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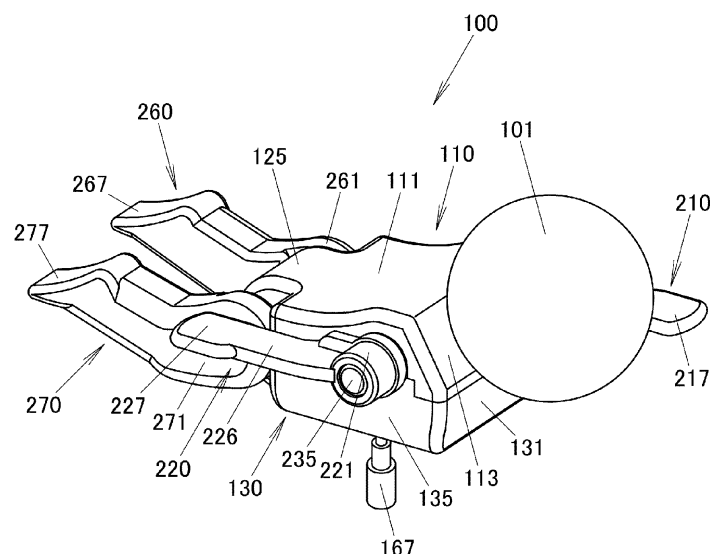
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BA ME(30) Priority: **25.09.2012 JP 2012210354**(71) Applicant: **Agatsuma Co., Ltd.****Tokyo (JP)**(72) Inventor: **Todokoro, Shinji****Tokyo (JP)**(74) Representative: **Skone James, Robert Edmund****Gill Jennings & Every LLP****The Broadgate Tower****20 Primrose Street****London EC2A 2ES (GB)**(54) **Water toy**

(57) The present invention provides a water toy (100) with which infants can enjoy themselves by watching the toy acting as it were a human being swimming. This water toy has a head portion (101), a torso portion (111), left and right arm portions (210,220), and left and right leg portions (260,270) to thereby be copy a human figure. The right arm portion and the left arm portion are provided individually at ends of a rotational shaft (261) provided

inside the torso portion. The right leg portion is interlocked with the rotation of the right arm portion, and the left leg portion is interlocked with the rotation of the left arm portion. The right arm portion is connected to the right leg portion, and the left arm portion is connected to the left leg portion. A power spring rotating the rotational shaft is incorporated, whereby the water toy can float on the surface of water.

【Fig.1】**EP 2 711 061 A1**

Description

[0001] The present invention relates to a doll or a toy of a human figure with which infants and the like play in the water.

[0002] In these days, various toys which travel on the surface of water are used by infants and the like when they play in the water in a domestic bathtub or a vinyl swimming pool placed in the garden. In some of these toys, a propelling unit which incorporates a battery and a motor to rotate a propeller is attached to a toy main body which takes the form of a vehicle which travels on the surface of water or an animal so as to propel the toy on the surface of water. Additionally, as described in, for example, Japanese Unexamined Patent Publication (KOKAI) No. 2007-21148, there is provided a toy with which infants and the like play in the water, and in this toy an impeller chamber is provided in a case of a character figure, whereby water sucked into the impeller chamber is jetted not only in the direction of an outer edge of the case to produce a propulsive force but also to sides of the case from the impeller chamber.

[0003] In these days, although various toys are provided which take the form of a vehicle or an animal and which travel on the surface of water, there are demands for water toys with which infants and the like can play with fun while getting more interested therein.

[0004] The invention has been made to meet these demands and the object thereof is to provide a toy which infants enjoy by showing them swimming actions of a human figure.

[0005] A water toy according to the invention is a water toy including a head portion, a torso portion, left and right arm portions, and left and right leg portions to thereby be copied from a human figure, wherein the right arm portion and the left arm portion are provided individually at both ends of a rotational shaft which is provided inside the torso portion, wherein the right arm portion is connected to the right leg portion so that a distal end of the right leg portion reciprocates as the right arm portion rotates, and the left arm portion is connected to the left leg portion so that a distal end of the left leg portion reciprocates as the left arm portion rotates, and wherein a power spring which rotates the rotational shaft is incorporated in an interior of the torso portion, the water toy being thereby able to float on the surface of water.

[0006] Preferably, in the water toy according to the invention, the head portion, the torso portion, the left and right arm portions, and the left and right leg portions are desirably formed from a synthetic resin whose specific gravity is smaller than 1.

[0007] Advantageously, in the water toy according to the invention, the right leg portion is connected to the other end of an oscillating rod which is caused to reciprocate at one end thereof by an eccentric cam provided on the right arm portion so that the distal end thereof reciprocates, while the left leg portion is connected to the other end of an oscillating rod which is caused to recip-

rocate at one end thereof by an eccentric cam provided on the left arm portion so that the distal end thereof reciprocates.

[0008] Preferably, in the water toy according to the invention, one arm portion of the left and right arm portions is fixed to one end of the rotational shaft so as to rotate together with the rotational shaft, while the other arm portion is attached rotatably to the other end of the rotational shaft, and an engagement projection is provided on this arm portion so that the engagement projection is brought into engagement with an engagement recess portion provided on a rotational plate which rotates together with the rotational shaft, whereby the other arm portion is allowed to rotate together with the rotational shaft.

[0009] In the water toy according to the invention, a power spring knob which winds up the power spring protrudes from a body portion, and the power spring knob is preferably formed of a member whose specific gravity is larger than 1.

[0010] Thus, the water toy according to the invention is a water toy including the head portion, the torso portion, the left and right arm portions, and the left and right leg portions to thereby be copied from the human figure. Then, when the water toy is put to float on the surface of water, the distal end of the right leg portion reciprocates as the right arm portion rotates, while the distal end of the left leg portion reciprocates as the left arm portion rotates. Therefore, infants and the like can enjoy playing with the water toy which acts as it were a human being swims.

[0011] If the main part of the water toy which is copied from the human figure is formed by using the resin whose specific gravity is smaller than 1, and therefore, the water toy can easily be put to float on the surface of water.

[0012] Additionally, if the right leg portion is connected to the right arm portion by the oscillating rod, and the left leg portion is connected to the left arm portion by the oscillating rod, the reciprocating motions of the distal ends of the leg portions can easily be made to follow the turning motions of the arm portions.

[0013] Further, in preferred embodiments, one of the arm portions is fixed to the rotational shaft, while the other of the arm portions is rotated by the rotational plate which rotates together with the rotational shaft. Therefore, the turning positions of the right arm portion and the left arm portion can be changed, so that the water toy can be made into a swimming toy which looks like performing a crawl stroke swimming in which the left and right arm portions are set so that the turning cycle of one arm portion is delayed 180 degrees from the turning cycle of the other arm portion and the left and right leg portions are set so as to reciprocate alternately, and a butterfly stroke swimming in which both the arm portions are turned altogether in an aligned fashion and both the leg portions reciprocate altogether in an aligned fashion.

[0014] In addition, in the event that the specific gravity of the power spring knob which protrudes from the body portion is larger than 1, a condition can be produced in

which a weight is suspended downwards from the toy, whereby the water toy is allowed to act in a stable fashion.

[0015] Examples of water toys will now be described with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view showing an external appearance of a water toy according to the invention.

Fig. 2 is a perspective view showing an internal construction of the water toy according to the invention.

Fig. 3 is an exploded perspective view of the water toy according to the invention.

Fig. 4 is a side view of the water toy according to the invention showing the construction of a main part thereof.

Fig. 5 A, B and C show side views of the water toy according to the invention showing actions thereof.

Fig. 6 A and B show side views of the water toy according to the invention showing actions thereof.

