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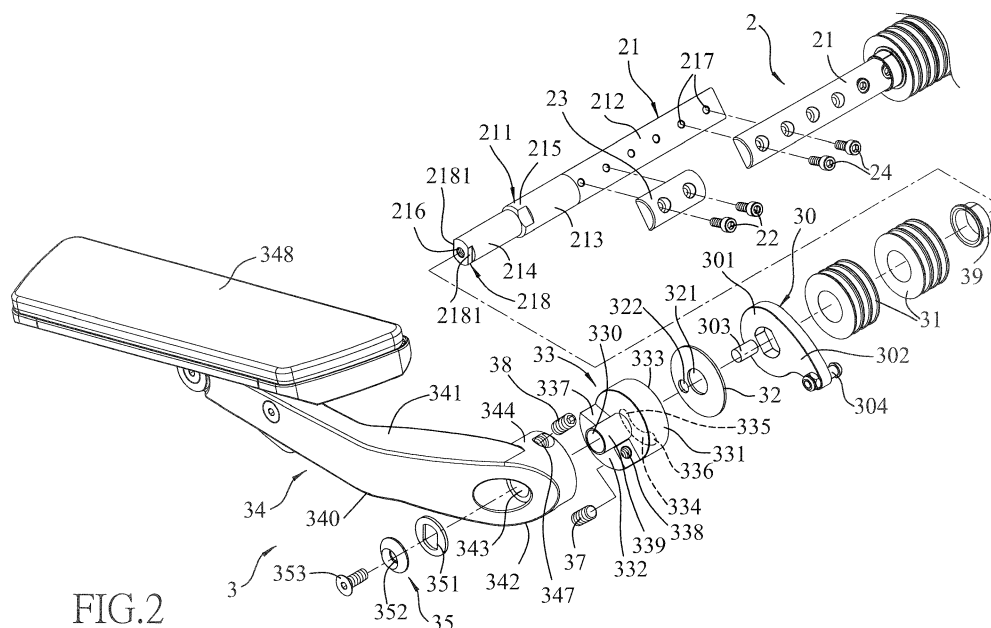
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(54) Armrest Device

(57) An armrest device includes two connecting rods (21), each of which has an armrest mounting portion (211) and an overlapping portion (212) connected to the armrest mounting portion (211). The overlapping portions (212) of the connecting rods (21) are overlapped with each other. The overlapping length of the overlap-

ping portions (212) is adjustable. At least one fixing member (24) detachably interconnects the overlapping portions (212) of the connecting rods (21). Two armrest units (3) are mounted pivotably and respectively to the armrest mounting portions (211) of the connecting rods (21).

**FIG.2****EP 2 888 974 A1**

Description

[0001] The invention relates to an armrest device, more particularly to an armrest device that can be suitably mounted on a body supporting apparatus, such as, a seat, an office chair, a wheelchair, an electric wheelchair, an electric mobility scooter, a walker, etc.

[0002] A conventional body supporting apparatus, such as a seat, an office chair, a wheelchair, an electric wheelchair, an electric mobility scooter, a walker, etc., generally has an armrest device connected to a backrest thereof. The armrest device includes a fixed bracket, and two armrest boards fixedly mounted on the fixed bracket for a user to rest his/her arms thereon. Although the conventional armrest device can provide resting of the user's arms, the width thereof is fixed. When the width of the backrest is changed or the stature of the user is different, the armrest device must be redesigned to match the backrest or the stature of the user. In view of this, the armrest device of the conventional body supporting apparatus may not only be inconvenient to manufacture and assemble, but also may not be comfortable to use when the distance between the armrest boards does not fit the stature of the user.

[0003] Therefore, an object of this invention is to provide an armrest device that is capable of overcoming the aforesaid drawbacks of the prior art.

[0004] Accordingly, an armrest device of this invention includes a connecting mechanism and two armrest units. The connecting mechanism includes two connecting rods and at least one fixing member. Each connecting rod has an armrest mounting portion and an overlapping portion connected to the armrest mounting portion. The overlapping portions of the connecting rods are overlapped with each other. The overlapping length of the overlapping portions is adjustable. The at least one fixing member detachably interconnects the overlapping portions of the connecting rods. The armrest units are mounted pivotably and respectively to the armrest mounting portions of the connecting rods.

[0005] A beneficial effect of this invention resides in that because the armrest units are respectively mounted on the connecting rods and because the overlapping length of the connecting rods is adjustable, the width between the armrest units can be adjusted, so that the armrest device of this invention can be suitably mounted on the body supporting apparatus 1 with different widths. Hence, easy manufacturing and assembling thereof can be enhanced. Furthermore, the width between the armrest units 3 and the heights of the armrest units 3 can be adjusted to cope with the different stature of users to thereby enhance use comfort.

[0006] Other features and advantages of the present invention will become apparent in the following detailed description of the embodiment with reference to the accompanying drawings, of which:

Figure 1 is a fragmentary perspective view of a body

supporting apparatus incorporating an armrest device according to the embodiment of the present invention;

Figure 2 is an exploded perspective view of a left armrest unit and a left connecting rod of the armrest device of the embodiment;

Figure 3 is a schematic top view of the embodiment; Figure 4 is a sectional view of the embodiment taken along line IV-IV of Figure 3;

Figure 5 is a sectional view of the embodiment taken along line V-V of Figure 3;

Figure 6 is a view similar to Figure 5, but with a second adjustment screw being moved toward an outer side of a second threaded hole to permit adjustment of an armrest unit of the embodiment; and

Figure 7 is a sectional view of the embodiment taken along line VII-VII of Figure 3, with the solid lines representing the armrest unit of the embodiment in a horizontal arm-resting position and with the phantom lines representing the armrest unit of this embodiment in a vertical non-resting position.

