

MASSAGE APPARATUS

BACKGROUND OF THE DISCLOSURE

1. Field of the Disclosure

[0001] The present disclosure is directed to a massage apparatus, and particularly to a handheld massage apparatus that vibrates and has a plurality of rollers.

2. Description of the Related Art

[0002] It is widely accepted that there are therapeutic benefits to massaging the muscles of the human body. Massage therapists undergo extensive training in order to learn to provide effective massages with their hands. Such professionally administered manual massages can be costly.

[0003] Over the years, there have been numerous attempts to create machines and devices that simulate manual massages. Such devices employ different massage techniques such as vibration, rolling, suction, and pressure.

SUMMARY OF THE DISCLOSURE

[0004] The present disclosure provides a generally u-shaped massage apparatus having three arcuate segments that are expandable to fit around a body part.

[0005] The present disclosure provides a vibrating apparatus that has massaging rollers.

[0006] The present disclosure further provides a massage apparatus that when positioned around a body part and moved along an axis of the body

part, causes one or more rollers to spin and massage the body part.

[0007] The present disclosure still further provides a massage apparatus when positioned around a body part is biased against the body part so that one or more rollers spin to massage the body part when the apparatus is moved along an axis of the body part.

[0008] The present disclosure provides a massage apparatus that is both portable and configured for self-administration.

[0009] The present disclosure provides a simplified massage device having improvements in massage function, portability and cost in view of the prior art.

[0010] The above and other objects, features, and advantages of the present disclosure will be apparent and understood by those skilled in the art from the following detailed description, drawings, and accompanying claims. As shown throughout the drawings, like reference numerals designate like or corresponding parts.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a top view of a massage apparatus according to the present disclosure.

[0012] FIG. 2 is partial exploded view of the massage apparatus of FIG. 1.

[0013] FIG. 3 is full exploded view of the massage apparatus of FIG. 1.

[0014] FIG. 4 is a cross section along A-A of FIG. 1.

[0015] FIG. 5 is a cross section along B-B of FIG. 1.

[0016] FIG. 6 is a cross section along C-C of FIG. 1.

[0017] FIG. 7A shows the massage apparatus of FIG. 1 in an unexpanded position.

[0018] FIG. 7B shows the massage apparatus of FIG. 1 in an expanded position.

[0019] FIG. 8 illustrates the process of expanding the device and locating the device on a body part for use.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0020] Referring to the drawings and, in particular to FIG. 1, a massage apparatus is shown and generally represented by reference numeral 100, hereinafter apparatus or "massager 100".

[0021] Massager 100 is a generally u-shaped device composed of three arcuate segments, left segment 102, center segment 104, and right segment 106, connected to each other by spring-loaded hinges 108 shown in FIG. 2, thereby enabling the device to expand to fit around a user's appendage 10. Appendage 10 is an elongate body part having an axis A2 such as, for example, an arm or leg.

[0022] The u-shape of massager 100 is disposed in a plane P. Massager 100 has an axis A1 within the u-shape that is normal to plane P and configured to align with axis A2 during use.

[0023] Massager 100 includes a plurality of rollers 110 that spin freely. When applied to a body part, rollers 110 improve the function of muscular connective tissue including tendons, ligaments, joint capsules and muscular envelopes

[0024] In certain embodiments, rollers 110 are constructed of a single material to have a single hardness. In other certain embodiments, rollers 110 are co-molded from two or more materials so as to have a plurality of areas with varying hardness.

[0025] Rollers 110 can comprise surface features. Nonlimiting examples include a groove concentric with an axis of rotation, a groove parallel to an axis of rotation, or a groove concentric with an axis of rotation and a groove parallel to an axis of rotation. Other nonlimiting examples include patterns such as horizontal, vertical, radial, circular, and cross-hatched patterns.

[0026] Opposed handles 114 and 116 on left segment 102 and right segment 106, respectively, are used to expand massager 100 for positioning on the user's calf muscle. In an expanded state or position, a distance between left segment 102 and axis A1 is greater than a distance between left segment 102 and axis A1 in an unexpanded state. Likewise, in an expanded state or position, a distance between right segment 106 and axis A1 is greater than a distance between right segment 106 and axis A1 in an unexpanded state.

[0027] A button 118 toggles a switch in operative communication with a battery-powered vibration producing internal motor, motor 120, shown in FIG 3, between energized and de-energized states.

[0028] Referring now to FIGS. 2 and 3, a partial exploded and full exploded view of the internal components that comprise massager 100 are shown.

[0029] Segment 102 includes a bottom housing 134 and a top housing 132 that have a plurality of inward facing openings 138. An arcuate roller axis 136 is positioned between bottom housing 134 and top housing 132. Rollers 110 are disposed on arcuate roller axis 136 and spin freely about the axis. A portion of each roller 110 protrudes from each opening 138 so that the rollers

contact the calf when in use. Segment 102 also includes a spring 131 that biases the segment to an unexpanded position from an expanded position.

[0030] Segment 106 includes a bottom housing 164 and a top housing 162 that have a plurality of inward facing openings 168. An arcuate roller axis 166 is positioned between bottom housing 162 and top housing 164. Rollers 110 are disposed on arcuate roller axis 166 and spin freely about the axis. A portion of each roller 110 protrudes from each opening 168 so that the rollers contact the calf when in use. Segment 106 also includes a spring 161 that biases the segment to an unexpanded position from an expanded position.