Fig. 7 shows a drive transmitting mechanism of the water toy according to the invention which actuates the same toy.

Fig. 8 is a perspective view showing an external appearance of the water toy according to the invention showing a different performance that the toy performs.

[0016] As shown in Fig. 1, a water toy 100 according to a preferred embodiment of the invention takes a human figure and has a head portion 101, a torso portion including a back body cover 110 and a front body cover 130, a first arm portion 210 and a second arm portion 220 which correspond, respectively, to a left arm and a right arm which are provided on left- and right-hand sides of the torso portion, and a first leg portion 260 and a second leg portion 270 which correspond, respectively, to a left leg and a right leg which are provided near an end portion of the torso portion.

[0017] When it is put to float on the surface of water, the water toy 100 can travel on the surface of water while copying human swimming actions by rotating first arm portion 210 and the second arm portion 220 and oscillating the first leg portion 260 and the second leg portion 270 about corresponding joint portions 261 and 271, which correspond to groins of respective the first leg portion 260 and the second leg portion 270, to the torso.

[0018] As shown in Figs. 2 and 3, in this water toy 100, a spring gearbox 161 which incorporates a power spring is built in an interior of the front body cover 130. The first arm portion 210 and the second arm portion 220 are turned via gears, while the first leg portion 260 and the second leg portion 270 are oscillated via a link mechanism in such a way that feet move vertically.

[0019] Namely, this water toy 100 has the front body cover 130 which imitates a front half portion which corresponds to a belly side of a human torso portion, and this front body cover 130 has a front body plate 133 which has a substantially flat rectangular plate shape and a chest plate 131 which is raised from one side of the front

body plate 133. Additionally, the front body cover 130 has front side plates 135 on both sides of the front body plate 133. These front side plates 135 are raised individually from other two sides of the front body plate 133 which face each other via curved portions to connect to both end portions of the chest plate 131 which is raised from the front body plate 133. Further, the front body cover 130 has a front crotch plate 141 which extends from the remaining side of the front body plate 133 so as to be curved upwardly. The front crotch plate 141 is narrower in width than the front body plate 133 and has front crotch side plates 143 on both sides thereof. These front crotch side plates 143 connect individually to the front side plates 135 which are raised individually from both sides of the front body plate 133.

[0020] In this way, the front body cover 130 is formed into a box shape which is opened upwards.

[0021] Additionally, plate-shaped arm supporting portions 136 are provided which extend upwards individually from part of upper ends of the front side plates 135. Arm supporting recess portions 137 which are recessed semi-circularly are provided at upper ends of the arm supporting portions 136. These arm supporting recess portions 137 support rotatably corresponding circular arm support portions 213, 223, respectively, which are provided individually at respective base portions 211, 221 of the first arm portion 210 and the second arm portion 220, which will be described later.

[0022] In addition, a first flat plate-shaped shaft supporting plate 151 and a second flat plate-shaped shaft supporting plate 152 are raised from the front body plate 133 inside the front body cover 130. A rotational shaft supporting 155 and an oscillating shaft supporting 157, which each is recessed into a small semi-circular shape, are formed in an upper end of each of the first shaft supporting plate 151 and the second shaft supporting plate 152.

[0023] Small semi-circularly recessed leg supportings 145 are formed individually at upper ends of the front crotch side plates 143 of the front body cover 130. When the front body cover 130 and the back body cover 110 are fixed together with a fixing screw 119 which is inserted from a side of the front body cover 130, a leg support shaft 269 which supports the first leg portion 260 and the second leg portion 270, which will be described later, at both ends thereof is supported by the leg supportings 145 of the front crotch side plates 143.

[0024] In addition, a rotational shaft 171 which supports the first arm portion 210 and the second arm portion 220, which will be described later, at both ends thereof are supported by the rotational shaft supportings 155 which are provided individually on the first shaft supporting plate 151 and the second shaft supporting plate 152. Further, an oscillating shaft 247 which supports a first oscillating rod 240 and a second oscillating rod 250, which will be described later, at both ends thereof is supported by the oscillating shaft supportings 157.

[0025] It is noted that a hole, not shown, is provided in

the front body plate 133 so that a power spring shaft 165 which protrudes from the spring gear box 161 is passed therethrough.

[0026] This spring gear box 161 incorporates the power spring, a reduction gear train and a power spring shaft reverse rotation preventing mechanism and rotates a driving gear 163 provided on an upper surface of the spring gear box 161 in one direction via the reduction gear train by virtue of an elastic restoring force of the power spring which is wound up with a power spring knob 167.

[0027] In addition, the back body cover 110, which is fixed together with the front body cover 130 with the fixing screw 119, has a flat rectangular back body plate 111. A shoulder plate 113 is provided on one side of the back body plate 111 so as to extend obliquely downwards. Back side plates 121 are provided on other two sides of the back body plate 111 in such a way as to extend perpendicularly downwards therefrom. A back crotch plate 125 is provided on the remaining side of the back body plate in such a way as to extend perpendicularly downwards therefrom. The back crotch plate 125 is narrower in width than the back body plate 111 and has back crotch side plates 127 provided individually on both sides thereof. A cylindrical neck portion 115 is provided substantially at the center of the shoulder plate 113 so as to protrude therefrom.

[0028] In the back body cover 110 and the front body cover 130, a lower end of the shoulder plate 113 is engaged with an upper end of the chest plate 131, lower ends of the back side plates 121 are engaged with the upper ends of the front side plates 135, and a lower end of the back crotch plate 125 is engaged with an upper end of the front crotch plate 141.

[0029] Further, a spherical head portion 101 can be fixed to the neck portion 115 of the back body cover 110. Arm hole supporting portions 123 are formed in part of the back side plates 121 which are provided on both the sides of the back body cover 110. The arm hole supporting portions 123 are each cut into a substantially semi-circular shape. Then, the arm hole supporting portions 123 support the thick circular arm support portions 213, 223 rotatably together with the arm supporting recess portions 137 of the arm supporting portions 136 which are provided on the front side plates 135.

[0030] The first arm portion 210, which is one of the arm portions and which constitutes the left arm, has an arm main body portion 216 which extends from the cylindrical base portion 211 and which has a plate shape and a hand portion 217 which is formed by expanding a front end portion of the arm main body portion 216 slightly widely. The thick and circular disk-shaped arm support portion 213 is provided at an end of the cylindrical base portion 211. A thick circular disk-shaped eccentric cam 214 is provided in a central position of the arm support portion 213. This eccentric cam 124 has a rotational shaft hole 215 in a central position of the arm support portion 213 and is formed into a circular shape whose center is

offset from the position where the rotational shaft hole 215 is formed.

[0031] In addition, similar to the first arm portion 210, the second arm portion 220, which is the other arm portion and which constitutes the right arm, has an arm main body portion 226 which extends from the cylindrical base portion 221 and a hand portion 227. The arm support portion 223 and an eccentric cam 224 are provided at one end of the arm main body portion 226, and a cylindrical cap hole 231 is provided which is opened to the other end of the base portion 221. An arm fastening spring 233 and an arm cap 235 can be accommodated in the cap hole 231. Further, as shown in Fig. 7, an engagement projection 237 is provided so as to protrude from the eccentric cam 224.

[0032] As shown in Fig. 2, the first arm portion 210 can rotate together with the rotational shaft 171 with one end of the rotational shaft 171 being inserted into the rotational shaft hole 215, while the second arm portion 220 is mounted rotatably on the rotational shaft 171 in such a way that the base portion 221 of the second arm portion 220 is not dislocated from the rotational shaft 171 by inserting the rotational shaft 171 into a rotational shaft hole which is not shown in the drawings and then fixing the arm cap 235 to an end portion of the rotational shaft 171.