[0007] Referring to Figures 1 to 7, an armrest device according to the embodiment of the present invention is suitable for mounting on a body supporting apparatus 1, such as a seat, an office chair, a wheelchair, an electric wheelchair, an electric mobility scooter, a walker, etc., and is adjustable according to the width of the body supporting apparatus 1. The body supporting apparatus 1 includes a backrest 11, and a rear cap 12 fixed to a rear side of the backrest 11 by a plurality of fasteners 10. The backrest 11 has a semicircular mounting portion 111 facing the rear cap 12. The rear cap 12 has two spaced-apart through holes 121. The body supporting apparatus 1 further includes a mounting passage 13 cooperatively defined by the backrest mounting portion 111 and the rear cap 12, and a telescopic rod 14 disposed at a rear lower portion of the backrest 11. The armrest device of this embodiment comprises a connecting mechanism 2 and two armrest units 3.

[0008] The connecting mechanism 2 includes two connecting rods 21 adjustably and movably mounted in the mounting passage 13, two reinforcing plates 23 respectively fixed to the connecting rods 21 by a plurality of fixing screws 22, and two fixing members 24 detachably interconnecting the connecting rods 21. Each of the connecting rods 21 has an armrest mounting portion 211, and an overlapping portion 212 connected to and disposed inwardly of the armrest mounting portion 211. The armrest mounting portion 211 includes an inner sleeve section 213 connected to the overlapping portion 212, and an outer sleeve section 214 connected to the inner sleeve section 213 opposite to the overlapping portion 212. In this embodiment, each of the reinforcing plates 23 is fixed to the overlapping portion 212 of the respective connecting rod 21 by using two fixing screws 22, and is proximate to the inner sleeve section 213 of the respective connecting rod 21. The inner sleeve section 213 has

a circular main body, and a notched part 215 formed in the main body adjacent to a junction between the inner and outer sleeve sections 213, 214. The outer sleeve section 214 has a circular main body, a notched part 218 with two diametrically opposite notches 2181 formed in an outer end of the main body of the outer sleeve section 214 and distal from the notched part 215, and a threaded connecting hole 216 extending axially and inwardly from the outer end of the outer sleeve main body between the notches 218.

[0009] The overlapping portion 212 has a semi-circular cross section, and is formed with a plurality of fixing holes 217 spaced apart from each other along the length thereof. The overlapping portions 212 of the connecting rods 21 are overlapped with each other. The length of the connecting mechanism 2 after assembly can be altered by adjusting the overlapping length of the overlapping portions 212 of the connecting rods 21.

[0010] With reference to Figures 1, 4 and 5, the armrest units 3 are symmetrically disposed on left and right sides of the connecting mechanism 2, and are mounted pivotably and respectively to the armrest mounting portions 211 of the connecting rods 21. Each of the armrest units 3 includes an engaging ring 39, two compressible rings 31, a pivot limiting seat 30, a wear-resistant piece 32, an angle fixing seat 33, and an armrest assembly 34. Since the structures of the armrest units 3 are similar, only the armrest unit 3 mounted to the armrest mounting portion 211 of a left one of the connecting rods 21 will be described hereinafter.

[0011] The engaging ring 39 is sleeved fixedly on the inner sleeve section 213 of the armrest mounting portion 211. The two compressible rings 31 are sleeved side by side on the inner sleeve section 213. The pivot limiting seat 30 is sleeved fixedly and non-rotatably on the notched part 215 of the inner sleeve section 213. The wear-resistant piece 32, the angle fixing seat 33, and the armrest assembly 34 are sequentially sleeved on the outer sleeve section 214 of the armrest mounting portion 211 from an inner side to an outer side thereof. The compressible rings 31 are disposed between the engaging ring 39 and the pivot limiting seat 30. The wear-resistant piece 32 is sandwiched between the pivot limiting seat 30 and the angle fixing seat 33. The armrest unit 3 further includes a mounting assembly 35, a first adjustment screw 37 threadedly and adjustably connected to the angle fixing seat 33, and a second adjustment screw 38 threadedly and adjustably connected to the armrest assembly 34.

[0012] The pivot limiting seat 30 has a seat main body 301 fixedly sleeved on the notched part 215 of the inner sleeve section 213, a protruding portion 302 extending rearwardly from the seat main body 301, a pivot limiting member 303 projecting from the seat main body 301 toward the angle fixing seat 33, and a coupling rod 304 coupling the protruding portion 302 to the telescopic rod 14 (see Figure 1) of the body supporting apparatus 1. The wear-resistant piece 32 is circular, and has a first

axial hole 321 for extension of the armrest mounting portion 211 therethrough, and an insertion hole 322 offset from the first axial hole 321 for extension of the pivot limiting member 303 therethrough.

[0013] The angle fixing seat 33 includes a circular main body 331 defining a central hole, an axial tubular wall 339 projecting from an outer surface of the main body 331 toward the armrest assembly 34 and defining a second axial hole 330 communicating with the central hole in the main body 331, and a first stopping block 332 projecting from the outer surface of the main body 331 and surrounding an outer periphery of the axial tubular wall 339. An inner surface 333 of the main body 331 faces the wear-resistant piece 32, and has an arcuate pivot limiting groove 334 surrounding the central hole in the main body 331. The pivot limiting groove 334 has a first groove end 335 and a second groove end 336 opposite to the first groove end 335. The first stopping block 332 has a first stopping face 337, and a first threaded hole 338 spaced apart from the first stopping face 337.

[0014] The armrest assembly 34 includes an armrest rod 340, and an armrest board 348 adjustably mounted on the armrest rod 340. The armrest rod 340 has a mounting portion 341 for mounting of the armrest board 348 thereon, and a pivot connection portion 342 mounted coaxially on and pivotable relative to the angle fixing seat 33. The pivot connection portion 342 has a third axial hole 343 axially aligned with the second axial hole 330, and a second stopping block 344 protruding toward the angle fixing seat 33 and surrounding the third axial hole 343. The second stopping block 344 has a second stopping face 345 (see Fig. 5), and a second threaded hole 347 spaced apart from the second stopping face 345. As shown in Figs. 2 and 5, each of the first and second adjustment screws 37, 38 is configured as a headless screw, and is inserted threadedly and adjustably into a respective one of the first and second threaded holes 338, 347. An inner end of the first adjustment screw 37 is abutable against the second stopping face 345, while an inner end of the second adjustment screw 38 is abutable against the first stopping face 337. How to adjust an angular position of the armrest board 348 relative to the armrest rod 34 is not an important aspect of this invention, so that a detailed description thereof is dispensed herewith.

