device Having Variable Stroke Length	15/892665	2/9/2018	11285075	3/29/2022
Massage Device Having Variable Stroke Length	17/681367	2/25/2022		
Wearable Flexible Tape Therapy System And Method	63/339748	5/9/2022		
Massage Device Having Light Therapy Application	63/326422	4/1/2022		
Handheld Meditation Trainer	29/649515	5/30/2018	D917712	4/27/2021
Handheld Meditation Trainer	29/770905	2/17/2021	D958385	7/19/2022
Footwear For Providing Temperature And Compression Therapy	63/330429	4/13/2022		
Temperature Therapy Device	29/838069	5/10/2022		
Mobile Pneumatic Therapy System	29/835985	4/22/2022		
Back Temperature And Compression Therapy Device	29/847758	7/27/2022		
Shoulder Temperature And Compression Therapy Device	29/847761	7/27/2022		
Vibrating Roller With Integrated Therapy Elements	63/421368	11/1/2022		

Percussive Massage Device With Selectable Stroke Length	17/972421	10/24/2022		
Applicator Head For Percusive Massage Device	29/694,192	1/19/2021	D908,235	1/19/2021
Applicator Head For Percussive Massage Device	29/694,387	1/12/2021	D907,792	1/12/2021
Applicator Head For Percussive Massage Device	29/695,481	2/16/2021	D910,870	2/16/2021
Applicator Head For Percussive Massage Device	29/750,435	8/16/2022	D961,104	8/16/2022
Applicator/Adaptor For Percussive Massage Device	29/803,626			
Applicator/Adaptor With Ball-Shaped Applicator Heads For Percussive Massage Device	29/803,627			
Applicator/Adaptor With Compressible Cylindrical Applicator Heads For Percussive Massage Device	29/803,628			
Back Brace With Heating And Vibration	29/578,124	2/27/2018	D811,613	2/27/2018
Back Brace With Heating And Vibration	29/578,127	2/27/2018	D811,614	2/27/2018
Back Brace With Heating And Vibration	29/674,978	2/16/2021	D910,858	2/16/2021
Battery-Powered Percussive Massage Device	15/902,542	1/12/2021	10,888,492	1/12/2021
Battery-Powered Percussive Massage Device	16/107,587	12/3/2019	10,492,984	12/3/2019
Battery-Powered Percussive Massage Device	16/656,348	2/18/2020	10,561,574	2/18/2020
Battery-Powered Percussive Massage Device	16/865,320	2/2/2021	10,905,627	2/2/2021
Battery-Powered Percussive Massage Device	16/931,860	2/9/2021	10,912,708	2/9/2021
Battery-Powered Percussive Massage Device	17/136,218			
Battery-Powered Percussive Massage Device With Pressure Sensor	16/201,542	6/11/2019	10,314,762	6/11/2019
Battery-Powered Percussive Massage Device With Pressure Sensor	16/887,383			
Combination Applicator And Adaptor For Percussive Massage Device	17/402,201			
Cover For Vibrating Exercise Roller	29/599,430	3/19/2019	D843,522	3/19/2019
Endplate For Vibrating Exercise Roller	29/605,787	8/20/2019	D857,131	8/20/2019
Hypervolt Go	17/206,530			
Ice Bag With Air Release Valve For Therapeutic Treatment	12/987,989	3/22/2016	9,289,323	3/22/2016

Massaging Device	15/892,665			
Massaging Device	17/681,367			
Modified Hypervolt Go	29/771,144			
Motor And Piston Assembly For Percussive Device	17/090,864	5/4/2021	10,993,874	5/4/2021
Percussive Massage Device	29/637,855	8/6/2019	D855,822	8/6/2019
Percussive Massage Device	29/690,791	1/28/2020	D874,015	1/28/2020
Percussive Massage Device	29/716,546	6/2/2020	D886,317	6/2/2020
Percussive Massage Device	29/744,890	6/28/2022	D956,253	6/28/2022
Percussive Massage Device	29/744,896	5/31/2022	D953,556	5/31/2022
Percussive Massage Device	29/744,899	6/28/2022	D956,258	6/28/2022
Percussive Massage Device (Further Modified Hypervolt Go 2)	29/776,753			
Percussive Massage Device (With Oval-Shaped Handle And Rotating Speed Control)	29/744,887	6/28/2022	D965,251	6/28/2022
Percussive Massage Device With Oval Shaped Handle And Reduced Size	29/744,897	6/28/2022	D956,257	6/28/2022
Percussive Massage Device With Oval-Shaped Handle And Rotating Speed Control	29/744,888	6/28/2022	D956,252	6/28/2022
Percussive Massage Device With Oval-Shaped Handle And Rotating Speed Control	29/744,893	6/28/2022	D956,254	6/28/2022
Percussive Massage Device With Oval-Shaped Handle And Rotating Speed Control	29/744,894	6/28/2022	D956,255	6/28/2022
Percussive Massage Device With Oval-Shaped Handle And Rotating Speed Control	29/744,895	6/28/2022	D956,256	6/28/2022
Percussive Massage Device With Selectable Stroke Length	16/864,596	10/25/2022	11,478,400	10/25/2022
Percussive Massage Device With Self-Lubricating Cylinder	17/121,210			
Therapeutic Vibrating Roller	14/628,233	5/15/2018	9,968,513	5/15/2018
Therapeutic Vibrating Roller	15/949,593	8/4/2020	10,729,614	8/4/2020
Therapeutic Vibrating Roller	16/914,921			
Transparent Applicator Head For Percussive Massage Device	29/777,205			
Vibrating Fitness Ball	15/252,840	4/9/2019	10,252,116	4/9/2019
Vibrating Fitness Ball	29/576,079	7/24/2018	D823,951	7/24/2018

Vibration And Heat Generation Apparatus	29/610,761	6/25/2019	D852,370	6/25/2019
Vibration And Heat Generation Apparatus For Use With Compression Wrap	15/650,410	1/7/2020	10,524,978	1/7/2020
Vibration And Heat Generation Apparatus For Use With Compression Wraps	16/741,317	9/27/2022	11,452,671	9/27/2022
Vyper 3.0 (Vibrating Massage Roller)	29/771,693			12/20/2022
Vyper 3.0 (Vibrating Massage Roller)	29/771,691			8/23/2021
Vyper 3.0 (Vibrating Massage Roller)	29/771,690			8/23/2021
Vyper 3.0 (Vibrating Massage Roller)	29/771,688			8/23/2021
Vyper 3.0 (Vibrating Massage Roller)	29/771,689			8/23/2021
Vyper 3.0 (Vibrating Massage Roller)	29/771,685			8/23/2021

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 07/31/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER
STANIS, TIMOTHY A

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
07/31/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
TFRANKLIN@GOODWINLAW.COM
US-PatentBos@goodwinlaw.com

Petitioner Therabody Ex-1004, 2502

Applicant-Initiated Interview Summary	**Application No.** 17/681,367	**Applicant(s)** Danby et al.		
	Examiner TIMOTHY A STANIS	**Art Unit** 3785	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
TIMOTHY A STANIS	Primary Examiner	Telephonic
Sanjeet Dutta	Attorney	

Date of Interview: 25 July 2023

Issues Discussed:

35 U.S.C. 103

Attorney Dutta argued that the reference of Rhoades (20080243039) is not analogous art. Examiner Stanis disagreed, and stated that Rhoades is analogous art at least because it addresses a similar problem faced by the inventor - designing a connection means for a removable head that attaches to a main housing of a vibrating treatment device. Attorney Dutta additionally argued that the strength of the magnetic connection of Rhoades would not be sufficient for the reciprocating device of Pivaroff (6,682,496). Examiner Stanis disagreed, and pointed to Rhoades teaching threaded mating, magnetic attractive force, and adhesive as equivalent connection mechanisms (Rhoades, [0061]). All of these connection mechanisms would be designed strong enough to maintain a massaging head in place during operation of the modified device. No agreement was reached.

☑ Attachment

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

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Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 Confirmation No.: 8567

Filed: February 25, 2022 Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on July 6, 2023. Please amend the above-identified U.S. patent application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

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AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~An apparatus~~ A percussive massager comprising:

a housing;

a handle;

a piston having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism that controls a predetermined stroke length of the piston; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head to the piston while the piston reciprocates ~~moves~~ the predetermined stroke length at the first speed.

2. (Cancelled)

3. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

5. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor is configured to cause the piston to reciprocate [[the]] the predetermined stroke length at a second speed.

6. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

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8. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

9. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel has a display device.

12. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel has one or more inputs.

13. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein a first selection of the one or more inputs is configured to cause the ~~apparatus~~ percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the apparatus to power off.

16. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

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17. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the data connection is a wireless data connection.

19. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Currently Amended) The ~~apparatus~~ percussive massager of claim 19, wherein the first data is indicative of usage of the ~~apparatus~~ percussive massager for providing a massage.

21. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Currently Amended) The ~~apparatus~~ percussive massager of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

24. (Currently Amended) The ~~apparatus~~ percussive massager of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Currently Amended) The ~~apparatus~~ percussive massager of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

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26. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor is positioned within the housing opposite the handle.

27. (Currently Amended) A method of assembling ~~an apparatus~~ a percussive massager, the method comprising:

positioning a motor at least partially within a housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector; and

positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, ~~and,~~ wherein the quick release connector is configured to connect a first massaging head to the piston while the piston reciprocates ~~moves the~~ the predetermined stroke length at the first speed.

28. (Cancelled)

29. (Currently Amended) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

31. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

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32. (Currently Amended) The ~~apparatus~~ percussive massager of claim 31, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

33. (Currently Amended) The ~~apparatus~~ percussive massager of claim 32, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

34. (Currently Amended) The ~~apparatus~~ percussive massager of claim 32, wherein the handle is on an opposite side of the piston with respect to the motor.

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REMARKS

Administrative Overview

Prior to the Office Action of March 7, 2023 (the "Office Action"), claims 1, 3, 5-27, 29, and 31-34 were pending. In the Office Action:

- claims 1, 3, 23, 27, and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff") in view of U.S. Publication No. 2008/0243039 to Rhoades ("Rhoades");
- claims 5-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai");
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich");
- claim 26 is rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 4,730,605 to Noble et al. ("Noble");
- claims 31-33 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 1,339,179 to Elmen ("Elmen"); and
- claim 34 is rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades and Elmen, and further in view of Noble.

In the present Amendment, claims 1, 3, 5-27, 29, and 31-34 are amended without prejudice or disclaimer. No new matter is added. Thus, following entry of this Amendment, claims 1, 3, 5-27, 29, and 31-34 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of

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the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, 27, and 29 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades. The Office Action rejects claims 5-15 under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of Harris. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Ehrenreich. The Office Action rejects claim 26 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Noble. The Office Action rejects claims 31-33 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Elmen. The Office Action rejects claim 34 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades and Elmen, and further in view of Noble. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites a percussive massager comprising, *inter alia*:

> a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head to the piston while the piston reciprocates the predetermined stroke length at the first speed.