[0033] This rotational shaft 171 has a thin rod-like shape and is supported rotatably on the rotational shaft supportings 155 which are provided in the first shaft supporting plate 151 and the second shaft supporting plate 152 in the front body cover 130. The rotational shaft 171 is fixed to the first arm portion 210 at the one end thereof, and a receiving gear 173, which is a crown gear, and a rotational plate 180 are fixed to near the other end of the rotational shaft 171.

[0034] This receiving gear 173, which is the crown gear, is fixed to the rotational shaft 171 at a shaft portion 175 thereof and meshes with the driving gear 163 which protrudes from the upper surface of the spring gear box 161 at a tooth portion 174 thereof, whereby the rotational shaft 171 and the rotational plate 180 are driven to rotate by the receiving gear 173.

[0035] In addition, the rotational shaft 171 is passed through a shaft hole 189 in the rotational plate 180. A cylindrical rotational plate shaft 183 protrudes from one side surface of a thin circular disk-shaped main body plate 181 of the rotational plate 180, and this rotational plate shaft 183 is inserted to be fitted in a fitting hole 176 which is formed in the shaft portion 175 of the receiving gear 173. Thus, the rotational plate 180 is integrated with the receiving gear 173, whereby the rotational plate 180 rotates together with the receiving gear 173.

[0036] A thick circular disk-shaped engagement plate 185 is provided on a side surface of the main body plate 181 which lies opposite to the side surface where the rotational plate shaft 183 is provided. Engagement recess portions are provided in this engagement plate 185 in positions which lie to face each other diametrically, and these first engagement recess portion 186 and sec-

ond engagement recess portion 187 are formed so that the engagement projection 237 provided on the eccentric cam 224 of the second arm portion 220 can be inserted to be fitted therein.]

[0037] Consequently, when the engagement projection 237 of the second arm portion 220 is brought into engagement, for example, with the first engagement recess portion 186 in the rotational plate 180, as shown in Figs. 1 and 2, both the first arm portion 210 and the second arm portion 220 can be turned together by the rotation of the rotational shaft 171 which results from the rotation of the driving gear 163 of the spring gear box 161 with the second arm portion 220 being delayed from the first arm portion 210 through 180 degrees about the rotational shaft 171.

[0038] Further, the base portion 221 of the second arm portion 220 is pinched with fingers in such a way as to compress the arm fastening spring 233 and is pulled axially outwards so that the engagement between the engagement projection 237 and the first engagement recess portion 186 is released. Then, the second arm portion 220 is turned through 180 degrees and the fingers are removed from the second arm portion 220, whereupon the second arm portion 220 moves inwards by virtue of an elastic force of the arm fastening spring 233. This brings the engagement projection 237 into engagement with the second engagement recess portion 187, whereby the second arm portion 220 can be turned in synchronism with the rotation of the rotational shaft 171.

[0039] Consequently, when the engagement projection 237 is brought into engagement with the second engagement recess portion 187, as shown in Fig. 8, both the arms can be turned while they are kept staying in the same rotating position.

[0040] The first leg portion 260 and the second leg portion 270, which constitutes the left and right leg portions, respectively, are formed into a symmetrical shape with each other and are fixed individually to both ends of a thin rod-shaped leg support shaft 269 so as to rotate together therewith.

[0041] Leg shaft holes 263, 273 are formed in corresponding joint portions 261, 271 at respective ends of the first leg portion 260 and the second leg portion 270, and plate-shaped protruding portions 265, 275 including pin supporting holes 266, 276 are provided at the joint portions 261, 271, respectively. Additionally, the other ends of the first leg portion 260 and the second leg portion 270 are formed into foot portions 267, 277, respectively.

[0042] Further, the water toy 100 has the first oscillating rod 240 which connects the first leg portion 260 with the first arm portion 210 and the second oscillating rod 250 which connects the second leg portion 270 with the second arm portion 220 inside the body portion. Additionally, the first oscillating rod 240 and the second oscillating rod 250 are both formed into a symmetrical shape with each other or the same shape. Cam holes 241, 251 are formed individually in respective ends of plate-shaped rod main body portions, and short rod-shaped

oscillating pins 245, 255 are provided on side portions of the other ends of the plate-shaped rod main body portions in such a manner as to protrude therefrom. In addition, oscillating shaft holes 243, 253 are provided individually on substantially central side portions of the plate-shaped rod main body portions.

[0043] The cam holes 241, 251 are formed into an elliptic shape. The length of a minor axis of each of the cam holes 241, 251 is made to match the diameter of the eccentric cams 214, 224 of the first arm portion 210 and the second arm portion 220, so that the eccentric cams 214, 224 are inserted into the cam holes 241, 251, respectively. Consequently, when the eccentric cams 214, 224 are rotated by the rotation of the rotational shaft 171, cam hole side end portions of the first oscillating rod 240 and the second oscillating rod 250 are moved in vertical directions about the corresponding oscillating shaft holes 243, 253 as their oscillating centers.

[0044] In addition, the oscillating pins 245, 255 of the first oscillating rod 240 and the second oscillating rod 250 are inserted into the pin supporting holes 266, 276 which are provided in the protruding portions 265, 275 of the first leg portion 260 and the second leg portion 270, respectively. Consequently, the pin supporting holes 266, 276 are also formed into an elongated hole having an elliptic shape, whereby when the first oscillating rod 240 and the second oscillating rod 250 oscillate about the corresponding oscillating shaft holes 243, 253, the protruding portions 265, 275 which include the pin supporting holes 266, 276 are oscillated so as to be moved vertically about the respective leg shaft holes 263, 273 in the first leg portion 260 and the second leg portion 270 as oscillating centers in synchronism with vertical motions of the oscillating pins 245, 255.

[0045] Consequently, as shown in Figs. 2 and 4, the driving gear 163 is brought into mesh engagement with the receiving gear 173, the eccentric cams 214, 224 are inserted into the cam holes 241, 251, respectively, and the oscillating pins 245, 255 are inserted into the pin supporting holes 266, 276, respectively. In this state, when the power spring of the spring gear box 161 is wound up by rotating the power spring knob 167, the receiving gear 173 and the rotational shaft 171 rotates as the driving gear 163 rotates, whereby not only does the first arm portion 210 which is fixed to the one end of the rotational shaft 171 rotate, but also the second arm portion 220 rotates in which the engagement projection 237 is brought into engagement with the first engagement recess portion 186 in the rotational plate 180.

[0046] Then, in the first oscillating rod 240 in which the eccentric cam 214 of the first arm portion 210 is inserted in the cam hole 241, as shown in Figs. 5 and 6, the cam hole 241 is moved vertically about the oscillating shaft 247 by the rotation of the first arm portion 210 and the eccentric cam 214 which rotate about the rotational shaft 171, and the oscillating pin 245 is also moved vertically together with the cam hole 241.

[0047] In addition, the first leg portion 260 having the

protruding portion 265 which includes the pin supporting hole 266 in which the oscillating pin 245 is inserted also oscillates so as to move the foot portion 267 vertically about the leg support shaft 269 as the oscillating pin 245 of the first oscillating rod 240 moves vertically.

[0048] Additionally, the second leg portion 270 which is formed symmetrically with the first leg portion 260 is connected to the second arm portion 220 by the second oscillating rod 250 which is formed symmetrically with the first oscillating rod 240, whereby the second leg portion 270 also oscillates about the leg support shaft 269 so as to move the foot portion 277 vertically as the second arm portion 220 rotates.

