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(54) **Massage device**

(57) The present invention relates to a locking mechanism and a massage device of using same. In one embodiment, the locking mechanism includes a base member secured to the a base cover of the massage device, a cushion member positioned over the base member, a bolt member positioned over the cushion member, a

wedge member operably engaged with the bolt member, and an eccentric block engaged with the wedge member and a motor of the massage device. The locking mechanism is configured such that the carriage of the massage device is pre-locked against movements, and the activation of the motor unlocks the massage device.

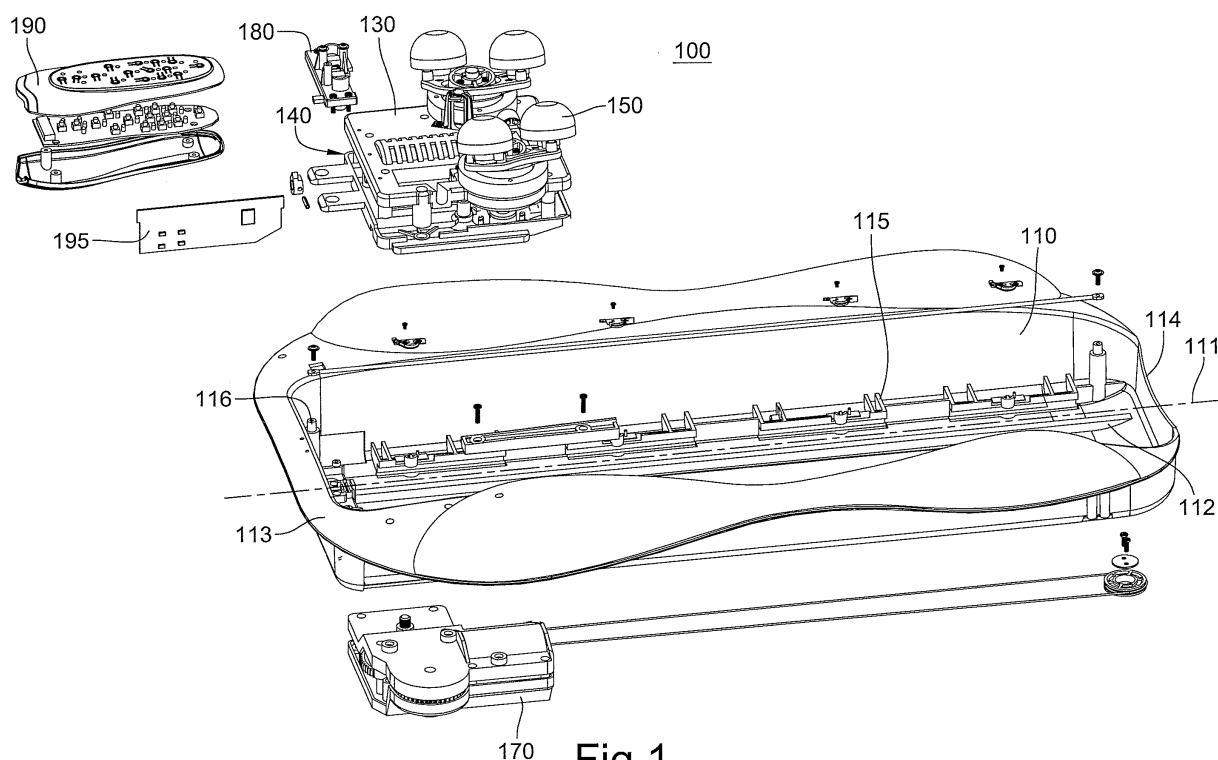


Fig.1

Description

CROSS-REFERENCE TO RELATED PATENT APPLICATION

[0001] This application claims priority of EP application Nos. EP 10157222.0, filed March 22, 2010, entitled "Massage Device with a Locking Mechanism" by Chi Chun Wu, and EP09169089.1, filed August 31, 2009, entitled "Massage Device," by Chi-Chun Wu and Chi-Wu Chiang, which are incorporated herein in their entireties by reference.

[0002] This application is also a continuation-in-part of U.S. patent application Serial No. 12/551,078 (hereinafter "the application '078"), filed August 31, 2009, entitled "Massage Device," by Chi-Chun Wu and Chi-Wu Chiang, which is incorporated herein in its entirety by reference.

[0003] The application '078 is a continuation-in-part of U.S. patent application Serial No. 11/625,255, filed January 19, 2007, entitled "Massage Device," by Chi-Wu Chiang, which itself is a continuation-in-part of U.S. patent application Serial No. 11/082,016, filed March 16, 2005, entitled "Massage Device," by Chi-Wu Chiang, which itself claims priority to and the benefit of, pursuant to 35 USC §119(a), Chinese patent application Serial No. 2004200456092, filed May 11, 2004, which are incorporated herein in their entireties by reference.

[0004] The application '078 is also a continuation-in-part of U.S. patent application Serial No. 12/103,785, filed April 16, 2008, entitled "A Massage Device," by Chi-Wu Chiang, which itself claims priority to and the benefit of, pursuant to 35 USC §119(a), Chinese patent application Serial No. 200820091616.4, filed March 7, 2008, entitled "A Massage Device," by Chi-Wu Chiang, which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0005] The present invention relates generally to a massage device, and more particularly to a massage device that utilizes a locking mechanism to releasably lock the massage assemblies from moving.

BACKGROUND OF THE INVENTION

[0006] Simulated massaging or kneading of parts of the body to aid circulation or relax the muscles has gained popularity, particularly, among people who are lack of exercise. The simulated massaging or kneading effects can be achieved electromagnetically and/or mechanically by means of a massage device. For the mechanical massaging or kneading, the massage device is usually designed to have multiple massage nodes and a driving system to drive the massage nodes to rotate so as to simulate massaging or kneading when applied to parts of interest of the body, and also move back and forth along a massage case so as to move the massage nodes to the parts of interest of the body.

[0007] Usually, means such as screws are used to secure massage assemblies including massage nodes of a massage device to its massage case so as to present movements of the massage assemblies against the massage case during transportation. For such a massage device, if users inadvertently activate the massage device without unscrewing the screws, it will damage the massage device.

[0008] Therefore, a heretofore unaddressed need exists in the art to address the aforementioned deficiencies and inadequacies.

SUMMARY OF THE INVENTION

[0009] In one aspect, the present invention relates to a massage device 100. In one embodiment, the massage device 100 comprises (a) a base cover 110 having a first end portion 113 and an opposite, second end portion 114, a longitudinal axis 111 and multiple guiding rails 112 formed parallel to the longitudinal axis 111; (b) a carriage 130 having a chassis member 131 and a shield member 132 over the chassis member 131, the chassis member 131 having multiple grooves 134 formed in the bottom surface, and at least one tab 131b protruded from one end portion 131a of the chassis member 131, the at least one tab 131b defining a hole 131c therein; wherein when the carriage 130 is engaged with the base cover 110, the guiding rails 112 is received in the grooves 134 of the chassis member 131, respectively, and the carriage 130 is movable back and forth along the guiding rails 112 of the base cover 110; and (c) a first transmission assembly 140 secured in the carriage 130, the first transmission assembly 140 comprising at least one first motor 141 comprising an output shaft 141a, a first worm 142 mechanically coupled with the output shaft 141a of the first motor 141, a pair of worm gears 143a and 143b meshing with the first worm 142, when the first motor 141 is activated, it drives the first worm 142 to rotate, the rotation of the first worm 142 results in the pair of the worm gears 143a and 143b to rotate;

[0010] The massage device 100 further comprises a massage assembly having a pair of massage members 150. Each of the massage member 150 comprises (i) a gear shaft 151 having a first end portion 151a and an opposite, second end portion 151b, wherein the gear shaft 151 extends through the shield member 132 of the carriage 130 and is coaxially mounted to the corresponding worm gear 143a or 143b by the first end portion 151a; (ii) a driving member 160 having an eccentric wheel 161 and an eccentric block 167, wherein the eccentric wheel 161 has a first planar surface 161a, a second planar surface 161b tilted to the first planar surface 161a at an angle β , a third planar surface 161c parallel to the second planar surface 161b, a first cylindrical portion 162 defined between the first planar surface 161a and the second planar surface 161b, a second cylindrical portion 163 defined between the second planar surface 161b and the third planar surface 161c, and a shaft bore 164 defined

through the first cylindrical portion 162 and the second cylindrical portion 163, wherein the first cylindrical portion 162 has a central axis 162c substantially perpendicular to the first planar surface 161a, and a diameter, d_1 , wherein the second cylindrical portion 163 has a central axis 163c substantially perpendicular to the second planar surface 161b and defining an angle α relative to the central axis 162c of the first cylindrical portion 162, and a diameter, d_2 , less than the diameter d_1 of the first cylindrical portion 162, and wherein the shaft bore 164 has a central axis 164c that is substantially coincident with the central axis 162c of the first cylindrical portion 162; and wherein the eccentric block 167 has a first planar surface 167a and a second planar surface 167b defining a cylinder body 168 therebetween, wherein the cylinder body 168 has a central axis 168c and a diameter, d_3 , greater than the diameter d_2 of the second cylindrical portion 163 of the eccentric wheel 161, and the first planar surface 167a is tilted to the second planar surface 167b at an angle γ ; (iii) a massage bracket 152 having a first surface 152a and an opposite, second surface 152b defining a bracket body 152c therebetween, a central axis 152d, a protrusion 155 laterally extending from the bracket body 152c, and a multiple stumps 153 spaced-apart on the second surface 152b, wherein the bracket body 152c defines an opening 154 therethrough; (iv) multiple massage heads 157; and (v) a U-shape fixture 159 wherein as assembled, the massage heads 157 is attached to the stumps 153 of the massage bracket 152, respectively, the second cylindrical portion 163 of the eccentric wheel 161 is received in the opening 154 of the massage bracket 152, the eccentric block 167 is mounted to the second cylindrical portion 163 of the eccentric wheel 161 such that the first planar surface 167a of the eccentric block 167 is substantially in contact with and parallel to the third planar surface 161c of the eccentric wheel 161, the central axis 168c of the cylinder body 168 of the eccentric block 167 is substantially coincident with the central axis 162c of the first cylindrical portion 162 of the eccentric wheel 160, the central axis 152d of the massage bracket 152 is substantially coincident with the central axis 163c of the second cylinder portion 163 of the eccentric wheel 160, and the massage bracket 152 operably cooperates with the second cylindrical portion 163 of the eccentric wheel 161, the protrusion 155 of the massage bracket 152 is received in the U-shape fixture 159, which is mounted to the shield member 132 of the carriage 130; and the second end portion 151b of the gear shaft 151 is received in the shaft bore 164.