[0015] The mounting assembly 35 includes a first cushion pad 351 sleeved non-rotatably on the notched part 218 of the outer sleeve section 214 of the armrest mounting portion 211, a second cushion pad 352 abutting against the first cushion pad 351, and a connecting screw 353 extending through the first and second cushion pads 351, 352 and threadedly engaging the threaded hole 216 in the outer sleeve section 214. Through this, the armrest assembly 34 is mounted on the connecting rod 21.

[0016] With reference to Figures 1 to 3, to use the armrest device of this embodiment, the overlapping length of the overlapping portions 212 of the connecting rods 21 is first adjusted according to the width of the backrest

11 of the body supporting apparatus 1, after which the fixing members 24 are inserted through the through holes 121 in the rear cap 12 and two of the fixing holes 217 in one of the connecting rods 21, and are threadedly and selectively engaged with two of the fixing holes 217 in the other connecting rod 21, thereby fixedly coupling the overlapping portions 212 of the connecting rods 21. Next, the armrest units 3 are respectively mounted and connected to the armrest mounting portions 211 of the connecting rods 21. After assembly, the armrest assemblies 34 of the armrest units 3 are respectively disposed on the left and right sides of the backrest 11 of the body supporting apparatus 1.

[0017] It should be noted that during adjustment of the overlapping length of the overlapping portions 212 of the connecting rods 21, there is no need to detach the rear cap 12 from the rear side of the backrest 11. It is only necessary to remove the fixing screws 24, so that the connecting rods 21 can be adjustably moved within the mounting passage 13 until the desired overlapping length of the overlapping portions 212 thereof is obtained. Hence, the armrest device of this embodiment can be adjusted according to the width of the backrest 11 of the body supporting apparatus 1 without much effort.

[0018] With reference to Figures 1, 2, 5 and 6, when it is desired to adjust the height of the armrest board 348 of the armrest assembly 34 of each armrest unit 3, one of the first and second adjustment screws 37, 38 is first threadedly adjusted to move toward an outer side of the respective first or second threaded holes 338, 347 so that the inner end thereof is moved away from the respective second or first stopping face 345, 337. During this time, the armrest assembly 34 of each armrest unit 3 is pivotable about the armrest mounting portion 211 of the respective connecting rod 21. When a desired angle or height of the armrest assembly 34 is reached, the other one of the first and second adjustment screws 37, 38 is threadedly adjusted to move further into the respective first or second threaded hole 338, 347, so that the inner end thereof pushes the respective second or first stopping face 345, 337, thereby moving the inner end of the one of the first and second adjustment screws 37, 38 to abut against the respective second or first stopping face 345, 337. At this time, the armrest assembly 34 of each armrest unit 3 cannot pivot further, and is retained at the desired angle or height. During adjustment, because the first cushion pad 351 is sleeved non-rotatably on the outer sleeve section 214 of the armrest mounting portion 211 of the respective connecting rod 21, and because the connecting screw 353 presses the second cushion pad 352 against the first cushion pad 351, the armrest assembly 34 is not only mounted coaxially and pivotably to the armrest mounting portion 211 of the respective connecting rod 21, but also the connecting screw 353 is not likely to loosen during the pivot movement of the armrest assembly 34.

[0019] With reference to Figure 7, in combination with Figures 1, 2 and 5, when a user desires to enter or exit

the body supporting apparatus 1 from a single side thereof, the armrest assembly 34 of one of the armrest units 3 is pivoted upward and rearward. That is, when the user pulls the armrest assembly 34, because the first and second adjustment screws 37, 38 respectively abut against the second and first stopping blocks 334, 332, the pulling force exerted on the armrest assembly 34 drives the angle fixing seat 33 to pivot along with the armrest assembly 34. When the pivot limiting member 303 abuts against the second groove end 336 of the pivot limiting groove 334 of the angle fixing seat 33, the angle fixing seat 33 and the armrest assembly 34 cannot pivot further. At this moment, the armrest unit 3 is moved from a horizontal arm-resting position, as shown in solid lines in Figure 7, to a vertical non-resting position, as shown in phantom lines in Figure 7.

[0020] In other words, when the armrest device of this embodiment is in normal use, because the compressible rings 31, the pivot limiting seat 30, the wear-resistant piece 32, the angle fixing seat 33 and the armrest rod 340 of the armrest assembly 34 of each armrest unit 3 are disposed tightly close to each other, and because the pivot limiting member 303 is inserted into the pivot limiting groove 334 of the angle fixing seat 33 and abuts against the first groove end 335 thereof, each armrest unit 3 is disposed in the horizontal arm-resting position at this time, and the armrest assembly 34 thereof is retained at a fixed angle for an arm of the user to rest thereon.

[0021] When it is desired to adjust the height of the armrest board 348 of the armrest assembly 34, the first and second adjustment screws 37, 38 are simply rotated. Further, when it is desired to enter or exit the body supporting apparatus 1, the armrest assemblies 34 of the armrest units 3 are simply pulled upward and rearward to drive the angle fixing seat 33 to move upward therealong. Hence, the armrest device of this invention not only has a novel structure, but also can be adjusted according to the requirement of the body supporting apparatus 1. That is, the width between the armrest units 3 can be adjusted so that the armrest device of this invention can be mounted to the body supporting apparatus 1 with different widths. The purpose of easy manufacturing and assembling can thus be achieved. Simultaneously, the width between the armrest units 3 and the heights of the armrest units 3 can be adjusted to cope with the different stature of users to thereby enhance use comfort.

Claims

1. An armrest device characterized by:

a connecting mechanism (2) including two connecting rods (21) and at least one fixing member (24), each of said connecting rods (21) having an armrest mounting portion (211) and an overlapping portion (212) connected to said armrest

mounting portion (211), said overlapping portions (212) of said connecting rods (21) being overlapped with each other, the overlapping length of said overlapping portions (212) being adjustable, said at least one fixing member (24) detachably interconnecting said overlapping portions (212) of said connecting rods (21); and two armrest units (3) mounted pivotably and respectively to said armrest mounting portions (211) of said connecting rods (21).