[0031] Springs 131 and 161 can be torsion springs acting on the respective segment 102 and 106.

[0032] Segment 102 is joined to segment 106 by segment 104 to form the u-shape, and specifically, as shown in FIGS. 7A and 7B, by hinged joints 154 and 156. Hinged joints 154 and 156 provide single axis rotation normal to plane P shown in FIG. 1.

[0033] Segment 104 includes a bottom housing 144 and a top housing 142 with an inward facing opening 145. Segment 104 encloses a motor housing 122 for motor 120. Segment 104 also encloses battery box 150 having positive and negative terminals for connecting a battery 152 (FIG. 4), a switch 117, spring 119 that biases button 118 away from the switch, and circuitry known in the art to provide operative communication with motor 120.

[0034] Rollers 110 are rotatably mounted over motor housing 122 on an axis 146. Again, rollers 110 spin freely, and here on axis 146.

[0035] Once assembled, battery box 150 can be accessed, for example to install or uninstall a battery, by removing a battery cover 148. Preferably,

battery cover 148 is outward facing so as to not interfere with rollers 110.

[0036] FIG. 4 is a cross section of FIG. 1 taken along A-A showing battery box 150, switch 117, button 118, and battery cover 148. In battery box 150, there are two batteries 152 shown. Batteries 152 are dry cell batteries known in the art. It is contemplated that other battery types can be used, including non-removable and rechargeable batteries. Batteries 152 should produce sufficient voltage to power motor 120.

[0037] FIG. 5 is a cross section of FIG. 1 taken along B-B showing bottom housing 134, top housing 132, arcuate roller axis 136 and rollers 110.

[0038] FIG. 6 is a cross section of FIG. 1 taken along C-C showing bottom housing 144, top housing 142, rollers 110, motor 120, motor housing 122, spring 131 and spring 161.

[0039] FIG. 7A shows massager 100 in an unexpanded position having an inner diameter or width W_1 and FIG. 7B shows massager 100 in an expanded position having an inner diameter or width W_2 that is greater than W_1 on the right.

[0040] Operation of massager 100 will now be described with reference to FIG. 8. A user grasps handles 114 and 116 to pull segments 102 and 106 away from each other. As shown, handles 114 and 116 are closed-loop handles. Segments 102 and 106 each pivot with respect to segment 104 expanding the width from W_1 to W_2 . The user then positions massager 100 around their calf muscle as shown and releases handles 114 and 116 causing segments 102 and 106 to contract around the calf muscle by a force of spring 131 and spring 161 so that rollers 110 contact the calf muscle, and preferably compress the calf muscle. Next, the user powers massager 100 by pressing button 118, thereby causing vibration. Finally, the user moves massager 100 up and

down their leg, causing rollers 110 to spin.

[0041] Massager 100, by vibrating, can stimulate blood flow, reduce pain, relax the underlying muscles and create a body-wide sense of relaxation in the user. By compressing against the calf, and spinning by movement up and down, rollers cause myofascial release in the calf.

[0042] As illustrated and described herein, there are three rollers 110 on segment 102, two rollers on segment 104, and three rollers on segment 106. Other configurations are envisioned. For example, there can be four rollers 110 in segments 102 and 106 and two rollers 110 in segment 104, four rollers 110 in segments 102 and 106 and three rollers 110 in segment 104, three rollers 110 in segments 102 and 106 and three rollers 110 in segment 104, two rollers 110 on segments 102 and 106 and two rollers 110 on segment 104, and other combinations.

[0043] The number of rollers 110 that can be included on each segment is dependent on width 111 of the rollers.

[0044] Although rollers 110 are shown to be the same width 111, rollers 110 can have different widths.

[0045] Preferably rollers 110 each have the same outer diameter.

[0046] Motor 120 is a vibration producing motor. A vibration motors typically has an unbalanced mass on its driveshaft. One example of such a motor is an eccentric rotating mass vibration motor (ERM) that use a small unbalanced mass on a DC motor that upon rotation creates a force that translates to vibrations. Another example is a linear resonant actuator (LRA) that includes a small internal mass attached to a spring, creating a vibration force when driven.

[0047] In certain embodiments, motor 120 can be driven by Pulse Width Modulation (PWM) to alternate between bursts of "On" and "Off" , thereby creating one or more discreet vibrating patterns.

[0048] The term "spin freely" means to revolve about an axis upon application of a rotational force with substantially only frictional forces, and preferably only frictional forces impeding rotation thereof.

[0049] Although shown on a user's calf, it should be apparent to those of ordinary skill in the art that massager 100 can be used on other body parts including arms or other portions of the leg, including thigh muscles.

[0050] While the present disclosure has been described with reference to one or more exemplary embodiments, it will be understood by those skilled in the art, that various changes can be made, and equivalents can be substituted for elements thereof without departing from the scope of the present disclosure. In addition, many modifications can be made to adapt a particular situation or material to the teachings of the present disclosure without departing from the scope thereof. Therefore, it is intended that the present disclosure will not be limited to the particular embodiments disclosed herein, but that the disclosure will include all aspects falling within the scope of a fair reading of appended claims.

What is Claimed is:

1. A massaging apparatus that has both an expanded and an unexpanded state, the massaging apparatus comprising:
a generally U-shaped housing having a first side segment, a second side segment, and a central segment,
wherein the housing is disposed in a plane,
wherein the housing has a housing axis that is normal to the plane and configured to align with an appendage axis of a user,
wherein each of the first side segment and the second side segment are pivotably connected to the central segment
wherein each segment has at least one opening that faces the housing axis; and
a roller disposed in the at least one opening.