[0049] Because of this, the first leg portion 260 and the second leg portion 270 are oscillated respectively about the leg support shaft 269 so as to move the corresponding foot portions 267, 277 vertically.

[0050] In addition, when the cam hole 241 in the first oscillating rod 240 in which the eccentric cam 214 is inserted is located in a highermost position with the first arm portion 210 located in a lowermost position as shown in Fig. 5B, the second arm portion 220 is located in a highermost position, while the cam hole 251 in the second oscillating rod 250 which connects the second arm portion 220 with the second leg portion 270 is located in a lowermost position. Because of this, with the rotating positions of the first arm portion 210 and the second arm portion 220 shifted through 180 degrees as shown in Fig. 1, when the foot portion 267 of the first leg portion 260 is located at a highermost point, the foot portion 277 of the second leg portion 270 is located at a lowermost point and vice versa. Consequently, in moving the foot portions 267, 277 of the first leg portion 260 and the second leg portion 270 vertically, the first and second leg portions 260, 270 are caused to move to take different positions in an alternate fashion in such a way that the foot portion of one of the leg portions is located in the uppermost point while the foot portion of the other of the leg portions is located at the lowermost point, whereby the water toy 100 is allowed to act as it were a human being swims in a crawl stroke.

[0051] Additionally, when the second arm portion 220 is pulled out to rotate it through 180 degrees so that the engagement projection 237 is brought into engagement with the second engagement recess portion 187 in the rotational plate 180, the first arm portion 260 and the second arm portion 270 are allowed to take the same turning position as shown in Fig. 8. Because of this, for example, when the cam hole 241 in the first oscillating rod 240 is located in the uppermost position with the first arm portion 210 located in the lowermost position, the cam hole 251 in the second oscillating rod 250 which is connected to the second arm portion 220 is also located in an uppermost position. Consequently, the oscillation cycles of the first oscillating rod 240 and the second oscillating rod 250 are made to coincide with each other, whereby the first leg portion 260 and the second leg portion 270 can also be moved vertically in such a way that

both the foot portions 267, 277 move vertically in an aligned fashion.

[0052] Because of this, when the engagement projection 237 of the second arm portion 220 is in engagement with the second engagement recess portion 187 in the rotational plate 180, the water toy 100 is allowed to act as it were a human being swims in a butterfly stroke in which the turning motions of both the left and right arms and the vertical motions of both the left and right legs coincide with each other.

[0053] It is noted that in the embodiment, although the water toy 100 can be switched between the crawl stroke and the butterfly stroke, the water toy 100 is allowed to swim only in the crawl stroke or the butterfly stroke by fixing the first arm portion 210 and the second arm portion 220, which act as the left and right arms, to the rotational shaft 171 without using the rotational plate 180. Alternatively, the water toy 100 is allowed to act as it were a human being swims in a backstroke by drawing pictures of the hands, feet and face of the water toy 100 upside down and right side left in such a way that the first arm portion 210 corresponds to the right arm, while the second arm portion 220 corresponds to the left arm.

[0054] Further, the head portion 101 is formed from a synthetic resin of a foamed resin system whose specific gravity is extremely low so that the head portion 101 becomes light, while the first arm portion 210 and the second arm portion 220, the first leg portion 260 and the second leg portion 270, the front body cover 130 and the back body cover 110 are formed from a polyethylene resin whose specific gravity is on the order of about 0.9. Thus, the water toy 100 is made to float on the surface of water.

[0055] Consequently, the water toy 100 is made easy to float on the surface of water by itself without making the leg portions and the torso portion into a watertight construction, thereby making it possible not only to fabricate easily the small water toy 100 but also to provide the water toy 100 with which infants and the like can play with fun in such a way as to play with their friends.

[0056] In addition, the power spring knob 167 is formed from a polymer of polyacetal whose specific gravity is on the order of 1.5 so as to function as a balancer which enables the water toy 100 to move on the surface of water in a stable fashion even when the arm portions and the leg portions are in action together with the weight of the power spring shaft which protrudes from the front body plate 133.

[0057] A substantially airtight space portion may be formed or a block of a foamed resin may be mounted inside the back body cover 110, whereby the back body cover 110 of the water toy 100 is made to float on the surface of water in a more ensured fashion. In this case, the resin from which the arm portions, the leg portions and the torso portion are formed is not necessarily limited to a resin whose specific gravity is smaller than 1.

[0058] In addition, in the embodiment described heretofore, while the first engagement recess portion 186 and

the second engagement recess portion 187 are described as being provided in the engagement plate 185 of the rotational plate 180 so that the engagement projection 237 provided on the eccentric cam 224 of the second arm portion 220 is brought into engagement therewith, a configuration may be adopted as required in which an engagement projection is made to project from the side surface of the engagement plate 185 and two engagement holes are provided in the eccentric cam 224 or the arm support portion 223 of the second arm portion 220 so as to transmit the rotation of the rotational plate 180 to the second arm portion 220.

[0059] Further, in the embodiment described above, the first arm portion 210 is fixed to the end portion of the rotational shaft 171 so as to rotate together with the rotational shaft 171 and the second arm portion 220 is made to rotate together with the rotational shaft 171 by bringing the engagement projection 237 which can be securely engaged with the engagement recess portions in the rotational plate 180 into engagement with the first engagement recess portion 186 or the second engagement recess portion 187. However, a configuration may be adopted in which with the rotational plate 180 omitted, one end portion of the rotational shaft 171 is inserted to be fixed in the rotational shaft hole 215 in the first arm portion 210 while the other end portion of the rotational shaft 171 is inserted to be fixed in the rotational shaft hole in the second arm portion 220, and the first arm portion 210 and the second arm portion 220 can be fitted to be fixed to the end portions of the rotational shaft 171 so that angles at which the first arm portion 210 and the second arm portion 220 are mounted on the rotational shaft 171 differ from each other when a strong force is applied to the first arm portion 210 and the second arm portion 220 so as to rotate them in opposite directions.

[0060] However, in the embodiment described above in which the rotational plate 180 having the first engagement recess portion 186 and the second engagement recess portion 187 and the arm fastening spring 233 are provided without the first arm portion 210 and the second arm portion 220 being fitted to be fixed to the end portions of the rotational shaft 171, the first arm portion 210 and the second arm portion 220 can be set easily and in an ensured fashion so that they take the same turning position or so that the turning phases thereof can be shifted from each other through 180 degrees.

[0061] The water toy 100 according to the embodiment is the toy 100 which takes the form of the human figure. When it is put to float on the surface of water, the water toy 100 acts so that the foot portion of the first leg portion 260 reciprocates as the first arm portion 210 rotates while the foot portion of the second leg portion 270 reciprocates as the second arm portion 220 rotates, whereby infants and the like can enjoy playing with the water toy 100 which acts as it were a human being swims in the crawl or butterfly stroke.

[0062] While the embodiment of the invention has been described heretofore, the embodiment is given to repre-

sent one example of the invention and is not intended to limit the scope of the invention. This novel embodiment can be carried out in various forms, and hence, various omissions, replacements and modifications can be made to the embodiment without departing from the spirit and scope of the invention. The embodiment and variations thereof are to be incorporated in the spirit and scope of the invention and also incorporated in inventions that will be described in claims and equivalents thereof.

Claims

1. A water toy having a head portion, a torso portion, left and right arm portions, and left and right leg portions to thereby be copied from a human figure, the water toy **characterized by** comprising:

the right arm portion and the left arm portion being provided individually at both ends of a rotational shaft which is provided inside the torso portion; wherein

the torso portion incorporates a power spring which rotates the rotational shaft in an interior thereof, the water toy is thereby able to float on the surface of water, wherein

the right arm portion is connected to the right leg portion so that a distal end of the right leg portion reciprocates as the right arm portion rotates, and the left arm portion is connected to the left leg portion so that a distal end of the left leg portion reciprocates as the left arm portion rotates.