2. The armrest device as claimed in Claim 1, **characterized in that** said overlapping portion (212) of each of said connecting rods (21) has a plurality of fixing holes (217) spaced apart from each other along the length of said overlapping portion (212), and said at least one fixing member (24) includes two said fixing members (24) extending through two of said fixing holes (217) in one of said connecting rods (21) and selectively engaging two of said fixing holes (217) in the other one of said connecting rods (21).
3. The armrest device as claimed in Claim 1, **characterized in that** each of said armrest units (3) includes an angle fixing seat (33) mounted on said armrest mounting portion (211) of a respective one of said connecting rods (21), an armrest assembly (34) mounted on said armrest mounting portion (211) of the respective one of said connecting rods (21) and pivotable relative to said angle fixing seat (33), a first adjustment screw (37) threadedly and adjustably connected to said angle fixing seat (33), and a second adjustment screw (38) threadedly and adjustably connected to said armrest assembly (34), said angle fixing seat (33) having a first stopping face (337) abutable against said second adjustment screw (38), said armrest assembly (34) having a second stopping face (345) abutable against said first adjustment screw (37).
4. The armrest device as claimed in Claim 3, **characterized in that:**

said armrest mounting portion (211) of each of said connecting rods (21) includes an inner sleeve section (213) connected to said overlapping portion (212), and an outer sleeve section (214) connected to said inner sleeve section (213) opposite to said overlapping portion (212), said inner sleeve section (213) having a notched part (215) adjacent to a junction between said inner and outer sleeve sections (213, 214), said angle fixing seat (33) is sleeved rotatably on said outer sleeve section (214) and further has an axial hole (330) and a pivot limiting groove (334) surrounding said axial hole (330), said pivot limiting groove (334) having a first groove end (335) and a second groove end

(336) opposite to said first groove end (335), and each of said armrest units (3) further includes a pivot limiting seat (30) fixed to said notched part (215) of said inner sleeve section (213) of the respective one of said connecting rods (21), said pivot limiting seat (30) having a pivot limiting member (303) movably extending into said pivot limiting groove (334) of said angle fixing seat (33), each of said armrest units (3) being disposed in a horizontal arm-resting position when said pivot limiting member (303) abuts against said first groove end (335) of said pivot limiting groove (334), and being disposed in a vertical non-resting position when said pivot limiting member (303) abuts against said second groove end (336) of said pivot limiting groove (334).

5. The armrest device as claimed in Claim 4, **characterized in that** said armrest assembly (34) of each of said armrest units (3) includes an armrest rod (340), and an armrest board (348) mounted on said armrest rod (340), said armrest rod (340) having a pivot connection portion (342) mounted coaxially on said angle fixing seat (33), each of said armrest units (3) further including an engaging ring (39) sleeved engagingly on said inner sleeve section (213) of the respective one of said connecting rods (21), at least one compressible ring (31) disposed between said engaging ring (39) and said pivot limiting seat (30), and a wear-resistant piece (32) sandwiched between said pivot limiting seat (30) and said angle fixing seat (33).
6. The armrest device as claimed in Claim 5, **characterized in that** said connecting mechanism (2) further includes two reinforcing plates (23), and a plurality of fixing screws (22) fixing said reinforcing plates (23) on said overlapping portions (212) of said connecting rods (21), respectively, said reinforcing plates (23) being respectively proximate to said inner sleeve sections (213) of said armrest mounting portions (211) of said connecting rods (21).
7. The armrest device as claimed in Claim 6, **characterized in that** each of said armrest units (3) further includes a mounting assembly (35) mounting said armrest assembly (34) on the respective one of said connecting rods (21), said mounting assembly (35) including a first cushion pad (351) sleeved non-rotatably on said outer sleeve section (214) of said armrest mounting portion (211), a second cushion pad (352) abutting against said first cushion pad (351), and a connecting screw (353) extending through said first and second cushion pads (351, 352) and threadedly engaging said outer sleeve section (214) of the respective one of said connecting rods (21).

8. The armrest device as claimed in Claim 1, **characterized in that** said armrest mounting portion (211) of each of said connecting rods (21) includes an outer sleeve section (214), and a connecting hole (216) extending axially and inwardly from an outer end of said outer sleeve section (214), each of said armrest units (3) further including an armrest assembly (34), and a mounting assembly (35) mounting said armrest assembly (34) on the respective one of said connecting rods (21), said mounting assembly (35) including a first cushion pad (351) sleeved non-rotatably on said outer sleeve section (214) of said armrest mounting portion (211), a second cushion pad (352) abutting against said first cushion pad (351), and a connecting screw (353) extending through said first and second cushion pads (351, 352) and threadedly engaging said connecting hole (216) in said outer sleeve section (214) of the respective one of said connecting rods (21).