Applicant respectfully submits that Rhoades does not qualify as prior art under 35 U.S.C. § 103 because it is not analogous to the invention of claim 1, as presently presented. The test for

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analogous art is very specific. Art is non-analogous unless it is: (1) from the same field of endeavor as the claimed invention; or (2) reasonably pertinent to the particular problem faced by the inventor. In re Bigio, 381 F.3d at 1325; In re Wood and Eversole, 599 F.2d 1032, 1036 (CCPA 1979). Pivaroff is directed to a deep muscle stimulation device having a titanium hollow head with loosely packed granular materials herein therein (Pivaroff at Abstract). Rhoades is directed to a cosmetic instrument (e.g., a microderm abrasion device) that is not a percussive massager, as recited in the claims. Applicant respectfully submits that Rhoades is not reasonably pertinent because it neither (1) addresses the same problem nor (2) serves the same purpose as the device of claim 1. Rhoades' microderm abrasion device has head portions that can mate to various types of treatment attachments for "treating skin and/or body parts by abrasion, cleaning, polishing, lighting, or oxygenation" (Rhoades at Abstract), which are all performed on the surface of the skin, rather than massage treatments. Rhoades further describes that a "motion generator may move the attachments by vibrating, spinning, oscillating, or propagating sonic waves through the head portions" (*Id.*), which are for treating the surface of the skin. Thus, the Rhoades patent would not have logically commended itself to the Applicant's attention. *See In re Clay*, 966 F.2d at 659 (when a reference "is directed to a different purpose, the inventor would accordingly, have had less motivation or occasion to consider it.").

Applicant respectfully submits that the Office Action fails to provide evidence that a person of ordinary skill in the art (POSITA) would have combined the isolated pieces of Pivaroff and Rhoades in the manner taught by amended claim 1. More succinctly, the Office Action has not presented a *prima facie* case of unpatentability of the claims under 35 U.S.C. § 103 based on a proper combination of Pivaroff and Rhoades. A POSITA would not have been motivated to combine Pivaroff and Rhoades in the manner provided in the Office Action, as there is no motivation to combine Rhoades' magnetic attractive force with Pivaroff's screw/thread connection mechanism for attaching a massage head to a rod. Moreover, even if one were to combine the references, one would not attain the claimed invention.

With respect to claim 1, the Office Action states that Pivaroff fails to teach or suggest the "quick release connector" as recited in claim 1, instead relying on Rhoades as teaching this feature. Specifically, the Office Action at pages 3-4 states (emphasis added):

> Regarding claim 1, Pivaroff discloses … a quick release connector at the distal end of the piston, wherein the quick release connector is configured to

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connect to a first massaging head (Fig. 3, recessed opening 40 in rod 38 is threaded and forms a "quick release" connector for attaching a mating head 44).

Pivaroff does not explicitly disclose that the quick release connector is configured to connect a first massaging head "while the piston moves the predetermined stroke length at the first speed." While it may be possible that the head 44 may be unscrewed from the rod 38 during reciprocation of the piston, the reference is not clear if this is the case.

However**, Rhoades discloses a massaging device (Fig. 4A, device 100) comprising a housing (Fig. 4A, handle portion 130 and head portions 120, 140 form a housing) having a quick release connector for attaching removable massage heads (Figs. 4A-4B, attachment heads 200 may be connected to the head portions 120/140 of the housing via a quick release connector). Rhoades discloses that these quick release connectors can be threaded mating or magnetic attractive force ([0061]).**

Thus, upon stating that "Pivaroff does not explicitly disclose that the quick release connector is configured to connect a first massaging head 'while the piston moves the predetermined stroke length at the first speed'" the Office Action references Rhoades in an attempt to reconstruct the present disclosure (*Id.*). However, "to replace the threaded connection between the massaging head and the piston of Pivaroff with a magnetic attractive force connection as taught by Rhoades" as suggested by the Office Action, a POSITA would be required to combine **an isolated connection mechanism** (e.g., a magnetic attractive force) of Rhoades' cosmetic instrument **that lacks any type of reciprocating piston** with a deep tissue massager as taught by Pivaroff. Rhoades does not describe a "percussive massager" as recited in amended claim 1, and instead describes a cosmetic instrument for treating skin, and **specifically for providing vibration** (e.g., via a motor 260 and eccentric mass 264), **sonic and/or ultrasonic wave, rotation, and oscillation therapy** via the head portions and/or treatment attachments. (See, e.g., Rhoades at paras. [0042]-0047]).

Accordingly, a POSITA would recognize that the magnetic force sufficient to connect Rhoades' treatment attachment to either of the head portions is configured to withstand vibrational, rotational, and oscillatory forces, but such a magnetic force would not be suited to "connect a first massaging head **to the piston while the piston reciprocates** the predetermined stroke length at the first speed" as recited in amended claim 1 due to the increased force required to connect and retain a massage head to a **reciprocating piston**. Thus, Applicant respectfully submits that the suggested modification to Pivaroff's device is not "the simple substitution for one known massage head connection mechanism for another known massage head connection

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mechanism" as alleged in the Office Action, as a POSITA would not find a teaching suggestion, or motivation to combine Rhoades' disclosure with Pivaroff to remedy the deficiencies of Pivaroff.

In addition, even if a POSITA was motivated to replace the threaded pin of Pivaroff with the magnetic attractive force of Rhoades as suggested by the Office Action (which Applicant does not concede), the modified device would still fail to teach or suggest a "quick release connector [that] is configured to connect a first massaging head to the piston while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1, as Pivaroff does not describe a quick release functionality and Rhoades does not describe a configuration or particular force applied by the magnetic attractive force as being configured to connect a first massaging head to the piston while the piston reciprocates.

As described above, the Office Action references Pivaroff as teaching a quick release connector, where "the recessed opening 40 in rod 38 is threaded and forms a "quick release" connector for attaching a mating head 44" (*Id.* at p. 3). Pivaroff describes that "[t]he recessed opening 40 captures one end of a connecting means, such as a pin 42, as by having screw threads formed therein" and "[t]he other or outer end of the pin 42 is screw threaded or otherwise captured in the hollow head 44." (Pivaroff at col. 2, lines 49-54). Accordingly, Pivaroff appears to describe a screw/thread connection mechanism for connecting a hollow head 44 to a rod 38. (See, e.g., *id.* at col. 2, lines 44-54). FIG. 3 of Pivaroff as reproduced below illustrates such a connection mechanism.

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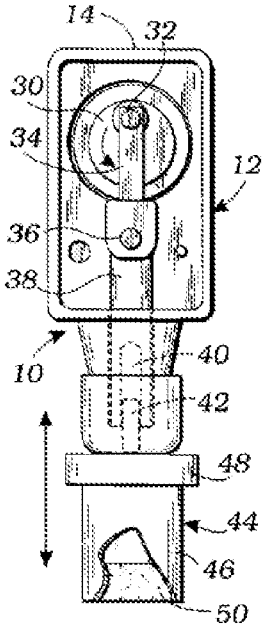


Fig. 3

However, Applicant respectfully submits that Pivaroff's opening 40 and pin 42 for connecting the hollow head 44 to a rod 38 fails to teach or suggest a "quick release connector" as suggested in the Office Action at page 3, as such a screw/thread connection mechanism does not comprise a "quick release" functionality as claimed, nor is it configured to "connect a first massaging head to the piston while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Pivaroff's screw/thread connection mechanism can not feasibly connect a massaging head to the rod 38 during reciprocation of the rod and the Office Action acknowledges Pivaroff's deficiencies at page 3 as described above.

Upon stating that "Pivaroff does not explicitly disclose that the quick release connector is configured to connect a first massaging head 'while the piston moves the predetermined stroke length at the first speed'", the Office Action references Rhoades to remedy the deficiencies of Pivaroff (Office Action at page 3). As illustrated in the embodiments of the cosmetic instrument in FIGs. 4A and 4B, Rhoades describes that an applicator attachment 200 and brush attachment 30 may be removably or permanently attached to the head portions 120, 140 of the apparatus 100 (See, e.g., Rhoades at para. [0059]). As one example, Rhoades describes that an attachment "can be attached to head portions via adhesive or magnetic forces" (*Id.* at para. [0061]). However, Applicant respectfully submits that the magnetic forces used to connect an attachment

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to a head portion of Rhoades' apparatus 100, in combination with the features of Pivaroff's device, fails to teach or suggest a "quick release connector is configured to connect a first massaging head to the piston **while the piston reciprocates the predetermined stroke length at the first speed**" as recited in amended claim 1. Rather, Rhoades' apparatus is a cosmetic instrument, not a "**percussive massager**", and does not include a "quick release connector [that] is configured to connect a first massaging head **to the piston**" as recited in amended claim 1. Further, any magnetic attractive force taught by Rhoades to allow for vibrating, spinning, oscillating, or propagating sonic waves through the head portions would not be suited for attaching a massage head to a reciprocating piston, as such a magnetic attractive force would be less than the force required to retain and connect the massage while the piston reciprocates.

Further, Applicant respectfully submits that the asserted combination of Pivaroff and Rhoades alleged as teaching the limitations of claim 1 is a product of hindsight. A POSITA would not have understood Pivaroff and Rhoades to teach or a quick release connector that is configured to connect a first massaging head **to the piston while the piston reciprocates the predetermined stroke length at the first speed**. "Impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. "(*See* MPEP at 2142). Applicant respectfully submits that Pivaroff and Rhoades, alone or in proper combination, fail to teach or suggest at least a "a quick release connector at the distal end of the piston, wherein the quick release connector is configured to connect a first massaging head to the piston while the piston reciprocates the predetermined stroke length at the first speed" as presently recited in amended claim 1.

The other cited references do not cure the above-noted deficiencies of Pivaroff and Rhoades to with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 3, 5-26, and 31-34 depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1, 3, 5-26, and 31-34 under 35 U.S.C. § 103 is respectfully requested.

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II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites a method of assembling a percussive massager comprising, *inter alia*:

> positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, wherein the quick release connector is configured to connect a first massaging head to the piston while the piston reciprocates the predetermined stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claim 29 depends from claim 27 and is allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27 and 29 under 35 U.S.C. § 103 is respectfully requested.

III. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Tsai, Ehrenreich, Noble, and Elmen) do not cure the deficiencies of the above-discussed references (Pivaroff and Rhoades) with respect to any of the independent claims, and the Office Action does not allege otherwise.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course. Applicant submits herewith a Request for Continued Examination and the associated fees required for entry and consideration of this paper. Applicant believes that no additional fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

If the Examiner believes that a telephone conversation with Applicant's attorney would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: DRAFT

Respectfully submitted,

Electronic signature: / /
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Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (01-22)
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	17681367	Filing Date	2022-02-25	Docket Number (if applicable)	HYP-034C3	Art Unit	3785
First Named Inventor	Philip C. Danby			Examiner Name	T. A. Stanis		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the orde in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 07-1700

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

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Signature of Registered U.S. Patent Practitioner			
Signature	/Sanjeet K. Dutta/	Date (YYYY-MM-DD)	2023-08-10
Name	Sanjeet K. Dutta	Registration Number	46145

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is t file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Tim will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions fo reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the informatio solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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Electronic Patent Application Fee Transmittal

Application Number:	17681367
Filing Date:	25-Feb-2022
Title of Invention:	MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH
First Named Inventor/Applicant Name:	Philip C. Danby
Filer:	Sanjeet Kumar Dutta/Tammy Franklin
Attorney Docket Number:	HYP-034C3

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	1202	27	100	2700
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	2000	2000
		Total in USD ($)		**4700**

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~An apparatus~~ A percussive massager comprising:

a housing;

~~a handle~~

a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism that controls a predetermined stroke length of the piston; and

a quick-connect system comprising ~~release connector at~~ the distal end of the piston and a first massaging head, wherein the quick-connect system ~~release connector~~ is configured to secure [[connect a]] the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates ~~moves~~ the predetermined stroke length at the first speed.