[0011] The massage device 100 further has a locking mechanism 180. The locking mechanism 180 comprises (i) a base member 181 defining a bore 181b and at least one step-like recess 181a for releasably receiving the at least one tab 131b of the chassis member 131, the base member 181 being secured to the first end portion 113 of the a base cover 110; (ii) a cushion member 182 having a first opening 182a, and at least one second opening 182b, positioned over the base member 181 such that

the first opening 182a and the at least one second opening 182b are respectively corresponding to the bore 181b and the at least one step-like recess 181a of the base member 181; (iii) a bolt member 183 having a body portion 183c, a peg 183a and at least one cylindrical column 183b respectively protruded from the body portion 183c, positioned over the cushion member 182 such that the peg 183a and the at least one cylindrical column 183b are respectively corresponding to the first opening 182a and the at least one second opening 182b of the cushion member 182; (vi) a wedge member 184 comprising a base portion 184a and a side portion 184b extending at an angle from the base portion 184a, positioned such that the base portion 184a is under the cushion member 182 and operably engaged with the bolt member 183; and (v) an eccentric block 185 having a protrusion 185a, mounted to the output shaft 141a of the at least one first motor 141 such that the protrusion 185a is operably against to the side portion 184b of the wedge member 184.

[0012] In one embodiment, the locking mechanism 180 is pre-set such that the at least one tab 131b of the chassis member 131 is received in the at least one step-like recess 181a of the base member 181; the peg 183a of the of the bolt member 183 is snapped, through the first opening 182a of the cushion member 182, into the bore 181b of the base member 181; the at least one cylindrical column 183b of the bolt member 183 is snapped, through the at least one second opening 182b of the cushion member 182 and the hole 131c of the at least one tab 131b of the chassis member 131, into the at least one step-like recess 181a of the base member 181; and the base portion 184a of the wedge member 184 is positioned under the cushion member 182 and releasably engaged with the bolt member 183, thereby locking the chassis member 131 from moving.

[0013] In one embodiment, when the first motor 141 is activated, the eccentric block 185 rotates around the output shaft 141a of the first motor 141, and the rotation of the eccentric block 185 causes the protrusion 185a to push the side portion 184b of the wedge member 184 to move towards a position limit point of the cushion member 182 so as to eject the bolt member 183, thereby releasing the at least one tab 131b of the chassis member 131 from the base member 181 of the locking mechanism 180.

[0014] In one embodiment, the massage device 100 further includes a second transmission assembly 170 engaged with the first transmission assembly 140.

the second transmission assembly 170 comprising a hoist transmission mechanism 175, a second motor 171 having an output shaft 171a, a second worm 172 mechanically coupled with the output shaft 171a of the second motor 171, one or more worm gears 173 mechanically coupled with the second worm 172 and the hoist transmission mechanism 175 such that when the second motor 171 is activated, it drives the second worm 172 to rotate, the rotation of the second worm 172 results in, in

turn, the rotations of the one or more worm gears 173, thereby moving the carriage 130 along the guiding rails 112 of the base cover 110.

[0015] In one embodiment, each massage members 150 comprises an energy source of capable of generating at least one of thermal energy and photonic energy, where the energy source comprises a lamp base, a PCB board attached to the lamp base, and heating lamps attached onto the PCB board.

[0016] In one embodiment, the massage device 100 further comprise a remote controller 190 for emit a wireless signal; and a circuit board 195 connected to first motor 141 and the second motor 171 and adopted to receive the wireless signal, wherein based on the received wireless signal, the at least one of the first motor 141 and the second motor 171 is activated by the circuit board 195.

[0017] These and other aspects of the present invention will become apparent from the following description of the preferred embodiment taken in conjunction with the following drawings, although variations and modifications therein may be affected without departing from the spirit and scope of the novel concepts of the disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The accompanying drawings illustrate one or more embodiments of the invention and, together with the written description, serve to explain the principles of the invention. Wherever possible, the same reference numbers are used throughout the drawings to refer to the same or like elements of an embodiment, and wherein:

Fig. 1 shows an exploded view of a massage device according to one embodiment of the present invention;

Fig. 2 shows a perspective view of the massage device shown in Fig. 1;

Fig. 3 shows an exploded view of the massage member, carriage and the first transmission assembly shown in Fig. 1;

Fig. 4A shows an exploded view of the second transmission assembly shown in Fig. 1;

Fig. 4B shows a partially perspective view of the second transmission assembly shown in Fig. 1;

Fig. 5 shows a perspective view of the massage member shown in Fig. 1;

Fig. 6 shows a partially exploded view of the massage member shown in Fig. 1;

Fig. 7 shows an exploded view of the massage member shown in Fig. 1;

Fig. 8A shows a cross-section view of the eccentric block shown in Fig. 6;

Fig. 8B shows a cross-section view of the eccentric wheel shown in Fig. 6;

Fig. 9 shows an exploded view of the locking mechanism shown in Fig. 1; and

Fig. 10 shows a perspective view of the locking mechanism shown in Fig. 1.

DETAILED DESCRIPTION OF THE INVENTION

[0019] The present disclosure is more particularly described in the following examples that are intended as illustrative only since numerous modifications and variations therein will be apparent to those skilled in the art. Various embodiments of the disclosure are now described in detail. Referring to the drawings, like numbers indicate like components throughout the views. As used in the description herein and throughout the claims that follow, the meaning of "a", "an", and "the" includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein and throughout the claims that follow, the meaning of "in" includes "in" and "on" unless the context clearly dictates otherwise.

[0020] The terms used in this specification generally have their ordinary meanings in the art, within the context of the disclosure, and in the specific context where each term is used. Certain terms that are used to describe the disclosure are discussed below, or elsewhere in the specification, to provide additional guidance to the practitioner regarding the description of the disclosure. The use of examples anywhere in this specification, including examples of any terms discussed herein, is illustrative only, and in no way limits the scope and meaning of the disclosure or of any exemplified term. Likewise, the disclosure is not limited to various embodiments given in this specification.

[0021] As used herein, the terms "comprising," "including," "having," "containing," "involving," and the like are to be understood to be open-ended, i.e., to mean including but not limited to.

[0022] The description will be made as to the embodiments of the present invention in conjunction with the accompanying drawings in Figs. 1-10. In accordance with the purposes of this invention, as embodied and broadly described herein, this invention, in one aspect, relates to a locking mechanism to releasably lock the massage assemblies from moving.

[0023] Referring first to Figs. 1-10, a massage device 100 is shown according to one embodiment of the present invention. The massage device 100 includes a base cover 110, a carriage 130, a transmission assembly comprising a first transmission assembly 140 and a second transmission assembly 170, a massage assembly having a pair of massage members 150, and a locking mechanism 180.

[0024] The base cover 110 has a first end portion 113, an opposite, second end portion 114, a longitudinal axis 111 and two guiding rails 112 formed parallel to the longitudinal axis 111. The two guiding rails 112 are adapted for cooperating with the carriage 130 and translating the pair of massage members 150 along the longitudinal axis 111. Other numbers of guiding rails can also be utilized

to practice the present invention. The base cover 110 may also have a series of ribs 115 and supporting structures 116 for supporting and securing a top cover (cushion) to form a housing for accommodating the carriage 130, the first transmission assembly 140 and the massage assembly therein. The base cover 110 is made of a durable material, such as wood, plastic, alloy or the like.

[0025] The carriage 130 includes a chassis member 131 having an end portion 131a and at least one tab 131b protruded from the end portion 131a, where the at least one tab 131b defines a hole 131c therein, and a shield member 132. The shield member 132 is placed over the chassis member 131 to form a chamber between the chassis member 131 and the shield member 132. The chassis member 131 has two grooves 134 spaced-apart and formed on the bottom surface of the chassis member 131. The two grooves 134 are configured and sized to receive the two guiding rails 112 of the base cover 110, respectively. The cooperation of the guiding rails 112 of the base cover 110 and the grooves 134 of the chassis member 131 provides longitudinal guidance and support to the carriage 130 as it translates along the guiding rails 112. That is, when the carriage 130 is engaged with the base cover 110, the guiding rails 112 are respectively received in the grooves 134 of the chassis member 131, respectively, and the carriage 130 is longitudinally movable back and forth along the guiding rails 112 of the base cover 110. Other numbers of grooves can also be utilized to practice the present invention. The number of grooves 134 is corresponding to the number of guiding rails 112 formed in the base cover 110.

[0026] The first transmission assembly 140 is secured in the carriage 130. As shown in Fig. 3, the transmission assembly 140 has a first motor 141 having an output shaft 141a, a worm 142 mechanically coupled with the output shaft 141a of the first motor 141, a pair of worm gears 143a and 143b meshing with the worm 142. Under this arrangement, when the first motor 141 is activated, it drives the worm 142 to rotate, the rotation of the worm 142 results in the rotations of the pair of worm gears 143a and 143b.