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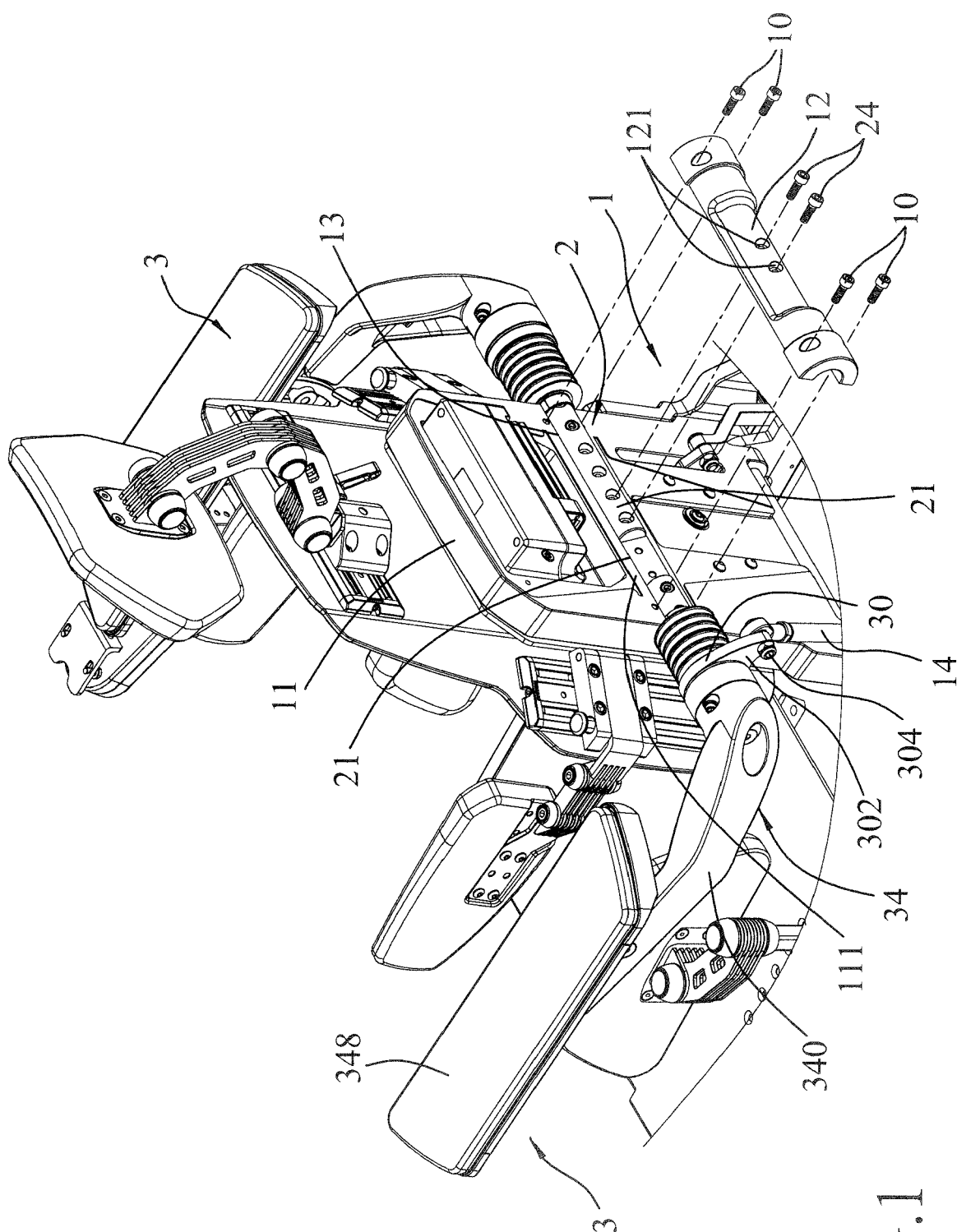