2. (Cancelled)

3. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick-connect system ~~release connector~~.

4. (Cancelled)

5. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor is configured to cause the piston to reciprocate [[the]] the predetermined stroke length at a second speed.

6. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

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7. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

9. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel has a display device.

12. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel has one or more inputs.

13. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein a first selection of the one or more inputs is configured to cause the ~~apparatus~~ percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the ~~apparatus~~ percussive massager to power off.

16. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

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17. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising a controller having[[,]] a processor, a memory, and a data connection.

18. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the data connection is a wireless data connection.

19. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Currently Amended) The ~~apparatus~~ percussive massager of claim 19, wherein the first data is indicative of usage of the ~~apparatus~~ percussive massager for providing a massage.

21. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Currently Amended) The ~~apparatus~~ percussive massager of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

24. (Currently Amended) The ~~apparatus~~ percussive massager of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Currently Amended) The ~~apparatus~~ percussive massager of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

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26. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor is positioned within the housing opposite [[the]] a handle.

27. (Currently Amended) A method of assembling ~~an apparatus~~ a percussive massager, the method comprising:

positioning a motor at least partially within a housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure; and

positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, ~~and,~~ wherein the quick release connector is configured to secure [[connect]] a first massaging head by sliding the first massaging head into the bore while the piston reciprocates ~~moves the~~ the predetermined stroke length at the first speed.

28. (Cancelled)

29. (Currently Amended) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

31. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

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32. (Currently Amended) The ~~apparatus~~ percussive massager of claim 31, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

33. (Currently Amended) The ~~apparatus~~ percussive massager of claim 32, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

34. (Currently Amended) The ~~apparatus~~ percussive massager of claim [[32]] 1, wherein [[the]] a handle is on an opposite side of the piston with respect to the motor.

35. (New) The percussive massager of claim 1, further comprising a substantially cylindrical structure within the bore.

36. (New) The percussive massager of claim 1, wherein the substantially cylindrical structure comprises a cylindrical seat.

37. (New) The percussive massager of claim 1, wherein the substantially cylindrical structure comprises a magnet.

38. (New) A percussive massager comprising:

a housing;

a piston in the housing having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

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39. (New) The percussive massager of claim 38, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

40. (New) The percussive massager of claim 38, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.

41. (New) The percussive massager of claim 40, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

42. (New) The percussive massager of claim 40, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

43. (New) The percussive massager of claim 40, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

44. (New) The percussive massager of claim 40, further comprising:

a control panel positioned on an exterior of the housing.

45. (New) The percussive massager of claim 44, wherein the control panel is configured to display one or more visual indicators.

46. (New) The percussive massager of claim 44, wherein the control panel has a display device.

47. (New) The percussive massager of claim 44, wherein the control panel has one or more inputs.

48. (New) The percussive massager of claim 47, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

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49. (New) The percussive massager of claim 47, wherein the first speed and the second speed are each selectable via the one or more inputs.

50. (New) The percussive massager of claim 47, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.

51. (New) The percussive massager of claim 38, further comprising an audible feedback device configured to generate one or more audible signals.

52. (New) The percussive massager of claim 38, further comprising a controller having a processor, a memory, and a data connection.

53. (New) The percussive massager of claim 52, wherein the data connection is a wireless data connection.

54. (New) The percussive massager of claim 53, wherein the controller is configured to send, by the data connection, first data to an external computing device.

55. (New) The percussive massager of claim 54, wherein the first data is indicative of usage of the percussive massager for providing a massage.

56. (New) The percussive massager of claim 52, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

57. (New) The percussive massager of claim 56, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

58. (New) The percussive massager of claim 38, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

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59. (New) The percussive massager of claim 58, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

60. (New) The percussive massager of claim 59, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

61. (New) The percussive massager of claim 38, further comprising a handle, wherein the motor is positioned within the housing opposite the handle.

62. (New) The percussive massager of claim 38, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

63. (New) The percussive massager of claim 62, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

64. (New) The percussive massager of claim 63, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

65. (New) The percussive massager of claim 38, further comprising a handle, wherein the handle is on an opposite side of the piston with respect to the motor.

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REMARKS

Administrative Overview

Prior to the Office Action of July 6, 2023 (the "Office Action"), claims 1, 3, 5-27, 29, and 31-34 were pending. In the Office Action:

- claims 1, 3, 23, 27, and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff") in view of U.S. Publication No. 2008/0243039 to Rhoades ("Rhoades");
- claims 5-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai");
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich");
- claim 26 is rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 4,730,605 to Noble et al. ("Noble");
- claims 31-33 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 1,339,179 to Elmen ("Elmen"); and
- claim 34 is rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades and Elmen, and further in view of Noble.

In the present Amendment, claims 1, 3, 5-27, 29, and 31-34 are amended without prejudice or disclaimer. New claims 35-65 are added. No new matter is added. Thus, following entry of this Amendment, claims 1, 3, 5-27, 29, and 31-65 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of

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the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

Interview Summary

Applicant thanks Examiner Stanis for his time and courtesy during the interviews conducted with the Applicant's representative on July 25, 2023 and August 10, 2023. The participants in the interviews were Examiner Stanis and Applicant's representative, Sanjeet K. Dutta (Reg. No. 46,145). During the interviews, the participants discussed the rejections of the claims under 35 U.S.C. § 103, including the connection mechanism described by Rhoades individually and in combination with the device described by Pivaroff. The participants also discussed potential amendments to independent claims 1 and 27. Examiner Stanis indicated that the potential amendments overcome the rejection of record to independent claims 1 and 27. Accordingly, Applicant has amended independent claims 1 and 27 and added new independent claim 38 in the manner discussed during the interview of August 10, 2023. The following remarks further summarize and reflect the points discussed during the interview. Accordingly, this paper is intended to constitute a proper recordation of each of the interviews in accordance with MPEP § 713.04, and also to provide a full response to the Office Action.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, 27, and 29 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades. The Office Action rejects claims 5-15 under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of Harris. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Ehrenreich. The Office Action rejects claim 26 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Noble. The Office Action rejects claims 31-33 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Elmen. The Office Action rejects claim 34 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades and Elmen, and further in view of Noble. Even assuming (without

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conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites a percussive massager comprising, *inter alia*:

> a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed.

Pivaroff is directed to a deep muscle stimulation device having a titanium hollow head with loosely packed granular materials herein therein (Pivaroff at Abstract). Pivaroff further describes the "hollow head is connected by a number of reciprocating elements to a finger on a rotating cam so as to have between a ⅛ to ½ inch stroke" "to provide deep penetrating muscle tissue stimulation" (*Id.*).

Rhoades is directed to a cosmetic instrument (e.g., a microderm abrasion device) that is not a percussive massager, as recited in the claims. Rhoades' microderm abrasion device has head portions that can mate to various types of treatment attachments for "treating skin and/or body parts by abrasion, cleaning, polishing, lighting, or oxygenation" (Rhoades at Abstract), which are all performed on the surface of the skin, rather than massage treatments. Rhoades further describes that a "motion generator may move the attachments by vibrating, spinning, oscillating, or propagating sonic waves through the head portions" (*Id.*), which are for treating the surface of the skin.

Even if a person of ordinary skill in the art (POSITA) was motivated to replace the threaded connection of Pivaroff with the magnetic attractive force of Rhoades as suggested by the Office Action (which Applicant does not concede), the modified device would still fail to teach or suggest securing "the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore" as recited in amended claim 1, as Pivaroff and Rhoades, individually or in combination, fail to describe (i) the distal end of the piston

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having a substantially cylindrical bore and (ii) the quick-connect system being configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates.

As described above, the Office Action references Pivaroff as teaching a quick release connector, where "the recessed opening 40 in rod 38 is threaded and forms a 'quick release' connector for attaching a mating head 44" (*Id.* at p. 3). Pivaroff describes that "[t]he recessed opening 40 captures one end of a connecting means, such as a pin 42, as by having screw threads formed therein" and "[t]he other or outer end of the pin 42 is screw threaded or otherwise captured in the hollow head 44." (Pivaroff at col. 2, lines 49-54). Accordingly, Pivaroff appears to describe a screw/thread connection mechanism for connecting a hollow head 44 to a rod 38. (See, e.g., *id.* at col. 2, lines 44-54). FIG. 3 of Pivaroff as reproduced below illustrates such a connection mechanism.

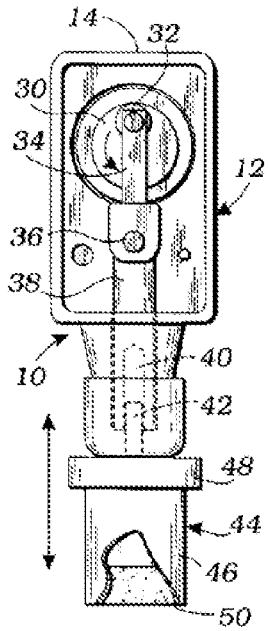


Fig. 3

However, Applicant respect fully submits that Pivaroff's opening 40 and pin 42 for connecting the hollow head 44 to a rod 38 fails to teach or suggest a quick-connect system as suggested in the Office Action at page 3, as such a screw/thread connection mechanism does not "secure the first massaging head to the percussive massager by a proximal end of the massaging

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head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Pivaroff's screw/thread connection mechanism cannot feasibly connect a massaging head to the rod 38 during reciprocation of the rod 38 by **sliding** the massaging head into a bore of the rod 38.

Further, Rhoades fails to remedy the deficiencies of Pivaroff with respect to independent claim 1, as amended. As illustrated in the embodiments of the cosmetic instrument in FIGs. 4A and 4B, Rhoades describes that an applicator attachment 200 and brush attachment 30 may be removably or permanently attached to the head portions 120, 140 of the apparatus 100 (See, e.g., Rhoades at para. [0059]). As one example, Rhoades describes that an attachment "can be attached to head portions via adhesive or magnetic forces" (*Id.* at para. [0061]). However, Applicant respectfully submits that the mechanisms used to connect an attachment to a head portion of Rhoades' apparatus 100, individually or in combination with the features of Pivaroff's device, fails to teach or suggest securing "the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Rather, Rhoades' apparatus is a cosmetic instrument, not a "**percussive massager**", and does not include a "quick-connect system" that secures "the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Thus, Applicant respectfully submits that Pivaroff and Rhoades, individually or in proper combination, fail to teach or suggest this feature as presently recited in amended claim 1.

The other cited references do not cure the above-noted deficiencies of Pivaroff and Rhoades with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 3, 5-26, and 31-34 xx depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1, 3, 5-26, and 31-37 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites a method of assembling a percussive massager comprising, *inter alia*:

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> operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure; and
>
> positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, wherein the quick release connector is configured to secure a first massaging head by sliding the first massaging head into the bore while the piston reciprocates the predetermined stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claim 29 depends from claim 27 and is allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27 and 29 under 35 U.S.C. § 103 is respectfully requested.

III. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Tsai, Ehrenreich, Noble, and Elmen) do not cure the deficiencies of the above-discussed references (Pivaroff and Rhoades) with respect to any of the independent claims, and the Office Action does not allege otherwise.