[0027] The second transmission assembly 170 is engaged with the first transmission assembly 140. As shown in Fig. 4, the second transmission assembly 170 includes a hoist transmission mechanism 175, a second motor 171 having an output shaft 171a, a second worm 172 mechanically coupled with the output shaft 171a of the second motor 171, and one or more worm gears 173 mechanically coupled with the second worm 172 and the hoist transmission mechanism 175. The one or more worm gears 173 have four gears 173a-173d mechanically coupled with one another. The first gear 173a is mechanically coupled to the second worm 172, while the fourth gear 173d mechanically coupled to the hoist transmission mechanism 175 through a shaft 174. For this arrangement, when the second motor 171 is activated, it drives the second worm 172 to rotate, the rotation of the second worm 172 results in, in turn, the rotations of

the one or more worm gears 173, thereby moving the carriage 130 along the guiding rails 112 of the base cover 110.

[0028] The massage assembly has a pair of massage members 150. Each massage member 150 has a gear shaft 151, a driving member 160, a massage bracket 152, two massage heads 157, and a U-shape fixture 159.

[0029] The gear shaft 151 has a first end portion 151a and an opposite, second end portion 151b. The gear shaft 151 extends through the shield member 132 of the carriage 130 and is coaxially mounted to the corresponding worm gear 143a or 143b by the first end portion 151a. In other words, when the worm gear 143a or 143b rotate, it drives the corresponding gear shaft 151 to rotate accordingly.

[0030] The massage bracket 152 includes a first surface 152a and an opposite, second surface 152b defining a bracket body 152c therebetween, a central axis 152d, a protrusion 155 laterally extending from the bracket body 152c, and two stumps 153 spaced-apart on the first surface 152b. The bracket body 152c defines an opening 154 therethrough in the central region. The two massage heads 157 are respectively attached to the two stumps 153 of the massage bracket 152.

[0031] In this embodiment as shown in Figs. 1-10, each of the massage heads 157 has a mushroom-shape. Each of the massage heads 157 includes a first structure 157a, a mushroom-shape node 157c and a second structure 157b placed between the first structure 157a and the mushroom-shape node 157c. Each massage head 157 may include an energy source capable of generating at least one of thermal energy and photonic energy. The energy source may include a lamp base mounted to the corresponding one of the stumps 153, a PCB board attached to the lamp base, and heating lamps attached onto the PCB board. For example, the first structure 157a and the second structure 157b of a massage head 157 can be parts of the energy source.

[0032] The driving member 160 includes an eccentric wheel 161 and an eccentric block 167. The eccentric wheel 161 has a first planar surface 161a, a second planar surface 161b tilted to the first planar surface 161a at an angle β , a third planar surface 161c parallel to the second planar surface 161b, a first cylindrical portion 162 defined between the first planar surface 161a and the second planar surface 161b, a second cylindrical portion 163 defined between the second planar surface 161b and the third planar surface 161c, and a shaft bore 164 defined through the first cylindrical portion 162 and the second cylindrical portion 163. The first cylindrical portion 162 has a central axis 162c substantially perpendicular to the first planar surface 161a, and a diameter, d_1 . The second cylindrical portion 163 has a central axis 163c substantially perpendicular to the second planar surface 161b and defining an angle α , relative to the central axis 162c of the first cylindrical portion 162, and a diameter, d_2 , less than the diameter d_1 of the first cylindrical portion 162. Each of the angles α and β is greater than zero but

less than 90° , preferably, less than 45° . In this embodiment, $\beta = \alpha$. The shaft bore 164 has a central axis 164c substantially coincident with the central axis 162c of the first cylindrical portion 162.

[0033] The eccentric block 167 has a first planar surface 167a and a second planar surface 167b defining a cylinder body 168 therebetween. The first planar surface 167a is tilted to the second planar surface 167b at an angle γ . The angle γ is greater than zero but less than 90° , preferably, less than 45° . In one embodiment, $\gamma = \alpha$. The angles α , β and γ can also be chosen with other values, same or different. The cylinder body 168 has a central axis 168c and a diameter, d_3 , greater than the diameter d_2 of the second cylindrical portion 163 of the eccentric wheel 161. The eccentric block 167 may have a head portion 169 extending from the second surface 167b, and a shaft bore 167c defined therethrough. The shaft bore 167c and the cylinder body 168 are substantially coaxial.

[0034] As assembled, the two massage heads 157 are respectively attached to the two stumps 153 of the massage bracket 152. The second cylindrical portion 163 of the eccentric wheel 161 is received in the opening 154 of the massage bracket 152. The eccentric block 167 is then attached onto the second cylindrical portion 163 of the eccentric wheel 161 such that the first planar surface 167a of the eccentric block 167 is substantially in contact with and parallel to the third planar surface 161c of the eccentric wheel 161, the central axis 168c of the cylinder body 168 of the eccentric block 167 is substantially coincident with the central axis 162c of the first cylindrical portion 162 of the eccentric wheel 160, the central axis 152d of the massage bracket 152 is substantially coincident with the central axis 163c of the second cylindrical portion 163 of the eccentric wheel 160, the massage bracket 152 operably cooperates with the second cylindrical portion 163 of the eccentric wheel 161, and the shaft bore 164 of the eccentric wheel 161 and the shaft bore 167c of the eccentric block 167 are substantially coaxial. Additionally, the protrusion 155 of the massage bracket 152 is received in the U-shape fixture 159 that in turn, is mounted to the shield member 132 of the carriage 130. The second end portion 151b of the gear shaft 151 is then secured into the shaft bore 164 such that when the gear shaft 151 rotates, it drives the driving member 160 to rotate accordingly. Additionally, fastening means such as fastening pins 158 and screws 158a may be applied wherever it is needed to secure various components of the massage device 100.

[0035] For such a massage device 100, in operation, the first motor 141 drives the pair of worm gears 143a and 143b to rotate in opposed rotational directions, which drives the driving member 160 of the massage assembly 150 to rotate. Since the protrusion 155 of the massage bracket 152 is placed in the U-shape fixture 159 that is mounted to the shield member 134 of the carriage 130, the rotation of the massage bracket 152 around the central axis 162c of the first cylindrical portion 162 of the

eccentric wheel 160 is prohibited. Therefore, the rotation of the driving member 160 of the massage assembly 150 drives the massage bracket 152 to gyrate in a way so that its central axis 152d rotates around the central axis 162c of the first cylindrical portion 162 of the eccentric wheel 160 in the angle α . Such a gyro rotation of the massage bracket 152 causes the two massage heads 157 to move alternatively along a direction parallel to the central axis 162c of the first cylindrical portion 162 of the eccentric wheel 160. When the massage heads 157 are applied to parts of the body of a user, a simulated massaging effect is provided.

[0036] As shown in Fig. 9, the locking mechanism 180 includes a base member 181 defining a bore 181b and at least one step-like recess 181a for releasably receiving the at least one tab 131b of the chassis member 131. The base member 181 is secured to the first end portion 113 of the base cover 110 for releasably locking the carriage 130. The locking mechanism 180 also includes a cushion member 182 having a first opening 182a, and at least one second opening 182b, positioned over the base member 181 such that the first opening 182a and the at least one second opening 182b are respectively corresponding to the bore 181b and the at least one step-like recess 181a of the base member 181. Further, the locking mechanism 180 includes a bolt member 183 having a body portion 183c, and a peg 183a and at least one cylindrical column 183b respectively protruded from the body portion 183c, positioned over the cushion member 182 such that the peg 183a and the at least one cylindrical column 183b are respectively corresponding to the first opening 182a and the at least one second opening 182b of the cushion member 182. Moreover, the locking mechanism 180 includes a wedge member 184 including a base portion 184a and a side portion 184b extending at an angle from the base portion 184a, positioned such that the base portion 184a is under the cushion member 182 and operably engaged with the bolt member 183. Additionally, the locking mechanism 180 includes an eccentric block 185 having a protrusion 185a, engaged with the at least one first motor 141 such that the protrusion 185a is operably against the side portion 184b of the wedge member 184. The locking mechanism 180 may also include an ejector positioned under the peg 183a of the bolt member 183. The wedge member 184 is formed in an L-like shape.

[0037] The locking mechanism 180 is pre-set such that the at least one tab 131b of the chassis member 131 is received in the at least one step-like recess 181a of the base member 181; the peg 183a of the bolt member 183 is snapped, through the first opening 182a of the cushion member 182, into the bore 181b of the base member 181; the at least one cylindrical column 183b of the bolt member 183 is snapped, through the at least one second opening 182b of the cushion member 182 and the hole 131c of the at least one tab 131b of the chassis member 131, into the at least one step-like recess 181a of the base member 181; and the base portion 184a of

the wedge member 184 is positioned under the cushion member 182 and releasably engaged with the bolt member 183, thereby locking the chassis member 131 from moving.

[0038] When the first motor 141 is activated, the eccentric block 185 rotates around the output shaft 141a of the first motor 141, and the rotation of the eccentric block 185 causes the protrusion 185a to push the side portion 184b of the wedge member 184 to move towards a position limit point of the cushion member 182 so as to eject the bolt member 183, thereby releasing the at least one tab 131b of the chassis member 131 from the base member 181 of the locking mechanism 180.