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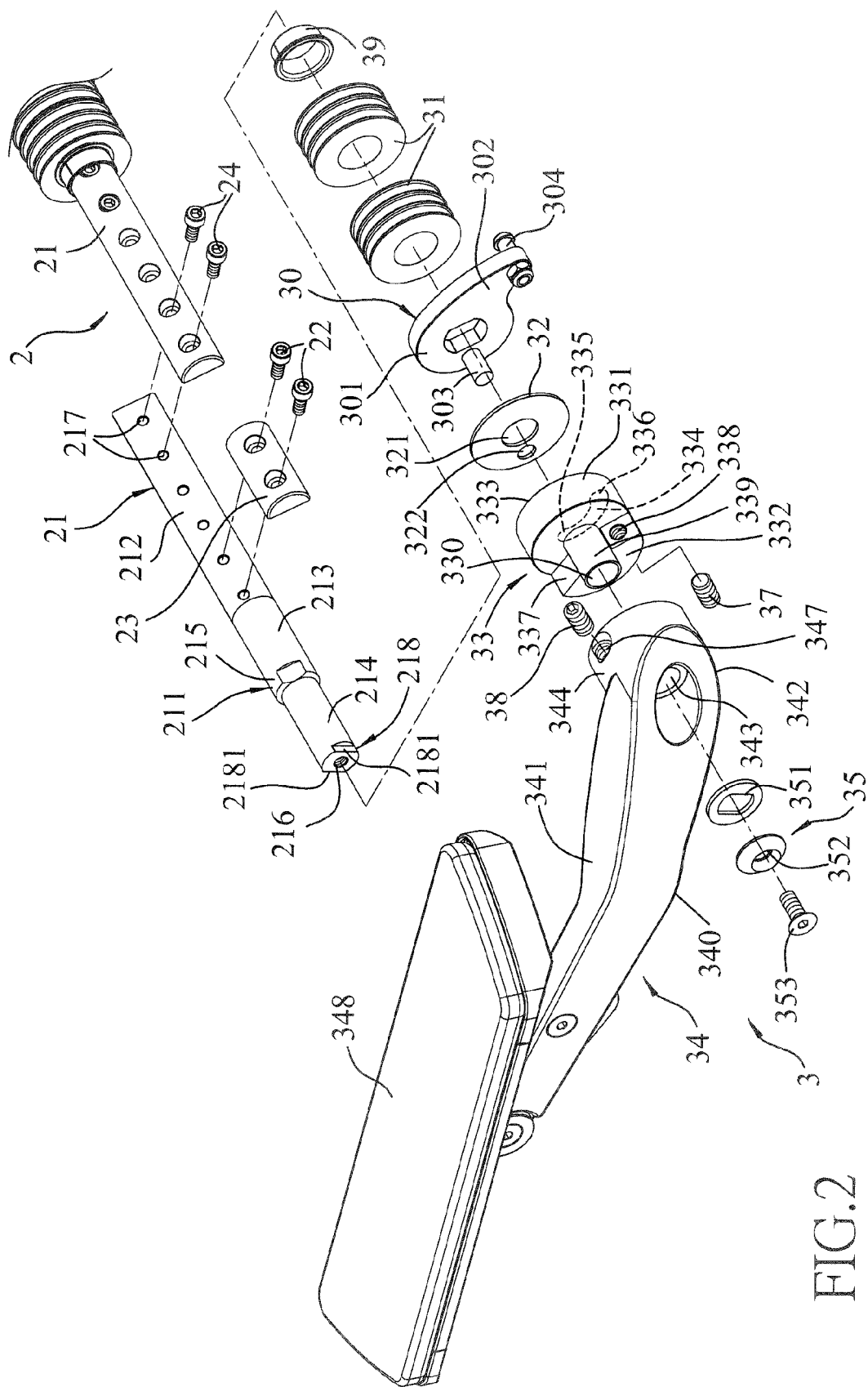
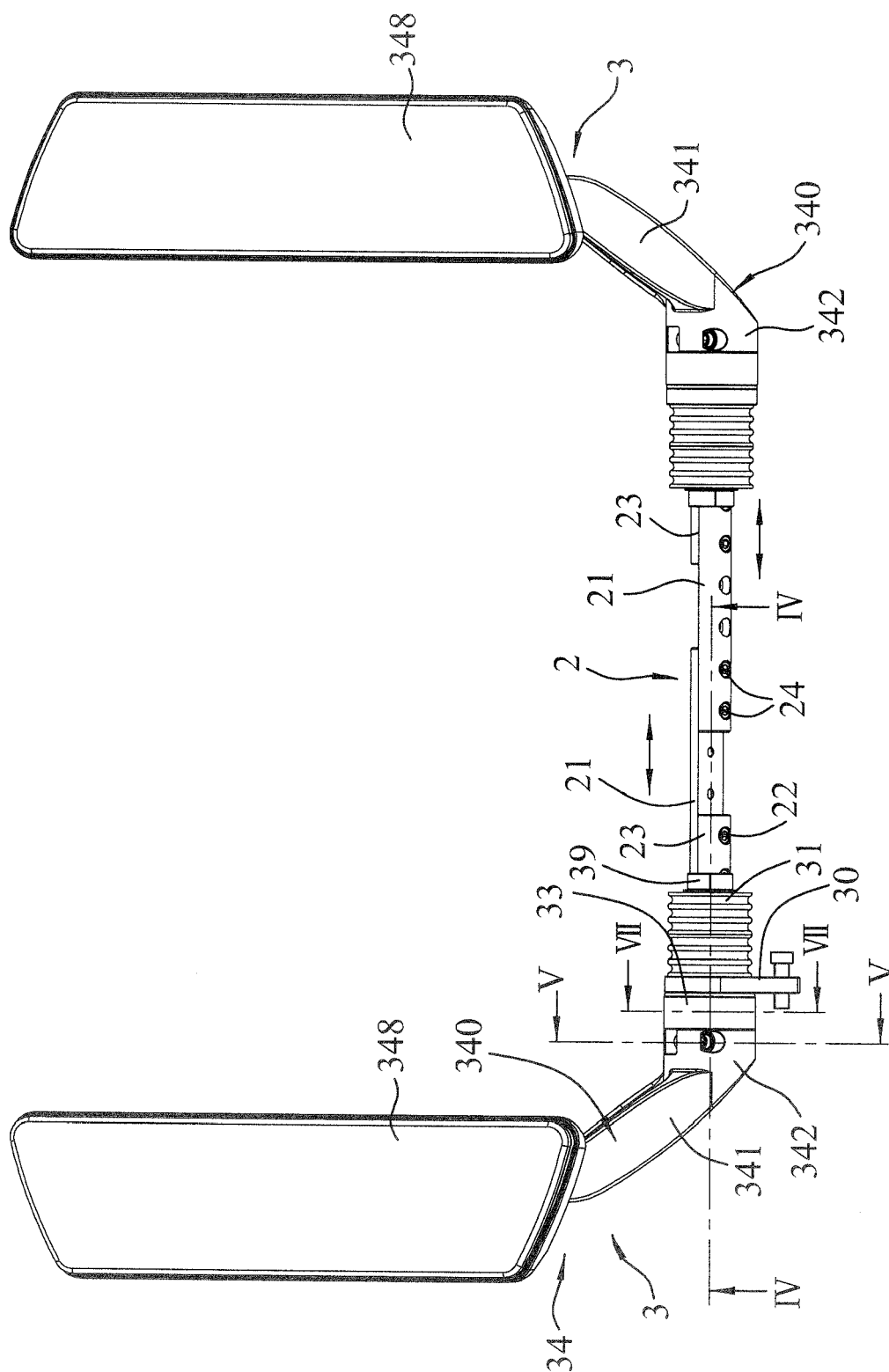