New Claims

New claims 38-65 are added. Independent claim 38 recites a percussive massager comprising, *inter alia*:

> a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

Applicant respectfully submits that Pivaroff and Rhoades, individually or in combination, fail to teach or suggest at least "a quick release connector … configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a **substantially cylindrical pocket** to receive the quick release connector" as recited in independent claim 38. As described above with respect to claim 1, the Office Action references Pivaroff as teaching a quick release connector as recited in

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claim 1, where "the recessed opening 40 in rod 38 is threaded and forms a 'quick release' connector for attaching a mating head 44" (Office Action at p. 3). However, Applicant respectfully submits that Pivaroff's hollow head 44 fails to teach or suggest a massaging head that "has a substantially cylindrical pocket to receive the quick release connector" as recited in claim 38. Pivaroff is silent regarding the hollow head 44 including any type of pocket for receiving the recessed opening 40 in rod 38.

Rhoades fails to remedy the deficiencies of Pivaroff with respect to independent claim 38. As illustrated in the embodiments of the cosmetic instrument in FIGs. 4A and 4B, Rhoades describes that an applicator attachment 200 and brush attachment 30 may be removably or permanently attached to the head portions 120, 140 of the apparatus 100 (See, e.g., Rhoades at para. [0059]). As one example, Rhoades describes that "treatment attachments may also attach to head portions via threaded mating, magnetic attractive force, adhesive, heat bonding, tape, glue, or other sufficient attachment systems" (*Id.* at para. [0061]). Rhoades shows and describes an exemplary threaded mating connection mechanism for an applicator attachment with respect to FIG. 5. However, Applicant respectfully submits that the applicator attachments of Rhoades' apparatus 100, individually or in combination with the features of Pivaroff's device, are silent regarding inclusion of any pocket for receiving a quick release connector and thereby fail to teach or suggest a "a quick release connector … configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a **substantially cylindrical pocket** to receive the quick release connector" as recited in claim 38.

Thus, Applicant respectfully submits that Pivaroff and Rhoades, individually or in proper combination, fail to teach or suggest at least a "a quick release connector … configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a **substantially cylindrical pocket** to receive the quick release connector" as recited in claim 38.

The other cited references do not cure the above-noted deficiencies of Pivaroff and Rhoades with respect to claim 38. Accordingly, Applicant respectfully submits that claim 38 is allowable. Claims 39-65 depend from claim 38 and are allowable for at least the same reasons.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course. Applicant submits herewith a Request for Continued Examination and the associated fees required for entry and consideration of this paper, as well as fees for the examination of twenty-seven excess claims. Applicant believes that no additional fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

If the Examiner believes that a telephone conversation with Applicant's attorney would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: August 10, 2023

Respectfully submitted,

Electronic signature: /Sanjeet K. Dutta/
Sanjeet K. Dutta
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Petitioner Therabody Ex-1004, 2539

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on July 6, 2023. Please amend the above-identified U.S. patent application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

Petitioner Therabody Ex-1004, 2540

Electronic Acknowledgement Receipt

EFS ID:	48426798
Application Number:	17681367
International Application Number:	
Confirmation Number:	8567
Title of Invention:	MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH
First Named Inventor/Applicant Name:	Philip C. Danby
Customer Number:	162143
Filer:	Sanjeet Kumar Dutta/Tammy Franklin
Filer Authorized By:	Sanjeet Kumar Dutta
Attorney Docket Number:	HYP-034C3
Receipt Date:	10-AUG-2023
Filing Date:	25-FEB-2022
Time Stamp:	20:56:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$4700
RAM confirmation Number	E202380K56505144
Deposit Account	071700
Authorized User	Tammy Franklin

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.21 (Miscellaneous fees and charges)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.16 (National application filing, search, and examination fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	HYP_034C3_Request_for_Continued_Examination.pdf	1666906 b5792c570a0668aae7bd5ec6cba5980daf7e37bd	no	3
Warnings:					
Information:					
2		HYP_034C3_Response_to_Final_Office_Action.pdf	213383 e8e1ffb21463b168171357f4027be3988c2a43ab	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	9
	Applicant Arguments/Remarks Made in an Amendment	10	17

Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	40616 f0b394ca28e5f363c89b39fdc19d42263ce55020	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1920905		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/681,367	Filing Date 02/25/2022	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	08/10/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 61	Minus	** 32	= 29		x $100 =	2900
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	2900

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/STANLEY E JORDAN/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

DO NOT ENTER - FOR DISCUSSION PURPOSES ONLY /TS/ 8/10/2023

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 Confirmation No.: 8567

Filed: February 25, 2022 Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH Examiner: T. A. Stanis

Submitted via Patent Center

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. § 1.116

INTRODUCTORY COMMENTS

This paper responds to the Office Action electronically sent from the Patent Office on July 6, 2023. Please amend the above-identified U.S. patent application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

Petitioner Therabody Ex-1004, 2545

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~An apparatus~~ A percussive massager comprising:

a housing;

~~a handle~~

a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism that controls a predetermined stroke length of the piston; and

a quick-connect system comprising ~~release connector at~~ the distal end of the piston and a first massaging head, wherein the quick-connect system ~~release connector~~ is configured to secure [[connect a]] the first massaging head to the percussive massager by sliding the first massaging head being slid into the bore while the piston reciprocates ~~moves~~ the predetermined stroke length at the first speed.

2. (Cancelled)

3. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

4. (Cancelled)

5. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor is configured to cause the piston to reciprocate [[the]] the predetermined stroke length at a second speed.

6. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

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7. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

8. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

9. (Currently Amended) The ~~apparatus~~ percussive massager of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel has a display device.

12. (Currently Amended) The ~~apparatus~~ percussive massager of claim 9, wherein the control panel has one or more inputs.

13. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Currently Amended) The ~~apparatus~~ percussive massager of claim 12, wherein a first selection of the one or more inputs is configured to cause the ~~apparatus~~ percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the ~~apparatus~~ percussive massager to power off.

16. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

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17. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, further comprising a controller having, a processor, a memory, and a data connection.

18. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the data connection is a wireless data connection.

19. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Currently Amended) The ~~apparatus~~ percussive massager of claim 19, wherein the first data is indicative of usage of the ~~apparatus~~ percussive massager for providing a massage.

21. (Currently Amended) The ~~apparatus~~ percussive massager of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Currently Amended) The ~~apparatus~~ percussive massager of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

24. (Currently Amended) The ~~apparatus~~ percussive massager of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Currently Amended) The ~~apparatus~~ percussive massager of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

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26. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor is positioned within the housing opposite [[the]] a handle.

27. (Currently Amended) A method of assembling ~~an apparatus~~ a percussive massager, the method comprising:

positioning a motor at least partially within a housing;

operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure; and

positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, ~~and,~~ wherein the quick release connector is configured to secure [[connect]] a first massaging head by sliding a shaft of the first massaging head into the bore while the piston reciprocates ~~moves the~~ the predetermined stroke length at the first speed.

28. (Cancelled)

29. (Currently Amended) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

31. (Currently Amended) The ~~apparatus~~ percussive massager of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

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32. (Currently Amended) The ~~apparatus~~ percussive massager of claim 31, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

33. (Currently Amended) The ~~apparatus~~ percussive massager of claim 32, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

34. (Currently Amended) The ~~apparatus~~ percussive massager of claim [[32]] 1, wherein [[the]] a handle is on an opposite side of the piston with respect to the motor.

35. (New) The percussive massager of claim 1, further comprising a substantially cylindrical structure within the bore

36. (New) The percussive massager of claim 1, wherein the substantially cylindrical structure comprises a cylindrical seat.

37. (New) The percussive massager of claim 1, wherein the substantially cylindrical structure comprises a magnet.

38. (New) A percussive massager comprising:

a housing;

a piston in the housing having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

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39. (New) The percussive massager of claim 38, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

40. (New) The percussive massager of claim 38, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.

41. (New) The percussive massager of claim 40, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

42. (New) The percussive massager of claim 40, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

43. (New) The percussive massager of claim 40, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

44. (New) The percussive massager of claim 40, further comprising:

a control panel positioned on an exterior of the housing.

45. (New) The percussive massager of claim 44, wherein the control panel is configured to display one or more visual indicators.

46. (New) The percussive massager of claim 44, wherein the control panel has a display device.

47. (New) The percussive massager of claim 44, wherein the control panel has one or more inputs.

48. (New) The percussive massager of claim 47, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

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49. (New) The percussive massager of claim 47, wherein the first speed and the second speed are each selectable via the one or more inputs.

50. (New) The percussive massager of claim 47, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.

51. (New) The percussive massager of claim 38, further comprising an audible feedback device configured to generate one or more audible signals.

52. (New) The percussive massager of claim 38, further comprising a controller having, a processor, a memory, and a data connection.

53. (New) The percussive massager of claim 52, wherein the data connection is a wireless data connection.

54. (New) The percussive massager of claim 53, wherein the controller is configured to send, by the data connection, first data to an external computing device.

55. (New) The percussive massager of claim 54, wherein the first data is indicative of usage of the percussive massager for providing a massage.

56. (New) The percussive massager of claim 52, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

57. (New) The percussive massager of claim 56, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

58. (New) The percussive massager of claim 38, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

Petitioner Therabody Ex-1004, 2552

59. (New) The percussive massager of claim 58, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

60. (New) The percussive massager of claim 59, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

61. (New) The percussive massager of claim 38, further comprising a handle, wherein the motor is positioned within the housing opposite the handle.

62. (New) The percussive massager of claim 38, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

63. (New) The percussive massager of claim 62, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

64. (New) The percussive massager of claim 63, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

65. (New) The percussive massager of claim 38, further comprising a handle, wherein the handle is on an opposite side of the piston with respect to the motor.

Petitioner Therabody Ex-1004, 2553

REMARKS

Administrative Overview

Prior to the Office Action of July 6, 2023 (the "Office Action"), claims 1, 3, 5-27, 29, and 31-34 were pending. In the Office Action:

- claims 1, 3, 23, 27, and 29 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,682,496 to Pivaroff ("Pivaroff") in view of U.S. Publication No. 2008/0243039 to Rhoades ("Rhoades");
- claims 5-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 6,432,072 to Harris ("Harris");
- claims 16 and 24-25 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Publication No. 2009/0270915 to Tsai et al. ("Tsai");
- claims 17-22 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Publication No. 2013/0102937 to Ehrenreich et al. ("Ehrenreich");
- claim 26 is rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 4,730,605 to Noble et al. ("Noble");
- claims 31-33 are rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of U.S. Patent No. 1,339,179 to Elmen ("Elmen"); and
- claim 34 is rejected under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades and Elmen, and further in view of Noble.

In the present Amendment, claims 1, 3, 5-27, 29, and 31-34 are amended without prejudice or disclaimer. New claims 35-65 are added. No new matter is added. Thus, following entry of this Amendment, claims 1, 3, 5-27, 29, and 31-65 will be pending.

Support for the claim amendments can be found in each of the applications to which the present application claims priority, including U.S. Patent No. 11,285,075 ("the '075 patent"), U.S. Patent No. 9,889,066 ("the '066 patent"), and U.S. Provisional Patent Application No. 61/841,693, each of which was incorporated by reference in the present application at the time of

Petitioner Therabody Ex-1004, 2554

the present application's filing. Thus, the claims are entitled to a priority date no later than the filing date of the earliest-filed patent application to which the present application claims priority (i.e., July 1, 2013).