[0039] The massage device 100 may further comprise a remote controller 190 and a circuit board 195 which is coupled to the first motor 141 and the second motor 171 and adopted for receiving wireless signals emitted from the remote controller 190. Under this arrangement, a user is capable of activating the at least one of the first motor 141 and the second motor 171 using the remote controller 190. When the second motor 171 is activated, the output shaft 171a of the second motor 171 may be controlled to rotate either clockwise or counter-clockwise so as to move carriage 130 along the guiding rails 112 and then stop the carriage 130 at a pre-determined position of the guiding rails 112. In addition, multiple sensors coupled to the circuit board 195 may be arranged along a path parallel to the guiding rail 112 so as to divide the guiding rail 112 into several sections. Under this arrangement, a user is capable of using the remote controller 195 to activate the second motor 171 for moving the carriage 130 back and forth along the guiding rail 112 inside the selected section.

[0040] Briefly, the present invention, among other things, recites a massage device that utilizes a locking mechanism to releasably lock the massage assemblies from moving.

[0041] The foregoing description of the exemplary embodiments of the invention has been presented only for the purposes of illustration and description and is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in light of the above teaching.

[0042] The embodiments were chosen and described in order to explain the principles of the invention and their practical application so as to activate others skilled in the art to utilize the invention and various embodiments and with various modifications as are suited to the particular use contemplated. Alternative embodiments will become apparent to those skilled in the art to which the present invention pertains without departing from its spirit and scope. Accordingly, the scope of the present invention is defined by the appended claims rather than the foregoing description and the exemplary embodiments described therein.

[0043] The present invention relates to a locking mechanism and a massage device of using same. In one embodiment, the locking mechanism includes a base mem-

ber secured to the a base cover of the massage device, a cushion member positioned over the base member, a bolt member positioned over the cushion member, a wedge member operably engaged with the bolt member, and an eccentric block engaged with the wedge member and a motor of the massage device. The locking mechanism is configured such that the carriage of the massage device is pre-locked against movements, and the activation of the motor unlocks the massage device.

Claims

1. A massage device 100, comprising:

(a) a base cover 110 having a first end portion 113 and an opposite, second end portion 114, a longitudinal axis 111 and a plurality of guiding rails 112 formed parallel to the longitudinal axis 111;

(b) a carriage 130 having a chassis member 131 and a shield member 132 over the chassis member 131, the chassis member 131 having a plurality of grooves 134 formed in the bottom surface of the chassis member 131, and at least one tab 131b protruded from one end portion 131a of the chassis member 131, the at least one tab 131b defining a hole 131c therein; wherein when the carriage 130 is engaged with the base cover 110, the plurality of guiding rails 112 is received in the plurality of grooves 134 of the chassis member 131, respectively, and the carriage 130 is movable back and forth along the plurality of guiding rails 112 of the base cover 110;

(c) a first transmission assembly 140 secured in the carriage 130, the first transmission assembly 140 comprising at least one first motor 141 comprising an output shaft 141a, a first worm 142 mechanically coupled with the output shaft 141a of the first motor 141, a pair of worm gears 143a and 143b meshing with the first worm 142, when the first motor 141 is activated, it drives the first worm 142 to rotate, the rotation of the first worm 142 results in the pair of the worm gears 143a and 143b to rotate;

(d) a massage assembly having a pair of massage members 150, each of the massage members 150 comprising:

(i) a gear shaft 151 having a first end portion 151a and an opposite, second end portion 151b, wherein the gear shaft 151 extends through the shield member 132 of the carriage 130 and is coaxially mounted to the corresponding worm gear 143a or 143b by the first end portion 151a;

(ii) a driving member 160 having an eccen-

tric wheel 161 and an eccentric block 167, wherein the eccentric wheel 161 has a first planar surface 161a, a second planar surface 161b tilted to the first planar surface 161a at an angle β , a third planar surface 161c parallel to the second planar surface 161b, a first cylindrical portion 162 defined between the first planar surface 161a and the second planar surface 161b, a second cylindrical portion 163 defined between the second planar surface 161b and the third planar surface 161c, and a shaft bore 164 defined through the first cylindrical portion 162 and the second cylindrical portion 163, wherein the first cylindrical portion 162 has a central axis 162c substantially perpendicular to the first planar surface 161a, and a diameter, d_1 , wherein the second cylindrical portion 163 has a central axis 163c substantially perpendicular to the second planar surface 161b and defining an angle α relative to the central axis 162c of the first cylindrical portion 162, and a diameter, d_2 , less than the diameter d_1 of the first cylindrical portion 162, and wherein the shaft bore 164 has a central axis 164c that is substantially coincident with the central axis 162c of the first cylindrical portion 162; and wherein the eccentric block 167 has a first planar surface 167a and a second planar surface 167b defining a cylinder body 168 therebetween, wherein the cylinder body 168 has a central axis 168c and a diameter, d_3 , greater than the diameter d_2 of the second cylindrical portion 163 of the eccentric wheel 161, and the first planar surface 167a is tilted to the second planar surface 167b at an angle γ ;
 (iii). a massage bracket 152 having a first surface 152a and an opposite, second surface 152b defining a bracket body 152c therebetween, a central axis 152d, a protrusion 155 laterally extending from the bracket body 152c, and a plurality of stumps 153 spaced-apart on the second surface 152b, wherein the bracket body 152c defines an opening 154 there-through;
 (iv). a plurality of massage heads 157; and
 (v). a U-shape fixture 159, wherein as assembled, the plurality of massage heads 157 is attached to the plurality of stumps 153 of the massage bracket 152, respectively, the second cylindrical portion 163 of the eccentric wheel 161 is received in the opening 154 of the massage bracket 152, the eccentric block 167 is mounted to the second cylindrical portion 163 of the ec-

centric wheel 161 such that the first planar surface 167a of the eccentric block 167 is substantially in contact with and parallel to the third planar surface 161c of the eccentric wheel 161, the central axis 168c of the cylinder body 168 of the eccentric block 167 is substantially coincident with the central axis 162c of the first cylindrical portion 162 of the eccentric wheel 160, the central axis 152d of the massage bracket 152 is substantially coincident with the central axis 163c of the second cylindrical portion 163 of the eccentric wheel 160, and the massage bracket 152 operably cooperates with the second cylindrical portion 163 of the eccentric wheel 161, the protrusion 155 of the massage bracket 152 is received in the U-shape fixture 159, which is mounted to the shield member 132 of the carriage 130; and the second end portion 151b of the gear shaft 151 is received in the shaft bore 164; and

(e) a locking mechanism 180, comprising:

- (i) a base member 181 defining a bore 181b and at least one step-like recess 181a for releasably receiving the at least one tab 131b of the chassis member 131, the base member 181 being secured to the first end portion 113 of the a base cover 110;
- (ii) a cushion member 182 having a first opening 182a, and at least one second opening 182b, positioned over the base member 181 such that the first opening 182a and the at least one second opening 182b are respectively corresponding to the bore 181b and the at least one step-like recess 181a of the base member 181;
- (iii) a bolt member 183 having a body portion 183c, a peg 183a and at least one cylindrical column 183b respectively protruded from the body portion 183c, positioned over the cushion member 182 such that the peg 183a and the at least one cylindrical column 183b are respectively corresponding to the first opening 182a and the at least one second opening 182b of the cushion member 182;
- (iv) a wedge member 184 comprising a base portion 184a and a side portion 184b extending at an angle from the base portion 184a, positioned such that the base portion 184a is under the cushion member 182 and operably engaged with the bolt member 183; and
- (v) an eccentric block 185 having a protrusion 185a, mounted to the output shaft 141 a of the at least one first motor 141 such

that the protrusion 185a is operably against to the side portion 184b of the wedge member 184.

2. The massage device of claim 1, wherein the locking mechanism 180 is pre-set such that the at least one tab 131b of the chassis member 131 is received in the at least one step-like recess 181a of the base member 181; the peg 183a of the of the bolt member 183 is snapped, through the first opening 182a of the cushion member 182, into the bore 181b of the base member 181; the at least one cylindrical column 183b of the bolt member 183 is snapped, through the at least one second opening 182b of the cushion member 182 and the hole 131 c of the at least one tab 131b of the chassis member 131, into the at least one step-like recess 181a of the base member 181; and the base portion 184a of the wedge member 184 is positioned under the cushion member 182 and releasably engaged with the bolt member 183, thereby locking the chassis member 131 from moving. 5
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3. The massage device of claim 2, wherein when the first motor 141 is activated, the eccentric block 185 rotates around the output shaft 141a of the first motor 141, and the rotation of the eccentric block 185 causes the protrusion 185a to push the side portion 184b of the wedge member 184 to move towards a position limit point of the cushion member 182 so as to eject the bolt member 183, thereby releasing the at least one tab 131b of the chassis member 131 from the base member 181 of the locking mechanism 180. 25
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4. The massage device of claim 1, further comprising a second transmission assembly 170 engaged with the first transmission assembly 140, the second transmission assembly 170 comprising a hoist transmission mechanism 175, a second motor 171 having an output shaft 171a, a second worm 172 mechanically coupled with the output shaft 171a of the second motor 171, one or more worm gears 173 mechanically coupled with the second worm 172 and the hoist transmission mechanism 175 such that when the second motor 171 is activated, it drives the second worm 172 to rotate, the rotation of the second worm 172 results in, in turn, the rotations of the one or more worm gears 173, thereby moving the carriage 130 along the plurality of the guiding rails 112 of the base cover 110. 35
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5. The massage device of claim 1, wherein each massage members 150 comprises an energy source of capable of generating at least one of thermal energy and photonic energy. 55

6. The massage device of claim 5, wherein the source energy comprises a lamp base, a PCB board attached to the lamp base, and heating lamps attached

onto the PCB board.

7. The massage device of claim 1, further comprises:
 - a remote controller 190, adopted to emit a wireless signal; and
 - a circuit board 195, coupled to the first motor 141 and the second motor 171 and adopted to receive the emitted wireless signal, wherein based on the received wireless signal, the at least one of the first motor 141 and the second motor 171 is activated by the circuit board 195.