FIG. 2



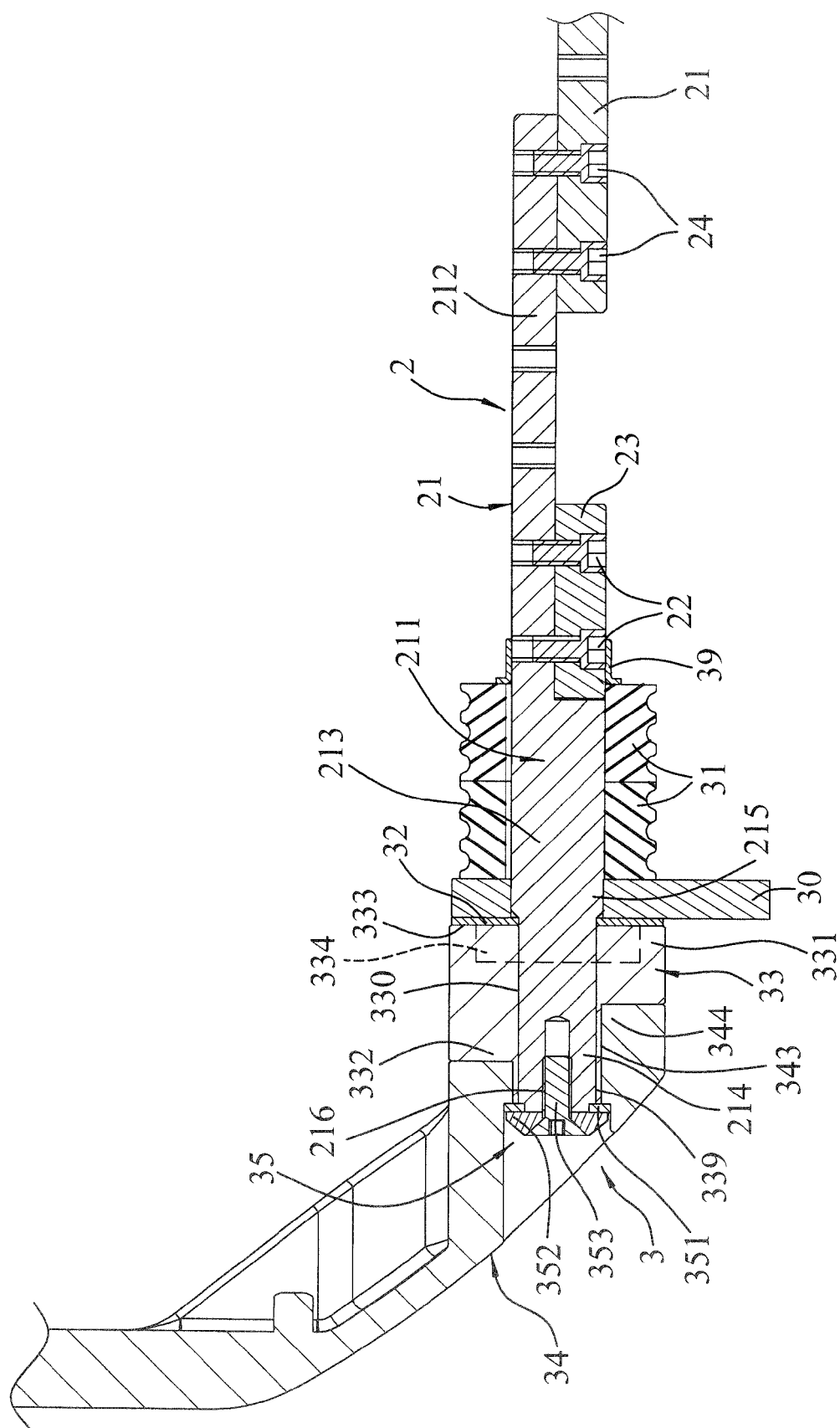


FIG. 4

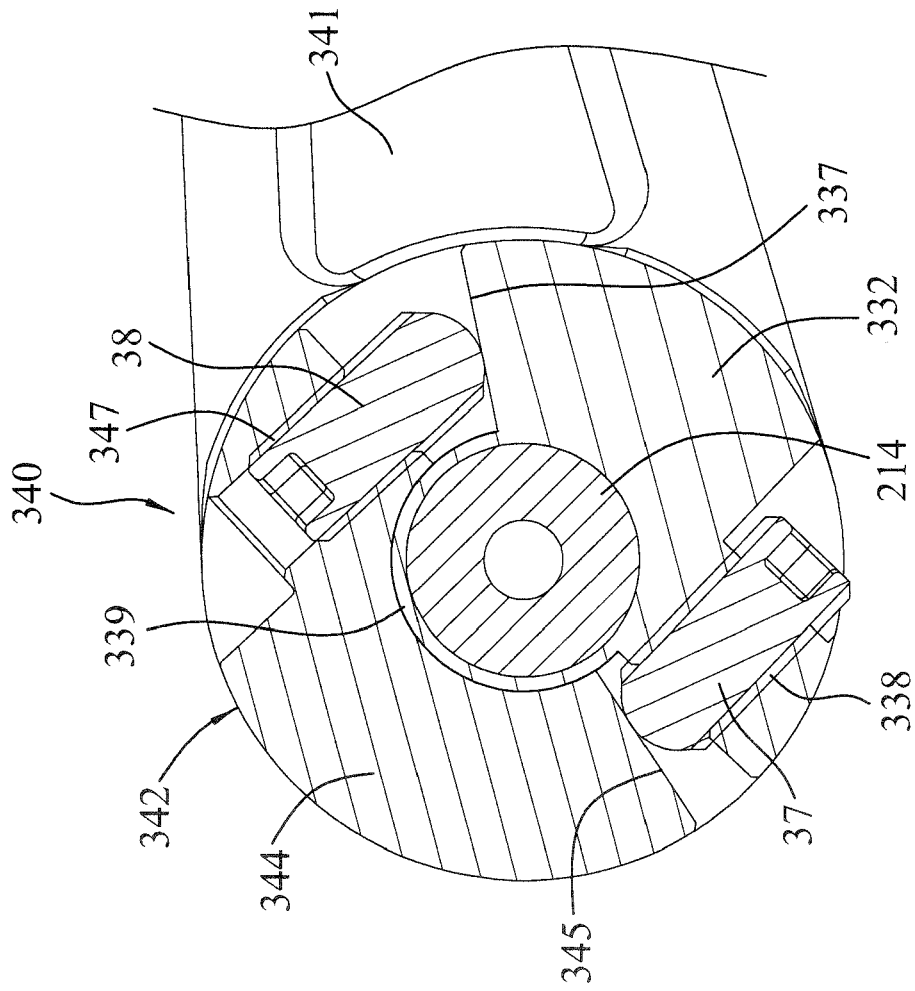


FIG. 5

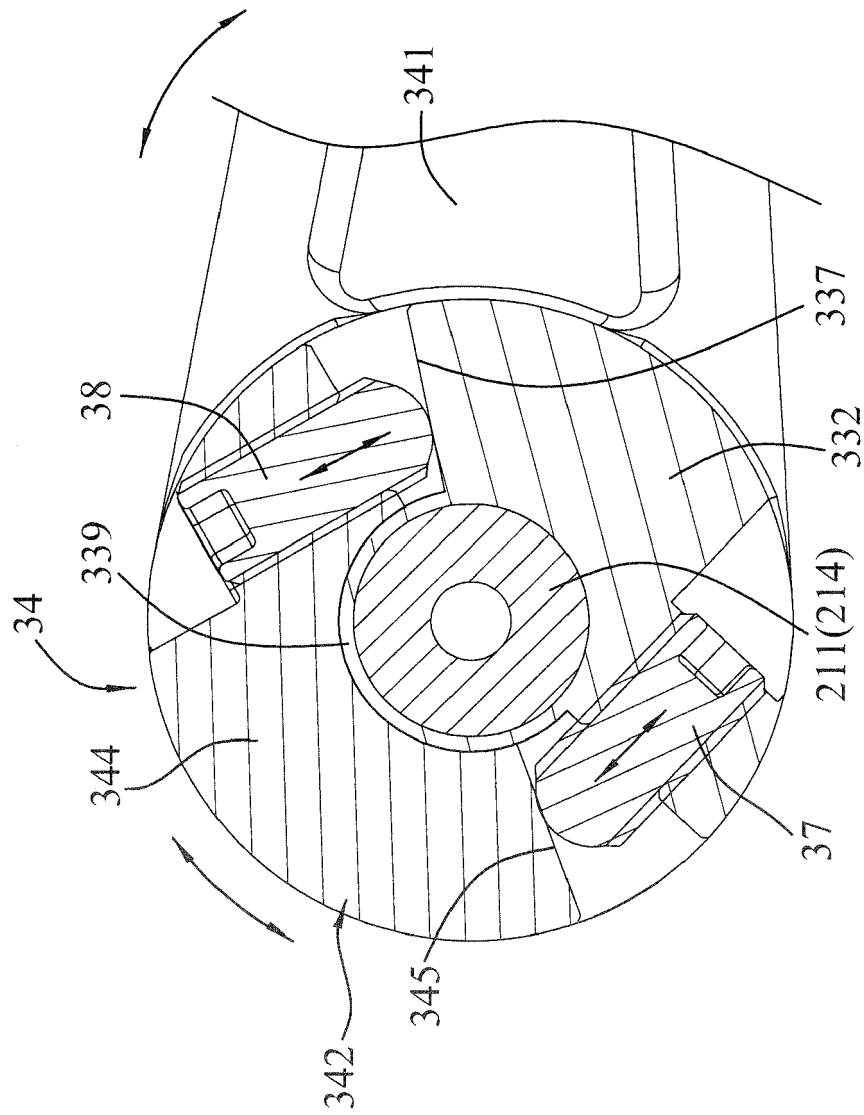
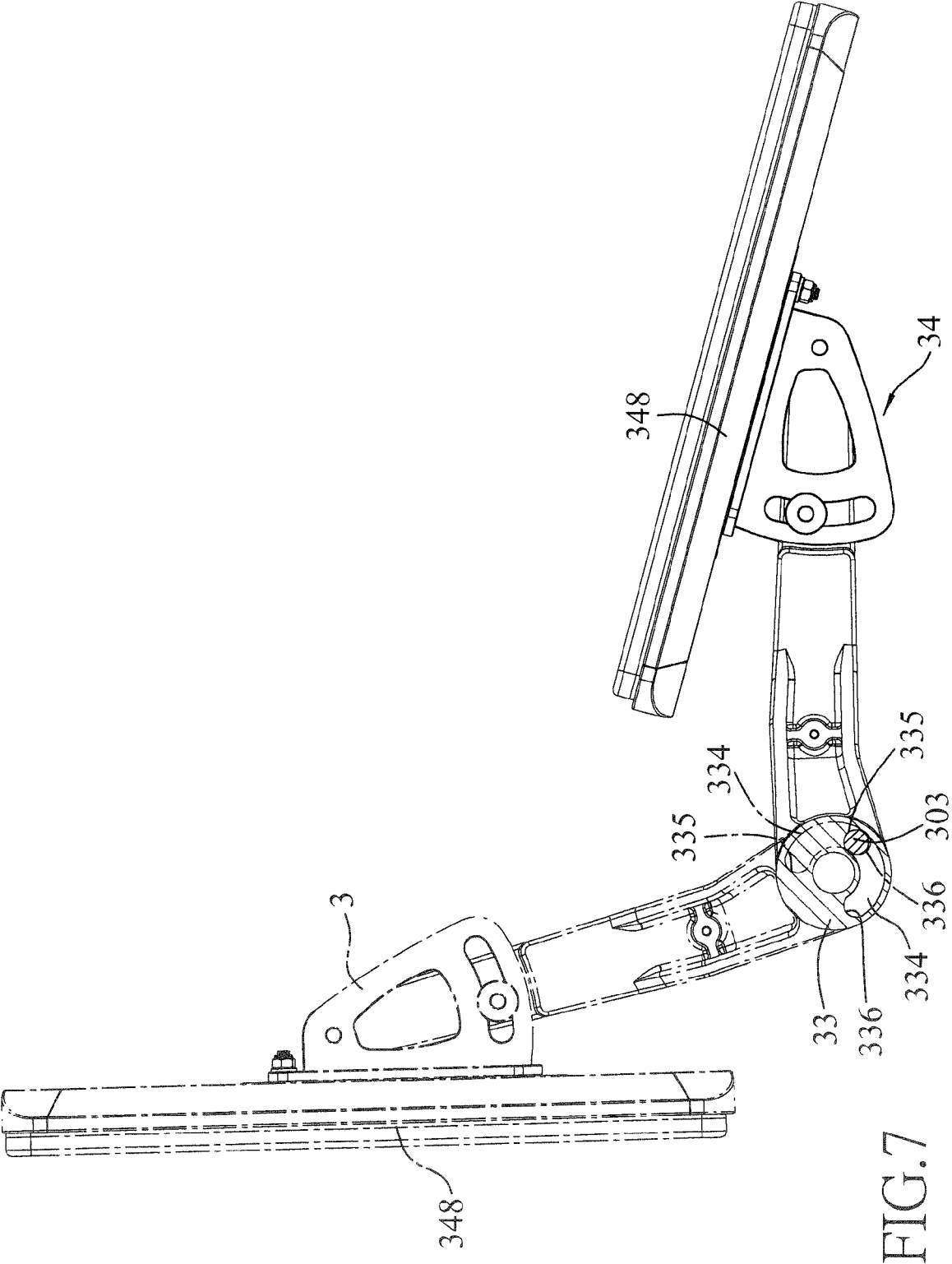


FIG.6





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Application Number
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		13 May 2015	Amghar, Norddin
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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