Interview Summary

Applicant thanks Examiner Stanis for his time and courtesy during the interview conducted with the Applicant's representative on July 25, 2023. The participants in the interviews were Examiner Stanis and Applicant's representative, Sanjeet K. Dutta (Reg. No. 46,145). During the interview, the participants discussed the rejections of the claims under 35 U.S.C. § 103, including the connection mechanism described by Rhoades individually and in combination with the device described by Pivaroff. No agreement was reached. Accordingly, this paper is intended to constitute a proper recordation of each of the interviews in accordance with MPEP § 713.04, and also to provide a full response to the Office Action.

Claim Rejections Under 35 U.S.C. § 103

The Office Action rejects claims 1-3, 23, 27, and 29 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades. The Office Action rejects claims 5-15 under 35 U.S.C. § 103 as being unpatentable over Pivaroff in view of Rhoades, and further in view of Harris. The Office Action rejects claims 16 and 24-25 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Tsai. The Office Action rejects claims 17-22 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Ehrenreich. The Office Action rejects claim 26 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Noble. The Office Action rejects claims 31-33 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades, and further in view of Elmen. The Office Action rejects claim 34 under 35 U.S.C. § 103 as purportedly being obvious over Pivaroff in view of Rhoades and Elmen, and further in view of Noble. Even assuming (without conceding) that the cited references could have properly been combined, Applicant respectfully submits that the claimed subject matter would not have been obvious to a person having ordinary skill in the art at the time the invention was made (i.e., no later than July 1, 2013) in view of the cited references.

Petitioner Therabody Ex-1004, 2555

I. Independent Claim 1 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 1 has been amended and reconsideration is respectfully requested.

Amended independent claim 1 recites a percussive massager comprising, *inter alia*:

> a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by sliding the first massaging into the bore while the piston reciprocates the predetermined stroke length at the first speed.

Pivaroff is directed to a deep muscle stimulation device having a titanium hollow head with loosely packed granular materials herein therein (Pivaroff at Abstract). Pivaroff further describes the "hollow head is connected by a number of reciprocating elements to a finger on a rotating cam so as to have between a ⅛ to ½ inch stroke" "to provide deep penetrating muscle tissue stimulation" (*Id.*).

Rhoades is directed to a cosmetic instrument (e.g., a microderm abrasion device) that is not a percussive massager, as recited in the claims. Rhoades' microderm abrasion device has head portions that can mate to various types of treatment attachments for "treating skin and/or body parts by abrasion, cleaning, polishing, lighting, or oxygenation" (Rhoades at Abstract), which are all performed on the surface of the skin, rather than massage treatments. Rhoades further describes that a "motion generator may move the attachments by vibrating, spinning, oscillating, or propagating sonic waves through the head portions" (*Id.*), which are for treating the surface of the skin.

Even if a POSITA was motivated to replace the threaded connection of Pivaroff with the magnetic attractive force of Rhoades as suggested by the Office Action (which Applicant does not concede), the modified device would still fail to teach or suggest securing "the first massaging head to the percussive massager by sliding the first massaging into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1, as Pivaroff and Rhoades, individually or in combination, fail to describes a quick release connector (i) having a bore having a cylindrical seat and (ii) configured to secure a first massaging head by sliding a shaft of the first massaging head into the bore.

As described above, the Office Action references Pivaroff as teaching a quick release connector, where "the recessed opening 40 in rod 38 is threaded and forms a 'quick release' connector for attaching a mating head 44" (*Id.* at p. 3). Pivaroff describes that "[t]he recessed

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opening 40 captures one end of a connecting means, such as a pin 42, as by having screw threads formed therein" and "[t]he other or outer end of the pin 42 is screw threaded or otherwise captured in the hollow head 44." (Pivaroff at col. 2, lines 49-54). Accordingly, Pivaroff appears to describe a screw/thread connection mechanism for connecting a hollow head 44 to a rod 38. (See, e.g., *id.* at col. 2, lines 44-54). FIG. 3 of Pivaroff as reproduced below illustrates such a connection mechanism.

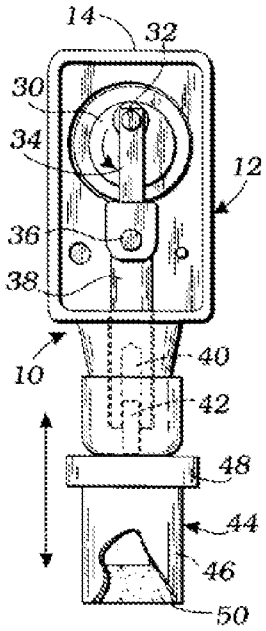


Fig. 3

However, Applicant respect fully submits that Pivaroff's opening 40 and pin 42 for connecting the hollow head 44 to a rod 38 fails to teach or suggest a quick-connect system as suggested in the Office Action at page 3, as such a screw/thread connection mechanism does not "secure the first massaging head to the percussive massager by sliding the first massaging into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Pivaroff's screw/thread connection mechanism cannot feasibly connect a massaging head to the rod 38 during reciprocation of the rod 38 by **sliding** a shaft of the massaging head into a bore of the rod 38.

Further, Rhoades fails to remedy the deficiencies of Pivaroff with respect to independent claim 1, as amended. As illustrated in the embodiments of the cosmetic instrument in FIGs. 4A

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and 4B, Rhoades describes that an applicator attachment 200 and brush attachment 30 may be removably or permanently attached to the head portions 120, 140 of the apparatus 100 (See, e.g., Rhoades at para. [0059]). As one example, Rhoades describes that an attachment "can be attached to head portions via adhesive or magnetic forces" (*Id.* at para. [0061]). However, Applicant respectfully submits that the mechanisms used to connect an attachment to a head portion of Rhoades' apparatus 100, individually or in combination with the features of Pivaroff's device, fails to teach or suggest securing "the first massaging head to the percussive massager by sliding the first massaging into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Rather, Rhoades' apparatus is a cosmetic instrument, not a "**percussive massager**", and does not include a "quick-connect system" that "secures the first massaging head to the percussive massager by sliding the first massaging into the bore while the piston reciprocates the predetermined stroke length at the first speed" as recited in amended claim 1. Thus, Applicant respectfully submits that Pivaroff and Rhoades, individually or in proper combination, fail to teach or suggest this feature as presently recited in amended claim 1.

The other cited references do not cure the above-noted deficiencies of Pivaroff and Rhoades with respect to amended claim 1 and are not alleged to do so.

Thus, amended independent claim 1 is allowable. Claims 3, 5-26, and 31-34 xx depend from claim 1 and are allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 1, 3, 5-26, and 31-37 under 35 U.S.C. § 103 is respectfully requested.

II. Independent Claim 27 and the Claims Depending Therefrom

Without acceding to the rejection, independent claim 27 has been amended and reconsideration is respectfully requested.

As amended, independent claim 27 recites a method of assembling a percussive massager comprising, *inter alia*:

> operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure; and
>
> positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, wherein the quick release connector is configured to secure a first massaging head by sliding a shaft of the first

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> massaging head into the bore while the piston reciprocates the predetermined stroke length at the first speed.

For reasons that should be apparent from the discussion of claim 1, the cited references, individually or in proper combination, do not teach or suggest at least the above-quoted portion of amended independent claim 27. Accordingly, Applicant respectfully submits that amended independent claim 27 is allowable. Claim 29 depends from claim 27 and is allowable for at least the same reasons. Reconsideration and withdrawal of the rejections to claims 27 and 29 under 35 U.S.C. § 103 is respectfully requested.

III. Dependent Claims

The additional references cited in the rejections of the dependent claims (i.e., Harris, Tsai, Ehrenreich, Noble, and Elmen) do not cure the deficiencies of the above-discussed references (Pivaroff and Rhoades) with respect to any of the independent claims, and the Office Action does not allege otherwise.

New Claims

New claims 38-65 are added. Independent claim 38 recites a percussive massager comprising, *inter alia*:

> a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

Applicant respectfully submits that Pivaroff and Rhoades, individually or in combination, fail to teach or suggest at least "a quick release connector … configured to secure a first massaging head while the piston reciprocates predetermined stroke length at the first speed, wherein the first massaging head has a **substantially cylindrical pocket** to receive the quick release connector" as recited in independent claim 35. As described above with respect to claim 1, the Office Action references Pivaroff as teaching a quick release connector as recited in claim 1, where "the recessed opening 40 in rod 38 is threaded and forms a 'quick release' connector for attaching a mating head 44" (Office Action at p. 3). However, Applicant respectfully submits that Pivaroff's hollow head 44 fails to teach or suggest a massaging head that "has a substantially cylindrical pocket to receive the quick release connector" as recited in claim 38.

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Pivaroff is silent regarding the hollow head 44 including any type of pocket for receiving the recessed opening 40 in rod 38.

Rhoades fails to remedy the deficiencies of Pivaroff with respect to independent claim 35. As illustrated in the embodiments of the cosmetic instrument in FIGs. 4A and 4B, Rhoades describes that an applicator attachment 200 and brush attachment 30 may be removably or permanently attached to the head portions 120, 140 of the apparatus 100 (See, e.g., Rhoades at para. [0059]). As one example, Rhoades describes that "treatment attachments may also attach to head portions via threaded mating, magnetic attractive force, adhesive, heat bonding, tape, glue, or other sufficient attachment systems" (*Id.* at para. [0061]). Rhoades shows and describes an exemplary threaded mating connection mechanism for an applicator attachment with respect to FIG. 5. However, Applicant respectfully submits that the applicator attachments of Rhoades' apparatus 100, individually or in combination with the features of Pivaroff's device, are silent regarding inclusion of any pocket for receiving a quick release connector and thereby fail to teach or suggest a "a quick release connector … configured to secure a first massaging head while the piston reciprocates predetermined stroke length at the first speed, wherein the first massaging head has a **substantially cylindrical pocket** to receive the quick release connector" as recited in claim 38.

Thus, Applicant respectfully submits that Pivaroff and Rhoades, individually or in proper combination, fail to teach or suggest at least a "a quick release connector … configured to secure a first massaging head while the piston reciprocates predetermined stroke length at the first speed, wherein the first massaging head has a **substantially cylindrical pocket** to receive the quick release connector" as recited in claim 38.

The other cited references do not cure the above-noted deficiencies of Pivaroff and Rhoades with respect to claim 38. Accordingly, Applicant respectfully submits that claim 38 is allowable. Claims 39-65 depend from claim 38 and are allowable for at least the same reasons.

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CONCLUSION

In light of the foregoing, Applicant submits that all pending claims are now in condition for allowance. Accordingly, Applicant respectfully requests reconsideration, withdrawal of all grounds of rejection, and allowance of the pending claims in due course. Applicant submits herewith a Request for Continued Examination and the associated fees required for entry and consideration of this paper. Applicant believes that no additional fees are due in connection with the filing of this paper; however, in the event that any such fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 07-1700 (under Ref. No. HYP-034C3).

If the Examiner believes that a telephone conversation with Applicant's attorney would expedite the allowance of this application or would be helpful in resolving any other outstanding issue, the Examiner is invited to call the undersigned at the telephone number set forth below.

Dated: DRAFT

Respectfully submitted,

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 08/18/2023

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EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
08/18/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Applicant-Initiated Interview Summary	**Application No.** 17/681,367	**Applicant(s)** Danby et al.		
	Examiner TIMOTHY A STANIS	**Art Unit** 3785	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
TIMOTHY A STANIS	Primary Examiner	Telephonic
Sanjeet Dutta	Attorney	

Date of Interview: 10 August 2023

Issues Discussed:

Proposed Amendment(s)

Examiner Stanis agreed that the proposed amendments (attached) overcome the prior art of record. The cited prior art does not disclose a cylindrical bore that receives the first massaging head, or a cylindrical pocket in the first massaging head configured to receive a quick release connector. Further search and consideration will be performed upon submission of the amendment.