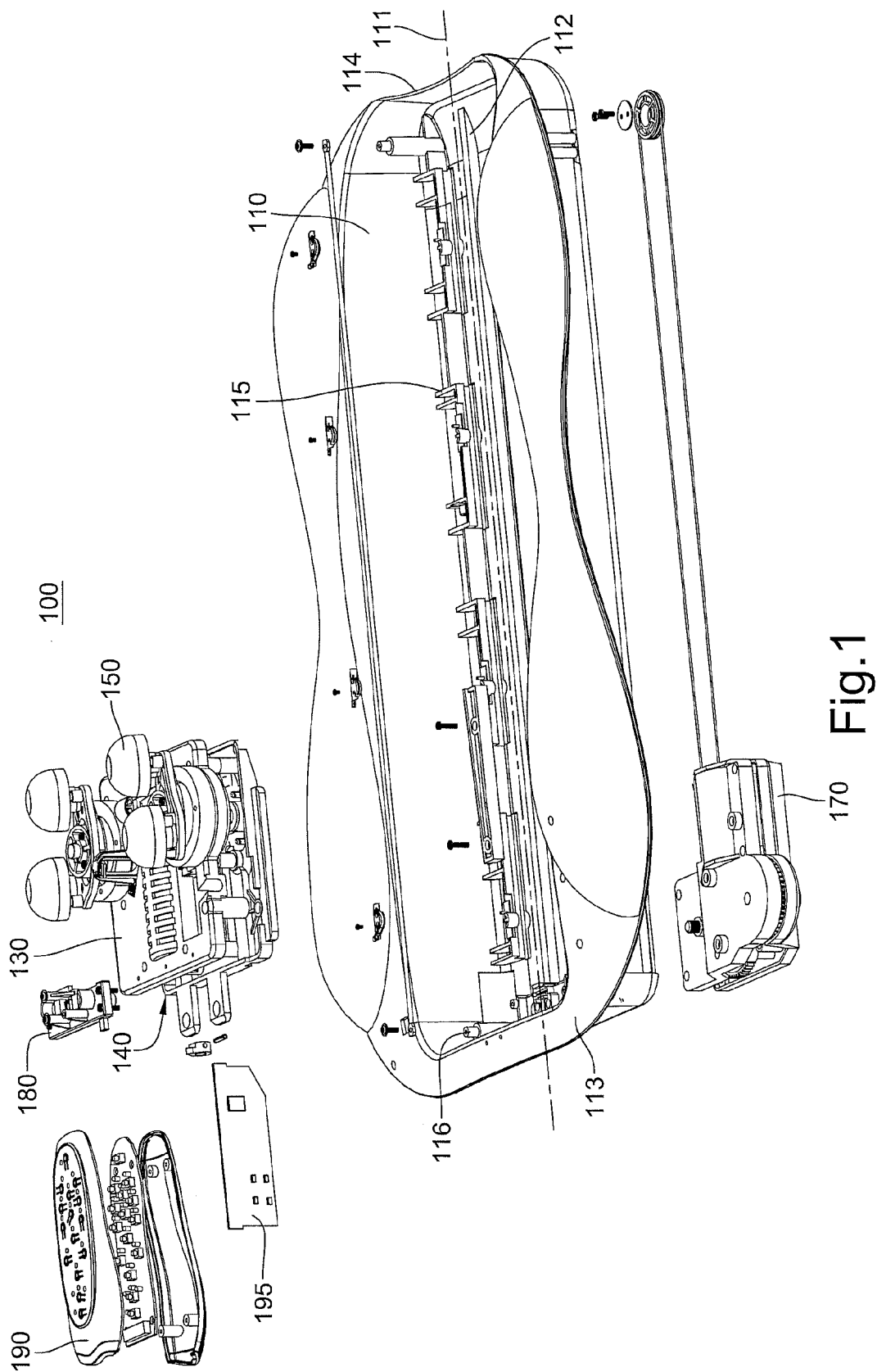


Fig.1

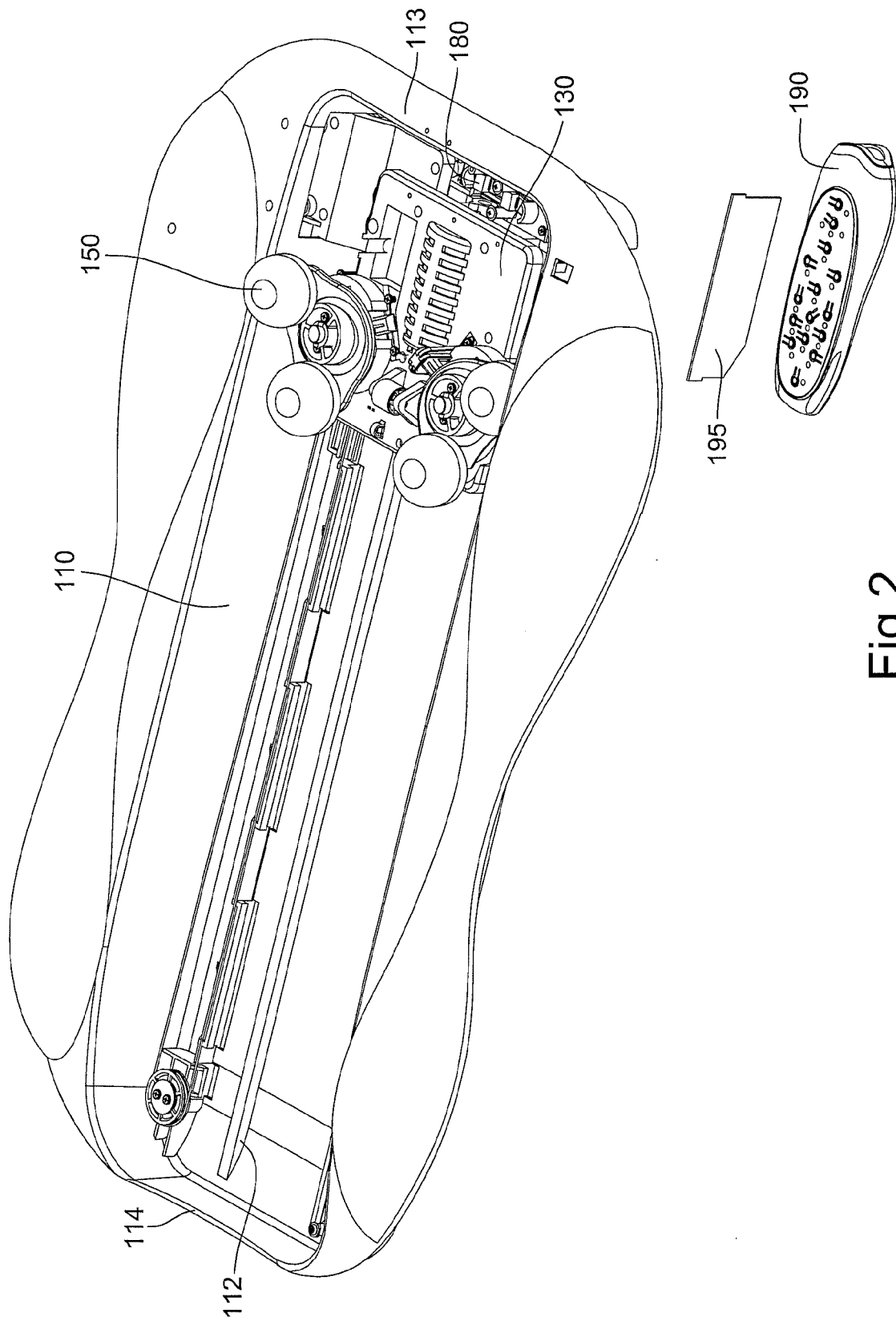


Fig.2

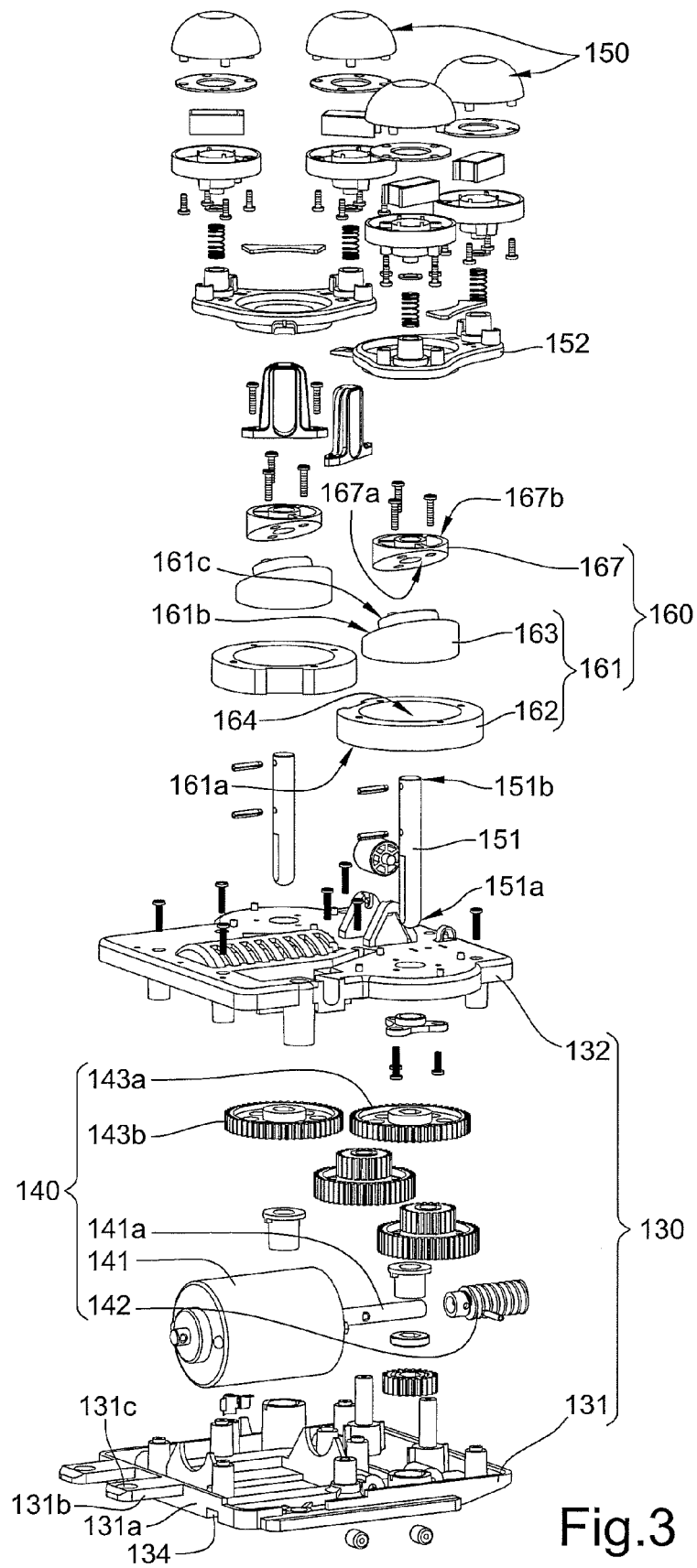


Fig.3

170

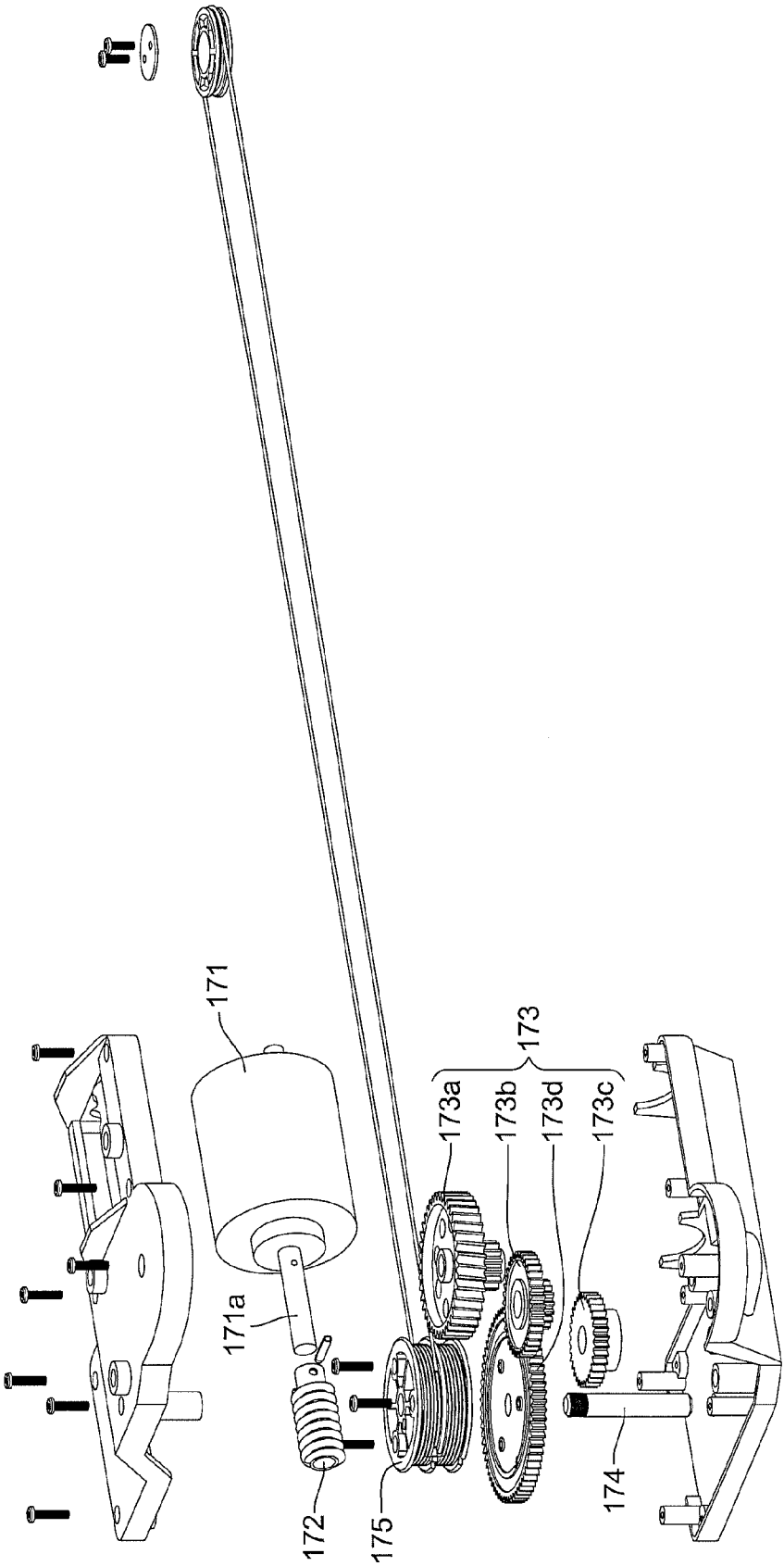


Fig.4A

170

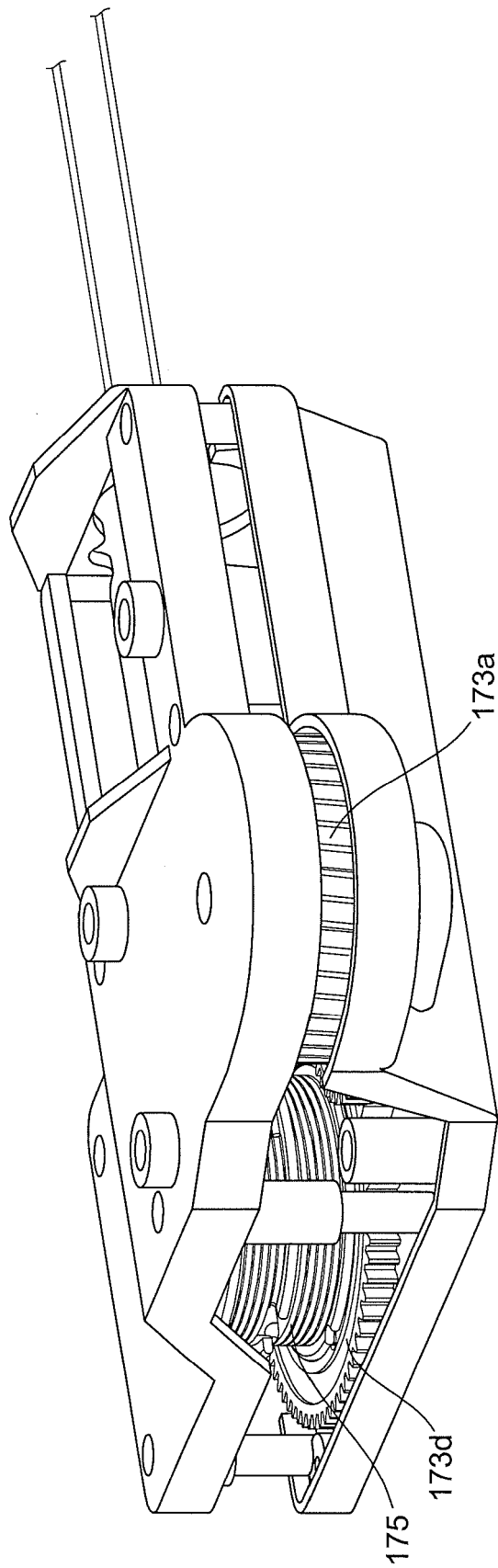


Fig.4B

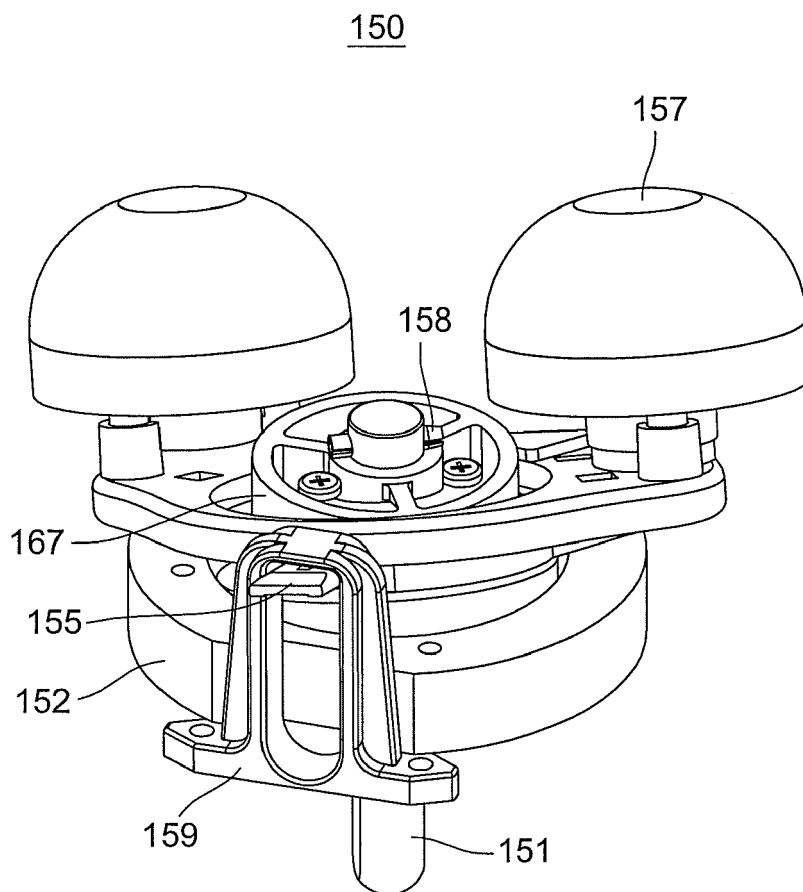