2. The apparatus of claim 1, further comprising a first torsion spring connecting said first side segment to said central segment and a second torsion spring connecting said second side segment to said central segment so as to bias the first side segment and the second side segment towards the axis when said housing is in an expanded state.

3. The apparatus of claim 1, further comprising a vibrating motor, and circuitry configured to energize and de-energize the vibrating motor.

4. The apparatus of claim 2, further comprising a rechargeable battery.

5. The apparatus of claim 1, wherein the roller spins freely.

6. The apparatus of claim 1, wherein the first side segment comprises an identical number of rollers as the second side segment.

7. The apparatus of claim 1, wherein the roller comprises a surface feature selected from the group consisting of: a texture, an indentation, a

projection, and a groove.

8. The apparatus of claim 1, wherein the roller comprises a material having a first density and a second material having a second density that is less than the first density.

9. The apparatus of claim 1, further comprising a handle on each of the first side segment and the second side segment.

10. The apparatus of claim 9, wherein the handle has a first end directly connected to the first side segment and a second end directly connected to the first side segment to form a closed-loop handle.

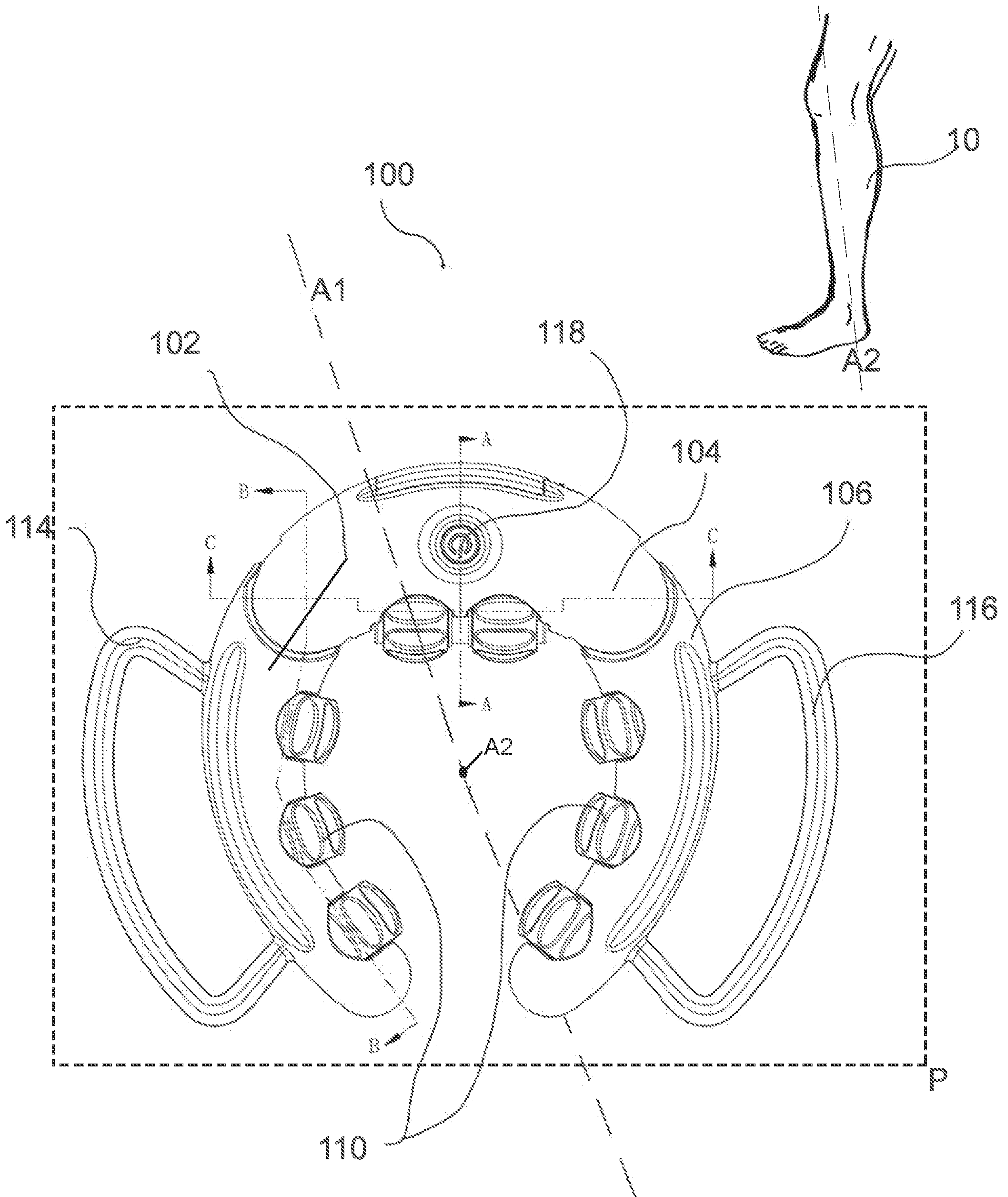


FIG. 1

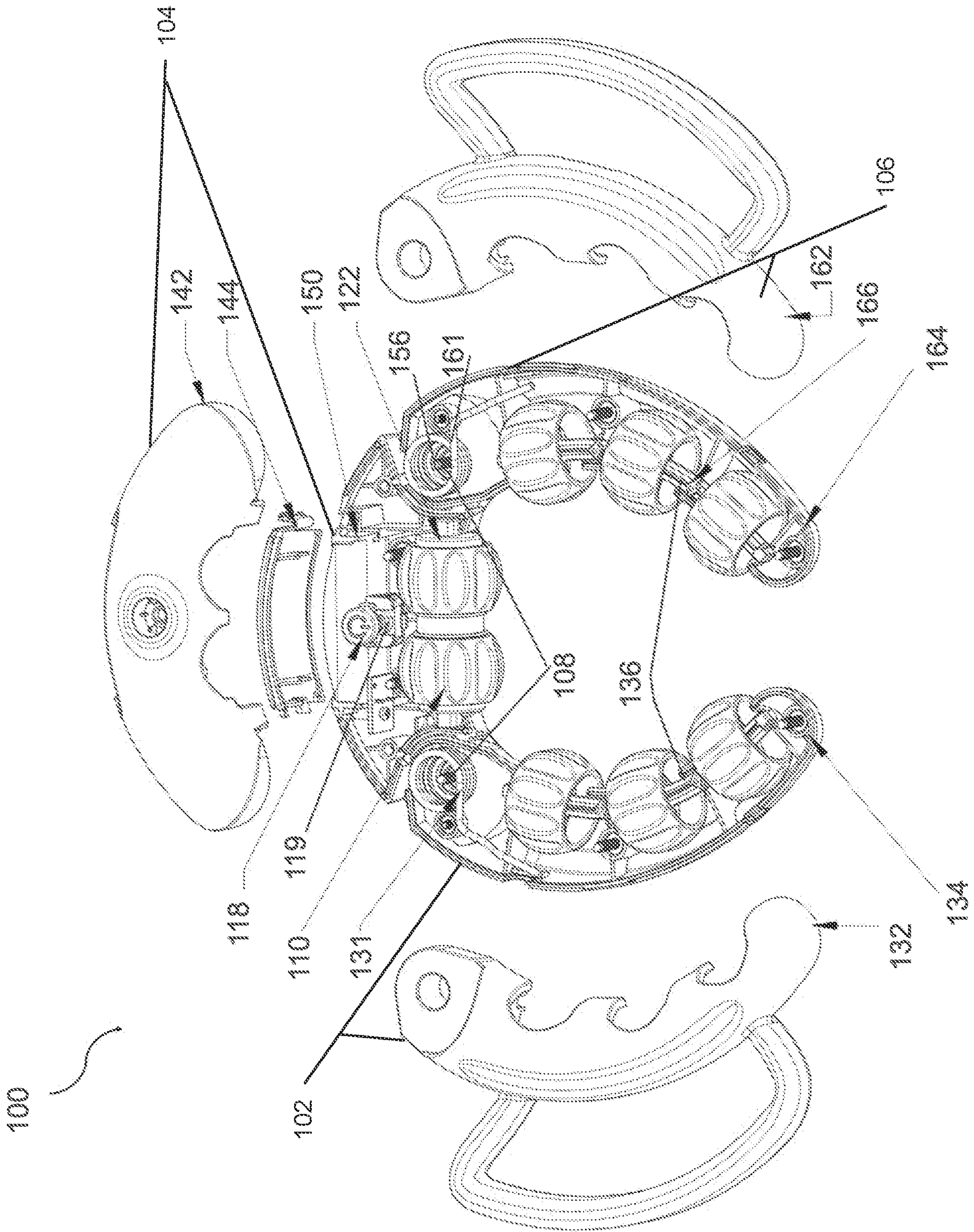


FIG. 2

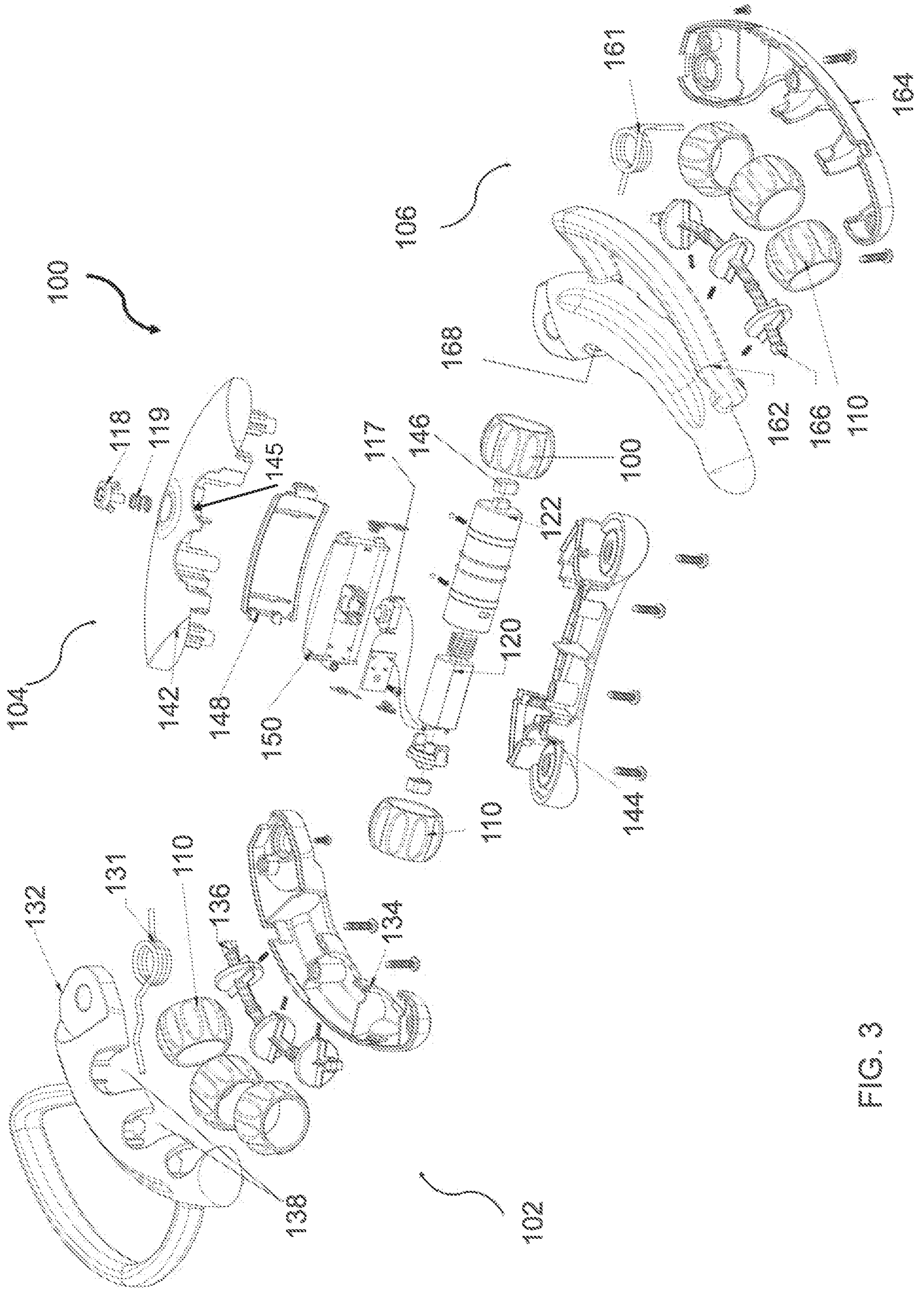
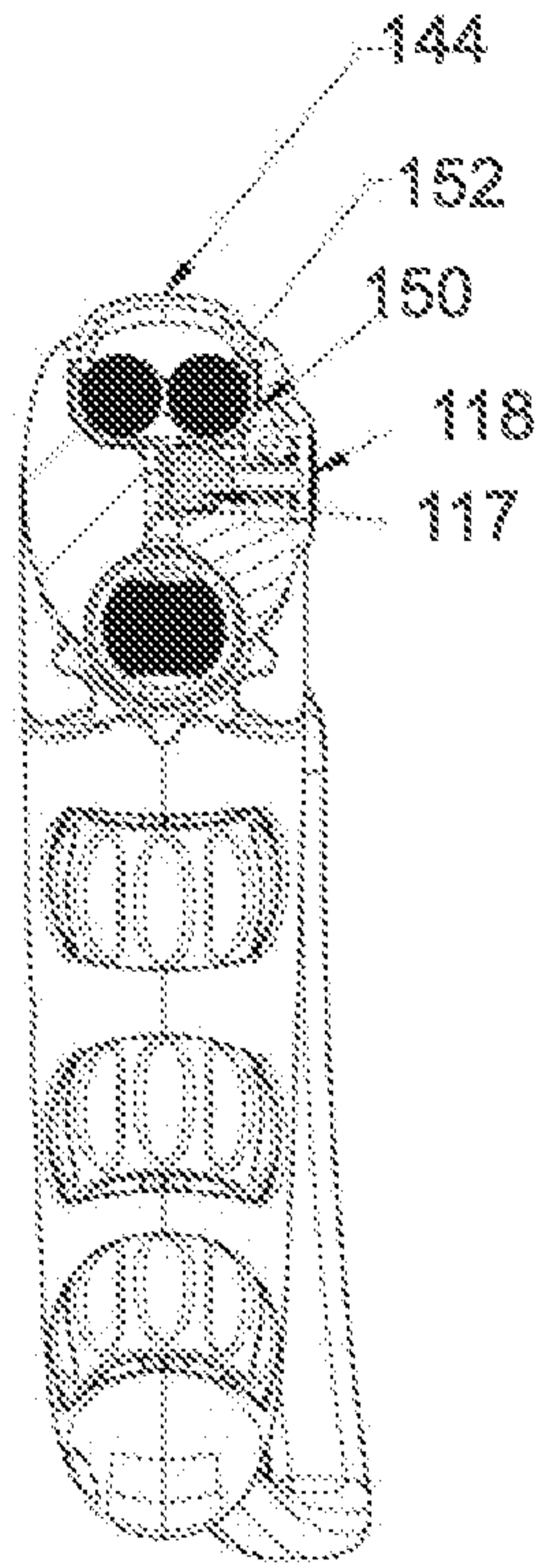
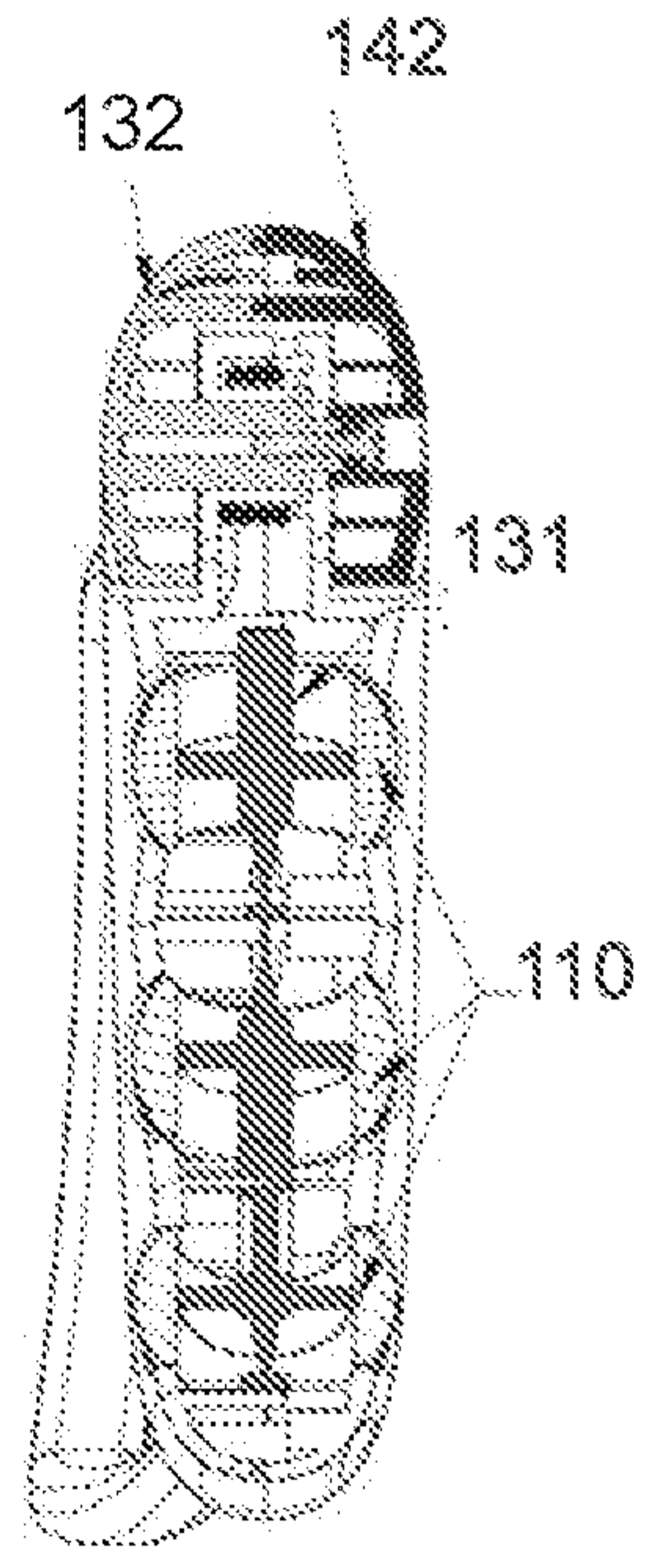