☑ Attachment

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

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AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A percussive massager comprising:

a housing;

a piston having a proximal end and a distal end, the distal end of the piston having a substantially cylindrical bore;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism that controls a predetermined stroke length of the piston; and

a quick-connect system comprising the distal end of the piston and a first massaging head, wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates the predetermined stroke length at the first speed.

2. (Cancelled)

3. (Previously Presented) The percussive massager of claim 1, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick-connect system.

4. (Cancelled)

5. (Previously Presented) The percussive massager of claim 1, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.

6. (Previously Presented) The percussive massager of claim 5, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

7. (Previously Presented) The percussive massager of claim 5, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

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8. (Previously Presented) The percussive massager of claim 5, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

9. (Previously Presented) The percussive massager of claim 5, further comprising:
a control panel positioned on an exterior of the housing.

10. (Previously Presented) The percussive massager of claim 9, wherein the control panel is configured to display one or more visual indicators.

11. (Previously Presented) The percussive massager of claim 9, wherein the control panel has a display device.

12. (Previously Presented) The percussive massager of claim 9, wherein the control panel has one or more inputs.

13. (Previously Presented) The percussive massager of claim 12, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

14. (Previously Presented) The percussive massager of claim 12, wherein the first speed and the second speed are each selectable via the one or more inputs.

15. (Previously Presented) The percussive massager of claim 12, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.

16. (Previously Presented) The percussive massager of claim 1, further comprising an audible feedback device configured to generate one or more audible signals.

17. (Previously Presented) The percussive massager of claim 1, further comprising a controller having a processor, a memory, and a data connection.

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18. (Previously Presented) The percussive massager of claim 17, wherein the data connection is a wireless data connection.

19. (Previously Presented) The percussive massager of claim 17, wherein the controller is configured to send, by the data connection, first data to an external computing device.

20. (Previously Presented) The percussive massager of claim 19, wherein the first data is indicative of usage of the percussive massager for providing a massage.

21. (Previously Presented) The percussive massager of claim 17, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

22. (Previously Presented) The percussive massager of claim 21, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

23. (Previously Presented) The percussive massager of claim 1, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

24. (Previously Presented) The percussive massager of claim 23, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

25. (Previously Presented) The percussive massager of claim 24, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

26. (Previously Presented) The percussive massager of claim 1, wherein the motor is positioned within the housing opposite a handle.

27. (Previously Presented) A method of assembling a percussive massager, the method comprising:

positioning a motor at least partially within a housing;

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operatively connecting the motor to a proximal end of a piston, wherein the motor is configured to cause the piston to reciprocate at a first speed, wherein a distal end of the piston has a quick release connector, wherein the quick release connector has a bore having a substantially cylindrical structure; and

positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing, wherein the quick release connector is configured to secure a first massaging head by sliding the first massaging head into the bore while the piston reciprocates the predetermined stroke length at the first speed.

28. (Cancelled)

29. (Previously Presented) The method of claim 27, wherein a second massaging head is configured to releasably couple to the distal end of the piston via the quick release connector.

30. (Cancelled)

31. (Previously Presented) The percussive massager of claim 1, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

32. (Previously Presented) The percussive massager of claim 31, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

33. (Previously Presented) The percussive massager of claim 32, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

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34. (Previously Presented) The percussive massager of claim 1, wherein a handle is on an opposite side of the piston with respect to the motor.

35. (Previously Presented) The percussive massager of claim 1, further comprising a substantially cylindrical structure within the bore.

36. (Currently Amended) The percussive massager of claim [[1]] 35, wherein the substantially cylindrical structure comprises a cylindrical seat.

37. (Currently Amended) The percussive massager of claim [[1]] 35, wherein the substantially cylindrical structure comprises a magnet.

38. (Previously Presented) A percussive massager comprising:

a housing;

a piston in the housing having a proximal end and a distal end;

a motor at least partially within the housing and operatively connected to the proximal end of the piston, wherein the motor is configured to cause the piston to reciprocate at a first speed;

a drive mechanism between the motor and the piston that controls a predetermined stroke length of the piston; and

a quick release connector at the distal end of the piston, wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector.

39. (Previously Presented) The percussive massager of claim 38, further comprising:

a second massaging head configured to releasably couple to the distal end of the piston via the quick release connector.

40. (Previously Presented) The percussive massager of claim 38, wherein the motor is configured to cause the piston to reciprocate the predetermined stroke length at a second speed.

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41. (Previously Presented) The percussive massager of claim 40, wherein the first speed and the second speed are each less than or equal to 3600 strokes per minute.

42. (Previously Presented) The percussive massager of claim 40, wherein the first speed and the second speed are each greater than or equal to 600 strokes per minute.

43. (Previously Presented) The percussive massager of claim 40, wherein the first speed and the second speed are each selectable from a plurality of predetermined speeds in a range of greater than 700 strokes per minute to less than 1800 strokes per minute.

44. (Previously Presented) The percussive massager of claim 40, further comprising:
a control panel positioned on an exterior of the housing.

45. (Previously Presented) The percussive massager of claim 44, wherein the control panel is configured to display one or more visual indicators.

46. (Previously Presented) The percussive massager of claim 44, wherein the control panel has a display device.

47. (Previously Presented) The percussive massager of claim 44, wherein the control panel has one or more inputs.

48. (Previously Presented) The percussive massager of claim 47, wherein the one or more inputs comprise at least one of: a button, a switch, and a dial.

49. (Previously Presented) The percussive massager of claim 47, wherein the first speed and the second speed are each selectable via the one or more inputs.

50. (Previously Presented) The percussive massager of claim 47, wherein a first selection of the one or more inputs is configured to cause the percussive massager to power on and wherein a second selection of the one or more inputs is configured to cause the percussive massager to power off.

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51. (Previously Presented) The percussive massager of claim 38, further comprising an audible feedback device configured to generate one or more audible signals.

52. (Previously Presented) The percussive massager of claim 38, further comprising a controller having a processor, a memory, and a data connection.

53. (Previously Presented) The percussive massager of claim 52, wherein the data connection is a wireless data connection.

54. (Previously Presented) The percussive massager of claim 53, wherein the controller is configured to send, by the data connection, first data to an external computing device.

55. (Previously Presented) The percussive massager of claim 54, wherein the first data is indicative of usage of the percussive massager for providing a massage.

56. (Previously Presented) The percussive massager of claim 52, wherein the controller is configured to receive, by the data connection, second data from an external computing device.

57. (Previously Presented) The percussive massager of claim 56, wherein the second data is indicative of a massage program having at least one of a massage duration, a massage location, and a type of massaging head.

58. (Previously Presented) The percussive massager of claim 38, wherein the housing comprises a cavity, wherein the motor and the drive mechanism are positioned within the cavity.

59. (Previously Presented) The percussive massager of claim 58, further comprising a thermally conductive motor housing positioned within the cavity proximal to the motor.

60. (Previously Presented) The percussive massager of claim 59, further comprising a heat sink positioned proximal to the thermally conductive motor housing.

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61. (Previously Presented) The percussive massager of claim 38, further comprising a handle, wherein the motor is positioned within the housing opposite the handle.

62. (Previously Presented) The percussive massager of claim 38, wherein the motor has an output shaft configured to rotate about a rotation axis, and wherein the drive mechanism comprises:

a flywheel operatively connected to the output shaft of the motor to rotate about a flywheel axis, the output shaft extending into the flywheel along the flywheel axis; and

a crank pin extending from the flywheel, the crank pin being operatively connected to the piston.

63. (Previously Presented) The percussive massager of claim 62, wherein an offset between the flywheel axis and an axis of the crank pin controls the predetermined stroke length of the piston.

64. (Previously Presented) The percussive massager of claim 63, wherein the motor is directly connected to the flywheel, and wherein the crank pin is directly connected to the flywheel.

65. (Previously Presented) The percussive massager of claim 38, further comprising a handle, wherein the handle is on an opposite side of the piston with respect to the motor.

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	**09/13/2023 06:44:54 PM ET**	**HYP-034C3**

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Anna Beaulieu
PATENT CENTER #	62792732	AUTHORIZED BY	Sanjeet Dutta
CUSTOMER #	162143	FILING DATE	02/25/2022
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Philip C. Danby

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 1146	**E20239CI46489807**	**Anna Beaulieu**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
			TOTAL AMOUNT:	**$1,200.00**

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage

submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Filed Electronically

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

INTRODUCTORY COMMENTS

Prior to issuance of the patent, applicant respectfully requests entry of this amendment under 37 C.F.R. 1.312 for the above-captioned patent application.

Amendments to the Claims begins on page 2 of this paper.

Remarks begin on page 10 of this paper.

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REMARKS

The above-identified application has been allowed. By this Amendment, claims 36 and 37 are amended to correct informalities. The amendment does not necessitate additional search or examination, is not believed to affect the patentability of the claims, and introduces no new matter. Accordingly, entry of the amendments is believed to be within the discretion of the Examiner and is respectfully requested under 37 C.F.R. § 1.312. The Office is invited to contact the undersigned with any questions concerning this submission.

In the event the U.S. Patent and Trademark Office determines that an extension is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 07-1700 referencing docket no. HYP-034C3.

Dated: September 13, 2023

Respectfully submitted,

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Petitioner Therabody Ex-1004, 2575

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Philip C. Danby et al.	Allowed: September 13, 2023
Application No.: 17/681,367	Confirmation No.: 8567
Filed: February 25, 2022	Art Unit: 3785
For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH	Examiner: T. A. Stanis

Filed Electronically

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE UNDER 37 C.F.R. § 1.104(e)

Applicant has received the Examiner's Statement of Reasons for Allowance with the September 13, 2023 Notice of Allowance and Allowability regarding the above-identified application. Entry of the Statement into the record should not be construed as any agreement with or acquiescence in the reasoning stated by the Examiner. Each of the claims stands on its own merits and is patentable because of the combination it recites and not because of the presence or absence of any one particular element. The Examiner's Statement was not prepared by Applicant and only contains the Examiner's possible positions in one or more reasons for allowability. Thus, any interpretation with respect to the Examiner's Statement of Reasons for Allowance should not be imputed to the Applicant.