2. The water toy according to Claim 1, wherein the head portion, the torso portion, the left and right arm portions, and the left and right leg portions are formed from a synthetic resin whose specific gravity is smaller than 1.

3. The water toy according to Claim 1 or 2, wherein the right leg portion is connected to the other end of an oscillating rod which is caused to reciprocate at one end thereof by an eccentric cam provided on the right arm portion so that the distal end thereof reciprocates, while the left leg portion is connected to the other end of an oscillating rod which is caused to reciprocate at one end thereof by an eccentric cam provided on the left arm portion so that the distal end thereof reciprocates.

4. The water toy according to any of Claims 1 to 3, wherein one arm portion of the left and right arm portions is fixed to one end of the rotational shaft so as to rotate together with the rotational shaft, while the other arm portion is attached rotatably to the other end of the rotational shaft and has an engagement projection which is brought into engagement with an engage-

ment recess portion provided on a rotational plate which rotates together with the rotational shaft so as to allow the other arm portion to rotate together with the rotational shaft.

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5. The water toy according to any of Claims 1 to 4, wherein

a power spring knob which winds up the power spring protrudes from a body portion, and the power spring knob is formed of a member whose specific gravity is larger than 1.

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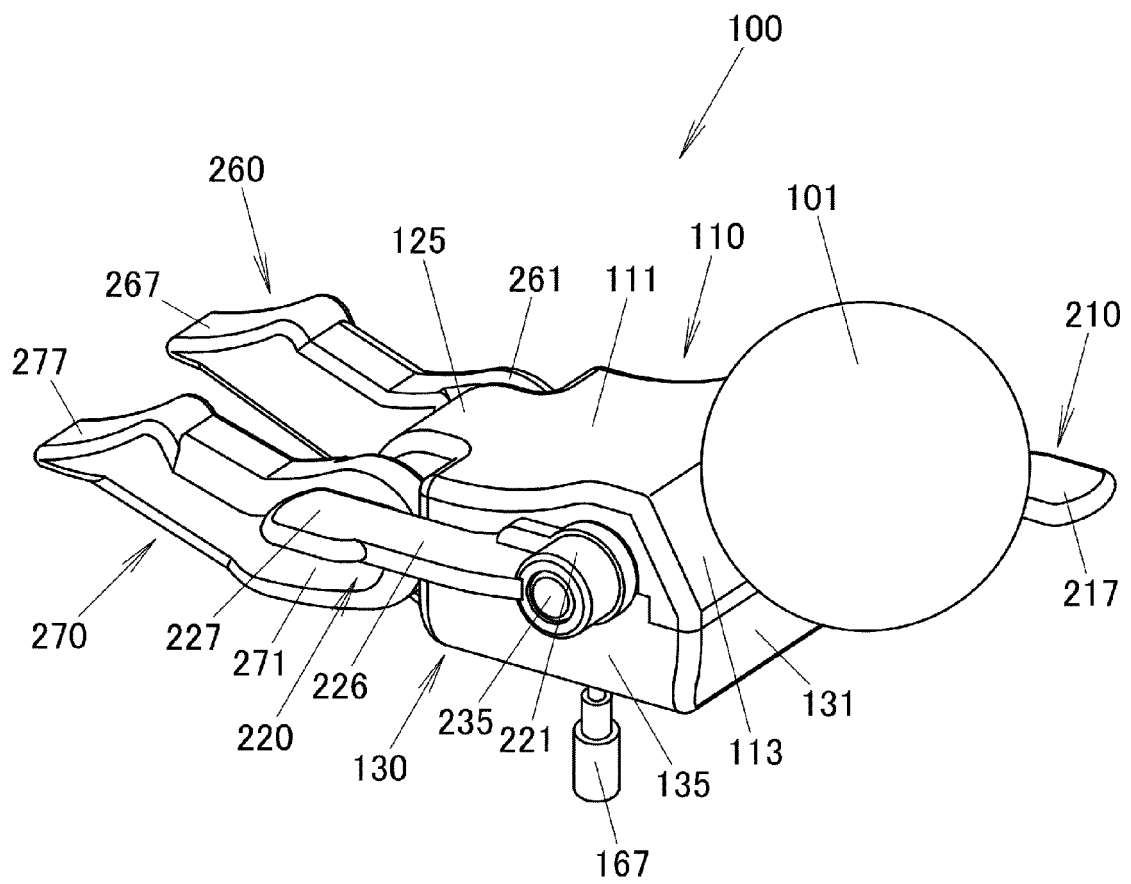
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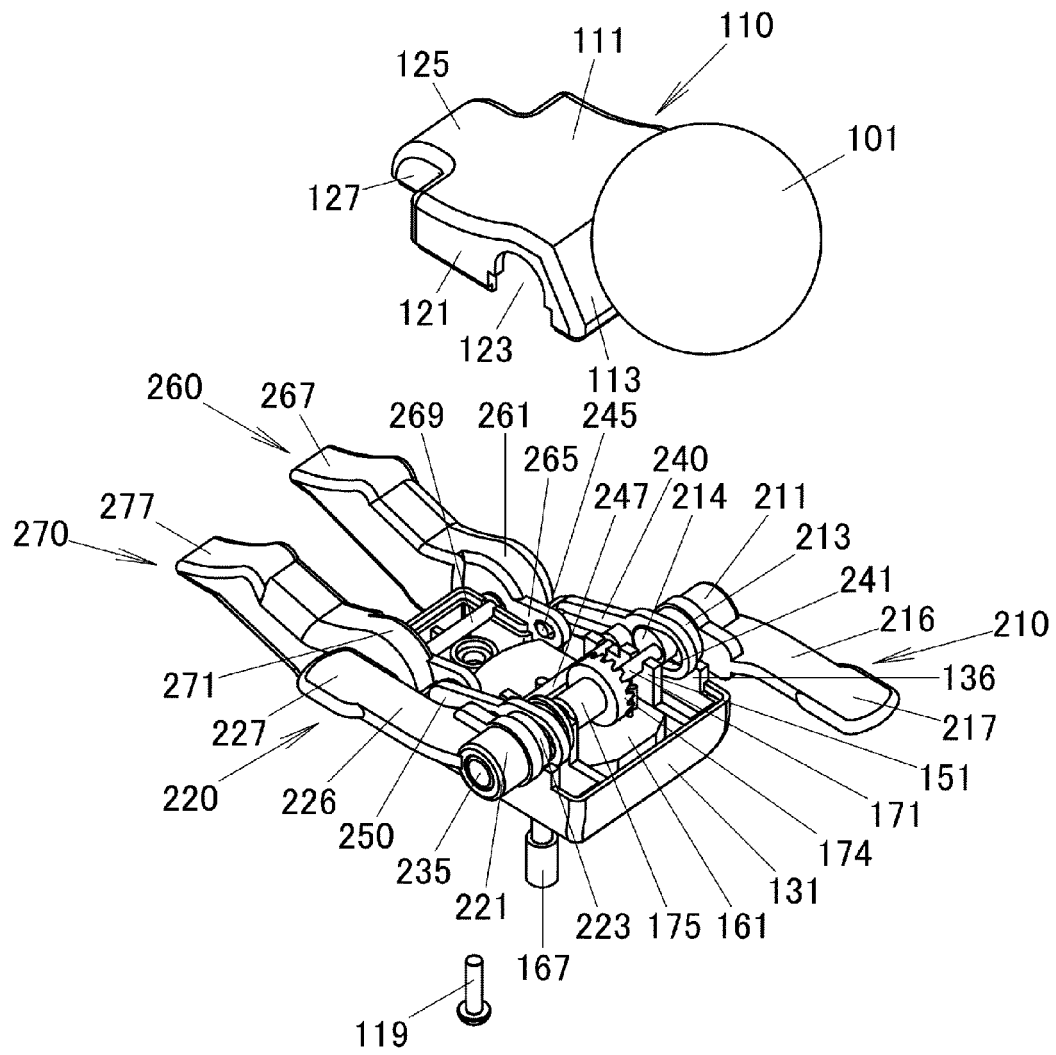
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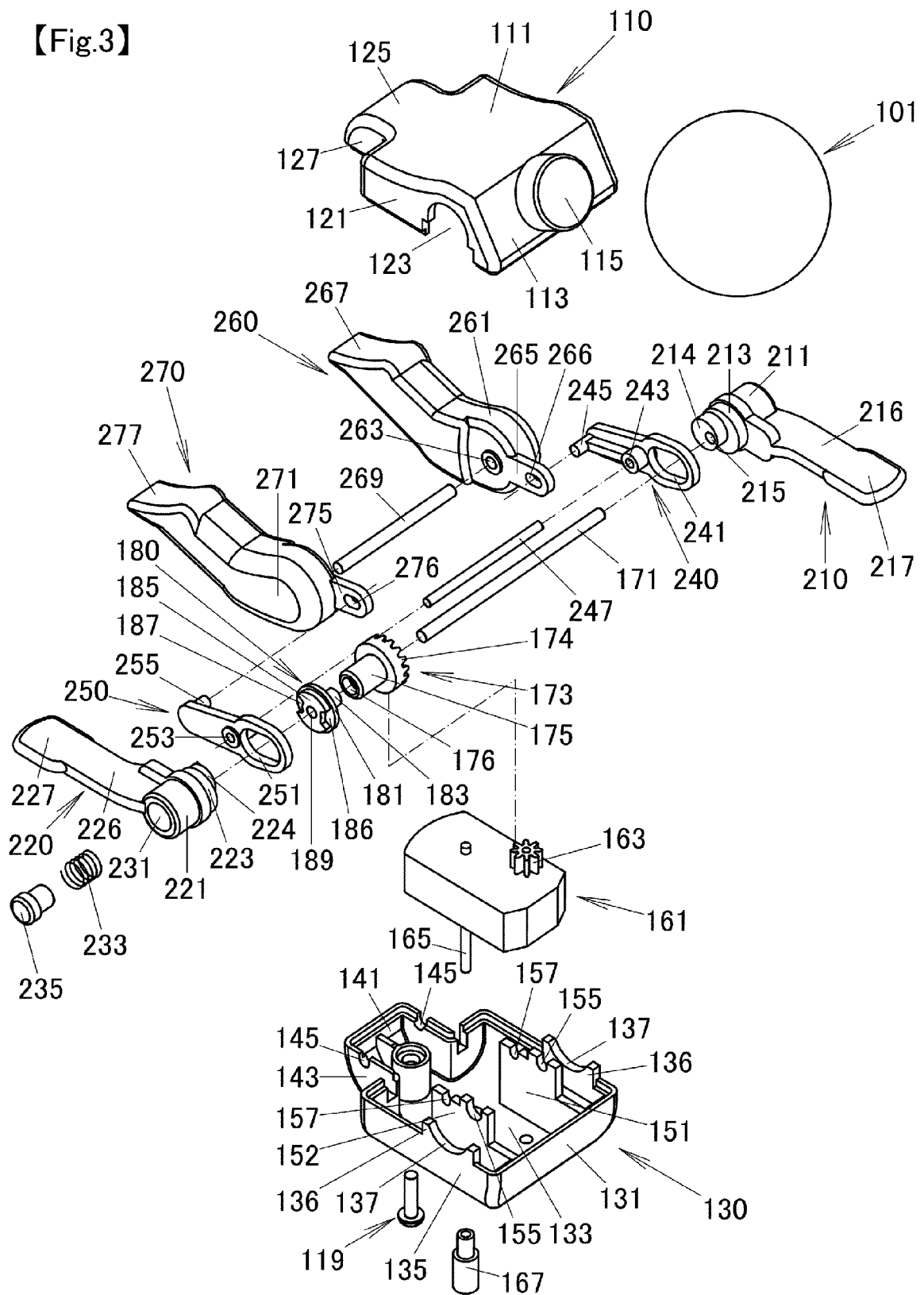
【Fig.1】