FIG. 3

4/6

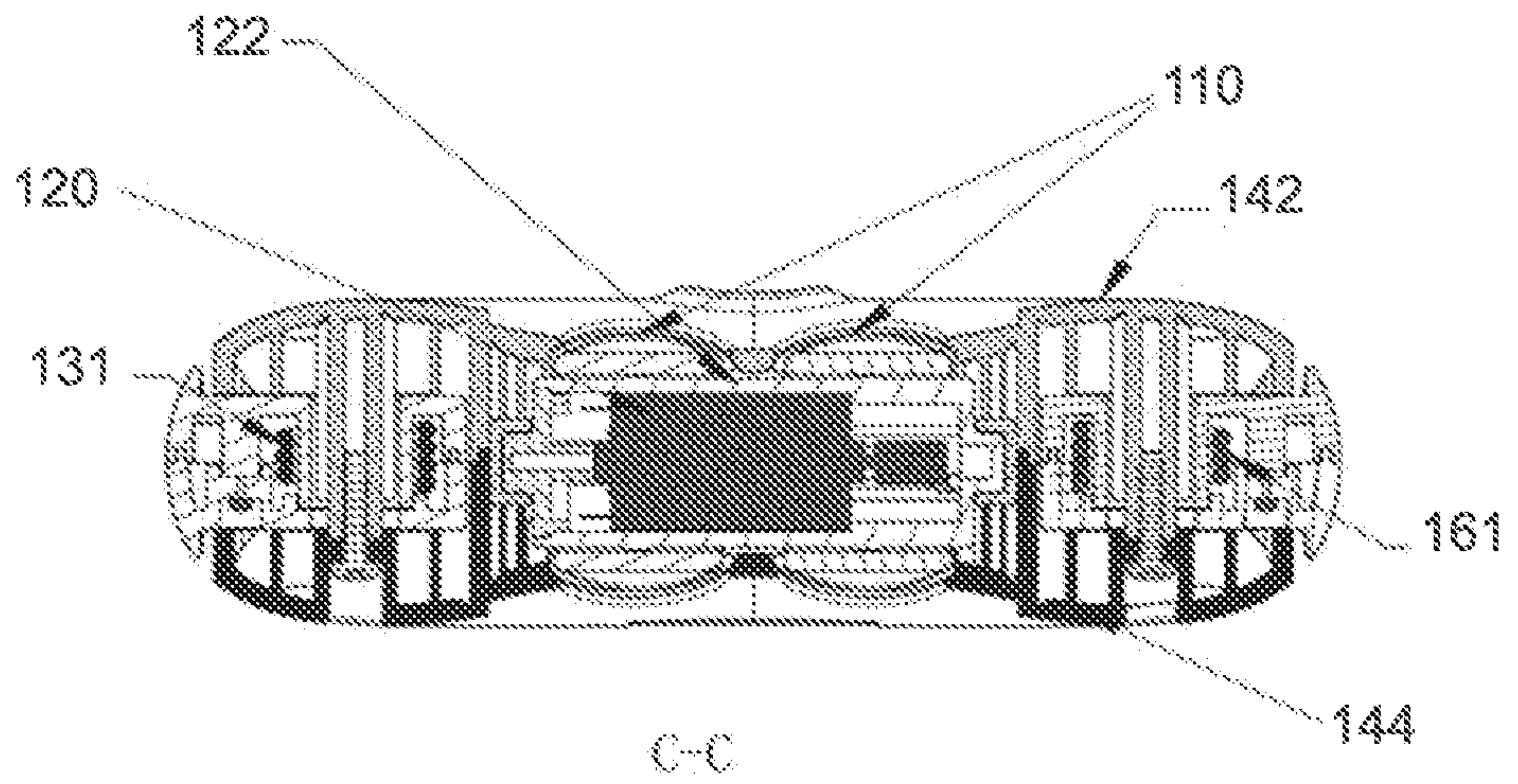


A-A
FIG. 4



B-B
FIG. 5

5/6



C-C
FIG. 6

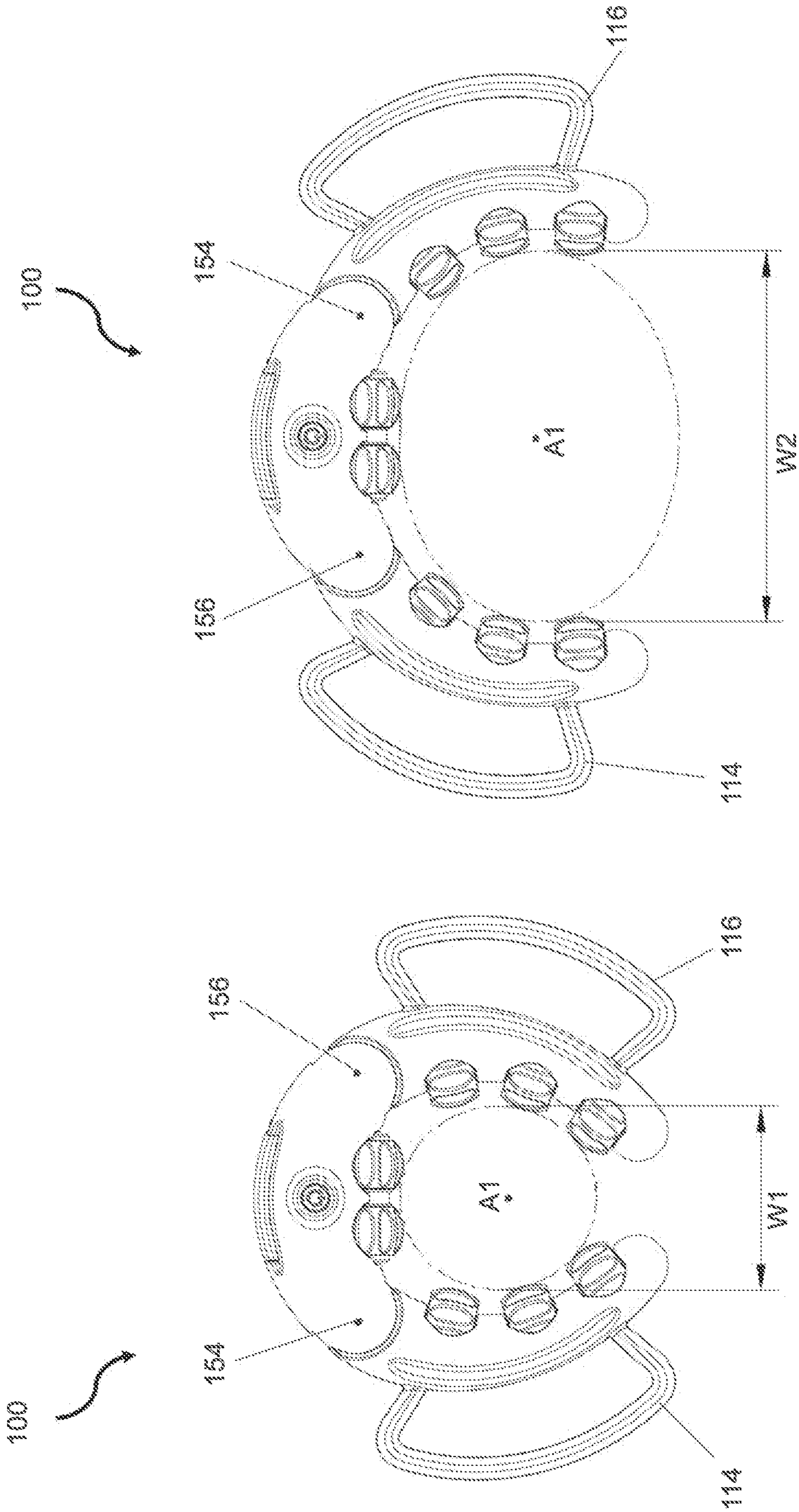


FIG. 7A

FIG. 7B

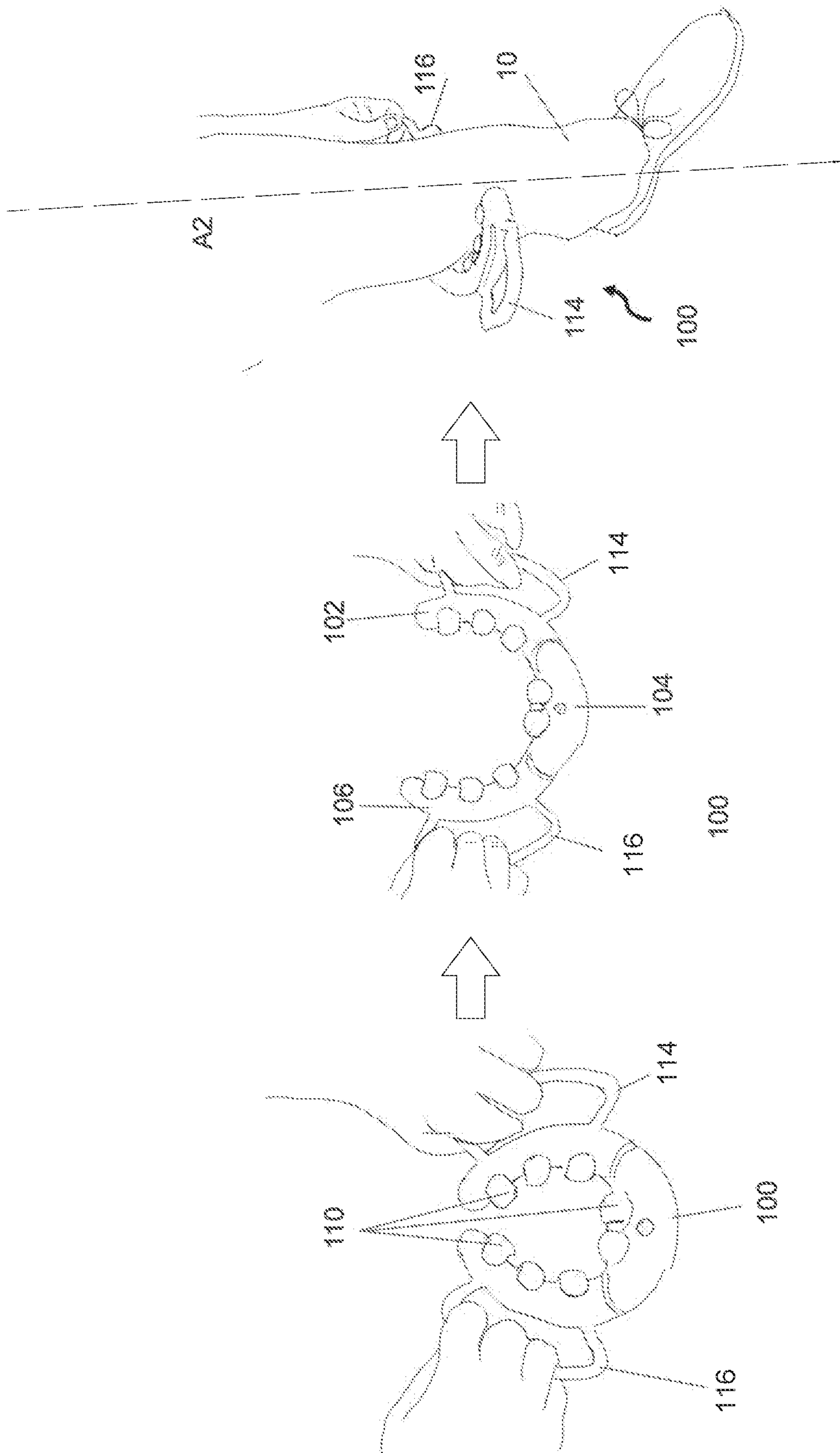


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2020/059266

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61H 23/02; A61H 7/00; A61H 15/00; A61H 37/00; A61H 99/00 (2021.01)

CPC - A61H 23/02; A61H 7/00; A61H 15/00; A61H 37/00; A61H 99/00 (2021.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

see Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

see Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

see Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2017/0112710 A1 (JOHNSTON) 27 April 2017 (27.04.2017) entire document	1-10
Y	US 2014/0228722 A1 (ROLL RECOVERY, LLC) 14 August 2014 (14.08.2014) entire document	1-10
Y	US 2003/0009116 A1 (LUETTGEN et al) 09 January 2003 (09.01.2003) entire document	3, 4
Y	US 2013/0096472 A1 (BERTRAM et al) 18 April 2013 (18.04.2013) entire document	7, 8
A	US 6,053,881 A (BOODRAMSINGH et al) 25 April 2000 (25.04.2000) entire document	1-10

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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

"D" document cited by the applicant in the international application

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

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

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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

"&" document member of the same patent family

Date of the actual completion of the international search

02 January 2021

Date of mailing of the international search report

04 FEB 2021

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, VA 22313-1450

Facsimile No. 571-273-8300

Authorized officer

Blaine R. Copenheaver

Telephone No. PCT Helpdesk: 571-272-4300