Dated: September 13, 2023

Respectfully submitted,

Electronic signature: /Sanjeet K. Dutta/
Sanjeet K. Dutta
Registration No.: 46,145
GOODWIN PROCTER LLP
100 Northern Avenue
IP DOCKETING DEPT./7TH FL
Boston, Massachusetts 02210
(617) 570-1000
Attorney For Applicant

Petitioner Therabody Ex-1004, 2576

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/681,367	**09/13/2023 06:44:54 PM ET**	**HYP-034C3**

Title of Invention

MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8567	FILED BY	Anna Beaulieu
PATENT CENTER #	62792732	FILING DATE	02/25/2022
CUSTOMER #	162143	FIRST NAMED INVENTOR	Philip C. Danby
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Sanjeet Dutta

Documents

TOTAL DOCUMENTS: 5

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
HYP-034C3 - CSRA.pdf		1	Post Allowance Communication - Incoming	19 KB
HYP-034C3 - ISSFEE.pdf		1	Issue Fee Payment (PTO-85B)	37 KB
HYP-034C3 - 312AMEND.pdf		10	-	47 KB
HYP-034C3 - 312AMEND-A.NA.pdf	(1-1)	1	Amendment after Notice of Allowance (Rule 312)	16 KB
HYP-034C3 - 312AMEND-CLM.pdf	(2-9)	8	Claims	38 KB
HYP-034C3 - 312AMEND-	(10-10)	1	Applicant Arguments/Remarks	17 KB

REM.pdf	Made in an Amendment

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
HYP-034C3 - CSRA.pdf	2C109F9A1D7BE64AE332DFD5EDD7B97664CD7ECCF43CCB5B81F9A630E0F2F6E43782D4005C05961C6764736C24B34E55D66607FD487AD651E94EEBF4355ECA33
HYP-034C3 - ISSFEE.pdf	B1F676D04F745FF51F95D8402F1A1D6A15503A388050B52441ED55F37E25BA2F85958415F21A8B08F8E1B00017DF0BCF71139FA93252E917E89981D3D5354915
HYP-034C3 - 312AMEND.pdf	4E072D197652CE23794451E9D836F2DC8E5131DA7ABB2D1211242EDB874EEB209A460A6E3B7130624FC3A66D1CA7BAAC5F12F012B6F871C33FF7E30A07E7E687
HYP-034C3 - 312AMEND-A.NA.pdf	08E1C2C3194205AC0DD66BBA2B91ACFC01608EED85CF535B3A72722A74C729960D17DFD2009C8B5B09ECCEFECD3576F10DDEAE9A14EF89BF9724EF3C10156F2A
HYP-034C3 - 312AMEND-CLM.pdf	BA8A38B63808A9AFA8D93928F4F5E215B721B37B06B81B7A878657E24CDA433457376F16C7BEF6BED6E1F2C903169787FF4DAC1049309B35BDC63FE89E954C66
HYP-034C3 - 312AMEND-REM.pdf	48FB413EC8B5385EF365268A3996F995A1CE208028E4215082113AC0FBE052640EBA343A99683253A2A5D00F38561A1680568E8CE5B03987C1F81A329CECF18F

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PART B–FEE(S) TRANSMITTAL

Complete and send this form, together with the applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By fax, send to: (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

GOODWIN PROCTER LLP
100 Northern Avenue
IP DOCKETING DEPT./7TH FL
Boston, Massachusetts 02210

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

TITLE OF INVENTION: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

APPLN: TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1,200.00	$0.00	$0.00	$1,200.00	12/13/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
T. A. Stanis	3785	601-101000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. Goodwin Procter LLP
2.
3.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: HYPERICE IP SUBCO, LLC

(B) RESIDENCE: (CITY and STATE or COUNTRY): Irvine, California

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees Submitted: ☒ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment (*Please first reapply any previously paid fee shown above*):

☒ Electronic Payment via Patent Center or EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 07-1700

5. Change of Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29. NOTE: Absent a valid Certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27. NOTE: If the application was previously under micro entity status, checking this box will be taken as a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. NOTE: Checking this box will be taken as a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Sanjeet K. Dutta/ Date September 13, 2023

Typed or printed name Sanjeet K. Dutta Registration No. 46,145

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Filed Electronically

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

INTRODUCTORY COMMENTS

Prior to issuance of the patent, applicant respectfully requests entry of this amendment under 37 C.F.R. 1.312 for the above-captioned patent application.

Amendments to the Claims begins on page 2 of this paper.

Remarks begin on page 10 of this paper.

Petitioner Therabody Ex-1004, 2581

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L139	110	((US-5085207-A OR US-5300095-A OR US-6902525-B1 OR US-4549535-A OR US-4790296-A OR US-6503211-B2 OR US-4716890-A OR US-7927259-B1 OR US-7503923-B2 OR US-6682496-B1 OR US-6537236-B2 OR US-6478755-B2 OR US-6228042-B1 OR US-5925002-A OR US-5447491-A OR US-5327887-A OR US-5140979-A OR US-4827914-A OR US-1657765-A OR US-4566442-A OR US-4513737-A OR US-4088128-A OR US-3626934-A OR US-3710785-A OR US-2078025-A OR US-1339179-A OR US-1269803-A OR US-4841955-A OR US-6357125-B1 OR US-4137632-A OR US-4031763-A OR US-4236874-A OR US-4245966-A OR US-4261228-A OR US-5134777-A OR US-5581896-A OR US-7658012-B2 OR US-6616621-B1 OR US-6432072-B1 OR US-5935089-A OR US-10314762-B1 OR US-7144417-B2 OR US-4730605-A OR US-6758826-B2 OR US-7354408-B2 OR US-10201470-B2 OR US-10653581-B2 OR US-10603208-B2).did. AND USPT.dbnm.) OR ((US-20060025710-A1 OR US-20090005812-A1 OR US-20090270915-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/09/05 02:35 PM

Petitioner Therabody Ex-1004, 2582

		20060293711-A1 OR US-20020177795-A1 OR US-20180200141-A1 OR US-20130338550-A1 OR US-20140094724-A1 OR US-20110118638-A1 OR US-20070150004-A1 OR US-20030195443-A1 OR US-20130261516-A1 OR US-20140194900-A1 OR US-20160151238-A1 OR US-20120253245-A1 OR US-20020183668-A1 OR US-20020115947-A1 OR US-20060178715-A1 OR US-20070167888-A1 OR US-20050113724-A1 OR US-20070179414-A1 OR US-20130102937-A1 OR US-20140135875-A1 OR US-20140180181-A1 OR US-20080243039-A1 OR US-20130060176-A1 OR US-20190262607-A1 OR US-20210077340-A1 OR US-20050113870-A1 OR US-20150305969-A1 OR US-20040049137-A1 OR US-20060135319-A1 OR US-20170304144-A1 OR US-20180280675-A1 OR US-20130158547-A1 OR US-20140371690-A1 OR US-20150005682-A1 OR US-20150182078-A1 OR US-20150182290-A1 OR US-20170172837-A1 OR US-20220085628-A1 OR US-20060253051-A1 OR US-20080319357-A1 OR US-20140288364-A1 OR US-20200085684-A1 OR US-20170087041-A1 OR US-20030009116-A1					

Petitioner Therabody Ex-1004, 2583

		OR US-20030028134-A1 OR US-20030149381-A1 OR US-20050222525-A1 OR US-20100137760-A1 OR US-20150005679-A1 OR US-20170304145-A1 OR US-20200085675-A1 OR US-20100274162-A1 OR US-20200390644-A1 OR US-20060058714-A1).did. AND PGPB.dbnm.) OR ((US-2704941-A OR US-3398588-A OR US-1657765-A OR US-1339179-A).did. AND USOC.dbnm.) OR ((CN-109842256-A).did. AND FTDB.dbnm.)					
L140	7894	(A61h23/0254.cpc. OR A61H2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097.cpc.) AND (reciprocat$3 OR percuss$3)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/09/05 02:37 PM
L141	1743	(A61h23/0254.cpc. OR A61H2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097.cpc.) AND (reciprocat$3 OR percuss$3) AND (bore OR slot)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/09/05 02:37 PM
L142	677	(A61h23/0254.cpc. OR A61H2201/0107,0153,0157,1215,1418,149,166	(US-PGPUB; USPAT)	OR	ON	ON	2023/09/05 02:37 PM

Petitioner Therabody Ex-1004, 2584

		4,5005,501,5015,5035, 5038,5097.cpc.) AND (reciprocat$3 OR percuss$3) AND (replac$4 OR interchang$4)					
L143	580	(A61h23/0254.cpc. OR A61H2201/0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035, 5038,5097.cpc.) AND (reciprocat$3 OR percuss$3) AND (bore OR slot)	(US-PGPUB; USPAT)	OR	ON	ON	2023/09/05 02:37 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	55	(massag$3 AND (piston OR rod) AND (reciprocat$4 OR percus$4) AND motor AND (connect$3 OR adaptor) AND (head)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/09/05 02:40 PM

Petitioner Therabody Ex-1004, 2585

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

162143 7590 09/13/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER	
STANIS, TIMOTHY A	
ART UNIT	PAPER NUMBER
3785	

DATE MAILED: 09/13/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

TITLE OF INVENTION: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	12/13/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PTOL-85 (Rev. 02/11)

Petitioner Therabody Ex-1004, 2586

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

162143 7590 09/13/2023
GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

TITLE OF INVENTION: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

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nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	12/13/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
STANIS, TIMOTHY A	3785	601-101000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via Patent Center or EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

Petitioner Therabody Ex-1004, 2587

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 09/13/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER	
STANIS, TIMOTHY A	

ART UNIT	PAPER NUMBER
3785	

DATE MAILED: 09/13/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Petitioner Therabody Ex-1004, 2588

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/681,367	Applicant(s) Danby et al.	
	Examiner TIMOTHY A STANIS	Art Unit 3785	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to the RCE and amendment filed 8/10/2023.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are See Continuation Sheet . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

Petitioner Therabody Ex-1004, 2590

Continuation of 3. The allowed claim(s) is/are: 1,3,5-27,29 and 31-65

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. This office action is in response to the Request for Continued Examination (RCE) and amendment filed on 8/10/2023. As directed by the amendment, claims 1, 3, 5-27, and 29-31-34 have been amended, claims 2, 4, 28, and 30 have been canceled, and claims 35-65 have been added. Thus, claims 1, 3, 5-27, 29, and 31-65 are pending in the application and are in condition for allowance per the reasons for allowance outlined below.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement for the reasons for allowance: the prior art of record by itself or in combination does not disclose all of the structural and functional limitations as recited in the claims. Specifically, the prior art of record does not disclose:

(1) A percussive massager comprising a housing, a piston having a proximal end and a distal end, "the distal end of the piston having a substantially cylindrical bore" (claim 1, ln. 4-5), a motor, a drive mechanism, and a quick-connect system comprising the distal end of the piston and a first massaging head, "wherein the quick-connect system is configured to secure the first massaging head to the percussive massager by a proximal end of the massaging head being slid into the bore while the piston reciprocates [a] predetermined stroke length" (claim 1, ln. 11-14) in combination with the remaining limitations of claim 1;

(2) A method of assembling a percussive massager, the method comprising: positioning a motor in a housing; operatively connecting the motor to a proximal end of a piston, wherein a distal end of the piston has a quick release connector, "wherein the quick release connector has a bore having a substantially cylindrical structure" (claim 27, ln. 6-7); and positioning a drive mechanism that controls a predetermined stroke length of the piston within the housing "wherein the quick release connector is configured to secure a first massaging head by sliding the first massaging head into the bore while the piston reciprocates the predetermined stroke length at the first speed" (claim 27, ln. 9-11) in combination with the remaining limitations of claim 27;

(3) A percussive massager comprising a housing, a piston in the housing having a proximal end and a distal end, a motor, a drive mechanism, and a quick release connector at the distal end of the piston, "wherein the quick release connector is configured to secure a first massaging head while the piston reciprocates a predetermined stroke length at the first speed, wherein the first massaging head has a substantially cylindrical pocket to receive the quick release connector" (claim 38, ln. 9-12) in combination with the remaining limitations of claim 38.