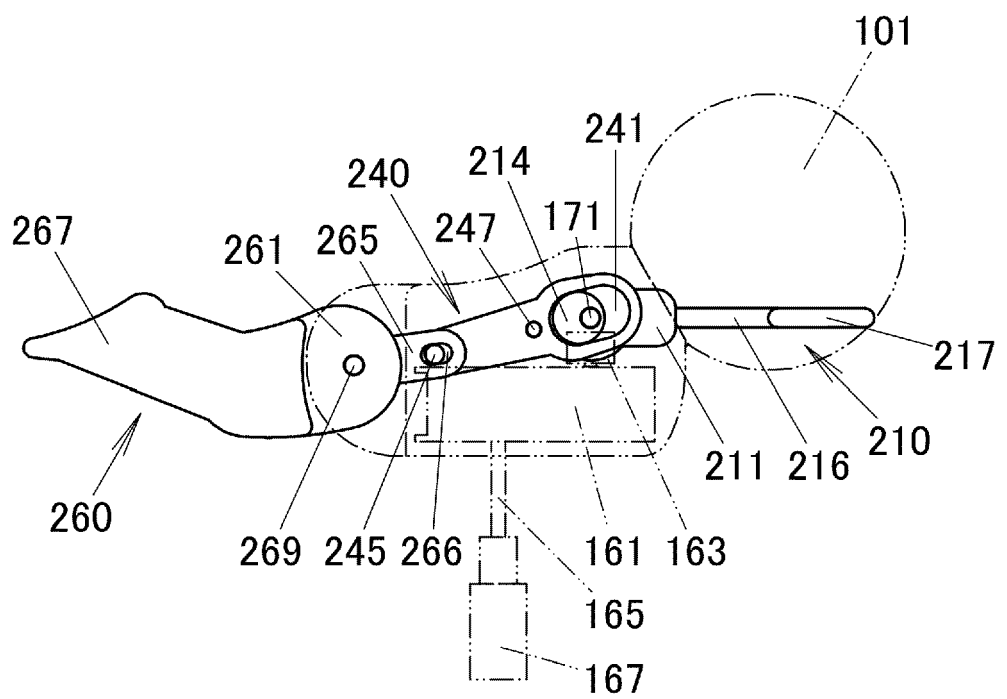
【Fig.2】



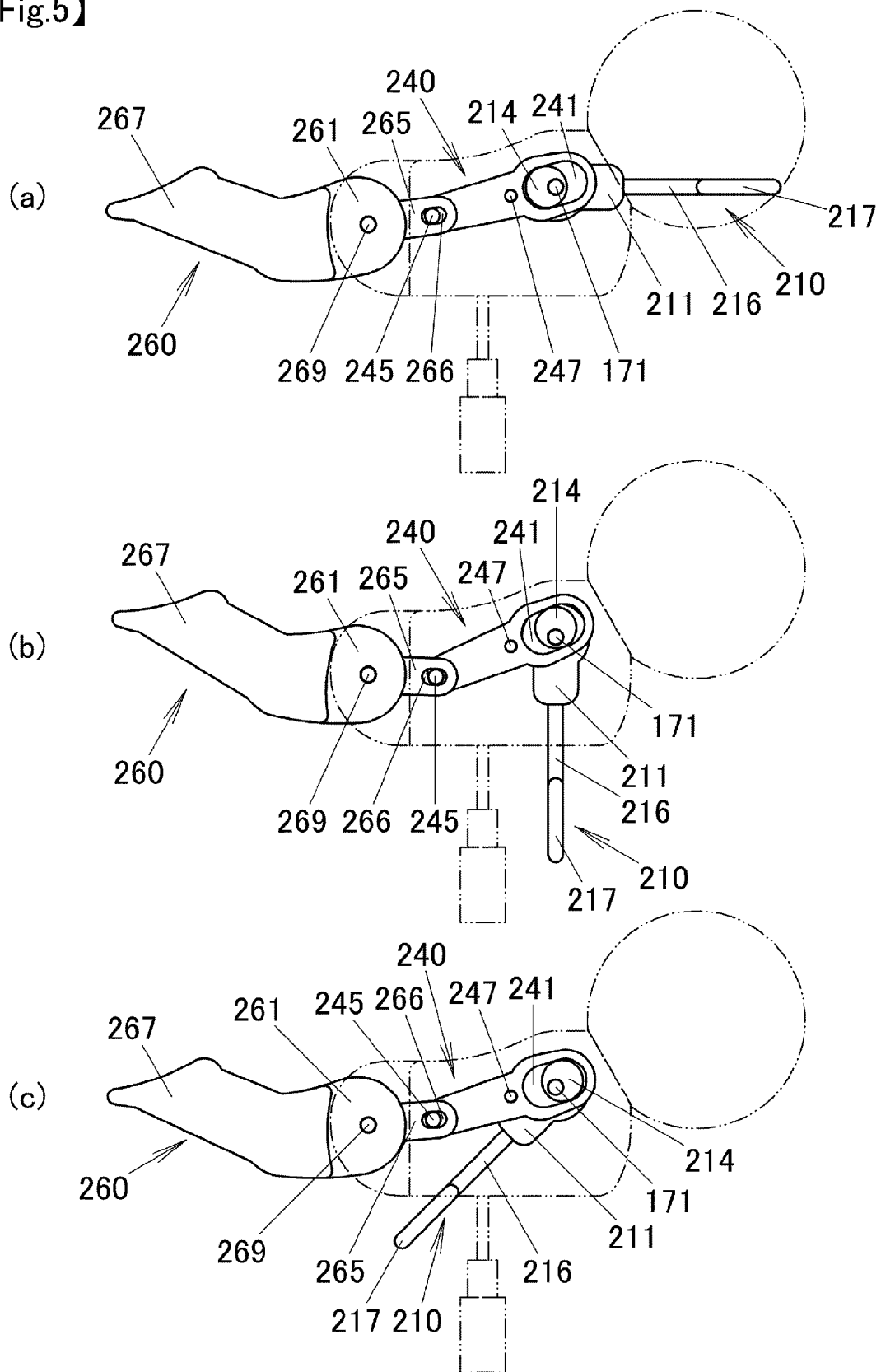
【Fig.3】



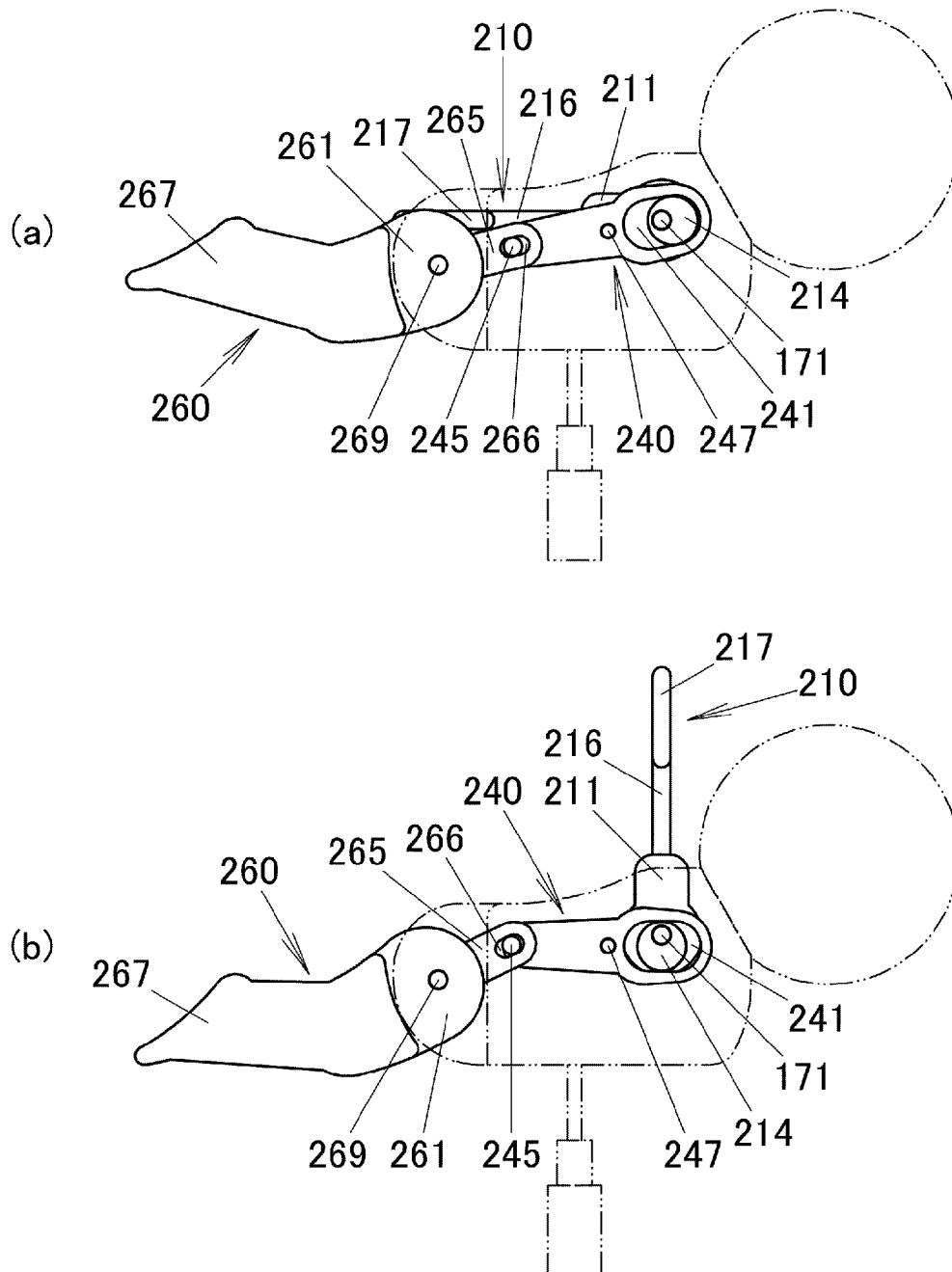
【Fig.4】



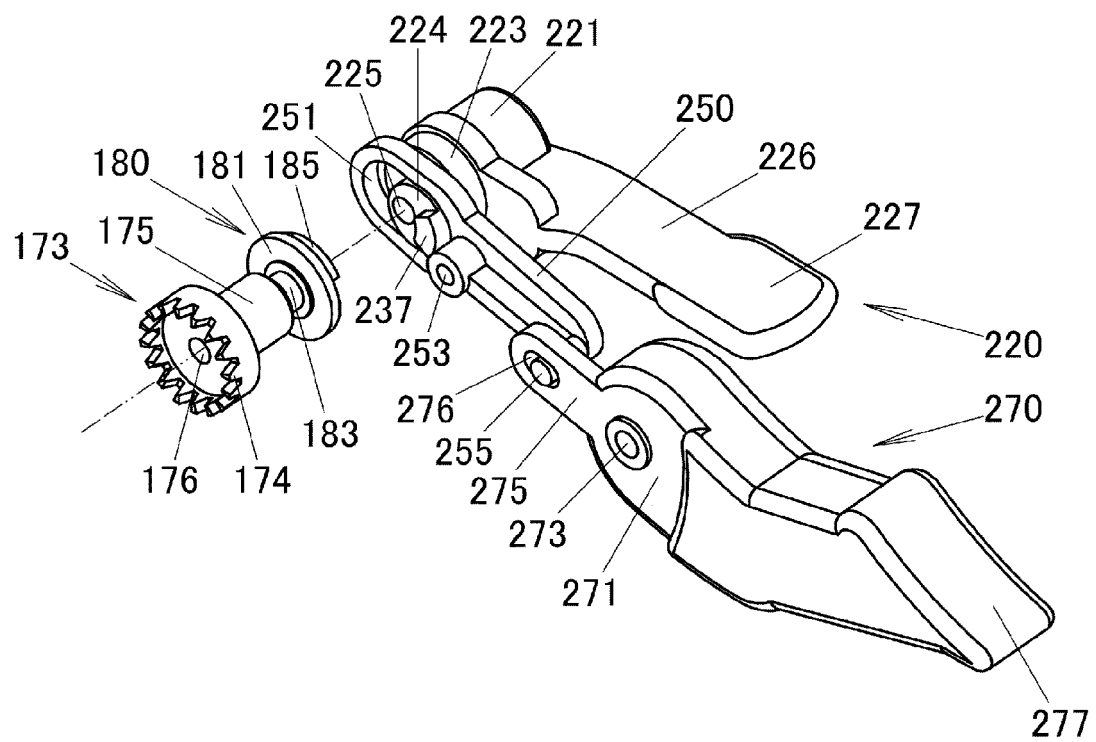
【Fig.5】



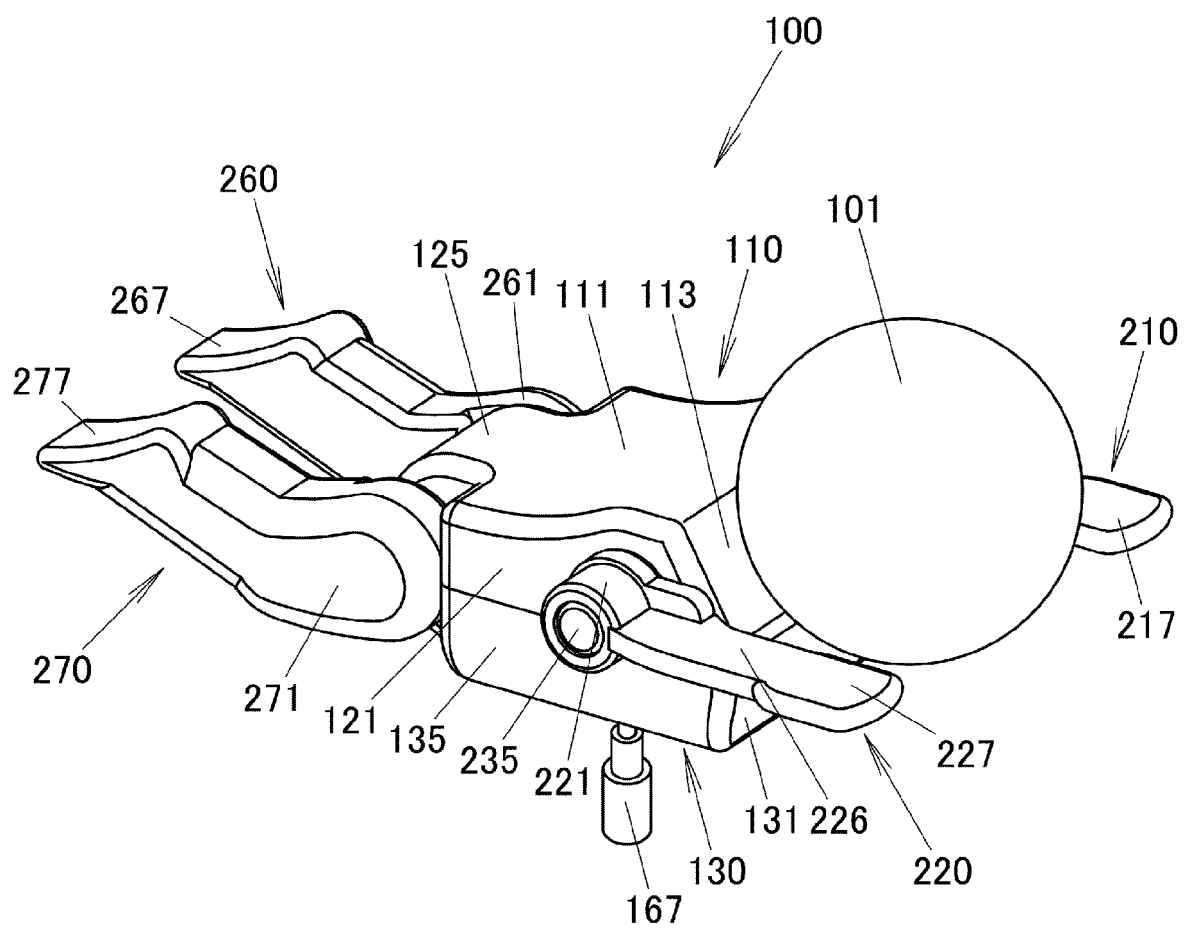
【Fig.6】



【Fig.7】



【Fig.8】





EUROPEAN SEARCH REPORT

Application Number
EP 13 18 3613

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 3 153 879 A (LUCIEN LUCAS) 27 October 1964 (1964-10-27)	1-3,5	INV. A63H23/10
A	* column 1, line 42 - column 2, line 56; figures *	4	
X	US 3 332 165 A (AMBROSIO LOSONCZY VINCE ET AL) 25 July 1967 (1967-07-25)	1-3,5	
A	* column 2, line 45 - column 3, line 20; figures *	4	
A	US 3 247 613 A (PARKER FREDERICK R) 26 April 1966 (1966-04-26) * column 1, line 63 - column 3, line 26; figures *	1-5	
A	US 3 693 292 A (LEVA ANTHONY JOSEPH DI) 26 September 1972 (1972-09-26) * column 3, line 21 - line 43 * * column 6, line 34 - line 37; figures *	1-5	TECHNICAL FIELDS SEARCHED (IPC) A63H
A	CN 101 229 445 A (ZHONGMING LIANG [CN] ZHONGMING LIANG) 30 July 2008 (2008-07-30) * the whole document *	1-5	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 31 October 2013	Examiner Lucas, Peter
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 2
EPO FORM 1503 03.82 (P04C01)

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ON EUROPEAN PATENT APPLICATION NO.**

EP 13 18 3613

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The members are as contained in the European Patent Office EDP file on
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31-10-2013

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3153879	A	27-10-1964	NONE	
US 3332165	A	25-07-1967	NONE	
US 3247613	A	26-04-1966	NONE	
US 3693292	A	26-09-1972	NONE	
CN 101229445	A	30-07-2008	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2007021148 A [0002]