Fig.5

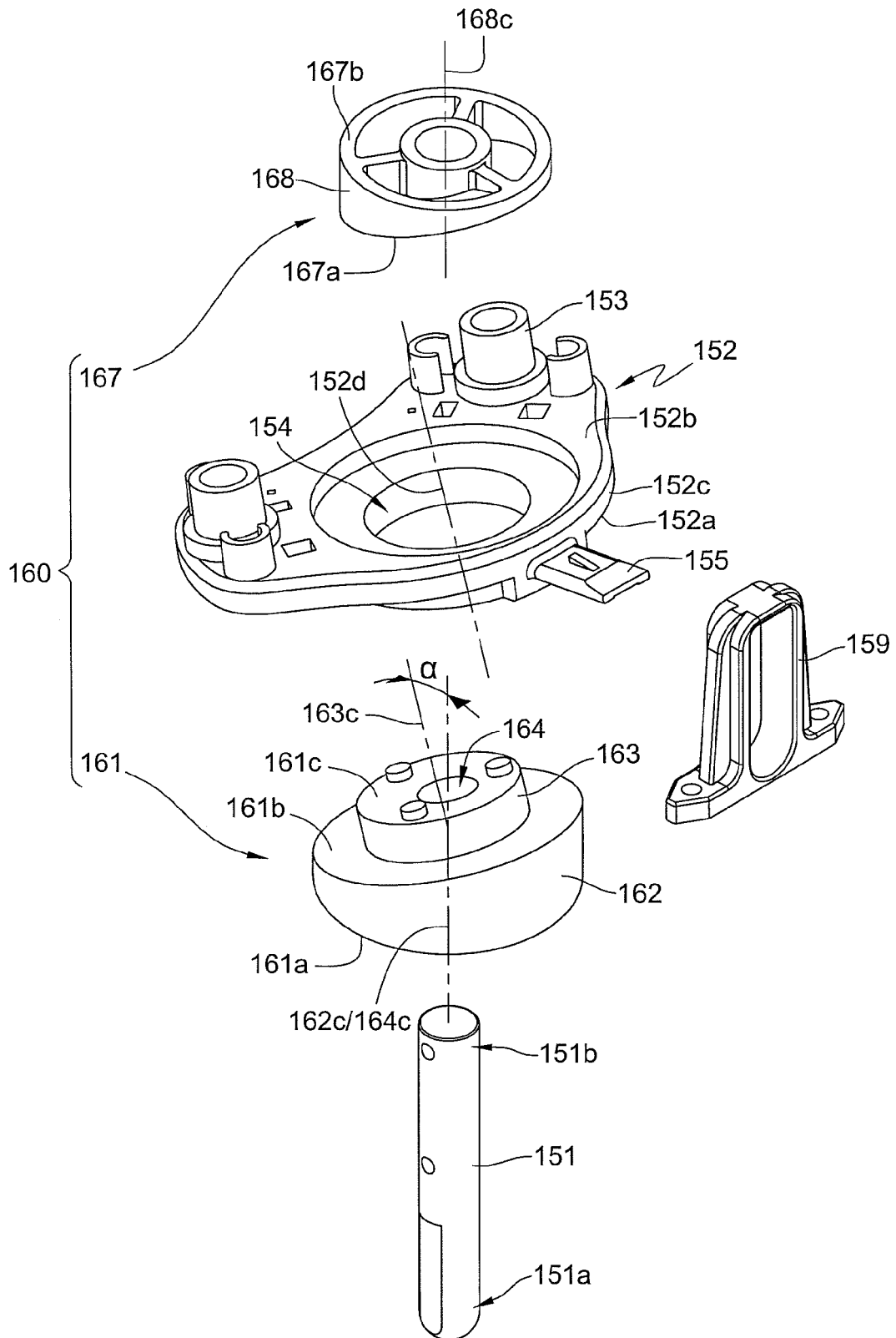


Fig.6

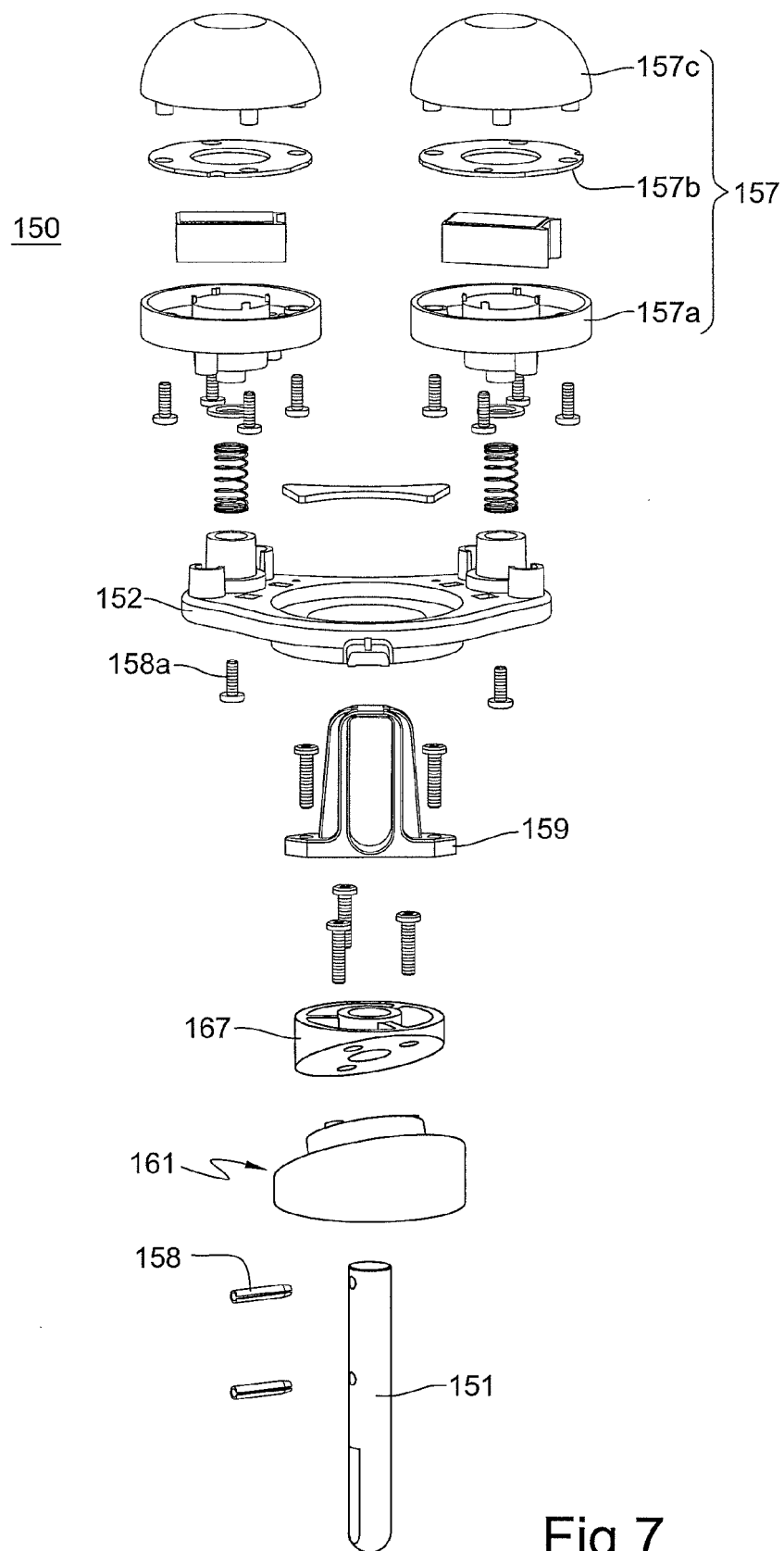


Fig.7

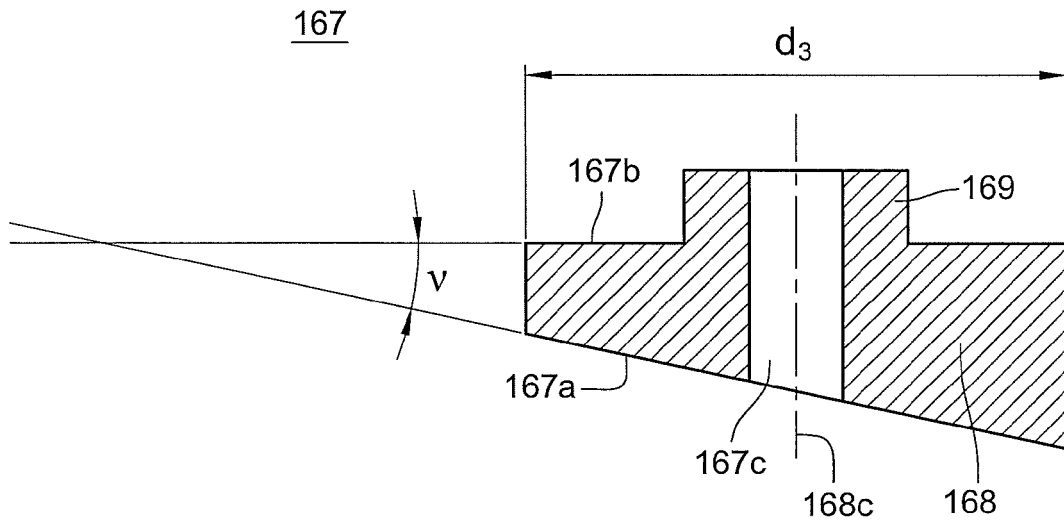


Fig.8A

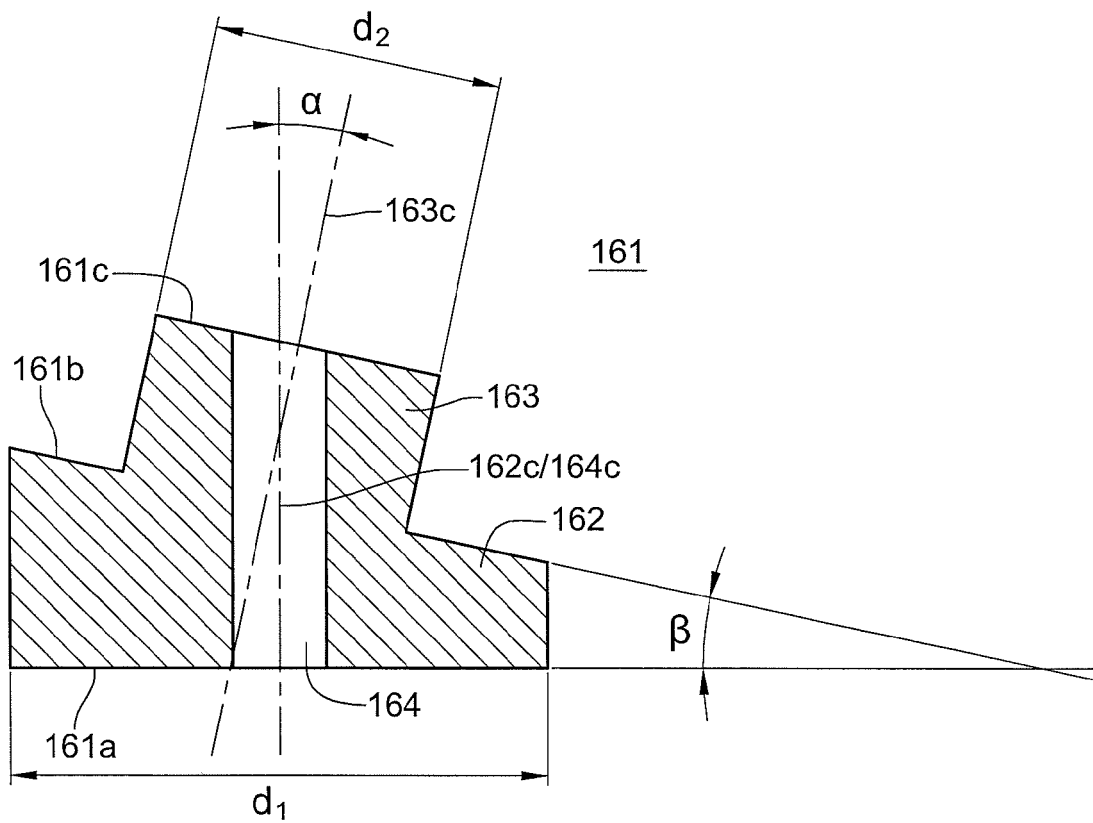


Fig.8B

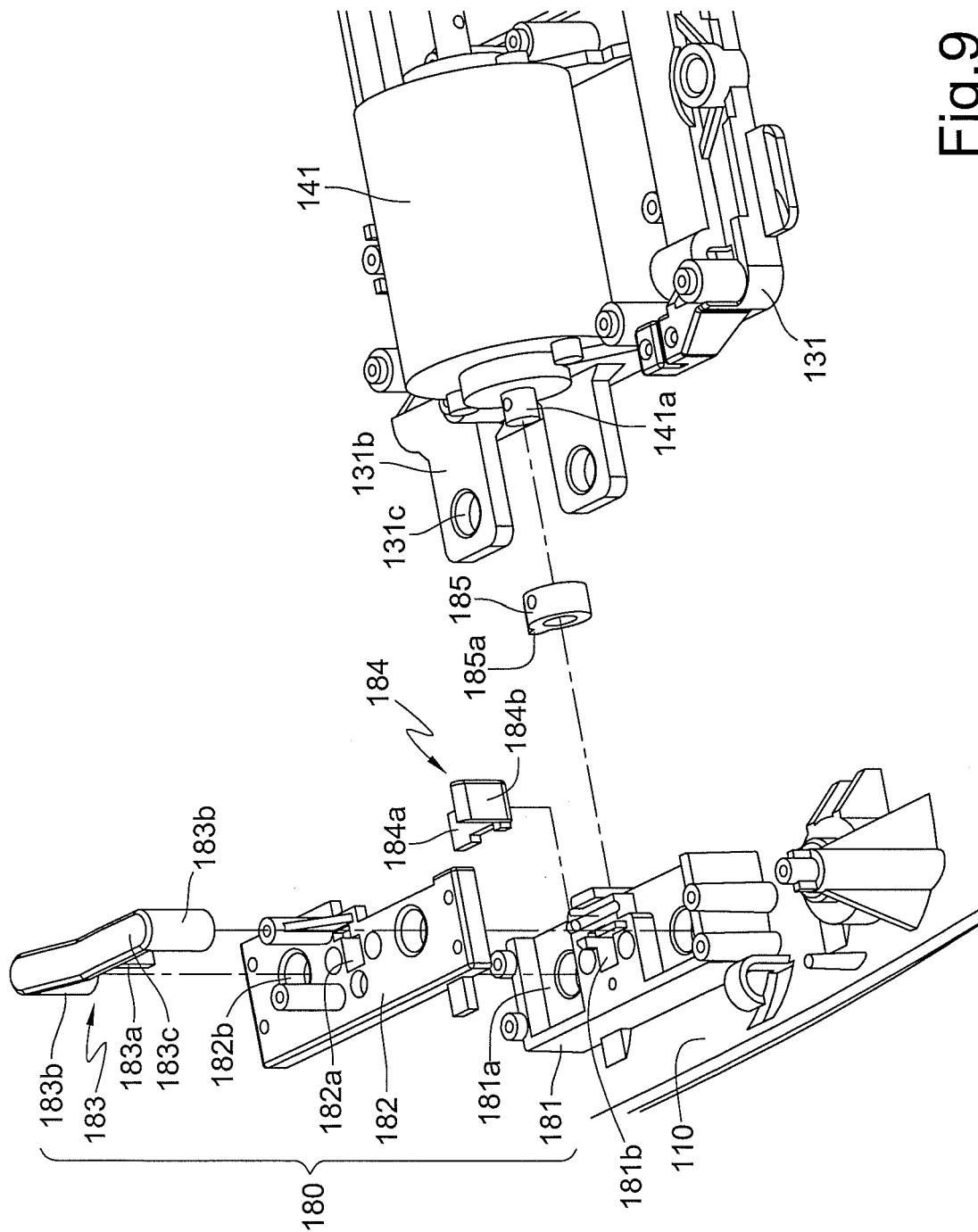


Fig.9

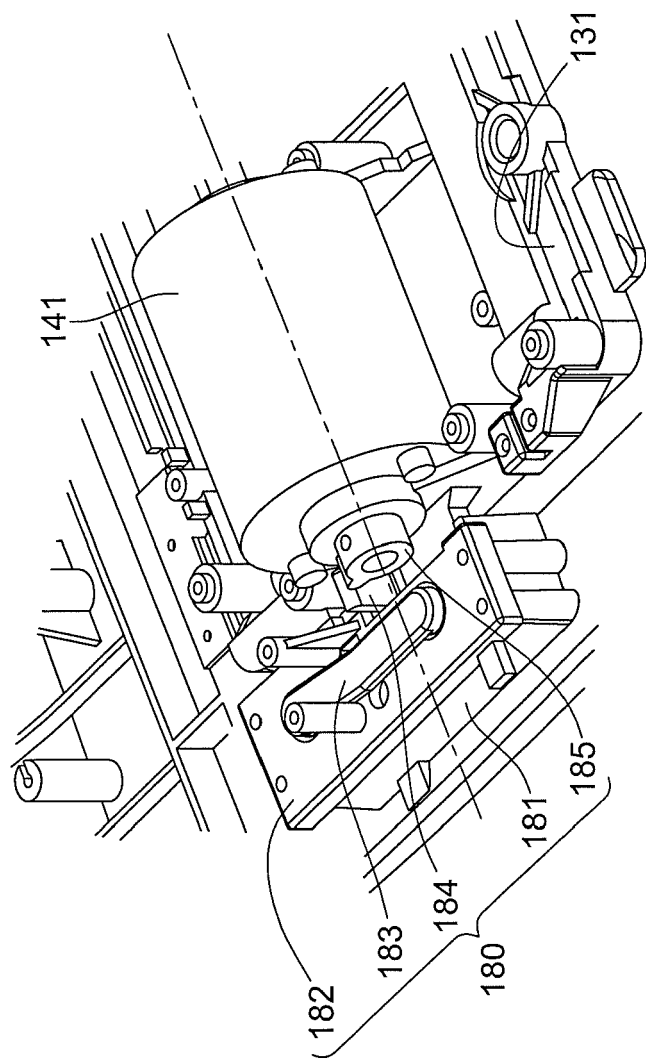


Fig.10



EUROPEAN SEARCH REPORT

Application Number
EP 10 16 8305

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			A61H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 September 2010	Examiner Knoflachner, Nikolaus
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ON EUROPEAN PATENT APPLICATION NO.**

EP 10 16 8305

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The members are as contained in the European Patent Office EDP file on
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17-09-2010

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