The closest prior art of record is Pivaroff (6,682,496) and Rhoades (2008/0243039)

While Pivaroff discloses most of the structure present in claims 1, 27, and 38 (see Final Rejection of 7/6/2023), Pivaroff does not disclose a quick-connect system configured to allow a massaging head to be secured or connected to the percussive massager while the piston reciprocates as required by claim 1 (ln. 13), claim 27 (ln. 10-11), and claim 38 (ln. 9-10). While Rhoades discloses a quick-connect system that uses

magnetic coupling that *might* allow for a massage head to attach to a piston while the piston reciprocates, Rhoades does not disclose the claimed structure of the quick release connection system - namely a substantially cylindrical bore at the distal end of the piston (claims 1 and 27) or a substantially cylindrical pocket at the first massaging head to receive a quick release connector (claim 38). Therefore, the claims and application are in condition for allowance.

Conclusion

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A STANIS whose telephone number is (571) 272-5139. The examiner can normally be reached on Mon - Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached at (571) 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61H23/0254	01/31/2023	TS
A61H2201/ 0107,0153,0157,1215,1418,149,1664,5005,501,5015,5035,5038,5097	01/31/2023	TS
Updated Above Search	02/28/2023	TS
Updated Above Search	05/09/2023	TS
Updated Above Search	06/29/2023	TS
Updated Above Search	09/05/2023	TS

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2596

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

Search Notes		
Search Notes	**Date**	**Examiner**
Inventor Search in PE2E and PALM	01/31/2023	TS
See attached PE2E search	01/31/2023	TS
Updated Search; see attached PE2E search	02/28/2023	TS
Updated Search; see attached PE2E search	05/09/2023	TS
Updated Search; see attached PE2E search	06/29/2023	TS
Updated Search; see attached PE2E search	09/05/2023	TS

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	PGPub Database Searched	09/05/2023	TS

/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	

Petitioner Therabody Ex-1004, 2597

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	**Art Unit**
	TIMOTHY A STANIS	3785

CPC						
Symbol					**Type**	**Version**
A61H	/	23	/	0254	F	2013-01-01
A61H	/	2201	/	0153	A	2013-01-01
A61H	/	2201	/	0157	A	2013-01-01
A61H	/	2201	/	1215	A	2013-01-01
A61H	/	2201	/	1418	A	2013-01-01
A61H	/	2201	/	1664	A	2013-01-01
A61H	/	2201	/	5005	A	2013-01-01
A61H	/	2201	/	501	A	2013-01-01
A61H	/	2201	/	5015	A	2013-01-01
A61H	/	2201	/	5035	A	2013-01-01
A61H	/	2201	/	5038	A	2013-01-01
A61H	/	2201	/	5097	A	2013-01-01
A61H	/	2201	/	149	A	2013-01-01
A61H	/	2201	/	0107	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	61	
/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	05 September 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1, 34

U.S. Patent and Trademark Office — Part of Paper No.: 20230905

Petitioner Therabody Ex-1004, 2598

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	**Art Unit**
	TIMOTHY A STANIS	3785

INTERNATIONAL CLASSIFICATION					
CLAIMED					
A61H	/	23	/	02	
NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner) (Date)		**Total Claims Allowed:** 61	
/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785 (Primary Examiner)	05 September 2023 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1, 34

U.S. Patent and Trademark Office Part of Paper No.: 20230905

Petitioner Therabody Ex-1004, 2599

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	**Art Unit**
	TIMOTHY A STANIS	3785

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	8	10	17	19	-	28	31	37	42	46	51	55	60	64
-	2	9	11	18	20	33	29	34	38	43	47	52	56	61	65
2	3	10	12	19	21	-	30	35	39	44	48	53	57		
-	4	11	13	20	22	25	31	36	40	45	49	54	58		
3	5	12	14	21	23	26	32	37	41	46	50	55	59		
4	6	13	15	22	24	27	33	38	42	47	51	56	60		
5	7	14	16	23	25	28	34	39	43	48	52	57	61		
6	8	15	17	24	26	29	35	40	44	49	53	58	62		
7	9	16	18	32	27	30	36	41	45	50	54	59	63		

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	61	
/TIMOTHY A STANIS/ Primary Examiner, Art Unit 3785	05 September 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1, 34

U.S. Patent and Trademark Office

Part of Paper No.: 20230905

Petitioner Therabody Ex-1004, 2600

Bibliographic Data

Application No: 17/681,367

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: _____ _____

Examiner's Signature | Initials

Title: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
02/25/2022	601	3785	HYP-034C3
RULE			

APPLICANTS

HYPERICE IP SUBCO, LLC, Irvine, CA, UNITED STATES

INVENTORS

Philip C. Danby, Key Biscayne, FL, UNITED STATES

John Charles Danby, Witham, UNITED KINGDOM

CONTINUING DATA

This application is a CON of 15892665 02/09/2018 PAT 11285075 Yes /TS/ 9/5/2023

15892665 is a CON of 14317573 06/27/2014 PAT 9889066

14317573 has PRO of 61841693 07/01/2013

FOREIGN APPLICATIONS None /TS/ 9/5/2023

IF REQUIRED, FOREIGN LICENSE GRANTED**

03/02/2022

STATE OR COUNTRY

UNITED STATES

ADDRESS

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210
UNITED STATES

FILING FEE RECEIVED

$7,160

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	Art Unit
	TIMOTHY A STANIS	3785

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/31/2023	02/28/2023	05/09/2023	06/29/2023	09/05/2023				
1	1	✓	✓	✓	✓	=				
-	2	✓	✓	✓	-	-				
2	3	✓	✓	✓	✓	=				
-	4	✓	-	-	-	-				
3	5	✓	✓	✓	✓	=				
4	6	✓	✓	✓	✓	=				
5	7	✓	✓	✓	✓	=				
6	8	✓	✓	✓	✓	=				
7	9	✓	✓	✓	✓	=				
8	10	✓	✓	✓	✓	=				
9	11	✓	✓	✓	✓	=				
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18	20	✓	✓	✓	✓	=				
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24	26	✓	✓	✓	✓	=				
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36	40					=				
37	41					=				
38	42					=				

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/681,367	Danby et al.
	Examiner	**Art Unit**
	TIMOTHY A STANIS	3785

CLAIM		DATE								
Final	Original	01/31/2023	02/28/2023	05/09/2023	06/29/2023	09/05/2023				
39	43					=				
40	44					=				
41	45					=				
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58	62					=				
59	63					=				
60	64					=				
61	65					=				

Petitioner Therabody Ex-1004, 2603

OK TO ENTER: /T.A.S/ 11/20/2023

Docket No.: HYP-034C3
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Philip C. Danby et al.

Application No.: 17/681,367 | Confirmation No.: 8567

Filed: February 25, 2022 | Art Unit: 3785

For: MASSAGE DEVICE HAVING VARIABLE STROKE LENGTH | Examiner: T. A. Stanis

Filed Electronically

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

INTRODUCTORY COMMENTS

Prior to issuance of the patent, applicant respectfully requests entry of this amendment under 37 C.F.R. 1.312 for the above-captioned patent application.

Amendments to the Claims begins on page 2 of this paper.

Remarks begin on page 10 of this paper.

Petitioner Therabody Ex-1004, 2604

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 11/27/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER
STANIS, TIMOTHY A

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
11/27/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JGoodwin@goodwinlaw.com
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Petitioner Therabody Ex-1004, 2605

Response to Rule 312 Communication	Application No.	Applicant(s)	
	17/681,367	Danby et al.	
	Examiner	Art Unit	AIA (FITF) Status
	TIMOTHY A STANIS	3785	Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ The amendment filed on 13 September 2023 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☑ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

f) ☐ not entered because the supplemental or corrected Application Data sheet (ADS)

☐ was not accompanied by a petition to accept an unintentionally delayed claim under 37 CFR 1.55 or 27 CFR 1.78;

☐ did not identify the information being changed in accordance with 37 CFR 1.76(c)(2);

☐ was not properly signed in accordance with 37 CFR 1.76(e) (or 37 CFR 1.33(b) for applications filed prior to September 16, 2012).

/TIMOTHY A STANIS/
Primary Examiner, Art Unit 3785

Petitioner Therabody Ex-1004, 2606

PTO/SB/08a (07-09)
Approved for use through 11/30/2020. OMB 0651-0031
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 7 of 18

Complete if Known	
Application Number	17/681,367-Conf. #8567
Filing Date	February 25, 2022
First Named Inventor	Philip C. Danby
Art Unit	3785
Examiner Name	T. A. Stanis
Attorney Docket Number	HYP-034C3

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A115	US-7,470,242	12-30-2008	Ferber et al.	
	A116	US-7,507,198	03-24-2009	Ardizzone et al.	
	A117	US-7,517,327	04-14-2009	Knight	
	A118	US-7,597,669	10-06-2009	Huang	
	A119	US-7,629,766	12-08-2009	Sadow	
	A120	US-7,634,314	12-15-2009	Applebaum et al.	
	A121	US-7,927,294	04-19-2011	Kamimura et al.	
	A122	US-7,976,485	07-12-2011	Huang	
	A123	US-8,052,625	11-08-2011	Tsai et al.	
	A124	US-8,083,699	12-27-2011	Colloca et al.	
	A125	US-8,092,407	01-10-2012	Tsukada et al.	
	A126	US-8,192,379	06-05-2012	Huang	
	A127	US-8,282,583	10-09-2012	Tsai	
	A128	US-8,317,733	11-27-2012	Chen et al.	
	A129	US-8,342,187	01-01-2013	Kalman et al.	
	A130	US-8,475,362	07-02-2013	Sohn et al.	
	A131	US-8,632,525	01-21-2014	Kerr et al.	
	A132	US-8,673,487	03-18-2014	Churchill	
	A133	US-8,951,216	02-10-2015	Yoo et al.	

FOREIGN PATENT DOCUMENTS

Change(s) applied to document, /K.D.D./ 11/29/2023

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/T.A.S/	~~B37~~	~~EP~~ 004377638-0002	10-25-2017	Einhell Germany AG		
/T.A.S/	B38**	FI-903376-A	12-31-1991	Mirfakhraei, Kaveh	Engl. Abstract	
	B39	GB-1293876-A	10-25-1972	Sunbeam, Corporation		
/T.A.S/	B40**	GB-188946-A	11-23-1922	James, Charles Hillman		
/T.A.S/	B41**	GB-191209026-A	03-06-1913	Johansen, Johannes Christian		
/T.A.S/	B42**	GB-191509508-A	06-29-1916	Begonin, Paul		

Examiner Signature	/TIMOTHY A STANIS/	Date Considered	01/26/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.A.S/

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	01/02/2024	11857482	HYP-034C3	8567

162143 7590 12/13/2023

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

Petitioner Therabody Ex-1004, 2608

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Philip C. Danby, Key Biscayne, FL;
John Charles Danby, Witham, UNITED KINGDOM;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

HYPERICE IP SUBCO, LLC, Irvine, CA;

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Petitioner Therabody Ex-1004, 2609

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/681,367	02/25/2022	Philip C. Danby	HYP-034C3	8567

162143 7590 01/02/2024

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EXAMINER
STANIS, TIMOTHY A

ART UNIT	PAPER NUMBER
3785	

NOTIFICATION DATE	DELIVERY MODE
01/02/2024	ELECTRONIC

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Petitioner Therabody Ex-1004, 2610

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APPLICATION NO.	ISSUE DATE	PATENT NO.
17/681,367	02-Jan-2024	11857482

GOODWIN PROCTER LLP/SILICON VALLEY
PATENT ADMINISTRATOR
100 NORTHERN AVENUE
BOSTON, MA 02210

EGRANT NOTIFICATION

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The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

Petitioner Therabody Ex-1004, 2611